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THE

ENGLISH FLOWER GARDEN

Design and Arrangement shown by existing examples of Gardens in Great Britain and Ireland followed by a Description of the best Plants for the Open-air Garden and their Culture By W. ROBINSON

Author of 'The Wild Garden'

Illustrated with many Engravings on Wood

Fifth Edition

"You see, sweet maid, we marry
A gentle scion to the wildest stock
And make conceive a bark of baser kind
By bud of nobler race: This is an art
Which does mend nature: change it rather.
The art itself is nature."—*Shakespeare.*

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TO

A. B. FREEMAN MITFORD, C.B.,

OF BATSFORD PARK,

AUTHOR OF "TALES OF OLD JAPAN" AND THE "BAMBOO GARDEN:"

THIS NEW EDITION OF THE ENGLISH FLOWER GARDEN

IS DEDICATED.

FOREWORDS TO NEW EDITION.

THIS book is the muster of various once forlorn hopes and skirmishing parties now united with better arms and larger aims, and its beginnings may have an interest for others. I came to London just when the Royal Horticultural Society's garden at Kensington was being laid out, a series of elaborate patterns set at different levels, and the Crystal Palace, in its glory, was described by the Press of the day to be the most wonderful instance of modern gardening—water-temples, water-paths, vast stone basins and all the theatrical gardening of Versailles reproduced in Surrey.

There was little or no reason admitted into garden design: all things being "matters of taste"; and the same poor imitation of the Italian garden being set down in all sorts of positions. If the place did not suit the ground had to be bolstered up in some way so that the plan might be carried out—a costly way to get an often ridiculous result. The great writers of the past had laughed the carpenter's rule out of the parks of England, and pictures arose where they were once impossible; but the ugliness of the garden about the house was thought to be an essential part of the work, removing that for ever from the sympathies of artistic people.

The flower garden planting was made up of a few kinds of flowers which people were proud to put out in thousands and tens of thousands, and with these patterns, more or less elaborate, were carried out in every garden save the very poorest cottage garden. It was not easy to get away from all this false and hideous "art," but I was then in the Botanic Gardens, Regent's Park, where there was at that time a small garden of British plants, which had to be kept up, and this led me into the varied country round London, from the orchid-flecked meadows of Bucks to the tumbled down undercliffs on the Essex coast, untroubled by plough, and so began to get an idea (which should be taught to every boy at school) that there was (for gardens even) much beauty in our native

make them use any less the Latin name in its right place, which is the book or the herbarium.

For the second part of this book the storehouse of information in *The Garden* has been taken advantage of, but articles have been specially written where it was thought necessary, and the following are the names of the writers whose contributions are embodied in the second part of the book, and frequently marked by their initials :—

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"An unerring perception told the Greeks that the beautiful must also be the true, and recalled them back into the way. As in conduct they insisted on an energy which was rational, so in art and in literature they required of beauty that it too should be before all things rational."
—SOME ASPECTS OF THE GREEK GENIUS.

THE ENGLISH FLOWER GARDEN.

CHAPTER I.

ART IN RELATION TO FLOWER-GARDENING AND GARDEN DESIGN.

THERE is no reason why we should not have true art in the garden, but much why we should have it, and there is no reason why a garden should be ugly, bare, or conventional. The word "art" being used in its highest sense here, it may perhaps be well to justify its use. As good a definition of the word as any perhaps is "to see and give form to beautiful things," and we see art in some of its finest forms in Greek sculpture and in the works of the great masters of painting.

Now art is of many kinds, and the word is frequently applied in our own time to conventional trifling, but owing to the loose, "critical" talk of the day, it is not easy to see the central truth of art, *i.e.* clear-eyed study and love for Nature, rather than invention and the bringing of the "personality" of the artist into the work of which we hear so much. The work of the true artist is always marked by its fidelity to Nature, and proof of this may be seen in the greatest art galleries now open to all, so that there is little to hide the proof of what is said here about art in its highest expression.

But as a number of people unfortunately write much about art in the magazines and papers, while blind as bats to its simple law, there is infinite confusion in many minds about it. One may read essay after essay about art without being brought a bit nearer to the simple truth, but on the other hand get the false idea that it is not by observing, but by inventing and supplementing, that good work is done. The strong man must be there, but his true work is to see the whole beauty of the subject and to help us to see it not

to distort it in any way for the sake of making it merely singular. This is often an easy way to popularity, but in the end it means bad work. It may be the fashion for a season, owing to some one quality; but it is soon found out, and we have to return to the great masters of all ages, who are always distinguished for truth to Nature.

The actual beauty of the thing in all its fulness and subtlety is almost the whole of the question, but the critics of the day will not take the trouble to see this. Artists, men of education, and gentlewomen write essays on art in which many words occur, but in which we do not once meet with the word *truth*. "Realism" and "idealism" are words freely used, and bad pictures are shown us as examples of "realism," which leave out all the refinement, subtlety, truth of tone, and perhaps even the very light and shade in which all things we see are set. The man who will not take the trouble to see the beauty of the real very often goes astray in quest of the "ideal."

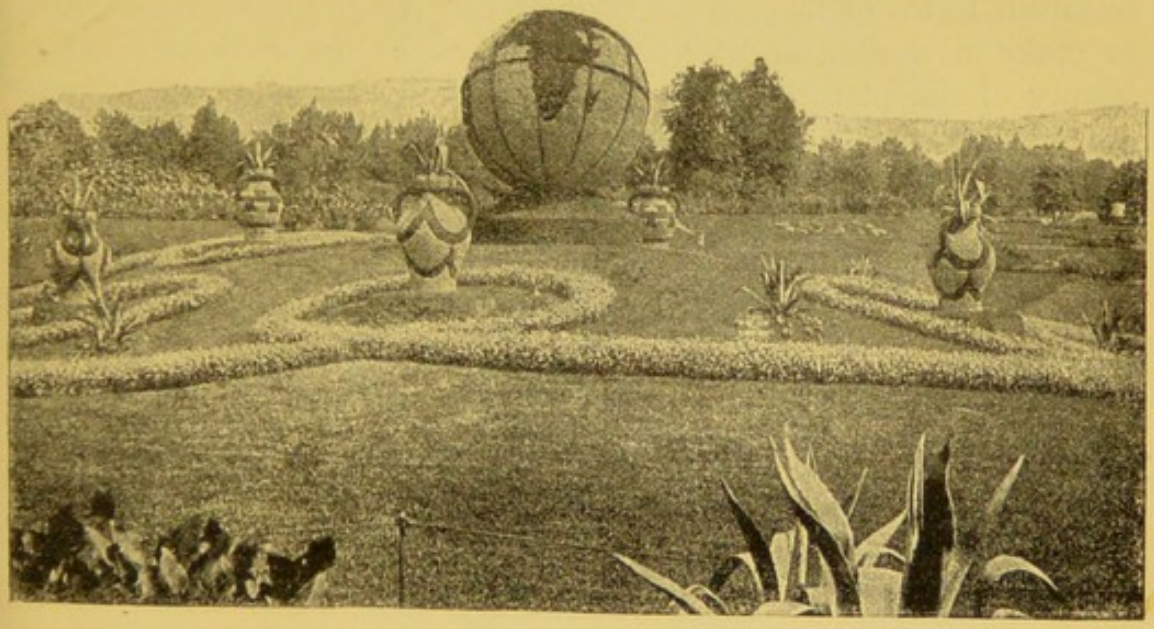
There are men so blind to the beauty of the things set before their eyes in sky, sea, or earth, that they would seek to idealise the eyes of a beautiful child or the clouds of heaven; while all who see natural beauty in landscape know that no imagining can come near to the beauty of things seen, art being often powerless to seize their full beauty, and the artist has often to let the brush fall in despair. Only a little, indeed, of the beauty that concerns us most—that of the landscape—can be seized for us except by the very greatest masters. Of things visible—flower, tree, landscape, sky, or sea—to see the full and every varied beauty is to be saved for ever from any will-o'-the-wisp of the imaginary.

But many people do not judge pictures by Nature, but by pictures, and therefore they miss the subtleties of Nature, and those delicate things on which all true work depends. Many of them sneer at those who "copy Nature," but the answer to such critics is for ever there in the work of the great men, be they Greeks, Dutchmen, Italians, French, or English.

It is, however, to be remembered that part of the work of the artist is the selection of beautiful or memorable things, not the first things that come in his way. The Venus of Milo is from a noble type of woman—not a mean Greek. The horses of the Parthenon are the best types of Eastern breed, full of life and beauty. Great landscape painters like Crome, Corot, and Turner seek not things only because they are natural, but beautiful combinations of field, and hill, wood, water, tree, and flower, and grass, selecting views which are good in composition, and then waiting for the most beautiful effects of morning, evening, or whatever light suits the chosen subject best, to give us pictures. But they work always

from faithful study of Nature and from stores of knowledge gathered from her, and that is the only true path for the gardener, all true art being based on her eternal laws. All deviation from the truth of Nature, whether it be at the hands of Greek, Italian, or other artist, though it may pass for a time, is in the end—it may be ages after the artist is dead—classed as *debased* art.

Why say so much here about art? Because once we see the meaning of true "art" we cannot endure what is ugly and false in art, and we cannot have the foregrounds of beautiful English scenery daubed with a flower garden like a coloured advertisement. Many feel the right way from their own sense being true, but others may wish for proof of what is urged here as to the true source of lasting work in art in the work of the great artists of all time. And we may be as true artists in the garden as anywhere else.



Last expression of "carpet" gardening at Chicago. From a photograph.

So far we have spoken of the work of the true artist, which is always marked by respect for Nature and by keen study of her. But apart from such we have a great many men who do what is called "decorative" work, useful it may be, but still not art in the high sense of delight and study in things as they are—the whole class of decorators, who make our carpets, tiles, curtains, and many other things. Skill in this way may be considerable without any attention whatever being paid to the greater art; that art being concerned with life in all its fulness, the decorative "art" being the adapting of conventional or geometric forms mostly to flat surfaces.

This it is well to see clearly; as for the flower gardener it matters much on which side he stands. Unhappily, our gardeners for ages

have suffered at the hands of the decorative artist, when applying his "designs" to the garden, and designs which may be quite right on a surface like a carpet or panel have been applied a thousand times to the surface of the reluctant earth. It is this adapting of absurd "knots" and patterns from old books to any surface where a flower garden has to be made that leads to bad and frivolous design—wrong in plan and hopeless for the life of plants. It is so easy for any one asked for a plan to furnish one of this sort without the slightest knowledge of the life of a garden.

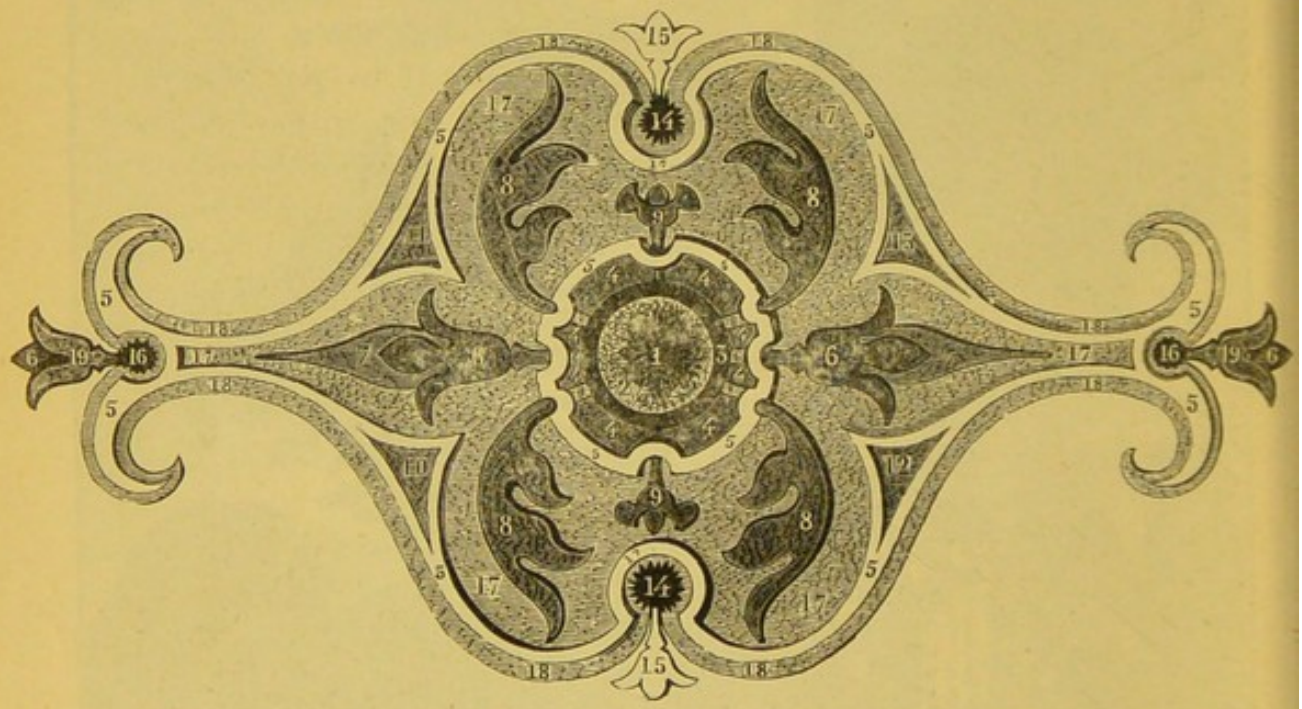
For ages the poor gardener has been troubled by trying to adapt himself to absurdities of this kind of work as regards plan, but for ages the beds in them were set with flowers in simple and natural ways. But in our own time the same "decorative" idea has come to be carried out in the planting of the flowers under the name of "bedding out," "carpet bedding," or "mosaic culture." In this the beautiful forms of flowers are degraded to the level of crude colour to make a design, and without reference to the natural form or beauty of the plants, clipping being freely done to get the carpets or patterns "true." When these tracery gardens were made, often by people without any knowledge of the plants of a garden, they were found to be difficult to plant; hence the desire to do without the gardener altogether, and get colour by the use of broken brick, white sand, and painted stone, as at South Kensington and various private places in our own day. All such work is wrong and degrading to the art of gardening, and in its extreme expressions is ridiculous.

Why are such designs bad? The good sense of all is the final court of appeal for even artistic things, and to many people these things need not be said, but the stereotyped gardens that abound in many places show us how much has to be learnt. The modern garden is often no more interesting than an oilcloth pattern, because instead of beautiful form and colour we see emphasis given to pattern-work and plants robbed of all their grace. But while the artist may be driven from the common bedding garden, he will perhaps go to rest his eyes on a cottage garden, and may make a picture of it, because the cottage garden is itself often a picture. Why should the cottage garden be a picture when the gentleman's garden is not? It is, that the plants, beds, and walks, are not set out in geometrical ways. Here is an engraving of a small cottage garden in Oxfordshire: an artistic garden in its simplest expression. There was very little in this beyond the Monthly Rose and a few Pansies and the tree beyond, and yet it was right and beautiful, and there are many better in every county in England. May the large gardens be as good in proportion to the money spent upon them and their size as this poor little cottage garden? Certainly: the gardens

An English cottage garden. Simple expression of the beautiful garden.

shown in this book prove it, although it is rarely nowadays that a large garden shows anything like the charm of simplicity and directness that many cottage gardens do.

The gardener should follow the true artist, however modestly, in his love for things as they are, in delight in natural form and beauty of flower and tree, if we are to be free from barren geometry, and if our gardens are ever to be pictures. The gardener has not the strenuous work of eye and hand that the artist has, but he has plenty of good work to do :—to choose from ten thousand beautiful living things ; to study their nature and adapt them to his soil and climate ; to get the full expression of their beauty ; to grow and place them



Bedding and Carpet Flower-gardening (mosaiculture of the French). No. 1, Palm ; 2, Begonias ; 3, Coleus ; 4, Lobelia ; 5, Pyrethrum ; 6, Alternanthera ; 7, A. amabilis ; 8, A. amœna ; 9, Sedum ; 10, Crassula ; 11, Echeveria ; 12, Kleinia ; 13, Crassula ; 14, Yucca ; 15, Iceplant ; 16, Echeveria ; 17, Sedum ; 18, Echeveria ; 19, Alternanthera.

well and in right relation to other things, which is a life-study in itself, in view of the great numbers of the flowers and flowering trees of the world. And as the artist's work is to see and keep for us some of the beauty of landscape, tree, or flower, so the gardener's should be to keep for us as far as may be, in the fulness of their natural beauty, the living things themselves. The artist gives us the fair image : the gardener is the trustee of a world of fair living things, to be kept with care and knowledge in necessary subordination to human convenience, and to the conditions of his work.

In recent writings on garden design, it is assumed as a truism that the landscape and naturalistic view of that design was the

A Devonshire Cottage Garden.

invention of certain men, and a mere passing fashion, like many that have disfigured the garden. This is a serious error, as landscape beauty has existed ever since the eyes of men were first opened to the beauty of the earth as now when from thousands of places in England beautiful landscape views are seen. It exists in wild mountain woodland, and in the forest plain, apart altogether from man's efforts, as seen in the parks of England from Alnwick to Richmond ; and in either case it is too lovely a lesson to forget so long as man has any eyes to see beauty.

If all the works of man in landscape planting were swept away, there would still be beautiful landscape on vast areas in many lands. There are ten thousand grassy lawns among the mountain Pines of Switzerland, where beautiful things are seen in landscape, as there are on the mountains of California and Cashmere, and, indeed, the many other woody mountain lands of the world.

Apart from the disposition of ground and its form, there is the question of the arrangement of all the beautiful things of earth—flower, shrub, or tree in right or wrong ways. Here there were always lessons to be learned which the clear-eyed might see : lovely colonies of Bird's-eye Primrose in the bogs of Westmoreland ; little families of Gentian by the alpine streams ; groups of Venetian Sumach cropping out of the hot southern rocks ; groups of May on the hill, the stately groves of the lowland forest, and the Grey Willows of the marsh land. In planting in the same way we are simply learning a lesson direct from Nature, and not carrying out a mere fashion. Even the creatures of earth and air are held together beautifully—wild birds in the air, delicate brown flocks of them by the cold northern sea, as well as groups of nobler birds on the banks of the Nile and southern rivers ; the cattle on a thousand hills : in no other way could their forms or colours be so well seen. And so it must ever be in the garden where natural grouping is the true and artistic way.

The expression of those ideas may seem to some to imply that the garden generally is to be a tangled wilderness. But having plants in natural forms does not in the least prevent us from making a straight walk along a straight wall, or from having the necessary wall protection for our gardens. A straight line is often the most beautiful that can be used ; but its use by no means implies that we are not to group our plants or bushes naturally alongside it.

I have to prove from examples existing even in our own day, when one has to travel far to see a beautiful garden, that there is a true art of garden design based on reason and the life and needs of gardens : that there are ways of placing our garden flowers which will make them as grateful to us as they are in the most beautiful natural conditions, and that the garden, instead of being a fright or a puzzle to the artist, may be the very heart of his work.

CHAPTER II.

DESIGN AND POSITION.

ONE aim of this book is to uproot the idea that a flower garden must always be of set pattern—usually geometrical—placed on one side of the house. The wants of flowers can be best met, and their varied loveliness best shown, in a variety of positions, and the first thing to do is to consider the error of arraying all our flowers in one spot under exactly the same conditions, as such a plan can never give us a tithe of the beauty which our gardens may afford. That a flower garden should occupy one spot, and all the flowers be there shown, is the rule, but we must take no notice of it if our gardens are to be beautiful with the flowers of all seasons. The settled way has been to regard one spot with the same soil and aspect—with every condition alike, in fact—as the only home for open-air flowers, though near at hand, in the same place, there may be various positions, each favourable to a different type of flower life.

For all that concerns us in this artistic question there are laws which will guide us if we seek for them. The laws here meant are Nature's laws—not merely landmarks set out by man for his convenience. Only they are not laws that bind with weary fetters, but as infinite in delightful change as the restless clouds on the hills. No one need fear their tyranny, for in them is perfect liberty and all the sweet wanderings the earth mother has for her children. We shall never settle the most trifling question by the stupid saying that it is "a matter of taste," and if the reader will come with me through these early chapters, I hope to convince him that flower-gardening is "a matter of reason." The laws of all true art can only be based on the eternal laws of Nature, and these are the source from which all our guidance should come. One of the first things we have to do is to get a clear idea of the hollowness of much of the talk about "styles" that forms a great part of what has been written in books about laying out gardens. There are many dissertations on the several styles, the authors going even to China and to Mexico for illustrations. The

first thing every writer on this subject does is to puzzle his readers with words about "styles," but when all is read, what is the result to anybody who looks from words to things? That there are two styles: the one strait-laced, mechanical, with much wall and stone, with water-squirts, plaster-work, and wasted sculpture; the other natural—in most cases, once free of the house accepting the ground lines of the earth herself as the best, and getting plant beauty from its natural source—the flowers and trees arranged in picturesque ways. Mr. Ruskin tells us that

> We are forced, for the sake of accumulating our power and knowledge, to live in cities; but such advantage as we have in association with each other is in great part counterbalanced by our loss of fellowship with Nature. We cannot all have gardens now, nor our pleasant fields to meditate in at eventide. Then the function of our architecture is, as far as may be, to replace these; to tell us about Nature; to possess us with memories of her quietness; to be solemn and full of tenderness like her, and rich in portraitures of her; full of delicate imagery of the flowers we can no more gather, and of the living creatures now far away from us in their own solitude.

What, then, are we to think of those who needlessly carry the dead lines of the builder into the garden, which, above every other artificial creation, should give us the sweetest "fellowship with Nature"?

There are positions where stonework is necessary; but the beautiful terrace gardens are those that are built where the nature of the ground required them; and there is nothing more melancholy than the walls, fountain basins, clipped trees, and long canals of places like the Crystal Palace, not only because they fail to satisfy the desire for beauty, but because they tell of wasted effort, riches worse than lost. There are, from Versailles to Caserta, a great many ugly gardens in Europe, but at Sydenham we have the greatest modern example of the waste of enormous means in making hideous a fine piece of ground. This has been called a work of genius, but it is the fruit of a poor ambition to outdo another ugly extravagance—Versailles. But Versailles is a relic of the past, and was the expression of such knowledge of the gardening art as men then possessed. Our means for garden adornment have increased a hundredfold since Versailles was designed, and our modern illustrations of a barbarous style have none of the excuses which might be urged for Versailles. As Versailles has numerous tall water-squirts, the best way of glorifying ourselves was to make some taller ones at Sydenham! Instead of confining the terrace gardening to the upper terrace, by far the greater portion of the ground was devoted to a stony extravagance of design, and nearly in the centre were placed the vast and ugly fountain basins. The contrivances to enable the water to go down-stairs, the temples,

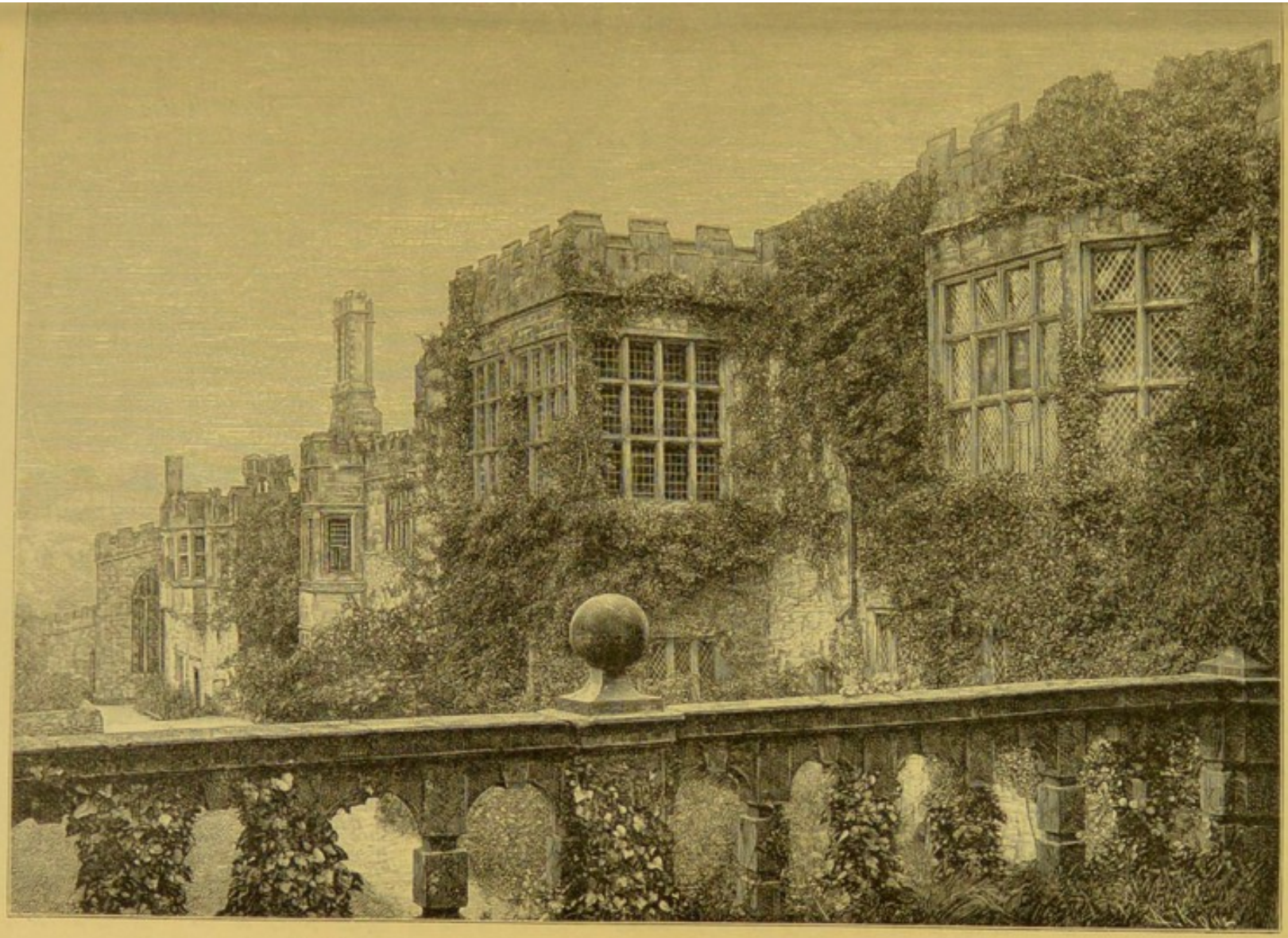
Arundel. Example of ground requiring terracing, this illustration showing also that picturesque disposition of the trees near is more beautiful than the clipped walls of trees near French châteaux.

the statues, the dead walls, all add to the distracting elements of the central region, and this costly rubbish was praised by the papers as the marvellous work of a genius. When a private individual indulges in such fancies, he may not injure many but himself; but in this public garden—set up as an example of all that is admirable—we have, in addition to wasteful outlay, what is absolutely hurtful to the public taste.

Many whose lawns were, or might readily have been made, the most beautiful of gardens have spoiled them for sham terraced gardens. There is a modern castle in Scotland where the embankments are piled one above another, till the whole looks as if Uncle Toby with an army of corporals had been carrying out his grandest scheme in fortification. The rude stone wall of the hill husbandman, supporting a narrow slip of soil for olive-trees or vines, became in the ornamental garden of the wealthy Roman a well-built one; but it must be remembered that, even where the wall or terrace is necessary, the beauty of a real Italian garden depends on the predominance of vegetation over the plan or form of the garden, whereas in our sham examples of the Italian garden all is as flat and lifeless as a bad mosaic.

TERRACED GARDENS, allowing of much building (apart from the house), have naturally been much in favour with some architects, and with artists who have taken up the profession of landscape gardening. The landscape gardener proper, led by custom, falls in with the notion that every house, no matter what its position, should be fortified by terraces. Accordingly he busies himself in forming them on level ground, instead of thinking of what should be his true work, and vast sums, ostensibly devoted to the garden, are spent on fountains, vases, statues, balustrades, useless walls, and stucco work, where these are quite out of place. By the extensive use of such materials many a noble lawn is cut up; and sometimes, as at Witley Court, the "architectural" gardening is pushed so far into the park as to curtail and injure the view. If the cost of the stone and stucco ornament lavished on the garden were spent on its legitimate object—the house—how much better it would be for architecture, as well as for gardening!

Where the ground is level, a finer effect often results from turf allowed to sweep up to the walk in front, or on some side, of the house than from an elaborate terrace, as may be seen on the north side of Holland House, and in many other English gardens, though in some, to protect the garden from park or wood, a simple low wall will often be right. The best effect is to be got not by carrying architectural features into the usually small level town garden, but by contrast between the garden vegetation and its formal



Haddon. Old English garden with terracing essential owing to use and position.

surroundings. This contrast should be got, not by the sham picturesque, with rocks, cascades, and undulations of the ground, but mainly by the simple dignity of trees and the charm of level turf. It was said that none but an Italian garden would suit South Kensington, and we had an elaborate garden there carried out with the greatest care, yet the result, as everybody knows, was miserable. There are many private gardens in European cities, with as formal surroundings as those of South Kensington, which are as beautiful as it was stiff and ugly.

Elaborate terraced gardens in the wrong place often prevent the formation of beautiful lawns, though a good lawn is the happiest thing in a garden. For many years past there has been so much cutting up, geometry, and stonework that it is extremely rare to find a good lawn left. Many a site cut up by terrace gardens and other formalities would be vastly improved if changed into a large, nobly fringed lawn. A very common, poorly built house with a fine open lawn has often a better effect than a fine one with a rectilineal garden and terraces in front of it, though there are many cases where the terraces would be the only possible way to a good result. The Italian made his terrace because he could not make a lawn on the steep hillside. But in imitating him in the plain we do away with the most precious feature of the English garden.

A style of garden "design" that for a long time has had an injurious effect on many places is the "railway embankment" phase of landscape gardening madness—one in which we see a series of sharply graded slopes, exactly like well-smoothed railway embankments. It is extraordinary that anybody with any kind of taste should imagine that such a plan, marring the whole landscape, should give pleasure to any human being, or do anything but make the foreground of the house wearisome to the last degree. In this variety we often find several sharp banks falling one below the other without a protecting wall at the top, and the sharp green angles cutting horrible capers from various points of view, and this perhaps in the face of a beautiful landscape.

A beautiful house in a fair landscape is the most delightful scene of the cultivated earth, all the more so if there be an artistic garden—the rarest thing to find! The union between the house beautiful and the ground near it—a happy marriage it should be—is worthy of more thought than it has had in the past, and the best way of effecting that union artistically should interest men more and more as our cities grow larger and our lovely English landscape shrinks. We have never yet got from the garden and the home landscape half the beauty which we might get by abolishing the needless patterns which disfigure so many gardens, both in plan and

Garden with picturesque planting, Thrumpington Hall, Derbyshire.

in flower arrangements. Formality is often essential to the plan of a garden but never to the arrangement of its flowers or shrubs, and to array these in rigid lines, circles, or patterns can only be ugly wherever it may be!

After we have settled the essential approaches and levels around a house, the natural form or lines of the earth itself are in nearly all cases the best to follow, and in my work I face any labour to get the ground back into its natural grade where it is disfigured by ugly or needless banks, lines, or angles. But in the true Italian garden *on the hills* we have to alter the natural line of the earth, or "terrace it," because we cannot otherwise cultivate the ground or stand at ease upon it, and in such ground the strictly formal is as right as the lawn is in a garden in the Thames valley. But the lawn is the heart of the true English garden, and as essential to it as the terrace to the gardens on the steep hills. English lawns have been too often destroyed for "geometrical" gardens not only needless, but absolutely ruinous both to the garden and the home landscape. Sometimes on level ground the terrace walls cut off the landscape from the house, and, on the other hand, the house from the landscape!

We may get every charm of a garden and every use of a country place without sacrificing the picturesque or beautiful; there is no reason, either in the working or design of gardens, why there should be a false line in them; every charm of the flower garden may be secured by wholly avoiding the knots and scrolls which subordinate all the plants and flowers of a garden, all its joy and life, to a wretched conventional design. The true way is the opposite. With only the simplest plans to insure good working, we should see the flowers and feel the beauty of plant forms, and secure every scrap of turf wanted for play or lawn, and for every enjoyment of a garden.

Time and Gardens.—Time's effect on gardens is one of the first considerations. Fortress-town, castle, and moat, all without further use, where in old days gardens were set within the walls. To keep all that remains of such gardens should be our first care—never to imitate them now. Many are far more beautiful than the modern formal gardens, which by a wicked perversity have been kept bare of plants or flower life. At one time it was rash to make a garden away from protecting walls; but when safety came from civil war, then arose the often beautiful Elizabethan house, free from all moat or trace of war.

In those days the extension of the decorative work of the house into the garden had some novelty to carry it off, while the kinds of evergreens were very much fewer than now. Hence if the old gardeners wanted an evergreen hedge or bush of a certain height,

Longleat. English country house with picturesque planting.

they clipped a Yew tree to the form and size they wanted. Notwithstanding this, we have no evidence that anything like the flat monotony often seen in our own time existed then. To-day the ever-growing city, pushing its hard face over our once beautiful land, should make us wish more and more to keep such beauty of the earth as may be still possible to us. The horrible railway embankments, where once were the beautiful suburbs of London, cry to us to save all we can save of the natural beauty of the earth.

Architecture and Flower Gardening.[1]—The architect is a good gardener when he makes a beautiful house. Whatever is to be done or considered afterwards, one is always helped and encouraged by its presence ; while, on the other hand, scarcely any amount of skill in gardening softens the presence of an ugly building. No one has more reason to rejoice at the presence of good architecture than the gardener and planter, and all stonework near the house, even in the garden, should be dealt with by the architect.

But when architecture goes beyond the strictly necessary round the house, and seeks to replace what should be a living garden by an elaborate tracery on the ground, then error and waste are at work, and the result is ugliness. The proof of this is at Versailles, at the Crystal Palace in great part, in the old gardens in Vienna, and at Caserta, near Naples, where there is a far from beautiful stone garden. One may not so freely mention private places as public ones, but many ugly and extravagant things have been done by trying to adapt a mode of garden design essential in a country like Italy, where people often lived for health's sake on tops of the hills, to gardens in the plains and valleys of England. I know a terrace in England built *right against the house*, so as to exclude the light from and make useless what were once the reception rooms. That deplorable result came about by endeavouring to adapt Italian modes to English conditions, and was the work of Sir Charles Barry. To any one deeply interested in the question, one of the best places to consider it is the upper terrace at Versailles, looking from the fine buildings there to the country beyond, and seeing how graceless and inert the whole vast design is, and how the clipped and often now dying, because mutilated, Yews thrust their ugly forms into the landscape beyond and rob it of all grace. To those who tell me this sort of work is necessary to "harmonise" with the architecture I say there are better ways, and that to rob fine buildings of all repose by a complex geometrical "pattern" in the foreground is often the worst way.

Cost and care of stonework in gardens.—Where stone or stucco gardening is done on a large scale, its cost and maintenance are monstrous. Even with the wealth of France, the repair of elaborate

[1] Read before the Architectural Association on Friday, December 16, 1893.

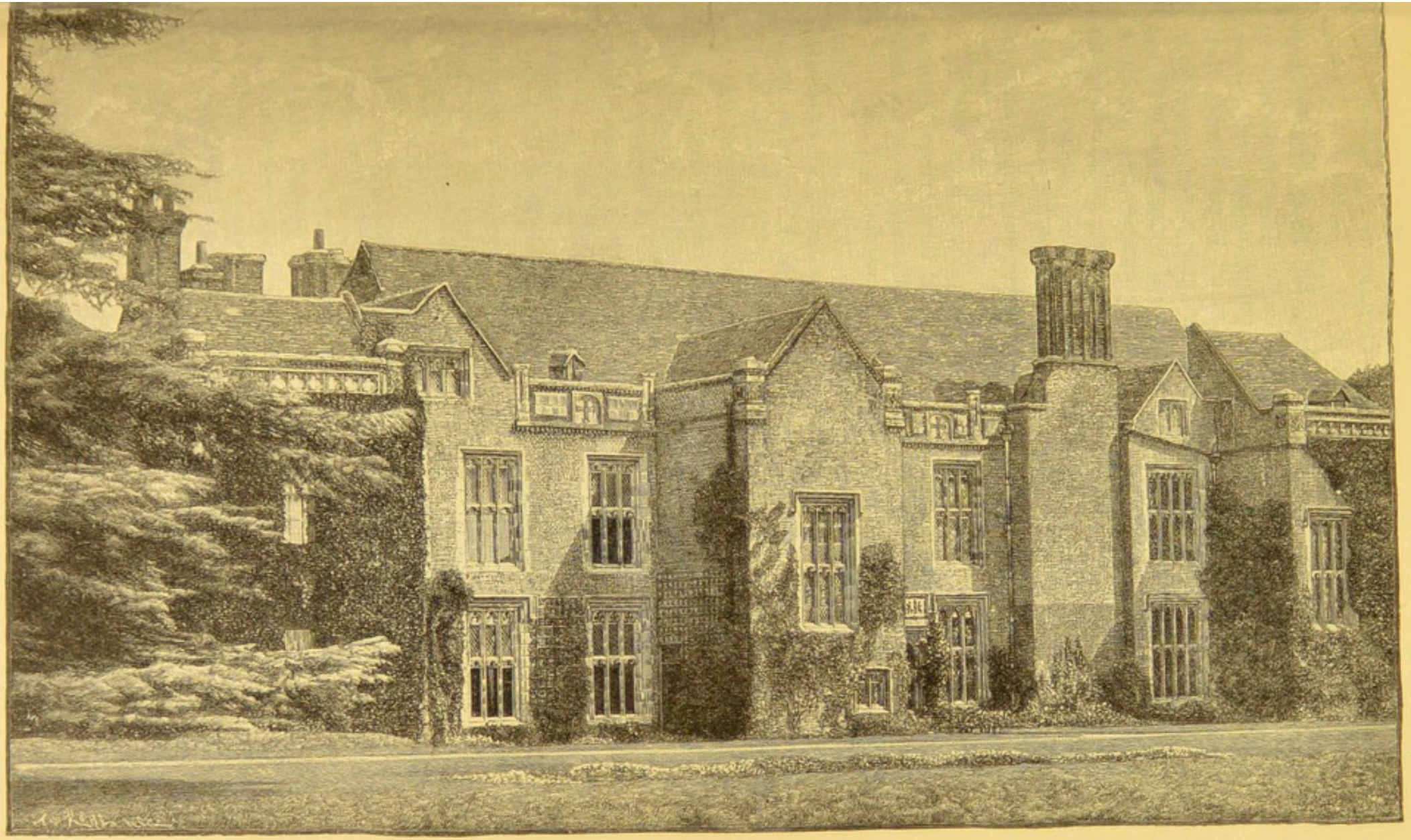
Old Place, Lindfield. A lawn garden for hardy flowers.

stonework in gardens is an impossible task, as any one may see who often visits that vast extravagance, Versailles. Nearer home we may see something of the same kind near the huge stone basins of the Crystal Palace. Is it in the interest of architecture that noble means should be so wasted? As the cost and difficulties of the finest work in building increase, the more the need to keep it to its true and essential uses, especially in face of the fact that half the houses in England require to be rebuilt if our architecture generally is to prove worthy of its artistic aims. I delight more than any one I know in walls for my Roses, and build walls, provided they have any true use as dividing, protecting, or supporting lines.

To take advantage of sunny sheltered corners in and about our old or new houses, and make delightful little gardens in and near them, as at Drayton or Powis, is quite a different thing from cutting off the landscape with vast flat "patterns" and scroll-work, as on the upper terrace at Versailles and at Windsor and many gardens made in our own day.

"Design" not formal only. — I find it implied by some writers on this subject that "design" can only concern formality—an extraordinary statement, as the artistic massing and giving picturesque effect to groups and groves of Oak, Cedar, or Fir are far higher design than putting trees in lines. There is obviously more true and subtle design in Richmond Park and other noble parks in England, where the trees are grouped in picturesque ways and allowed to take natural forms, than in a French wood with straight lines cut through it, which the first carpenter could design as well as anybody else. Now a wholly different order of things has arisen, because we have tens of thousands of beautiful things coming to us from all parts of the temperate and northern world, and people who know these things will not accept a book pattern design, instead of our infinitely varied garden flora. The trees of California, Oregon, and Canada alone form a tree garden in themselves, and it is absolutely impossible to lay out gardens of any size or dignity without a knowledge of those and all other hardy trees not only in a cultivated but in a wild state. If anything demands special study, it is that of garden design with our present materials. If that art is to be mastered, the work of a life must be given to it—more than that, a life's devotion, and no less is the sacrifice his own art requires of the architect.

No one "style" right.—There is no such thing as a style fitted for very situation, and only one who knows and studies the ground well will ever make the best of a garden. Any "style" may be right if the site fits it. I never see a house the ground around which does not invite plans for itself only. A garden on the slopes about Naples is impossible without much stonework to support the earth, while in



Sutton Place. Example of Elizabethan house without terracing.

London or Paris there is no such need. But these considerations never enter into the minds of men who plant an Italian garden in one of our river valleys, where in nine cases out of ten an open lawn is often the best thing before the house, as at Bristol House, Roehampton; Greenlands, Henley-on-Thames; and in many gardens in the Thames valley. So, too, there are right and wrong ways in formal gardening. Haddon, simple, right, and charming on the one hand, and Chatsworth on the other. Knole and Ightham and Rockingham without a single yard of stonework not absolutely needed for the house and its approaches, and others with a fortune spent in vast display of costly stonework absolutely needless, and only effective in robbing the foreground of a fine landscape of all repose or for even shutting it out altogether, as has not seldom been done by a needless wall. It is worth noting that many of these terrace gardens out of place shut off the house from the landscape near, and that in the case of a beautiful house is often an irreparable loss.

The idea in some minds that the old style of building in England was always accompanied by elaborate terrace gardening is proved to be erroneous by many beautiful old houses. The Elizabethan house had often an ample lawn in front or plenty of grass near, as at Sutton. Such houses are quite as delightful in effect as the old houses and castles where terracing was necessary and right, owing to the ground, such as Berkeley, Powis, and Rockingham. The mosaic in flower-planting is a modern idea, and had nothing to do with old gardens, which, however planned, had their flowers planted in simple ways.

The idea that trees must be clipped to make them "harmonise" with architecture is a mere survival. In the old days of garden design, when in any northern country there were few trees in gardens, it was, perhaps, expedient to slash these trees into any shape that met the designer's view. But now that many beautiful trees and shrubs are coming to us from many countries, the aim of true gardening is, so far from mutilating them, to develop their natural forms. In by far the greater number of beautiful places in England, from Knole to Haddon, and from the fine west-country houses to the old border castles, there are many of the fairest gardens where the trees are never touched with shears. Sutton Place, near Guildford, built in 1521, is one of the most beautiful old houses in the home counties, and its architecture is none the less delightful because the trees near show their true natural forms and are *not* clipped. It is also an example of a fine old house around which there is no terraced gardening.

It would be as hopeless to design a building without knowing anything of its uses or inhabitants as design a garden without full

knowledge of its nobler ornaments—trees and the many things that go to make our garden flora vary much in form, habits, and hardiness according to soils, situations, and districts. Errors of the most serious kind arise from dealing with such things without knowing them well. Any attempt to keep the gardener out of the garden must fail, as it did in our own day in the case of the ridiculous broken brick and marble flower beds at South Kensington. Except for what is mostly a very small area near the house, the architect and garden-designer deal with distinct subjects and wholly distinct materials. They should work in harmony, but not seek to do that for which their training and knowledge have not fitted them.

CHAPTER III.

VARIOUS FLOWER GARDENS: MAINLY CHOSEN FOR THEIR BEAUTY; COTTAGE GARDENS IN KENT AND SOMERSET; MOUNT USHER; GREENLANDS; GOLDER'S HILL; PENDELL COURT; RHIANVA; SHEEN COTTAGE; DRUMMOND CASTLE; PENSHURST; COMPTON WINYATES; LILFORD; KETTON COTTAGE; POWIS; COTEHELE; EDGE HALL; SHRUBLAND; CHILLINGHAM; BULWICK; OFFINGTON; WILTON; STONELANDS.

THESE should help us to get the most precious lesson of all as regards design; that the best-laid-out garden is that which is best fitted for its situation and conditions, and without much consideration as to any "style" in its conception.

Everywhere the ugliest things are seen, especially in the larger places, but here and there one sees gardens that are beautiful, and nothing will help us so well to a clear view of what is best in flower-gardening as a visit to such.

BARE FLOWER-GARDENS.—Those who notice the ground round country seats need not be surprised to find now and then a house without any flower garden, and with the turf running hard into the walls—the site of a flower garden without flowers.

It is a mistake to suppose that the only alternatives to such nakedness are coarse perennials and annuals, that flower a short time and are weedy the rest of their days, or the ordinary summer-planting. Many delightful things may be grown near a house; fragrant plants, too, beautiful not only throughout the summer but in colour even in winter. The ceaseless digging about of the beds also may prejudice people against flowers in the garden. The bedding plants set out in June were taken away in autumn, and replaced by spring-flowering things. These had a short period of bloom in spring, and were, in their turn, pulled up, leaving bare beds until the summer flowers were planted, sometimes very late; so that in June, when we ought to have flowers or, at least, pleasant colour

Cottage garden at Maltingley, near Winchfield, Hants.

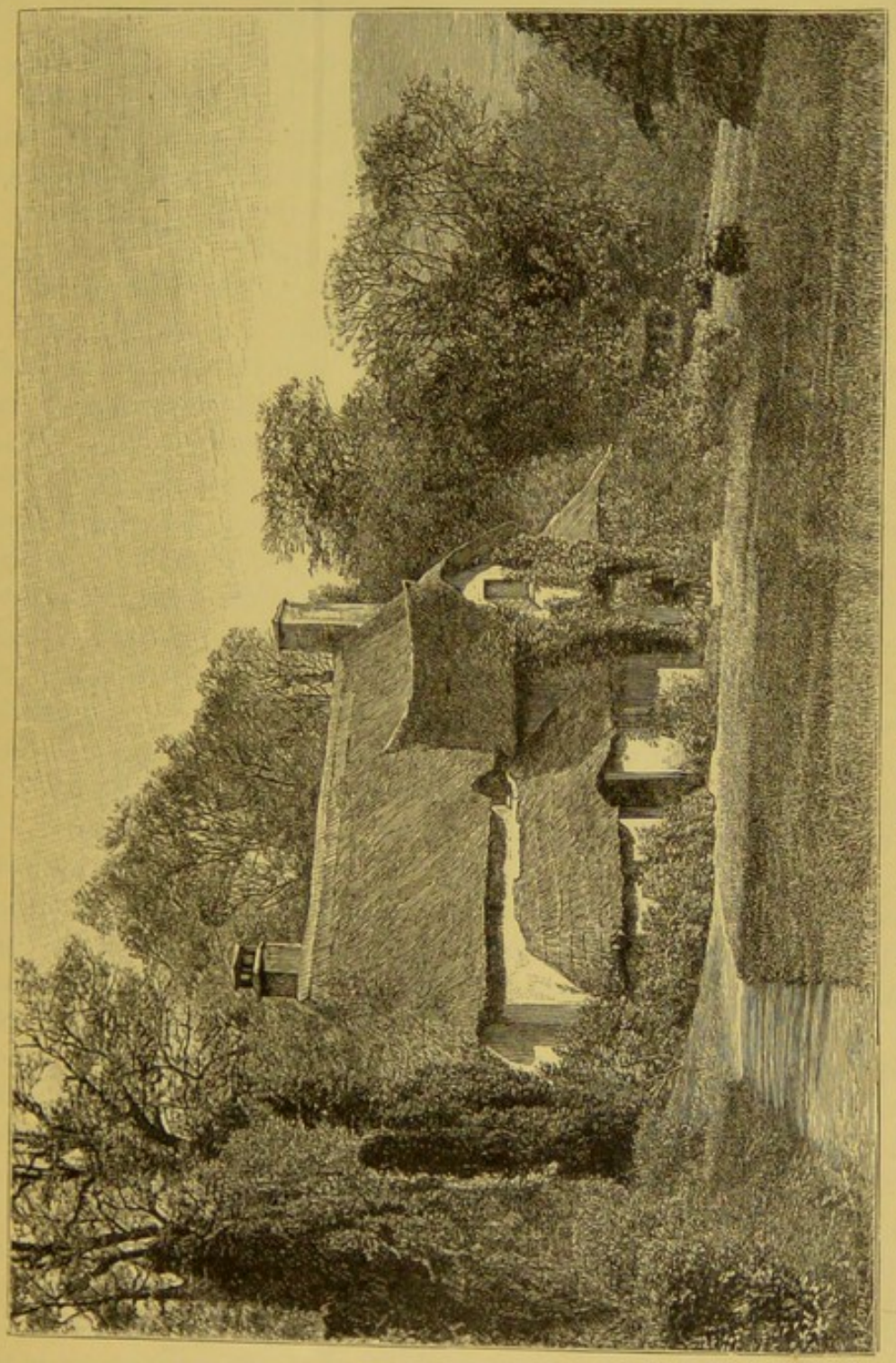
over the ground, there was nothing but grave-like earth. The spring flowers round a country house should be grown in quite a different way. They may be naturalised in multitudes (Narcissus, Snowdrop, Crocus, Snake's-head, Grape Hyacinth). They may be grown in borders, in special little gardens for bulbs, and in various other ways, without in the least disturbing the beds near the house, which should for the most part be planted permanently, so that the greatest amount of beauty may be had throughout the fine months, without disfiguring the beds during those months.

The permanent flowers should be hardy, and of the highest order of beauty, and such as require more than a few weeks or months for development; though here and there blanks might be filled with good, tender things, like Heliotrope. Many of the hardy flowers, too, should be fragrant—Tea Roses, Carnations, and tufted Pansies; all those, grown in large groups, give off a grateful odour round a house. What is the soil in these gardens for? Why do people make them? Surely it is not to have them laid down to grass in a country like ours where grass in park, meadow, lawn, and playground is often seen on all sides? The objection to the bare surface of beds in such gardens is a just one; it is easily got rid of by permanent planting; and if the ground in the early state of the bed or from any other cause is bare below the flowers, it is quite easy to surface the beds with small rock plants of good colour always.

ENGLISH COTTAGE GARDENS.—We will next look at a few of the gardens that are never bare and seldom ugly. Those who look at sea or sky or wood see beauty that no art can show; but among the things made by man nothing is prettier than an English cottage garden. We do not see the same thing in other lands. The bare cottages of Belgium and North France are shocking in their ugliness; even in Ireland and Scotland we do not see the same charming little gardens, nor are they so good in some parts of England; while in Surrey, Kent, and the southern counties they are charming. I often pass a cottage garden in the Weald of Sussex never without a flower for nine months in the year. It is only a square patch, but the beauty of it is far more delightful than that of the large gardens near, and it is often pretty when they are bare.

What is the secret of the cottage garden's charms? Cottage gardeners are good to their plots, and in the course of years they make them fertile. The shelter, too, of the little house and hedge favours the flowers. But there is something more, and it is the absence of any pretentious "plan" which lets the flowers tell their story to the heart. The walks are only what are needed, and so we see only the earth and its blossoms. Wherever the cottage garden threw

off its good old ways and went in for the new style, the result was sad to see, and all the old year-round charm of flowers was lost. The



A west-country cottage with small open lawn. Engraved from a photograph sent by Mr. E. Brightman, Bristol.

cottage garden being often beautiful as a spring garden, to make it into a "bedding-out" garden was to rob it of all life. The very pretty cottage garden of which Mr. Mason Good has sent me a view

is in that charming country south of London where good cottage gardens abound. May their charms never grow less! They often teach lessons that "great" gardeners should learn: and are pretty from Violet and Snowdrop time till the Fuchsia bushes bloom nearly into winter.

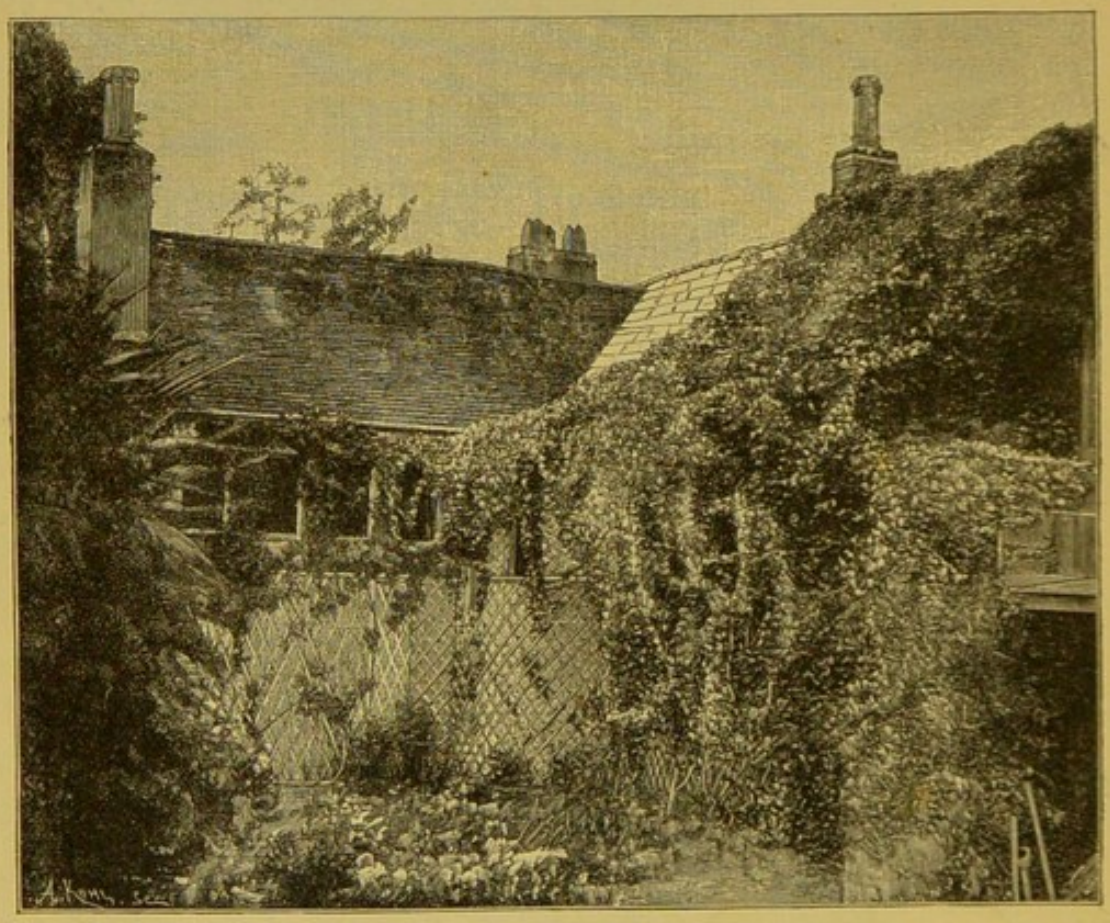
A COTTAGE GARDEN IN KENT.—Driving on one of the sunny days of autumn through the Weald of Kent from Charing to Ashford—a country strewn with pretty houses and gardens of many charming kinds—an old house set in flowers was seen to the left just after passing the pretty village of Charing and the big woods above it. We turned from the main road, and, looking over the low garden wall, were asked in to see the pretty old house, Oak-panelled, and to stroll about the small garden, little more than a cottage garden in its simplicity of planting. No pretentious plan to consider, only the yellow Sunflowers of the season massed in their own way and running about inside the little wall, and by their profusion giving a unity as well as richness of colour. One lesson of these little gardens, that are so pretty, is that one can get good effects from simple materials. The absence of complexity and pretence, of foolish "design," aids these pictures very much. Many things are not needed for good effect, and very often we see gardens in which people store numbers of plants, but which are not artistic because too much cut up into dots. There is no reason why a garden should not be rich in plants and artistic too, but such a garden is rare to see. A most precious thing in a garden is a beautiful house, and this, with its pretty, brown-tiled roof and Oak-timbered walls, is an example of many in the Weald of Kent which have braved several hundred winters and are so beautiful in colour. If these cottage gardens are beautiful from such simple materials, how much more might we get by good hardy flower gardening round such pretty old houses. There are so many beautiful things among the hardiest. The Somersetshire cottage garden is in a milder climate than this, and in Somerset things seem to do so well and in all that delightful west-country. In Kent we must trust to the hardy things of which there are so many that no cottage garden can contain half of them; but in Somersetshire we may have many things which seldom thrive on the eastern side—Myrtle, Bay, and Passion-flower, tall Fuschias, and even things in the open air in winter which in many other districts we have to put in the greenhouse.

MOUNT USHER, A WICKLOW GARDEN.—A quaint creeper-laden mill-house at Ashford, and of an acre or two of ground, partly wooded, through which the silvery Vartry River flows, gentle as it falls over its little rocky weirs in summer, but swollen and turbid after wintry storms. The place is really an island at the bottom

Cottage and garden near Charing, Kent. Engraved from a photograph sent by Miss Vinall.

of a valley; the hilly country around is beautifully diversified, and is graced by the finest of native timber trees. The garden is quite unlike any other garden I have seen, and to see it in the time of Lilies, Roses, Peonies, Poppies, and Delphiniums is to see much lovely colour amongst the rich greenery of the rising woodlands. In autumn the colour is less brilliant, but equally satisfying as the eye wanders from the Torch Lilies and Gladioli to the blue Agapanthus, and thence to the Pine and Fir-clad hills.

An old Ivy-covered wall makes a good background for the



Old mill-house garden at Mount Usher, Wicklow.

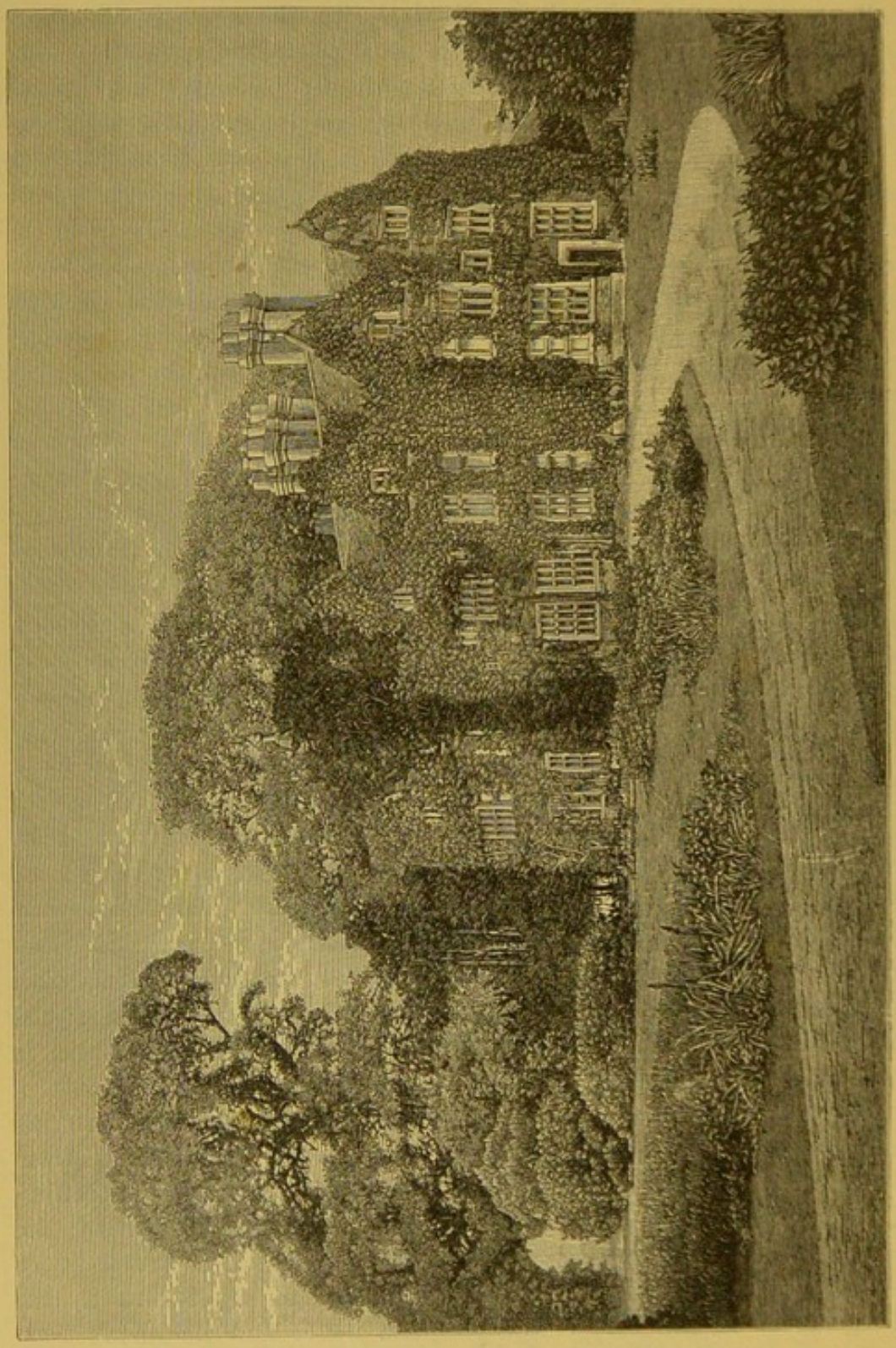
brilliant Tropæolum speciosum, which everywhere runs wild about the place, throwing its soft green wreaths over twig and branch, their tips scarlet with blossoms, or heavily laden with turquoise-blue berries. Here also the soft rosy Hydrangeas bloom, and you may see the big scarlet hips on the great Apple Rose of Parkinson (Rosa (pomifera) villosa), with its large glaucous leaves scented like those of the Sweet Brier. Mount Usher is a charming example of the gardens that might be made in river valleys, especially those among the mountains and hills. In such places there is often delightful shelter

from violent winds, while the picturesque effect of the mountains and hills around offers a charming prospect from the gardens. There is a distinct charm about Irish gardens. The country also is excellent, at least in the shore districts, for the growth of many plants that soon perish out of doors in most parts of England.

GREENLANDS is an example of a garden in which the principal and river front of the house is a simple sloping lawn. Originally laid out by Mr. Marnock for Mr. Majoribanks, it has long been a garden showing good work. The situation of the house by the river is well shown: there are no terrace gardens, and one passes easily from the house to a pleasant lawn, which slopes gently till it touches the river. From this lawn one approaches the wide and well-planted grounds around, studded with many fine trees, among which are beautiful groups of Cedars. It may be noticed that the common plan of a garden in front of the house is here avoided; but at a little distance there are various flower gardens within easy reach. It need scarcely be pointed out that this plan keeps the lawn immediately in front of the house unbroken and quiet, instead of, what it too often is, patched with brown earth or, not always happy, masses of flowers. It would not be the best plan to follow in every case; the more variety the greater the charm and there are ways of delightful flower-gardening in which no bare earth need be seen, in summer at least. There are many cases where the sunny side and the secluded side of the house afford the best of sites for the flower garden.

PENDELL COURT.—It will be seen here that even where it is desired to have the garden, or a portion of it, against the house, it is by no means necessary that the ground should be made "architectural." It is a great pleasure to see a beautiful old house, with no impedimenta to keep one away from the door. There are three good views of it: first, that of the lawn in front of the house, which was a flowery meadow yet uncut, with no beds or other obstructions to the view of the house, and with a fine group of trees on either hand. It was a poem in building and in lawn. Quite on the other side a border of flowers and a wall of climbers ran from the house. Looking along this border to the house, a shower of white climbing Roses were seen falling from the wall, and a quaint gable and a few windows and glistening rich Ivy behind formed a lovely picture. Another view of the house from across the water, showing its west end, is also very beautiful. There is a Wild Rose bush on the right and a tuft of Flag leaves on the left; before you, the water and its lilies; then a smooth, gently rising lawn creeping up to the windows, which on this side are all wreathed with white climbing Roses. All these views of the same house, although distinct, show no frivolous patterns

in beds, fountains, statues, and such objects, which destroy all repose. The view from the house to the left is also free and charming—a



View of lawn garden at Pendell Court.

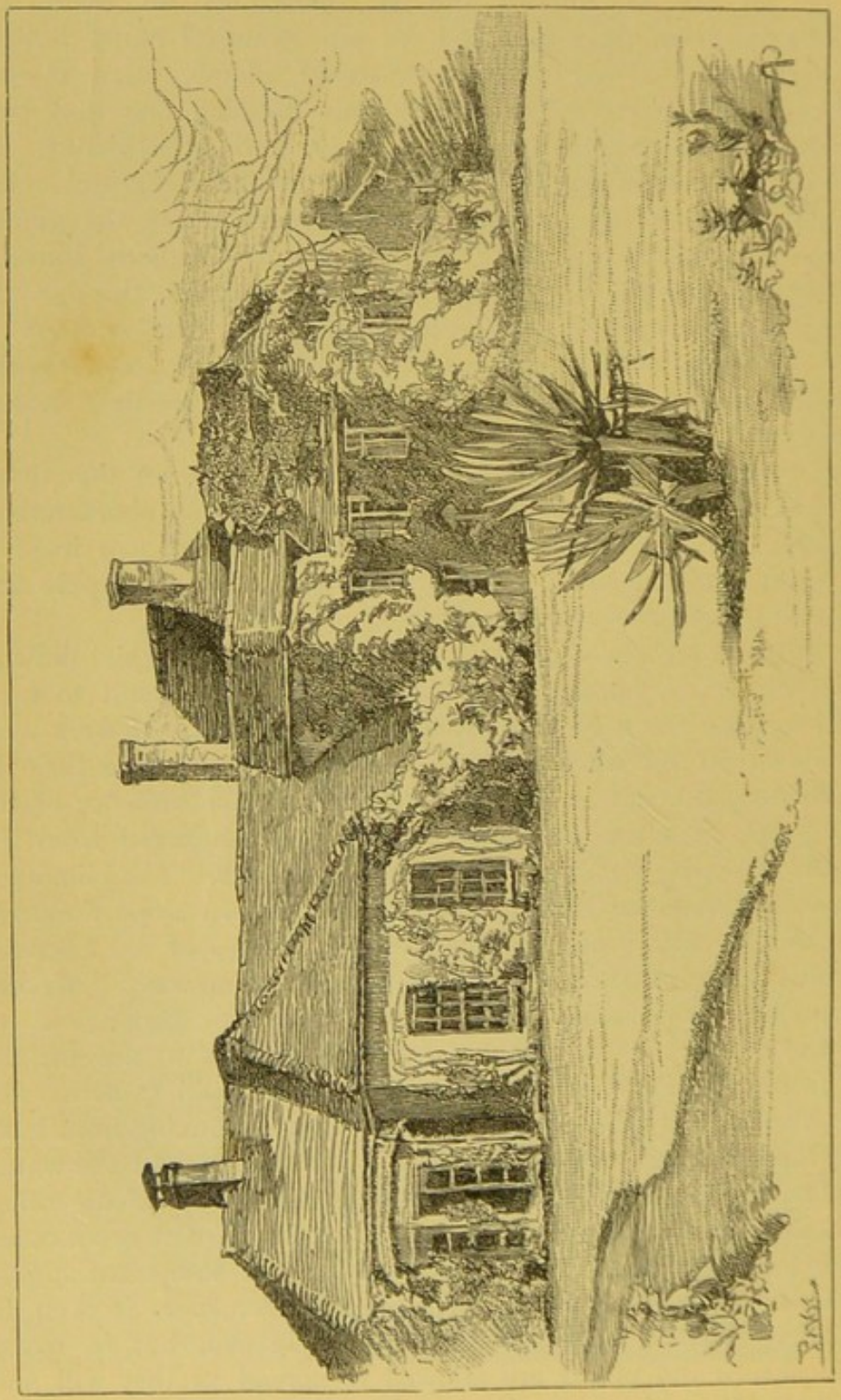
wide meadow climbing up the hill through groups of trees, and in the woody region reminding one a little of Alpine pastures.

RHIANVA.—We have not only to deal with ugly gardens, made in the wrong places, but with a false idea that all the flowers must be set out as smooth and as "hard" as tin plate, and that these gardens are not suited for our beautiful hardy flowers. They are accordingly set out with dwarf plants, often clipped to make them dwarfer. But despite this clipping one may here and there see a little of a better way, and at Rhianva, the free growth of evergreens and climbers, and the delightful interlacements of hardy flowers, ferns, and creepers, make the garden beautiful. Again, I remember the garden at Ockham Park in Dr. Lushington's time, was formal and yet beautiful, through the freedom of the vegetation. So again in Italy, the stiffness of the stone is soon softened by the graceful forms of trees, shrubs, and trailers as at Verona and in many of the prettiest Italian gardens.

Fifty years ago the site of Rhianva, on the banks of the Menai Straits, was a steep field, with the large gray rocks so characteristic of Anglesey, and was crossed by a small stream which lost itself in marshy ground by the shore, where stood a couple of old Apple and Thorn trees and a little white-washed cottage.

The extreme steepness of the rocky ground made the site difficult to deal with, and a number of supporting walls were built to form terraces; and, by the help of a protecting sea-wall, the flowers were carried down to the very edge of the water. Facing a little to the south-east, the garden was protected from the violence of the westerly gales, while the more tender plants were sheltered from the east winds of spring by the larger shrubs and trees. The climate is mild in winter, and the garden being on a southern slope the trees and shrubs grew with great rapidity; so that hedges of red Fuchsias and of blue and pink Hydrangeas soon hid the stone walls. Myrtles and Camellias, and some Acacias, were found to thrive out of doors; and at the present time the only difficulty is to prevent the shrubs from injuring each other, through their rapid growth. In summer the luxuriant abundance of the Roses, climbing from bush to bush, the Cypresses, the Tamarisk and the Vines; and the water, and the purple mountains in the background, seem to belong rather to the Lake of Como than to Anglesey. All the borders are mossed over with small green plants; large, hardy exotic Ferns are spread into groups; and a lacework of Ivy, Vine, and creepers is seen in many parts. A mixed order of planting is pursued, but in many cases the shrubs and plants are allowed to spread as they will, and the climbers take picturesque shapes. Rhianva is an example of the error of the notion that a terraced garden should only be arranged as a "bedded-out" garden. We have here a terraced garden in a

position that called for it, namely, a rocky slope, in which the only way of making a garden was by terracing the ground, but it is a



Gilbert White's garden at Selborne, engraved from sketch by A. Parsons, flowers mostly on the outer fringes of lawn in borders, and around beds of "peat shrubs.

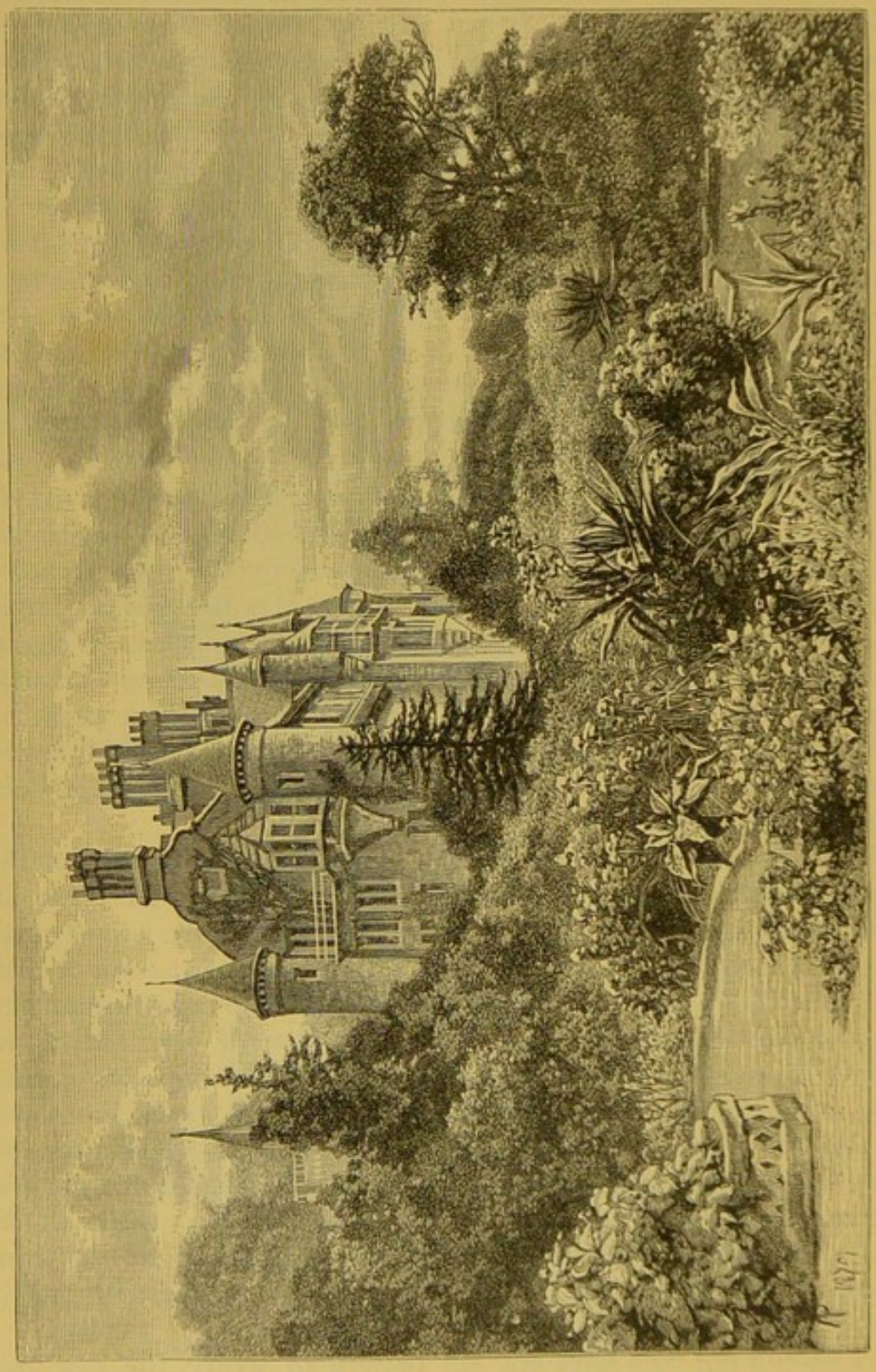
garden that shelters every treasure of our garden flora, from the Cyclamen to the Tea Rose.

It has been said that, however valuable the more beautiful hardy flowers, their place is not the parterre, but some out-of-the-way spot. Not only may any terrace garden be embellished with hardy flowers, but it is the best place for them. The odd notion that our fairest flowers must not show themselves in the flower garden might lead one to suppose that there never was anything in the flower garden before bedding-out was invented. Is it well to devote the flower beds to one type of vegetation only, whether it be hardy or tender? We have been so long accustomed to forming flat surfaces of colour in flower beds that few think of better ways of filling them. In Nature vegetation in its most beautiful aspects is rarely a thing of one effect, but rather a union or mingling of different types of life often succeeding each other in bloom. So it might often be in the garden. The most beautiful effects must be obtained by combining different forms so as to aid each other, and give us a succession of pictures. If any place asks for permanent planting it is the precious spot of ground near the house; for no one can wish to see large, grave-like masses of soil frequently dug near the windows. It is easy to form beds that would look well in all seasons by the use of choice shrubs of many kinds—Rhododendron, Azalea, Dwarf Cypress, Japan Quince Heath, Coronilla, Clematis, Aralia, Honeysuckle, Weigela, Sweet Brier, Vine, Hydrangea, Azara, Skimmia, Rock Rose, Tamarix, Daphne, Yucca, Tree Pæony. Why should we not use a beautiful Andromeda, or a Kalmia, or a rare evergreen Barberry in the flower garden in the same way as a Camellia, an Acacia, or a Tree Fern in the winter garden?

The shrubs should be arranged in an open way, the opposite to the crowding of American shrubs common in our beds. In these all individual character and form are crushed away in the crowd; yet there is scarcely a shrub that has not a charm of form it will show if allowed room. One good plan is to allow no crowding, and to place the *finest hardy flowers in groups between the free untortured shrubs.* Thoroughly prepare the beds; put in the choicest shrubs, which, without being high enough to obscure the view, adorn the earth all the winter as well as all the summer, and give us a broken surface as well as a beautiful one. Between them allow for the planting of a variety of the choicer hardy flowers, which would come up and give us pictures following the seasons. So far from leading to monotony, this would lead to an infinite and varied succession of beauty.

We should not then have any set pattern to weary the eye but quiet grace and verdure, and little pictures, month by month. The beds, filled with shrubs and garlanded with Ivy and other evergreens and creepers, would everywhere afford nooks and spaces among the

shrubs where we could grow some of the many fine hardy Lilies with the Gladioli, Phlox, Pentstemon, Iris, tall Anemone, Peony,



Rhianva Anglesey. A terraced garden with picturesque planting.

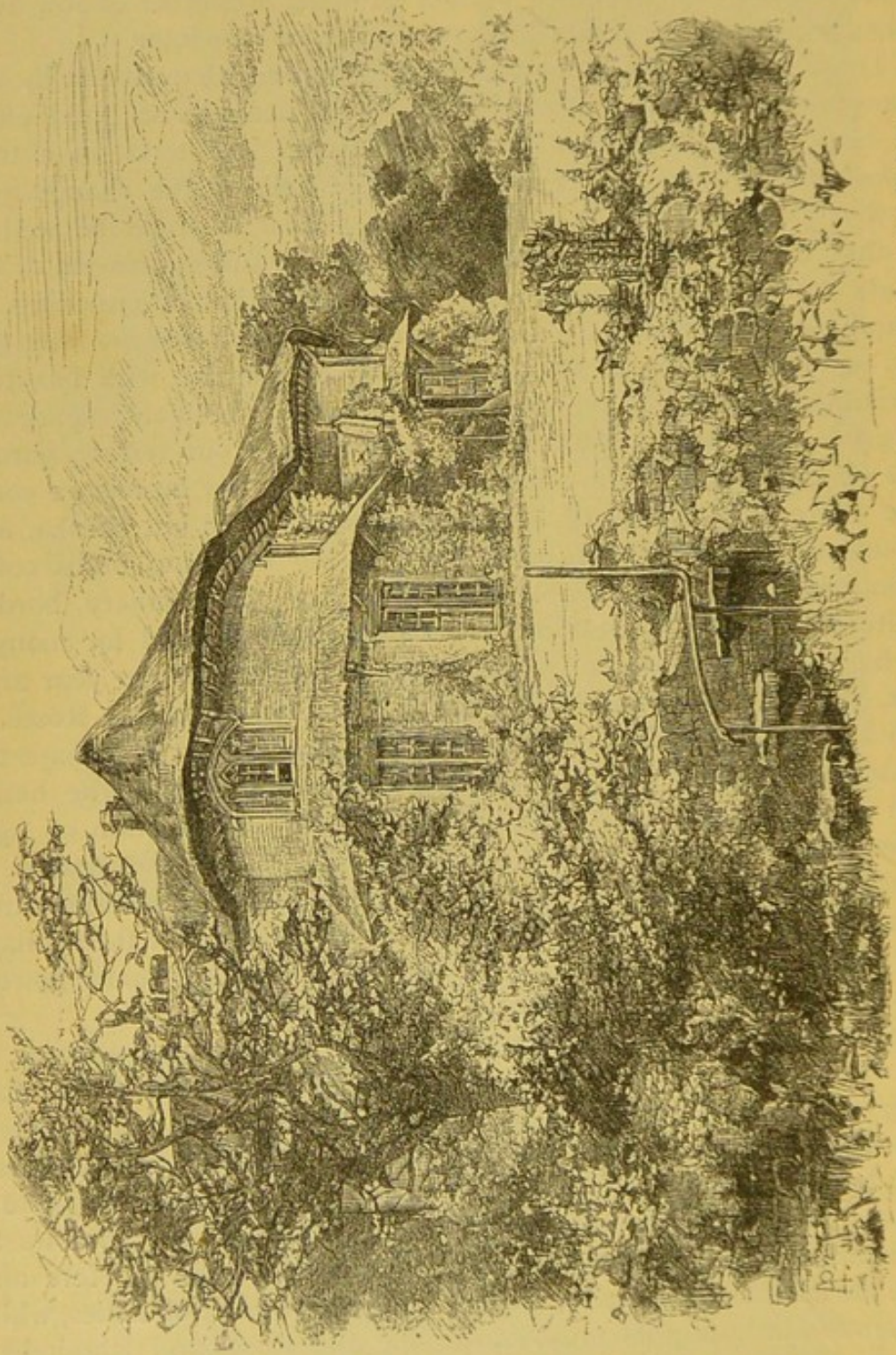
and Delphinium. The choice shrubs suited for such beds are not gross feeders, like trees, but on the other hand encourage the finer

hardy bulbs and flowers. They also relieve the plants by their bloom or foliage, and when a Lily or Cardinal Flower fades after blooming it is not noticed as it might be in a stiff border. In this way we should not need the wretched plan of growing a number of low evergreens in pots, to "decorate" the flower garden in winter.

To get artistic effects in such a flower garden we must not by any means adopt the usual close pattern beds, because no good effect can be got from beds crowded on each other like tarts on a tray. Repose and verdure are essential. Before making the change from the dwarf plants only, be they hardy or tender, it would be well to see that there is ample repose or room for the full expression of the beauty of each bed or group, and no complication or crowding, no complex or angular beds. *The contents of the beds and not their outlines are what we should see.* By this way of planting with beautiful flowering summer or evergreen shrubs, with abundant space for flowers to grow between, we might see beauty in our terrace garden beds on the dullest day in winter. Between the low bushes we could have evergreen carpets of Alpine plants and tiny hill shrubs, and through these the autumn, winter, and spring flowering bulbs could bloom, untarnished by the soil splashing of the ordinary border. Shelter, as well as the best culture, could be thus secured for many a fair flower, which, once well planted, would there come up year after year. Among the flowering shrubs we have many lovely Roses to help us with our plans. The Rose in its many forms is perhaps the greatest treasure of all, and, so disposed, its effect would be better than in any "rosary." We must get rid of the old collection of ugly sticks formally arranged as a Rose garden. The Rose should be planted in groups, without formality, in simple, large, well-prepared beds and the plants trained as dwarf bushes so as to let their foliage and shoots spring from the ground, and we may have many flowers here and there among the Roses.

SHEEN COTTAGE.—The late Sir Richard Owen's garden is one of the most charming and simple in the neighbourhood of London. Many a visitor to Richmond Park enjoys the view of his cottage, as it nestles on the margin of the sweep of ground near the Sheen gate, but it is from the other or the garden side that the picture is best. A lawn, quite unbroken, stretches from near the windows to the boundary, and is fringed with numerous hardy trees. Here and there are masses of flowering shrubs and an odd bed of Lilies, while numerous hardy flowers are seen among the Roses and Rhododendrons. There is in the main part of the garden only one walk, which takes one round the whole, and does not obtrude itself, as it glides behind the outside of the groups which fringe the sweet little open lawn. Instead of coming quite close to the house it is cut off from it

by a deep border of evergreen shrubs, intermingled with Lilies and hardy plants, and their flowers look into the windows. Instead of



A west country garden. Selwood Cottage near Frome. Rough wall in foreground covered with rock and wall plants.

looking out of the window, as usual, on a bare gravel walk, the eye is caught by Rhododendrons or Spiræas, with here and there a Lily, a Fox-glove, or a tall Evening Primrose. From the other side of the

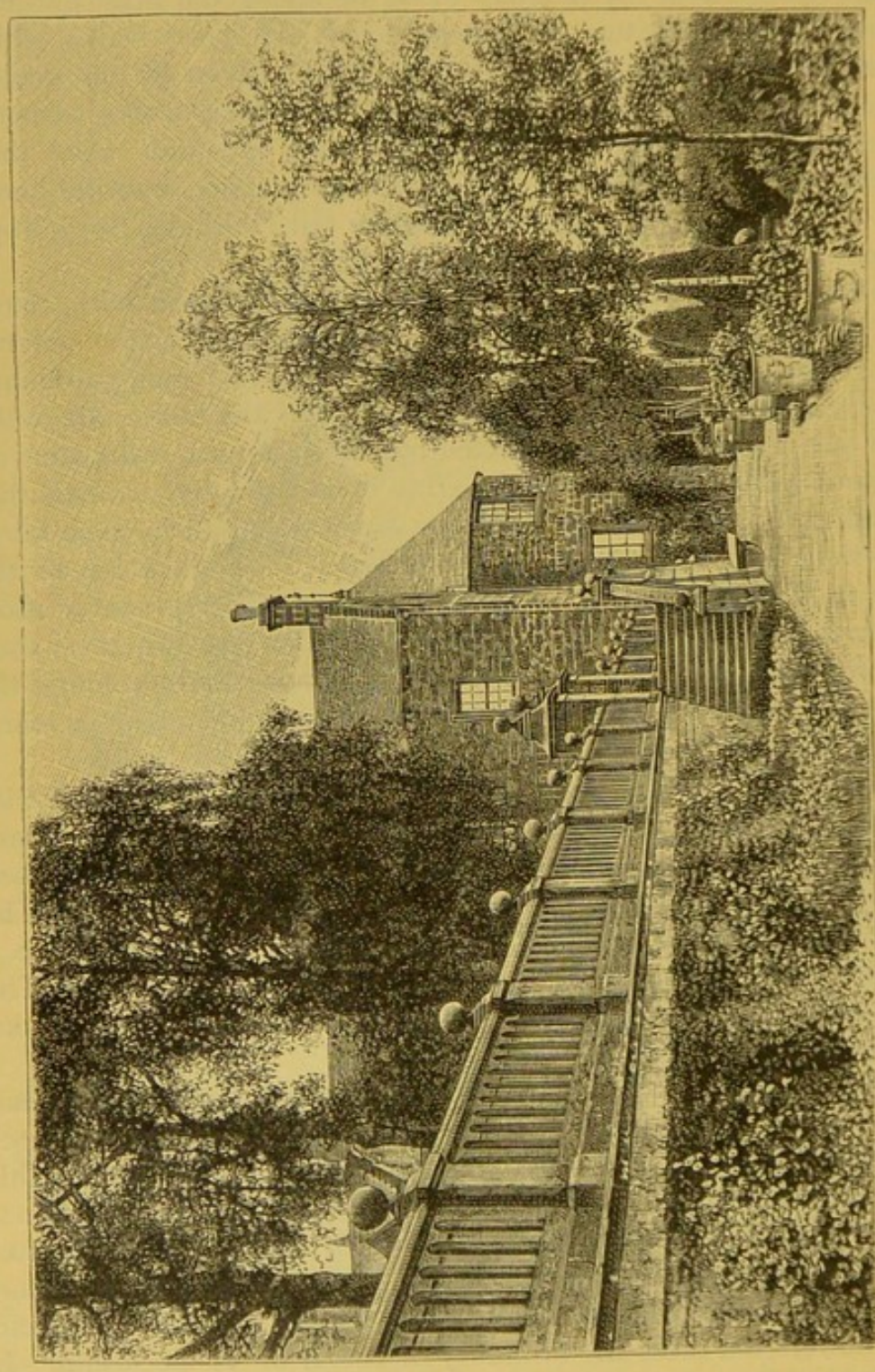
garden the effect of the border is quite charming, and the creeper-covered cottage seems to spring out of a bank of flowers. The placing of a wide border with Evergreens against the house is a pleasant change from the ordinary mode of laying out little gardens. Another agreeable feature of this garden is the grass walks, which ramble through a thick and shady plantation. Even in our coolest summers there is many a day on which such shady walks, carpeted with grass, are the most enjoyable retreats one can find. And their margins form capital situations for naturalising many beautiful hardy plants—Daffodils, hardy Ferns, Scillas, the tall Hairbells, Snowdrops, and Snowflakes.

DRUMMOND CASTLE.—A house on a rock, graced with many Ferns and Ivy, and wild flowers natural to the spot. It would not be easy to find a more graceful example of "natural" rock gardening. It is only, however, on going to the south side of the house, where the ground falls rapidly and is supported by stately terrace walls, that all gloom is dispelled by the brightest array of blossoming climbers that ever clad gray stones with beauty. To fancy one's self in some fairy-land of sun-bathed flowers a thousand miles south in a lap of the mountains would be easy. No Italian gardens could probably show the same high beauty at the same period of the year, whatever they might do earlier. The very coolness encourages and prolongs the bloom. The shelter of the terrace, with the house behind, helps many things ; but, beyond training, there is little artificial help.

It is our privilege of growing so many plants from other countries that makes our open-air gardens so beautiful in the fall of the year : here, when the leaves begin to colour, and when even the Hairbell is past its best on the banks, we have a very paradise of flowers. The fact that this fine plant beauty may be enjoyed by all who have a patch of ground and a wall is what makes it so precious a gift. The plants that here give most flowers are nearly all as easily grown as our common Honeysuckle.

Loveliest of all the climbers here is the Flame Nasturtium (Tropæolum speciosum), which drapes these stately walls, as it does those of many a cottage in Scotland. Admirable for walls as is this fragile and brilliant plant, it is seen to even greater advantage when a delicate shoot runs over a Yew-hedge, with its arrows of colour. Near it on the walls are many flowers of the older and once better-known Tropæolum pentaphyllum, which has a graceful habit and curious flowers, but lacks the brilliancy of colour of T. speciosum. It is, however, easily grown anywhere, while speciosum is established with some difficulty in our southern gardens. At least one other hardy Tropæolum should be added where the object is to have the climbing kinds, and that is the long-neglected T. tuberosum, which is handsome

in flower. The common, showy, climbing Nasturtiums of gardens grow high on the walls here, and add to the rich glow of colours. The whole of the Tropæolums are precious plants for our gardens,



Upper terrace at Drummond Castle, Perthshire. Ground steep.

from the old and lovely Canary Creeper to the snake-like, sea-green T. polyphyllum, with its yellow blossoms, so admirable for banks or warm borders. Nothing could surpass the rich purple of the Clematis

here—waves of colour, the flowers of enormous size. The cool hill air suits them so well. We have never seen them show the largest flowers to such an extent elsewhere. One large white variety (C. Anderson-Henryi) was a wonder to see, with its creamy white flowers a span across, crowding each other, and forming a fine contrast with the purple kinds.

In the warm or temperate south, in Madeira or the Riviera, the garden lover sometimes makes a pretty hedge of Oak-leaved Geraniums ; but, as one does not see them in the South of England, it is a surprise to see them happy on the walls here in Scotland, growing from four feet to seven feet high, with fresh foliage and many flowers. Their spicy fragrance and pretty foliage make them worth the trouble of storing in the winter, and placing in the open air in early summer. All the winter they are kept in the house on trellises, and, carefully trained in summer against the warm wall, soon make fresh growth and are in good bloom late in September.

Large borders of the common river Forget-me-not remind us of its value as compared with the wood and Alpine Forget-me-nots usually grown in gardens. It is charming in moist borders, flowering long through summer and autumn. The charm of the place almost ceases with the terraces, for below them is one of those wonderful displays of "bedding out" in its cruder forms, which attains its greatest "glory" near large Scottish houses. Plants in squares, repeated by hundreds and thousands ; walks from which all interest is taken by the planting on each side being of exactly the same pattern.

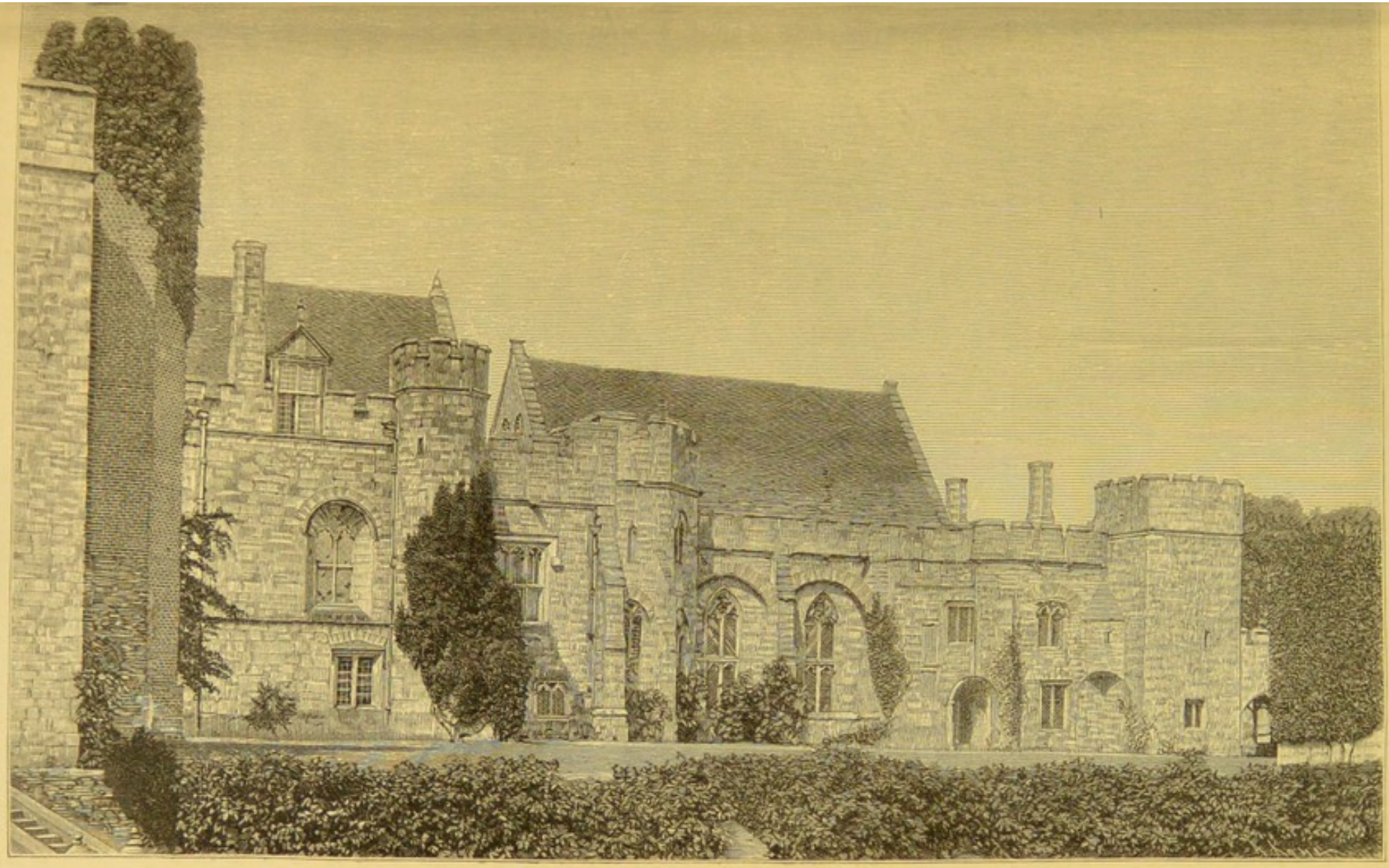
STEPS AND TERRACE IN THE OLD PARK, AXMINSTER.—This engraving is instructive as regards the bare state of many gardens. For many years past the rule in some of the most pretentious geometrical gardens has been to allow no vegetation on the walls or balustrades, but the older and graceful way is to garland all wall surfaces with beautiful life, and not to wholly hide them in doing so. Dividing lines and walls may do their work without being as bare as if in a stonemason's yard.

It cannot be too clearly known that the original idea of the terrace garden came from the sunny steep slopes of Italy and Greece. The rough terrace wall of the common cultivator, which kept the earth up and prevented it from being washed away, and gave a little depth on the stony hillside, became, in the garden of the wealthy man, the ornamental terrace. It was structurally right ; it was necessary whether men gardened for pleasure or for profit. Well, these people having got their bits of ground level through terracing, it was the rule to have the terrace planted with beautiful things—Olive-trees for profit, and Cypress for shade. If anybody will compare such effects with the common style of debased English planting of the flower-garden,

where everything is hard and flat and nothing is allowed on the walls, he will at once see a vital difference.

What is said here about the true Italian garden being remarkable for freedom of vegetation rather than the primness which is characteristic of our imitation of it, is also true of many English gardens abroad. For instance, in the gardens about Algiers, those of Mr. Smith Parry, Mr. Arkwright and other gardens of English people, in the suburbs of Algiers are charmingly graceful and diversified, with plenty of light and shade and variety of form. The island of Maderia is full of beautiful gardens made by English people, each one I remember to have seen absolutely distinct from the others and with a delightful variety of vegetation. It may be said that this is owing to the favourable climates of those countries, and it is to some extent true as there are no doubt Acacias, climbing Tea Roses and many lovely things people love to let grow up above their heads. But is not our country also capable of growing beautiful things, many of them hardy, which would take their place in any flower garden, such as the finer forms of Rhododendron and Kalmia, the Azalea in many brilliant forms, and Roses allowed to grow more freely? It would be hard to find anything abroad more striking than the "American" plants in flower in the Knaphill nurseries in early summer. And it should be borne in mind that our island climate is more favourable to such beautiful shrub life than other cold countries, the United States and Germany among others.

THE FLOWER GARDEN AT PENSHURST PLACE.—There is no more essential charm for a garden than that it should stand by itself in character and not be a mere copy of gardens near it or elsewhere. This merit belongs to Penshurst, and the network of orchard trees and tall summer flowers beneath them which make up much of the flower gardening there. Much of the ground between the kitchen garden and the house is thrown into squares and strips, which shelter and divide the space and most of this space between the hedges is planted with fruit trees, and walks—very often Grass walks—running between them. The remaining spaces are planted with flowers, from beds of Carnations to mixed borders of tall herbaceous plants and Lilies. Foxgloves are at home here, and in rather broad masses under the trees their effect is charming—the shade and mystery of the overhead growth give them something of the look they have in woods. The lines of border after border are broken by the trees, and the effect is very soft and different from what it so often is, while the colour tells splendidly in the case of masses of Orange Lily. The growth is free, and there is no such thing as primness, which greatly helps the effect. Groups of Acanthus look well here, and Delphinium, Meadow Sweet, giant Scabious, and many a hardy flower are refreshing to see.

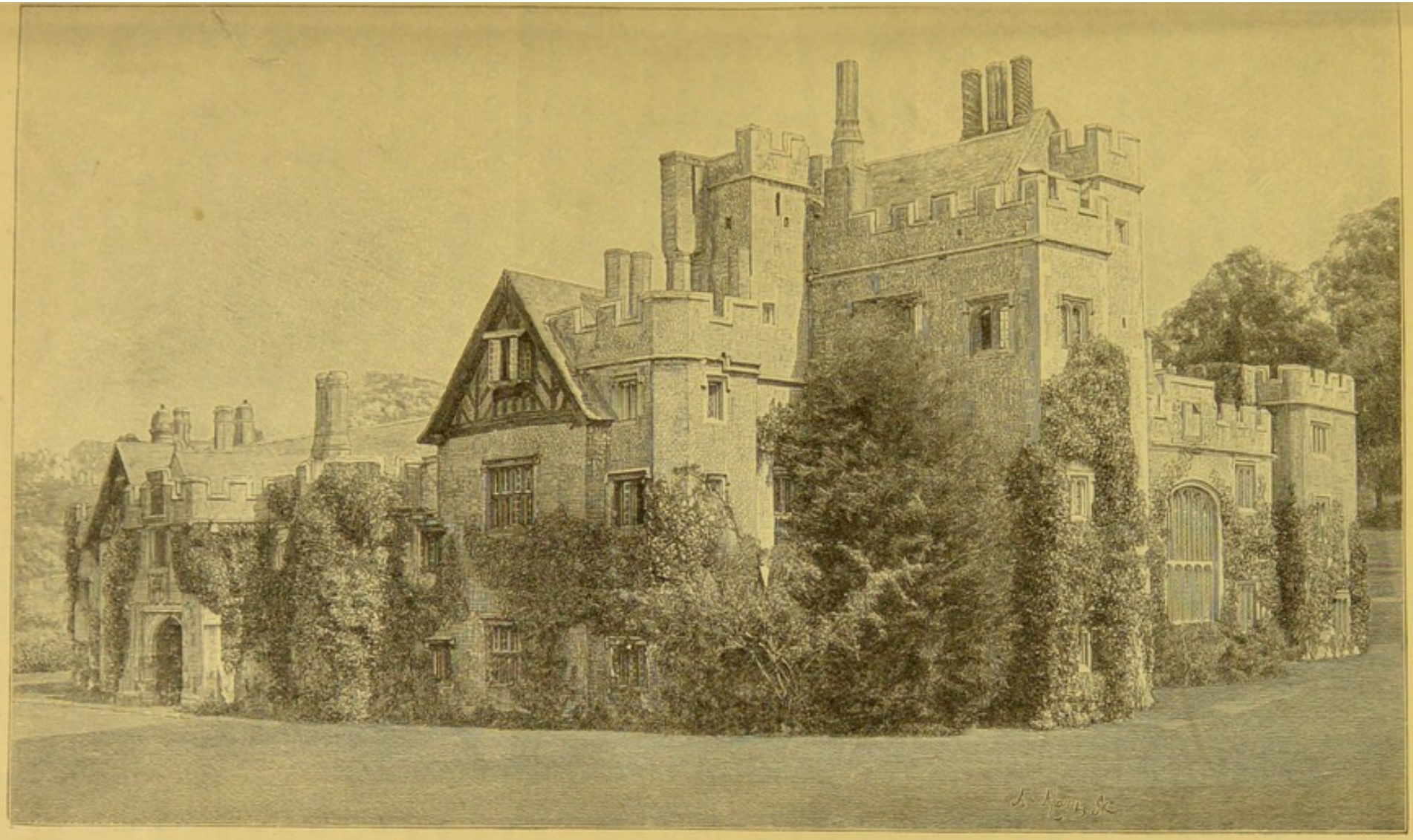


Penshurst Place, Kent. Garden front. Engraved from a photograph.

Penshurst is an example of the many gardens (new and old) where the reaction from the hardness of bedding out and the winter bareness of it have led people to abolish altogether flowers near the house. It is not the old way to make this clearance of everything but shaven Grass near a beautiful old house, nor is it the true way, but it is now a common one, and it gets rid of much of the ugliness of beds.

But there are ways of putting flowers in charming modesty about a house as well as that of digging up in early summer ugly grave-like beds for them. In the old days flowers clustered round the house, and were the better for its shelter, warmth, and colour. Long before the massing system, with all its garishness, was discovered, flowers were planted for many generations in quiet ways about old English houses. It is right that the main entrance and park side of a great house should be frank and open, but to make the house bare all round for the sake of bare Grass, and to lose all the advantage of shelter and seclusion, is not the best way by far. Bays and warm corners, and high walls, and their shelter and variety of aspect, are delightful for flowers—flowers such as could not injure any building ; not even a suspicion of the injury that comes from Ivy betimes could attach to borders of Fern or Iris. Shaven turf is pretty in our summer, but there are acres of it in the parks and fields around. If we lived in a country where close turf was not seen in the parks, or hills, or fields, there would be a reason for making a special effort to get nothing but turf under the windows. Grass is charming, but to exclude the flowers altogether for its sake is a mistake. In the park the short nibbled turf is often fringed by Bracken, Foxglove, and Wild Rose ; whereas, near the house, the way too often now is to let the turf run hard and straight into the walls. All the winds of heaven strike such houses untempered by the breath of a Violet.

There is the question of seclusion about large houses which is bound up with this. Nothing is worse than planting out and hiding the sun and air from a beautiful house, but dividing lines connecting little secluded gardens and sheltered places for flowers are often needed. There are so many ways of screening off such precious spaces, too—Vine, Sweet Verbena, Winter Sweet, and Jasmine for low walls ; Rose, Sweet Brier, and Honeysuckle for fragrant or blossoming hedges ; Clematis, Wistaria, and climbing Rose for arch or pergola. The very lines for shelter or privacy might be gardens of the most fragrant and beautiful things we have, from the winter Jasmine to the climbing Tea Rose. No, the Grass alone is not and never can be the artistic way on all sides of a house! The gray of the Carnation is welcome in winter seen from the windows, and there are many evergreen rock plants that take their finest hues in

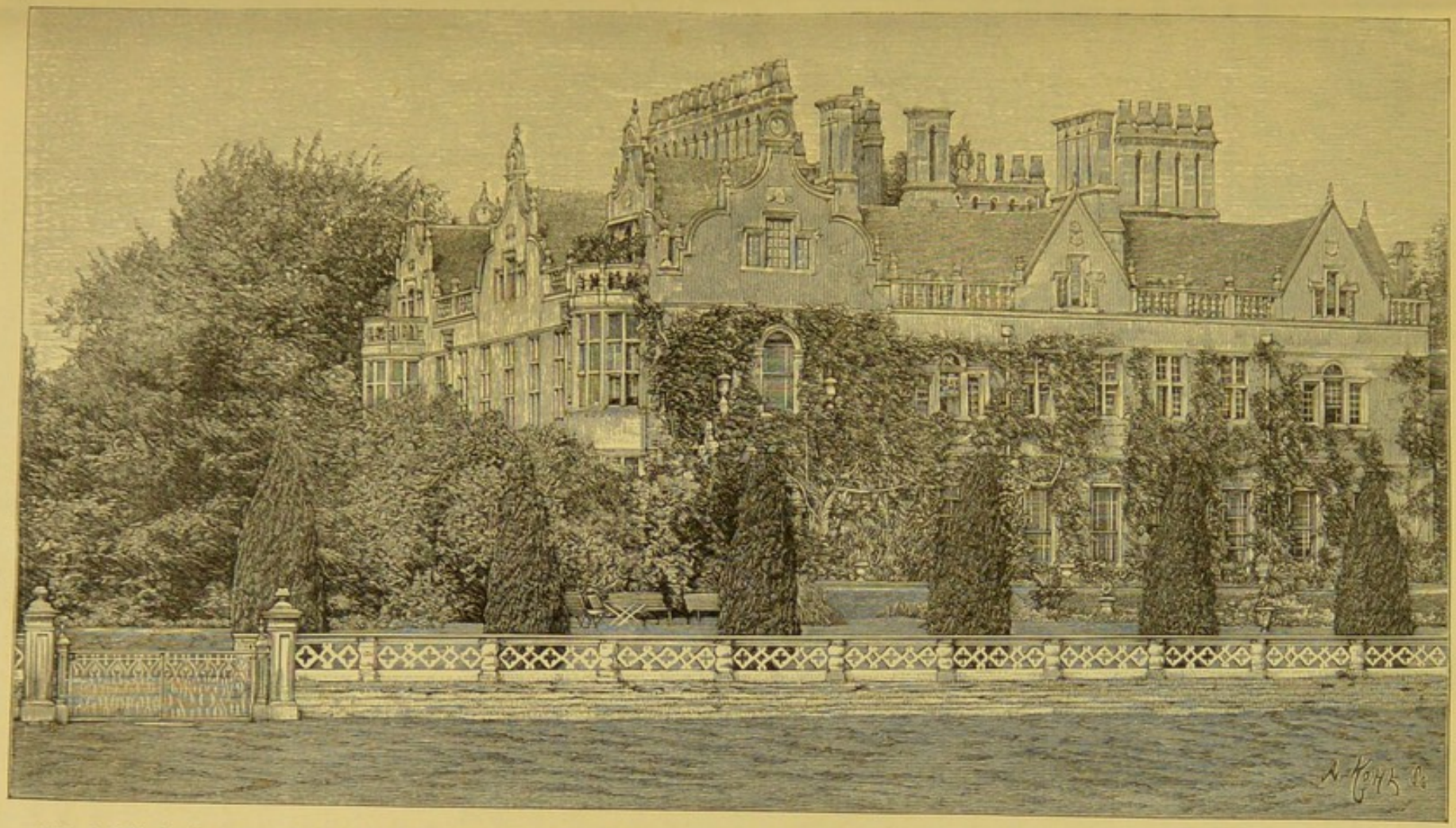


Compton Winyates—house at head of deep hollow or coombe.

winter, and they are a long way better, even for their green, than the winter-worn turf. It is often well, too, to see a glimpse from the windows of the way the Crocus opens its heart to the sun—brilliant forerunner of crowds of fair blossoms.

COMPTON WINYATES.—Compton Winyates is one of the dearest of the old houses jewelled over the land of England, the most charming of countries for its houses. There are graceful old climbers and trees near, but not much showy gardening—almost none. There is also very little of what is called pleasure ground in the ordinary sense; but that is too stereotyped a thing to make one regret it in the presence of such a beautiful home. None the less is it pleasant to wander over the high fields near and along the deep slopes of the coombe, especially in the autumn time with the tree leaves rich in colour, and the Barberry laden with a thousand coral boughs. Compton Winyates is one of the houses not surrounded by a Chinese or other puzzle of terraces and impedimenta of all sorts, as some writers tell us the ideal house should be. It sits quietly on the turf, and is none the worse for it, and tells us, as other of our finest old houses do, that each situation demands its own treatment as regards the surroundings of the house.

LILFORD HALL.—This is one of the beautiful houses of the great old days of building, of which some of the most interesting examples in England are to be seen in Northamptonshire—Burleigh, Rushton, Drayton, Deene, Castle Ashby, and many others. Lilford is not so large as some of these, but it stands up in a stately way over a fine sweep of landscape and woodland scenery. Instead of the usual unclean, canal-like water which disfigures so many country seats, there is a natural stream running below the house at a comfortable distance away—a great improvement on the artificial water so often made. So far as the flower garden is concerned, it is rather of the bedding order, stiff and neat, with many little walks and Grass edgings, and a line of the emphatic forms of the Irish Yew in front of all. But there is much to be grateful for even in this, for the reaction against bedding-out or some other cause has led to many gardens of the present day being turfed up, and some like Burleigh are bare as desert rocks. The shelter of walls or hedges, which give privacy on certain warm sides of the house, are helps to good gardening; and therefore we were grateful to see trees clustering round Lilford and something like gardening there, though we missed the grace of hardy flowers and beautiful mixed borders like those which Lady Ardilaun makes near her house. Lilford is set in noble woods, and we have rarely seen a house which gave us a more distinct and agreeable impression. But the impression brought away from various fine old houses in Northampton, was how much they lose



Lilford Hall, showing effect of repetition of evergreen trees of poor form like the Irish Yew. Engraved from a photograph by Mr. J. T. Hopwood, Ketton Hall.

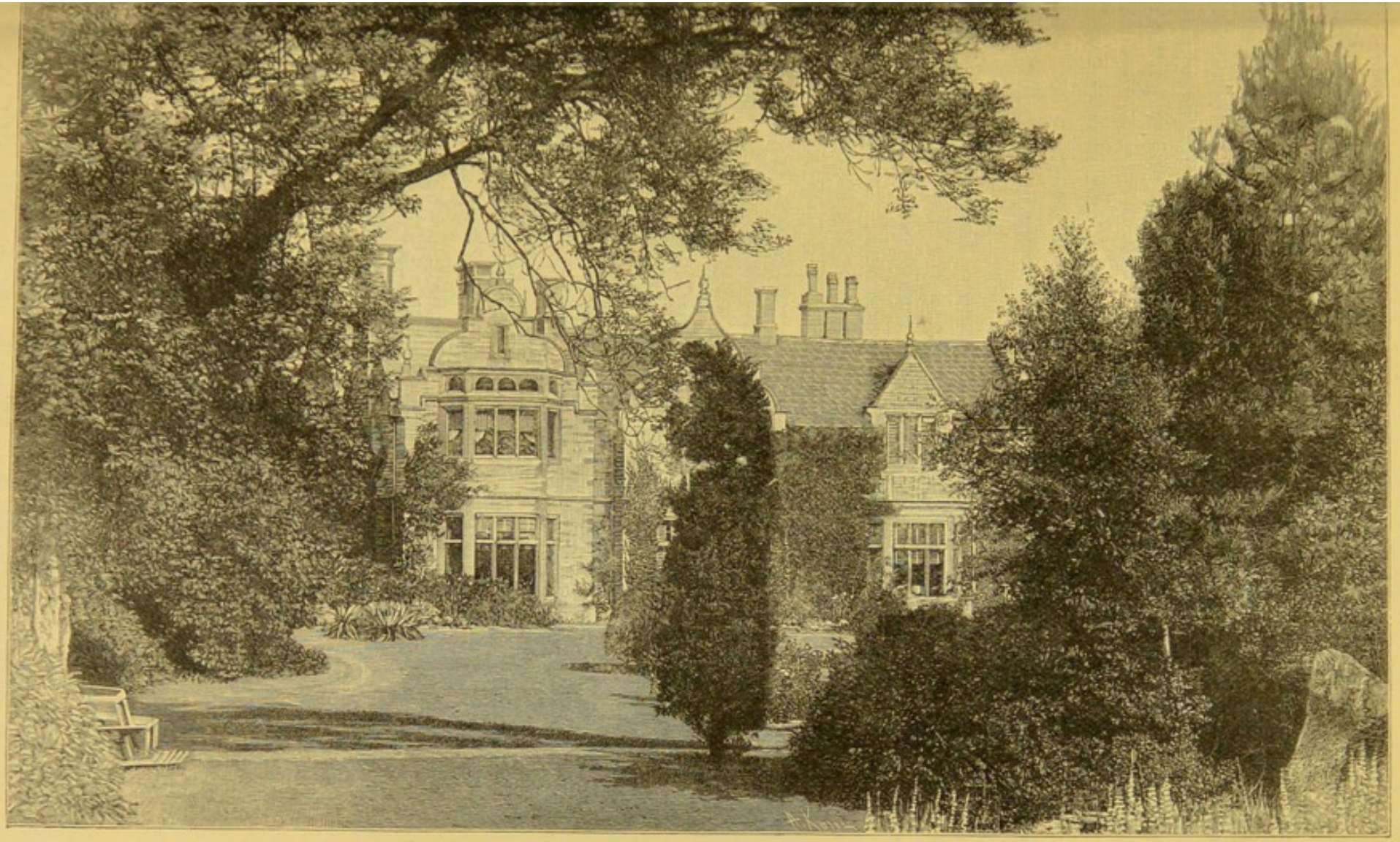
through the mean bedding and the scraggy forms of the flower beds by which they are surrounded, while in the whole world one could not get more delightful situations for good flower gardening or happier homes and backgrounds for all our choicest hardy flowers and shrubs.

KETTON COTTAGE.—This is one of the Elizabethan farmhouses common in the villages round Stamford, with some recent additions. It stands in the village, a short distance from the beautiful church of St. Mary, a few yards from the little river Chater, which, coming down from Leicestershire, falls into the Welland a mile or two below Ketton and as far above Stamford. As the position is sheltered from rough winds, the small space of ground between the road and the river has proved a home for such of the hardy shrubs and flowers planted in it during the last thirty years as find the lime in both soil and water congenial to them.

The banks of the stream are in places fringed with Osmunda regalis intermingled with a few plants of Struthiopteris and some patches and undergrowth of Onoclea, all of which bear patiently the floods which sometimes in summer and often in winter pass over their heads, lasting now and then for several weeks. All these Ferns thrive in a bed of rough leaf-mould, 6 inches or 8 inches above and below the usual water level, partly coated in the course of years with earth from the floods and partly denuded by the action of the water, which is prevented in the exposed portions from washing away the roots by a covering of heavy stones, between which there is just room for the crowns to appear. These conditions prevent the growth of seedling Royal Ferns, but the old plants are after more than twenty years as vigorous as their kindred in the Norfolk marshes the fronds of some in the shade being more than 6 feet in length. In a place rather more sheltered from the force of the stream Osmunda gracilis and O. interrupta thrive equally well; as also on a somewhat higher level a certain number of other strong Ferns which do not suffer by occasional floods.

On an open part of the bank a quantity of purple Loosestrife makes a good background for the Ferns, and a patch of Meadow Rue gives variety and a distinct autumn colour. Saxifraga peltata and Rodgersia podophylla grow vigorously, but not on the lowest level. The summer Snowflake and the Fritillary show well among the old stems of the Osmunda fronds, and the yellow wood Anemone thrives a little higher on the bank, seedling Kingcups coming often to the edge of the water.—B.

POWIS CASTLE.—Of the many gardens I have seen, very few gave me the pleasure of Powis: first, because of its noble drive through great Oaks with breaks of Fern between, so unlike the dark monoton-



Ketton Cottage. Garden framed in trees showing their natural forms. Engraved from a photograph by Mr. J. T. Hopwood, Ketton Hall.

ous avenue which spreads gloom over so many country seats. The light and shade and the noble forms of the trees make the picture more beautiful than any primly set-out avenue. The flower garden is beautiful, partly owing to its position, which is that of a true terrace garden—*i.e.* the ground falls so steeply, that terracing is necessary. These terraces were wreathed with Clematis and beautiful with shrub, and flower, and life, a picture of what a flower garden should be.

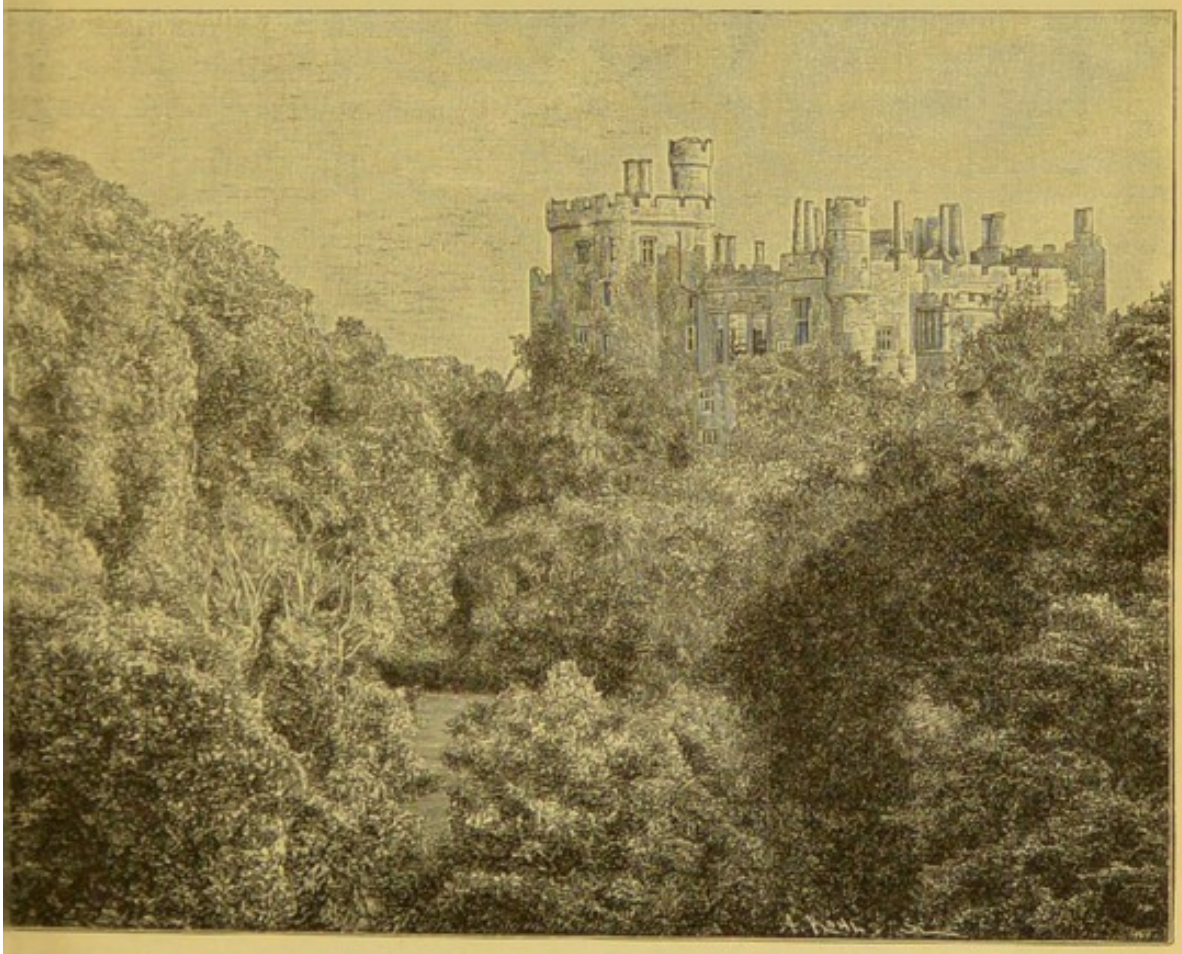
Powis is a few miles inside the Welsh border, and near the old town of Welshpool on the bluff, from which several passes in and out of the Principality can be seen, a position of importance in the old days of feudal strife. The variety of the views obtained from the castle heights are charming in the extreme. The Breidden Hills tower in the distance, and the windings of the Severn carry the eye through the fertile valley away into the several Welsh ranges in the opposite direction. As the original name, "Castell Coch," signifies, the castle is built of red sandstone, and stands on the same rock. The terraces, too, are hewn out of this red rock, which forms the walls, for the most part unaided by masonry. Glancing over a balustrading from the castle level on to the terraces beneath, the scene is charming, and we are struck at once with the harmonious blending of the flowers and their surroundings. A happy idea is carried out in regard to colours by the three terraces having each its predominating colour—viz. the lowest white, the middle yellow, and the highest purple; not that other colours are excluded, but these prevailing tones are maintained.

A charm of this terrace has been for years a number of trellises, 8 feet to 10 feet high, covered with Clematis. Here and there a blaze is produced by the Flame Nasturtium (Tropæolum speciosum), which is induced to cover a few branching sticks loosely, and to suspend therefrom in graceful festoons of brightest colour. Pyramids of Sweet Peas are among the best perennials and choice annuals used; there is no air of formality in any of the arrangements, the stiffness of hard lines being quite broken by the Clematis, Roses, standard and dwarf, Sunflowers, Hollies, Japanese Maples, and Tree Pæonies. The walls of the terrace are covered with Roses, Clematises, Pears, Peaches, Nectarines, Pomegranate, which flowers freely every season, Magnolia, and fine plants of Wistaria.

COTEHELE, CORNWALL.—This is one of the finest old houses in the west of England, and a paradise to the antiquarian. The quaint old terraces are laid out in old-fashioned beds and borders filled with hardy flowers. No carpet bedding or any like modern monstrosities have been permitted here. Very little masonry is seen in the formation of the terraces, and the old walls are mantled with various

creepers, including Vines, Myrtles, Clematis, Magnolia, Jasmines, and Ivy.

The engraving gives a faithful representation of one side of the house, looking east. It is situated on the summit of a high hill on the Cornish side of the river Tamar, commanding extensive views of its winding course, also of the distant ranges of hills in both Devon and Cornwall. The picturesque freedom of the planting and surroundings is delightful, especially to those who see so many stiff, trim gardens both in England and France. Happily these stiff fashions



Powis Castle, Welshpool. Flower garden site.

do not obtain at Cotehele, which is delightfully covered. Whatever people may think of the influence of Ivy on walls, there are a certain number of plants to which no objection can apply, such as the more delicate Clematises and the superb climbing Tea Roses we now have for walls.

SHRUBLAND PARK.—Shrubland Park, in Suffolk, illustrates the recent history of English flower-gardening as it was the great bedding-out garden, the "centre" of the system, and which provided many examples for other places in England. The great terrace garden in

front of the house was laid out in scrolls and intricate beds, all filled with plants of a few decided colours, principally yellow, white, red, and blue, and edged with Box. In every spot in this garden the same rigid system of set beds was followed, and not a creeper was permitted to ramble over the masonry and stonework of the various terraces. Every bit of Ivy that tried to creep up the walls and cover the stonework had to be removed, to leave the stone in its first bareness. Where some particular colour was wanted in a certain spot, coloured stones were freely used—yellow, red, and blue—and in the summer, when the hedgerows and meadows are full of flowers, there were no flowers in this large garden to cut for the house! A few years ago, when Shrubland passed into the hands of the Hon. James Saumarez, the elaborate designs were swept away. The terrace-garden was planted with the flowers that every one loves—Roses, Lavender, and among them many of what are called common things, and climbers of many kinds were encouraged to clothe the stone walls. One half the garden was devoted to the Carnation, of the best self kinds, grouped with many Tea Roses. The self Carnation and the Tea Rose are the glory of this garden—the flowers that fill the air with fragrance, and give quantities for cutting. The silvery hue of the large groups of fragrant Lavender, the rich masses of Carnations, and the groups of the loveliest of the Tea Roses, make a delightful picture.

Of the Tea Rose, all the finest kinds for our climate are planted; and there is a charming gradation of colour. There is an idea that it succumbs to the first frost, but all the varieties at Shrubland, and they include, we believe, every good kind in cultivation, passed unharmed through 20 degrees of frost, and this without shelter. One of the most interesting spots of Shrubland is the Bamboo walk.

This is a straight walk, planted at one time with smooth ribbon borders. These were swept away, and Bamboos and tall Lilies now fill their place. We have never seen Bamboos make finer growth, and there are fine hardy plants to relieve the green foliage of the Bamboos and the Plume Poppy (Bocconia cordata) with its feathery plumes; Lilies, Funkias, or Plantain Lilies, and Evening Primroses.

CHILLINGHAM CASTLE.—Chillingham is on a ridge of land nearly 1,000 feet above the sea in a rocky moorland district, intersected by deep and beautifully wooded glens.

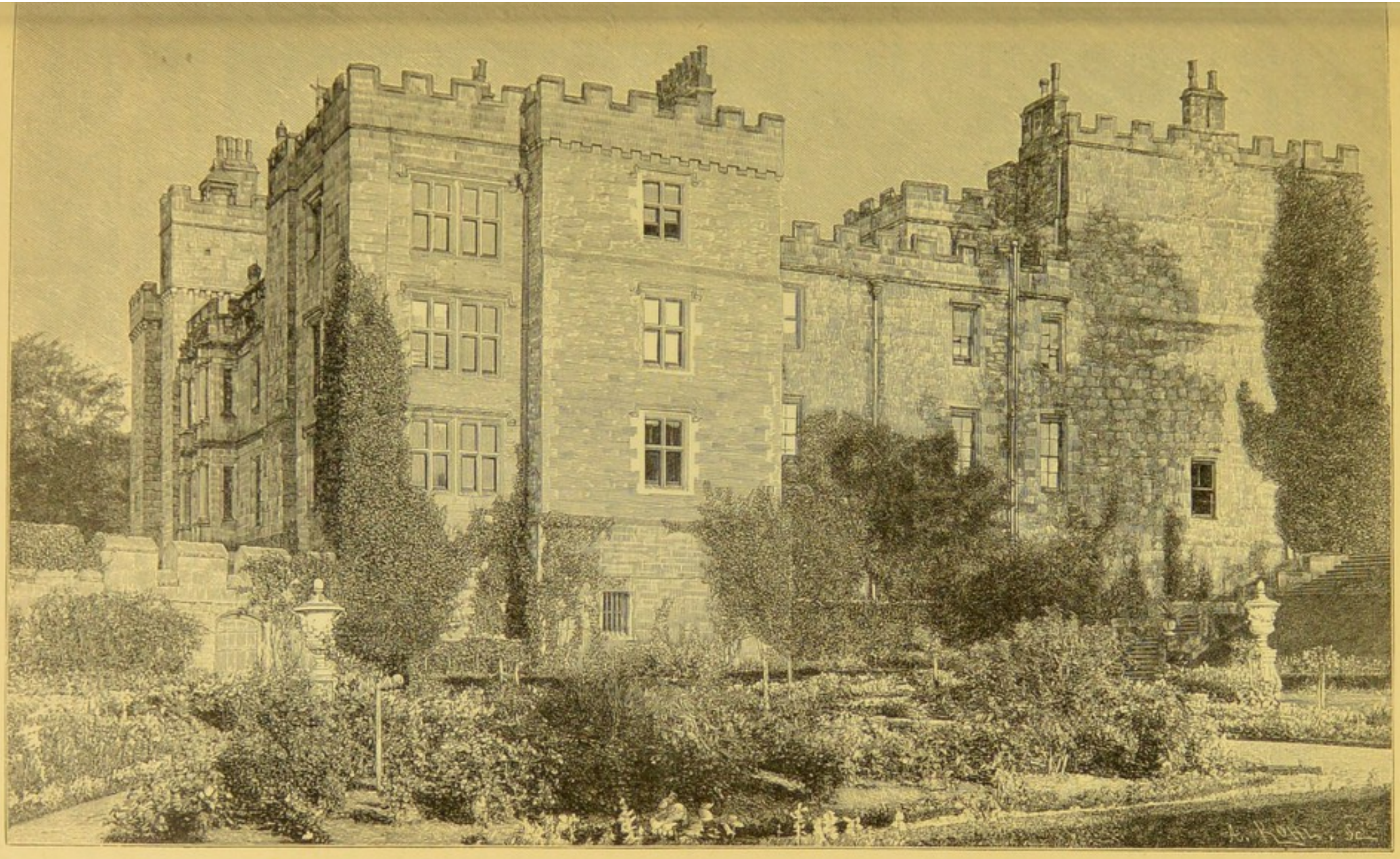
The illustration shows but a small part of the handsome terrace garden, with its beautiful retaining wall 120 yards in length. The wall alone was a picture. In one part covered with Ivy, elsewhere a large bush of Barberry had grown several feet higher than the wall, and was a mass of colour with its crop of berries. Clematises hung in

Cotehele, Cornwall. Engraved from a photograph by Mr. Hayman, Launceston.

festoons, with Ivies, Vines, a fine plant of the climbing Hydrangea, Pyracantha and other plants, while in front of the wall a long border was planted with some of the best open-air flowers. The flower beds, although somewhat angular, are of sufficient size to permit of bold grouping, and this is so well done that the form of the beds is less seen, and the blending of the colours of the many flowers was well carried out. Many hardy plants are here well grown, from the stately Delphinium down to Hepaticas. Wild Roses and hardy Fuchsias give height and boldness to the arrangement, and the whole terrace in summer and autumn days is gay with fine colour. The wall at the end of the terrace, which is partly overhung with trees, has its face in a great part hidden by a lovely veil, Asplenium Trichomanes. From here, ascending a flight of rough Moss-covered steps, Grass slopes adorned with trees make a pleasant shady corner, and we pass on to the south front of the castle, which has a broad gravel walk in the foreground and a lawn that merges into the park and the adjoining pastures.

WILTON.—One of the glories of Wilton is its fine Lebanon Cedars, the tree having been extensively planted here at the time of its first introduction, and although later years have witnessed a great thinning of its ranks, enough remain to form the most prominent feature of the place. The Wilton Cedars are older than those at Goodwood or Warwick, and although mighty ones have fallen, some still remain, whilst numerous young ones are growing up to take the place of those that fall victims to the storms. Whilst the present wise policy of frequent planting is continued, there will be no break in the history of this tree at Wilton. The finest old specimen has a grand bole about 15 ft. up to the point of branching and of fairly even diameter throughout its length of main stem, which girths fully 24 ft. A stem of greater girth entirely enshrouded in Ivy stands near by, the tree having perished in a storm some years ago. A noble evergreen Oak near the Cedars has a stem that girths 19 ft., and at one time it had a head of branches spreading quite 100 yards in circumference, but a giant Cedar in its fall broke away a large portion of this Oak on one side. It is a magnificent tree in perfect health, and bids fair to grow out of its present disfigured state. Near this tree, and on the west side or library front of the house, is an Italian garden, and beyond it a long vista terminated by a stone structure called Holbein's Porch. A fine Chamærops Fortunei stands near, this also being a plant out of the first introduced batch. It has been outside for seventy years, is not so tall as some younger specimens we have seen, but its stem is unusually thick and denotes great age.

The view shown is that of the south front of the house, showing a little garden of stone-edged beds set in gravel. Beyond, adorned only by the grand trees on it, the lawn spreads away to the



Chillingham. Border castle garden with old-fashioned beds.

river bank, the river itself being spanned by the "Palladian Bridge," built of stone and having a roof supported by rows of columns on either side. This leads to the deer park, in which the ground rises upwards to a considerable elevation, whilst along this slope another informal avenue of Lebanon Cedars is a fine feature amid the great beauty of native trees in abundance and of large size. An interesting fact gathered in regard to the Cedars is that on an average once in ten years they ripen a batch of good seed, which is sown for future planting about the place.

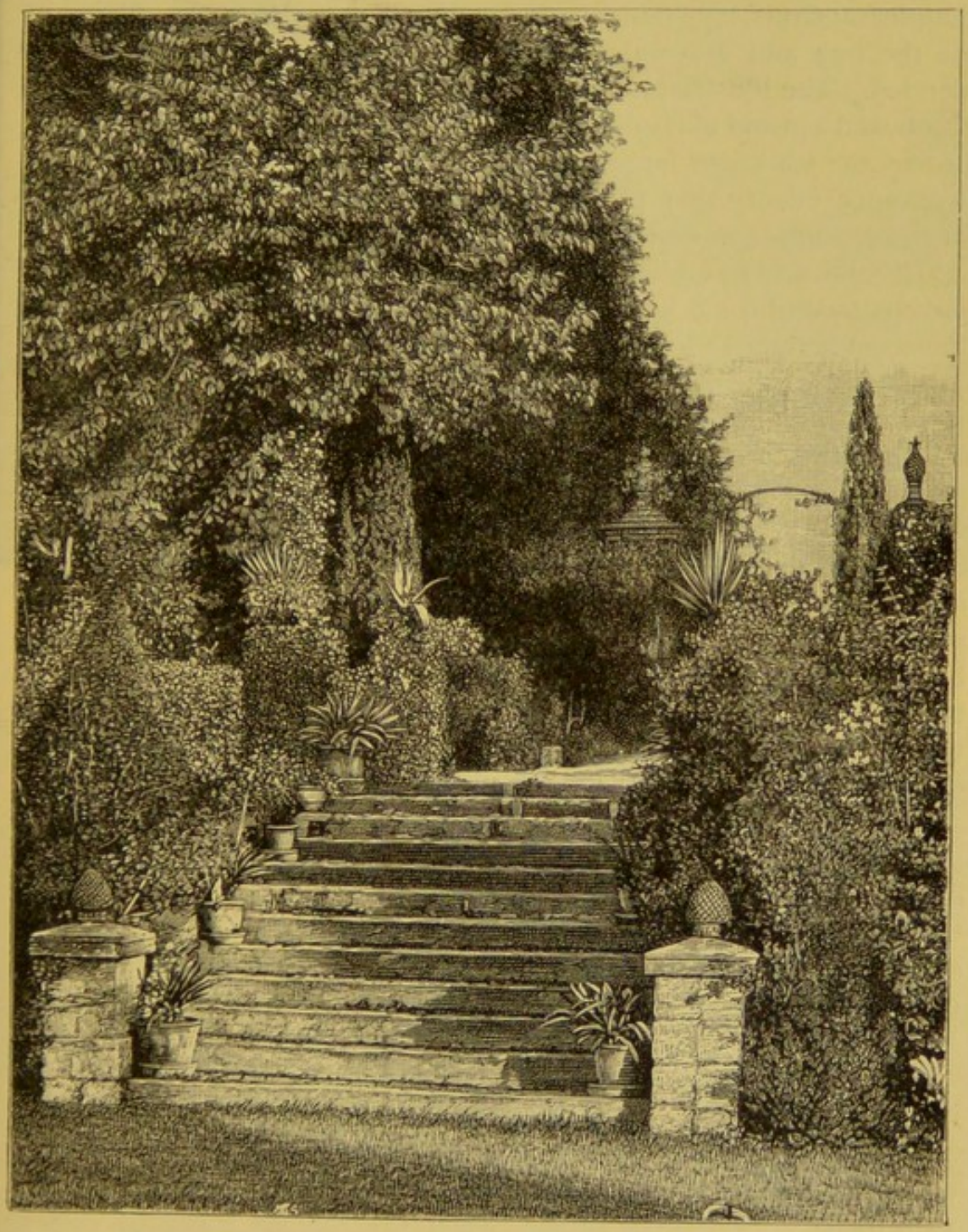
Looking eastwards from the house, the ground stretches away almost as flat as a table, but this flatness has been delightfully broken up by a series of well-arranged groups, chiefly of coniferous or evergreen trees and shrubs margined in a pretty way with graceful masses of Savin. A broad gravel walk at right angles to the east front of the mansion, with lawn and fine trees on either side of it, extends for 300 yards, and is terminated by a seat hedged round with Yew. This bold walk and the shrub groups that break up the flatness of and give distance to the fine expanse of lawn that extends to the waterside are from the designs of Sir Richard Westmacott, who assisted the Countess of Pembroke in planning the grounds.

The second engraving shows well that portion of the house commanding the view of this broad walk, with its lawn and distant water, whilst between the trees in the distance is seen the spire of Salisbury Cathedral. Near the river a statue of Venus on the top of a column stands in the centre of a little square formed by trees of the Italian Cypress. The red Cedar was charming in some of the groups, its branches laden with glaucous fruits, that appeared as a silvery sheen cast over the tree. Yews, Hollies, and Evergreen Oaks, numerous and fine, give perennial verdure to the grounds. Coniferous trees in sheltered breaks and nooks are equally fine, a tree of Picea cephalonica especially so, being nearly 100 ft. high, whilst many are growing with great vigour.

OFFINGTON.—Offington is a very instructive garden, because richly stored and pretty too. Large collections are rarely in the hands of those who have any feeling for fine general effect, and no garden is more likely to be inartistic than the full-stored one from a botanical point of view. Now there should be nothing really antagonistic between collecting many plants and having a beautiful garden with plenty of lawn, effective groups of trees, and well-managed tree and shrub gardens; but it nevertheless is rare to find a pretty garden which is also full of beautiful things as this garden is. It is one of those seashore places in which there is much gain in point of warmth and other conditions which allow the growing of plants we should have no chance of keeping in inland districts. The southern

and seashore district in one gives us all the conditions we could desire for growing many more plants than are hardy in our country.

Native trees—notably the Scotch Fir on either side of the pleasant



Steps and terrace, "The Old Park," Axminster. Terrace garden not stiffly planted. From a photograph by Miss Dryden, Canons Ashby.

drive that leads to the house—are expressive of the most beautiful surroundings of an English home, compared with which the exotic conifers that so many plant are a poor substitute. In this garden itself Major

Gaisford has gathered together, and arranged in an artistic manner, a host of rare and beautiful trees, shrubs, and plants which, favoured by a genial climate, give to the garden a distinctive aspect. There is here an entire absence of that conventional gardening which cuts up the pleasant turf, lays down hard, geometric patterns where we should see the free and graceful forms of shrubs and flowers massed and blended. The illustration shows the house nearly hidden by climbing plants, and a grand old Ivy-embowered Walnut standing on an airy lawn. Beside the walk are large beds where the best hardy flowers prove how much beauty they can impart to the garden where the plan is large and simple in design.

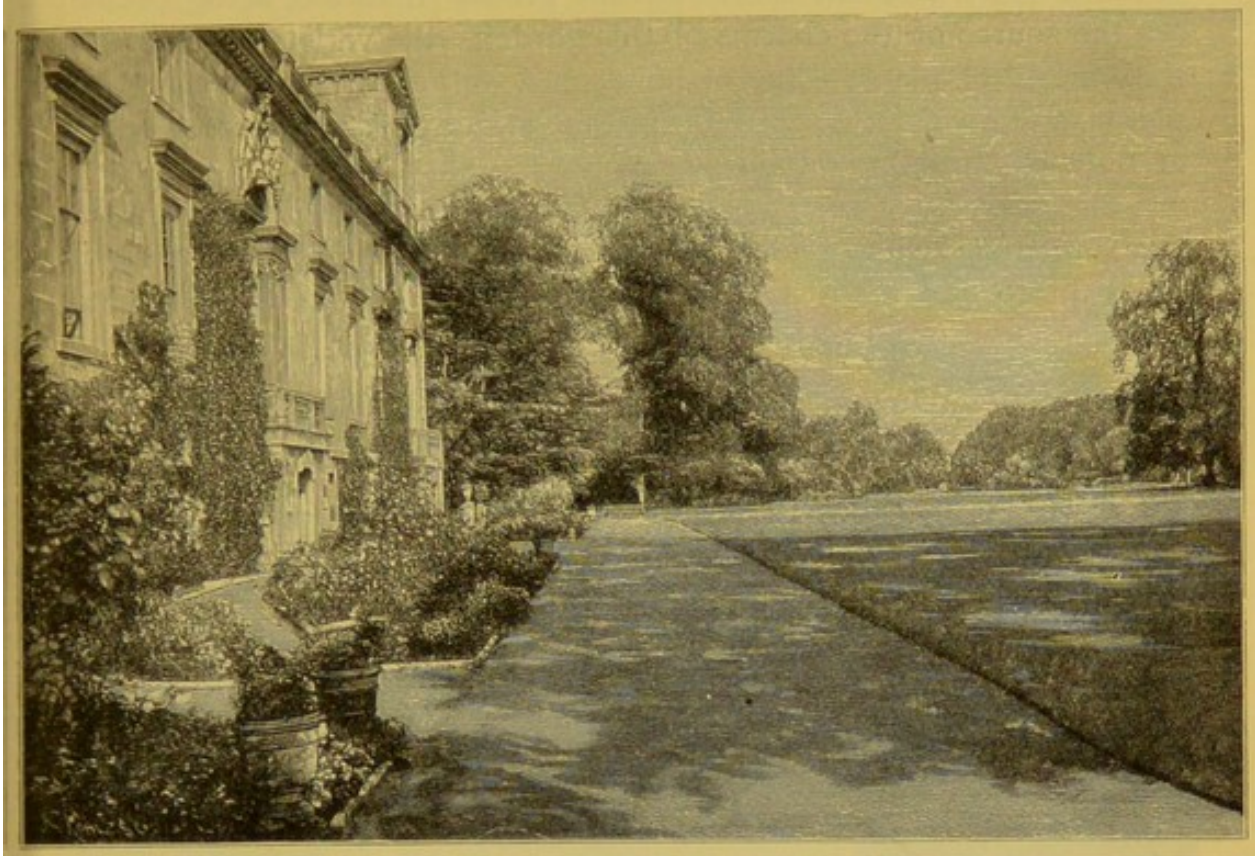
BULWICK.—Rambling about Northamptonshire, and delighted with its beautiful old houses, many of them, unfortunately, as bare of flower-gardening as a deserted ship, it was pleasant to come to a real garden at Bulwick full of Carnations and many open-air flowers arranged in various pretty ways, even the house being full of large basins of Carnations, some of them of one self-coloured kind—a rare pleasure.

The flower garden was not one of those places which astonish us by a showy display, but modest at first sight as regards flower-gardening in immediate relation to the house, and the chief charm of the place was rather in various little side gardens and long and pretty borders backed with Holly and other hedges, and giving an opportunity for growing a great number of hardy flowers which bloom in the autumn. These formed picture vistas, of which the effect is very often better than a flower garden of the usual type.

But, more than this, the excellent plan was followed here by the late Lady Henry Grosvenor of having what I do not think any garden can be right without, namely, a "square" or reserve garden in which things are grown well without reference to effect. It was a large square of the kitchen garden thrown into 4-feet beds, with little beaten alleys between, in which many thousand Carnations were grown in simple masses.

One sees at once how much more beauty and variety can be got in such ways than where all the effort goes to help one scheme for effect in front of one's windows. Carnations were grown very finely, and the finest single bed of one kind of Carnation I ever saw was here with many thousand fresh buds and blossoms.

What is the secret of beauty in such a garden, and what the lesson to be learnt from it? It is that no one way will give us a true garden which is likely to be beautiful even for any length of time even in the fine season. Any one way is so liable to failure from the weather or other causes, that the main source of success is to have many ways with flowers, as there were at Bulwick. Hardy plants in beds and



Wilton, looking from house.

Wilton, another view.

borders apart from the flower garden proper (that, too, being pretty) are the source of the charms of this garden—the variety of situation, the variety of plants—but of handsome, well-chosen and well-grown plants, and even variety of level in the various gardens, such as occurs at Bulwick, are all good aids.

The nearness of an interesting kitchen garden with sheltering walls is a source of beauty and infinite variety, but this does not occur in every place, and many houses are best without it, so that when we

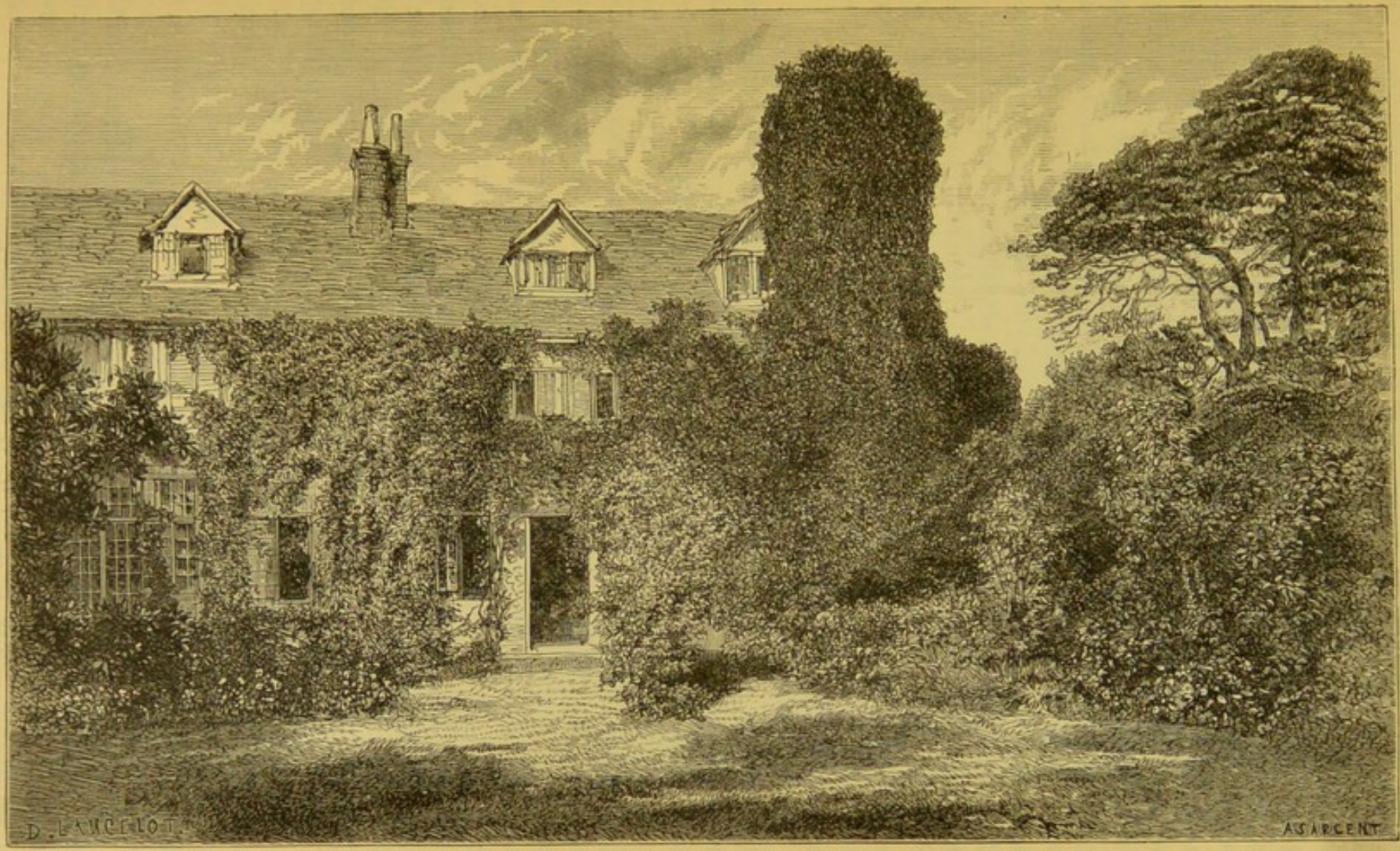
Bulwick, covered way.

have found the secret we cannot always follow the same plan. It would be better for our flower gardens if imitation were more difficult, as the greatest pleasure of the garden only comes when the best use is made of every scrap of the ground and with plants and ways adapted to the spot and to no other.

EVERSLEY.—Rhianva shows us how a stony waste may be made into a garden very distinct, and by a glance at the late Charles

Offington House, Worthing Engraved from a photograph by Miss Gaisford.

Kingsley's rectory garden at Eversley, we get to see a modest, and simple as charming, type of garden. The walls and borders are full of flowers, while the Grass clothes the central space. When Canon Kingsley became rector of Eversley, in 1844, he found the garden at the rectory in as unsatisfactory a state as was, in other respects, the rest of his parish; but it had capabilities, and these capabilities he used to the utmost. On the sloping lawn between the house and the road stood, and still stands, a noble group of three Scotch Firs, planted about the time that James I.—who was just then building the grand old house of Brainshill, hard by, as a hunting box for Prince Henry—planted the Scotch Firs in Bramshill Park, and the clumps on Hartford Bridge Flats and Elvetham Mount. A fine Acacia and twin Arbor-vitæ, thirty feet high, completed the trees on the lawn. Most of the garden consisted then of a line of ponds from the glebe fields, past the house, down to the large pond behind the garden and churchyard. The rector at once became his own landscape gardener. The ponds were drained, with the exception of three in the field, which were in course of time stocked with trout. Plane trees, which threatened in every high gale to fall on the south end of the house, were cut down, and masses of shrubs were planted to keep out the cold draughts, which even on summer evenings streamed down from the bogs on the edge of Hartford Bridge Flats. What had been a wretched chicken yard in front of the brick-floored room used as a study was laid down in Grass, with a wide border on each side, and the wall between the house and stable was soon a mass of creeping Roses, scarlet Honey-suckles, and Virginian Creeper. Against the south side of the house a Magnolia (M. grandiflora) was trained, filling the rooms with its fragrance. Lonicera and Clematis montana, Wistaria, Gloire de Dijon and Ayrshire Roses, and variegated Ivy hid the rest of the wall with a veil of sweetness. In front of the study window, on the lawn, an immense plant of Japanese Honeysuckle grows, given to the rector by Mr. Standish a year before he distributed it, and carefully the little treasure was nursed and well it throve, being covered every summer with sweet flowers. Next to this the pride of the study garden lay in its double yellow Brier Roses. These grew very freely, and in June the wall of the house and garden was ablaze with the golden blooms, the rooms being decorated for two or three weeks with dishes of the yellow Roses. The rector was never able to afford himself a green-house, so only a few plants were kept for bedding in a little pit; and, owing to the poor soil and the late and early frosts, which were peculiarly destructive from the low, damp situation of the rectory, none but the hardiest and most common plants could be grown out-of-doors; but the borders were always gay with such plants as Phloxes, Delphiniums, Saxifrages, Pinks, Pansies, and, above all,



Rectory garden at Eversley.

Roses and Carnations, which grew in the greatest profusion. One bay in front of the house was well covered with Pyracantha, in which a pair of white-throats built undisturbed for many years. Over the glass porch at the front door Clematis Jackmanni, white cluster Roses, and Pyrus japonica were woven in inextricable confusion. Rhododendrons grew in the greatest luxuriance, and the neighbours always came to see the rector's garden when two beds, on either side of the front, were in blossom. An ancient Yew tree, and a slight hedge of Laburnum, Hollies, Lilac, and Syringa divide the rectory garden from the churchyard, and here, again, the rector turned his mind to making the best of what he had. The church, a plain red brick structure, was gradually covered with Roses, Ivy, Cotoneaster, Pyracantha, &c., and, in order that his parishioners should look on beautiful objects when they assembled in the churchyard for their Sunday gossip before service, the older part of the churchyard was planted with choice trees, flowering shrubs, Junipers, Cypress, Berberis, and Acer Negundo, and the Grass dotted with Crocuses where it was not carpeted with wild white Violets.

EDGE HALL garden is one of those in which the hardy flowers of the northern world are grown in numbers for the owner's delight and the good of his friends, and it is in such large collections that charming novelties for our gardens often make their appearance. Such gardens in our own day carry on the traditions, so to say, of very interesting English and Scottish gardens of the past, in which numbers of beautiful open air things were grown—among those I have had the happiness to see were the late Mr. Borrey's at Henfield in Sussex, a garden museum of beautiful hardy plants and of rare British forms of plants and trees ; the Ellacombes'—father and son—garden at Bitton ; Mr. Leeds' garden at Manchester, Stirling's at Edinburgh ; Comely Bank, a home for the rarest and most beautiful plants ; the Rev. Harpur Crewe's ; Mr. Atkins' garden at Paineswick ; Sir George McLeay's at Pendell Court, Major Gaisford's at Offington, and many other delightful gardens. The very riches of the collection in such gardens is a source of danger as to effect, the very number of plants often leading to a neglect of breadth and simplicity of effect but there is no real reason why a garden, rich in many classes of plants, may not also be beautiful in its masses, airiness and quiet verdure as well as in the charms of its plants and trees.

A mile to the east the well-wooded and well-heathered range of the Broxton Hills give shelter, whilst from the south-west to the north-west the horizon is formed by Welsh mountain ranges. A sunk fence of sandstone, easily jumped by a fox or a hare, and in other parts a line of movable hurdles, well wired against rabbits, separate three

Edge Hall, Malpas, Cheshire. Lawn garden with hardy flowers in beds and groups. Engraved from a photograph sent by Rev. C. Wolley-Dod.

acres for house and garden from the surrounding grass fields and from a small park of eighty acres. About 200 yards from the house the sand rock comes through, forming a long terrace with an escarpment towards the west. The park is bounded by a deep dingle with steep sides, covered with wood for a length of a mile and at the bottom runs a small brook full of trout; this turns a turbine for the house supply and fills a large mill-pond of four acres. The woods in spring are carpeted first with Primroses and wood Anemones, then with wild Hyacinths and Pink Campion, whilst later there is a tall growth of Campanula latifolia and large breadths of Polygonum cuspidatum, which has been planted to supersede Nettles, while overhead is abundance of Hawthorn, Crab, and wild Cherry. The hall stands on the side of a hollow watercourse worn in the stiff clay, which in Cheshire often lies over the sand rock. Down this watercourse runs a torrent in heavy rains, but it is quite dry in summer, unless dammed up. On the sloping banks of this, close above the house, there formerly stood ranges of cow-houses and pig-sties, which drained into a stagnant pond in the bed of the watercourse within twenty yards of the bed-room windows. Twenty-five years ago it was drained, the watercourse confined within a covered culvert; and the whole space is now covered all summer with a dense forest of herbaceous plants—every ornamental kind which will thrive in the cold and damp soil on which the house stands being cultivated there.

STONELANDS, SUSSEX.—It is pleasant to get out of the conventional and there are many ways of doing this. Generally gardens are out of all sympathy with the surrounding country; that is to say, the usual arrangement of our gardens is so stereotyped, that it is rare to find anything in them which is suggestive of the country around, as there might well be. The landscape and sylvan beauty of a pretty country might often be reflected, so to say, in the home landscape. It might indeed often tell us what to do as regards grouping, and kinds of trees and the natural character of the ground even give hints as to ground work in gardens. Among gardens in the southern country, Stonelands is characteristic of the woodland district of Sussex, and pretty, with its groups of Scotch Firs behind the house and in intimate connection with the farm buildings near. The house, too, is pretty and of a good Sussex kind with bright sunny windows, stone, pretty in colour, big chimneys, simple, and right in all ways as regards the building. There is a small terrace which is made necessary by the slope of the ground, and the wall of which also cuts off the house from the road to the farm buildings near. The effect, near, or far is very pretty. Stonelands is a fifteenth-century house, of the history of which nothing can be gleaned. It is probably of about the same

Stonelands (south side), Manor House garden.

period as Wakehurst and other houses in the neighbourhood, and was occupied by yeomen till of recent years.

GOLDER'S HILL.—Places where the simple and essential conditions for beauty in planting and design are understood or illustrated are far too rare, and it is all the more pleasing to meet with an example of artistic treatment of a garden almost in London, on the western border of Hampstead Heath. As regards design and views, it is the prettiest of town gardens, and the conditions of its beauty are so simple that there is little to be said about them. An open lawn there is, rolling up to the house ; groups of fine trees, and wide and distant views over the country.

A sunken fence separates the lawn from some park-like meadow with fine Oaks and Firs ; and beyond, the country north of London opens up, without any building visible on either side or in the foreground. From almost every other point of view these trees seem to form a picturesque group, and afford a welcome shade in summer. The whole of the front of the house, it must be understood by those who have not the opportunity of seeing the place, is an open lawn, which one can step on to at once without any *impedimenta* of the kind usual in such places. Being on a gentle rise, the ordinary landscape gardener would no doubt have urged this as a reason for making some kind of fortification in the shape of walls, which would have destroyed the repose, verdure, and the freedom of the spot.

Now the only drawback—if drawback it be to such perfect freedom and breadth of airy foreground—is the fact that it offers a continual temptation to unthinking people to dot it over with flower-beds, or to allow evergreen trees to be planted over it. Many places, originally well laid out, are spoiled by this thoughtless dotting about of objects of poor form. The question of flowers is the greatest difficulty, because people are so well accustomed to have all their flowers gathered in front of the house, that if abundant provision is not made for them elsewhere, the carpet is apt, some day or other, to be dissected into a number of ugly flower-beds. The best way to guard against this is to provide abundance of simple beds elsewhere; which half seen peeping through the trees, or met with in groups here and there at no great distance from the house, may afford better effects than if all the beds are stereotyped under the windows. Thus where the foreground is a pleasant lawn, it is often well to have other sites for the flower garden ; and good large beds or groups of beds, in which special subjects can be grown, as they are never grown in the ordinary flat flower garden, which leads to uniformity in height and otherwise. To have here a group of large beds, simple in outline, with Roses and smaller plants surfacing the ground ; next in some

Lawn garden at Golder's Hill

isolated nook, large beds of Lilies, separated by a group of low shrubs and flowering Yuccas from a few beds of hardy flowers ; then a varied flower garden partially cut off and embowered by trees—these and the like are in certain situations better than the stereotyped floral rug which is spread before the door.

Iris border at Tresserve.

CHAPTER IV.

BORDERS OF HARDY FLOWERS.

WE now come to the flowers that are worthy of a place in gardens and to consider ways of arranging them. Their number and variety

A mixed border of hardy flowers.

being almost without limit, the question is, how the garden lover is to enjoy as many of these treasures as his conditions allow of. As during all time a simple border has been the first expression of flower garden-

ing, and as there is no arrangement of flowers more graceful, varied, or capable of giving more delight, and none so easily adapted to almost every kind of garden, some ideas of the various kinds of borders of hardy flowers mainly deserve our first consideration.

The difference between the expense of growing hardy flowers and tender ones should be thought of. The sacrifice of flower gardens to plants that perish every year has often left them poor of all the nobler plants. We must take into account the hothouses, the propagation of plants by thousands at certain seasons, the planting out at the busiest and fairest time of the year—in June, the digging up and storing in autumn, the care in the winter.

Perhaps the most striking effects from individual plants ever seen in England were Japanese Lilies grown for years in the open air by Mr. M'Intosh among his Rhododendrons at Weybridge Heath. And not only Lilies; but many noble flowers may be grown in the same simple way. A few years ago we saw only dense masses of Rhododendrons; now the idea of growing this shrub with the finer hardy plants has spread. It means more room to show the form of the shrubs, and more light and shade; mutual relief of shrub and plant; colonies and groups of lovely plants among the shrubs. Good preparation and some knowledge of plants are needed, but no necessity whatever for any system that may not be called permanent.

There are a number of things which, given thorough preparation at first, it would be wise to leave alone for some years at a time—as, for example, groups or beds of the various Tritomas, Irises, Lilies, Pæonies, the free-flowering Yuccas Narcissi—these and many more, either grouped with others or in families. When all these exhaust the ground or become too crowded, by all means move them and replant, but this is a very different thing from moving all the plants in the flower garden twice a year.

It would be better every way if, so far as the flower garden is concerned, gardeners were to see what could be done unaided by the hothouse; but meanwhile the wise man will reduce the expense of glass, labour, fire, repairs, paint, pipes, and boilers to something like reasonable proportions. In presence of the wealth of our hardy garden flora, the promise of which is now such as men never expected a few years ago, no one need doubt of making a fair flower garden from hardy plants alone.

THE TRUE WAY to make gardens yield a return of beauty for the labour and skill given them is the permanent one. Choose some beautiful class of plants and select a place that will suit them, even as to their effect in the garden landscape. Let the beds be planted as permanently and as well as possible, so that there will remain little to do for years. All plants may not lend themselves to this permanent

Borders at Broadway, Worcestershire. From a picture in possession of the author.

plan, but such as do not may be grown apart—for instance, the Poppy, Anemones, Turban and Persian Ranunculuses, Carnations, Stocks, Asters, and the finer annuals. But a great many delightful plants can be planted permanently, and be either allowed to arrange themselves, to group with others, or to grow among peat-loving shrubs which, in many places, are jammed into pudding-shaped masses void of form or grace, or light and shade.

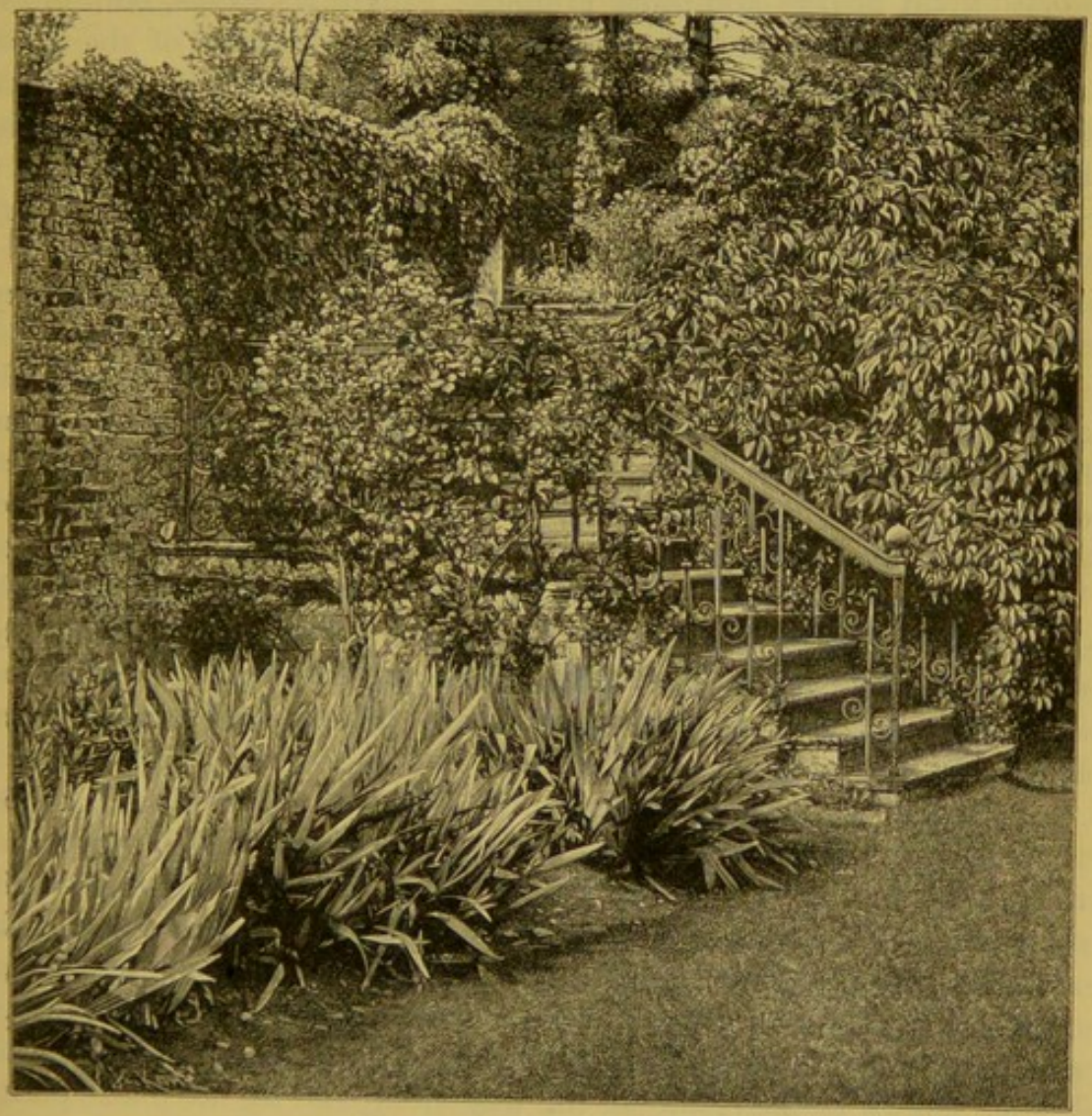
One of the best reforms will be to avoid the "rug pattern," and adopt simple beds, placed singly or in groups, in positions suited to the plants they are to grow. These can best be filled permanently, because the planter is free to deal with them in a bolder and more artistic way than if he has to consider their relation to a number of small beds. In this way, also, the delight of flowers is much more keenly felt as one sees them relieved, sees them at different times, and to more advantage than the flowers stereotyped under the window. Roses—favourites with everybody—grouped in their different classes, and not trained as standards, would lend themselves admirably to culture with other things—moss Roses growing out of a carpet of double Primroses, and Tea Roses with Carnations. Then there are many groups made by the aid of the finer perennials themselves, such as the Delphiniums and Phloxes, by choosing things that would go well together. Other plants, such as Yuccas, of which there are now various beautiful kinds, are often best by themselves; and noble groups they form, whether in flower or not. The kinds of Yucca that flower very freely, such as Y. recurva and Y. flaccida, lend themselves to grouping with Flame Flowers (Tritoma) and the bolder autumn plants.

No plan which involves expensive yearly efforts on the same piece of ground can ever be satisfactory. All garden plants require attention, but not annual attention. The true way is quite different—the devotion of the skill and effort to fresh beds and effects each year. It does not exclude summer "bedding," but includes lovely and varied aspects of vegetation far beyond that attainable in summer "bedding," and attempts to make the garden artistically beautiful. It also helps to make the skill of the gardener effective for lasting good, and prevents its being thrown away in annual fireworks. There can be no gardening without care; but is there not a vast difference between some of the beds and groups just mentioned and those which disappear with the frosts of October, and leave us nothing but bare earth?

The main charm of bedding plants—that of lasting in bloom a long time—is really a drawback. It is the stereotyped kind of garden which we have to fight against; we want beautiful and changeful gardens, and should therefore have the flowers of each season. Too short a bloom is a misfortune; but so is too long a

bloom, and numbers of hardy plants bloom quite as long as can be desired.

There is nothing whatever used in bedding out to be compared in colour, form, or fragrance with many families of hardy plants. There is no beauty among bedding plants at all comparable with that of Irises, Lilies, Delphiniums, Evening Primroses, Pæonies, Carnations, Narcissi, and a host of others. Are we to put aside or into the back-



Iris border in lower garden at Bulwick.

ground all this glorious beauty for the sake of a few things that merely give us flat colour? No one who knows even to a slight extent what the plants of the northern and temperate world are can admit that this sort of gardening should have the first place. There is nothing among "carpet" plants equal to Windflowers in many kinds, flowering in spring, summer, and autumn; Torch Lilies, superb in autumn: Columbines; Harebells; Delphiniums; Day Lilies; Everlasting Peas;

Evening Primroses, Pæonies ; Phloxes ; Ranunculus, double and single, and the many fine species ; all the noble autumn-blooming, Daisy-like flowers ; Scabious ; plumy Spiræas ; Globe Flowers ; Lilies, in noble variety ; Polyanthus ; Primroses ; Auriculas ; Wallflowers ; Meadow Saffrons ; Crocuses, of the spring and autumn ; Scillas ; Gladioli ; Snowflakes ; Grape Hyacinths ; Narcissi, in lovely variety ; Tulips, the old florists' kinds, and many wild species ; Yuccas ; Carnations and Pinks ; Dielytras ; Cornflowers ; Foxgloves ; Stocks ; Starworts ; great Scarlet and other Poppies ; Christmas Roses, both of the winter and spring ; Forget-me-nots ; Pansies and many of the Rock of the mountains of Europe—from the Alps to the hills of Greece, cushioned with Aubrietia, and skyblue wind-flowers—all hardy as the Docks by the frozen brooks.

FLOWER BORDERS FRINGING SHRUBBERIES.—A frequent way in which people attempt to cultivate hardy flowers is in what is called the "mixed border," often made on the edge of a shrubbery, the roots of which leave little for the flowers.

The face of a shrubbery should be broken and varied ; the shrubs should not form a hard line, but here and there they should come full to the edge and finish it. The variety of positions and places afforded by the front of a shrubbery so arranged is delightful, but it is generally best to use plants which do not depend for their beauty on high culture—which, in fact, fight their way among shrubs —and there are a great many of them, such as the evergreen Candytufts, the large-leaved Rockfoils, Acanthus, Day Lilies, Solomon's Seal, Starworts, Leopard's Banes, Moon Daises, and hardy native Ferns.

A scattered, dotty mixed border along the face of a shrubbery gives a poor effect, but a good one may be secured by grouping the plants in the open spaces between the shrubs, making a careful selection of plants, each occupying a bold space. Nothing can be more delightful than a border made thus ; but it requires knowledge of plants, and that desire to consider plants in relation to their surroundings which is never shown by those who make a "dotty" mixed border, which is the same all the way along and in no place pretty. The presence of tree and shrub life is a great advantage to those who know how to use it. Here is a group of shrubs over which we can throw a delicate veil of some pretty creeper that would look stiff and wretched against a wall ; there a shady recess beneath a flowering tree : instead of planting it up with shrubs in the common way, cover the ground with Woodruff, which will form a pretty carpet and flower very early in the year, and through the Woodruff a few British Ferns ; in front of this use only low plants, and we shall thus get a pretty little vista, with shade and a pleasant relief. Next

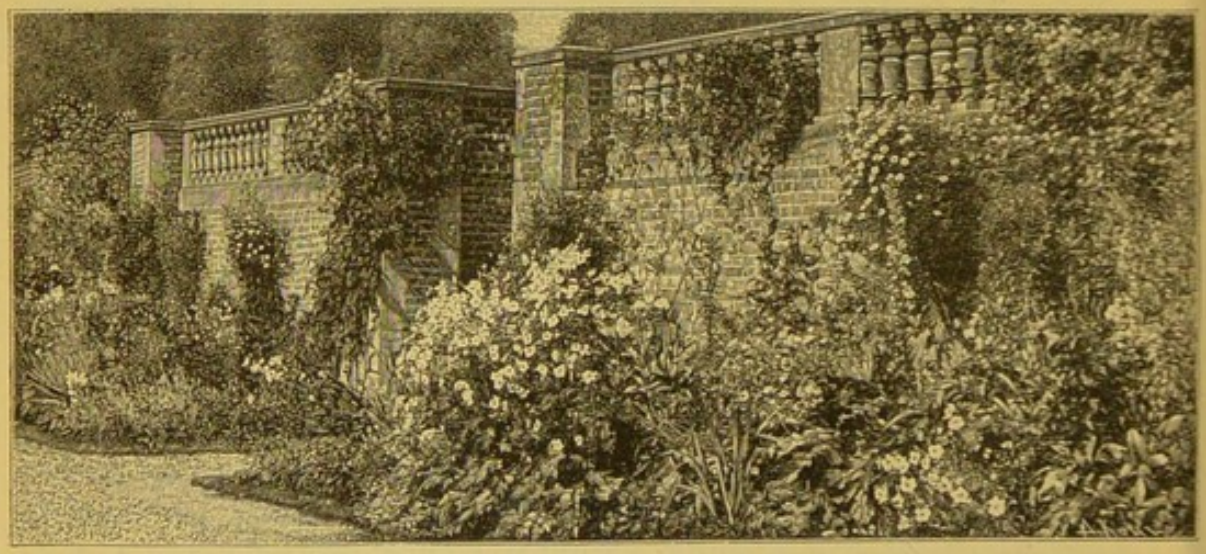
we come to a bare patch on the margin. Cover it with a strong evergreen Candytuft, and let this form the edge. Then allow a group of Japan Quince to come right into the grass edge and break the margin; then a large group of broad-leaved Saxifrage, receding under the near bushes and trees; and so proceed making groups and colonies, considering every aid from shrub or tree, and never using a plant of which we do not know and enjoy the effect.

This plan is capable of much variety, whether we are dealing with an established and grown shrubbery, or a choice plantation of flowering Evergreens. In the last case, owing to the soil and the neat habit of the bushes, we have excellent conditions in which good culture is possible. One can have the finest things among them—if the bushes are not jammed together. The ordinary way of planting shrubs is such that they grow together, and then it is not possible to have flowers between them, nor to see the true form of the bushes, which are lost in one solid leafy mass. In growing fine things—Lilies or Cardinal Flowers, or tall Evening Primroses—among open bushes we may form a delightful garden, we secure sufficient space for the bushes to show their forms and we get light and shade among them. In such plantations one might have in the back parts "secret" colonies of lovely things which it might not be well to show in the front of the border, or which required shade and shelter that the front did not afford.

BORDERS BY GRASS WALKS IN SHADE OR SUN.—It is not only in the flower garden where we may have much beauty of flower, but away from it there are many places better fitted for growing the more beautiful things which do not require continual attention. Unhappily, the common way of planting shrubberies has robbed many Grass walks of all charm. The great trees, which take care of themselves are often fine, but the common mixed plantation of Evergreens means death to the variety and beauty of flower we may have by Grass walks in sun or shade. The shrubs are frequently planted in mixtures, in which the most free-growing are so thickly set as soon to cover the whole ground, Cherry Laurel, Portugal Laurel, Privet, and such common things frequently killing all the choicer shrubs and forming dark heavy walls of leaves. Some of these Evergreens, being very hungry things, overrun the ground, rob the trees, and frequently, as in the case of the Portugal Laurels, give a dark monotonous effect while keeping the walks wet, airless, and lifeless.

Light and shade and the charm of colour are impossible in such cases with these heavy, dank Evergreens, often cut back, but once one is free of their slavery what delightful places there are of growing all hardy flowers in broad masses, from the handsome Oriental Hellebores of the early spring to the delicate lavenders of the

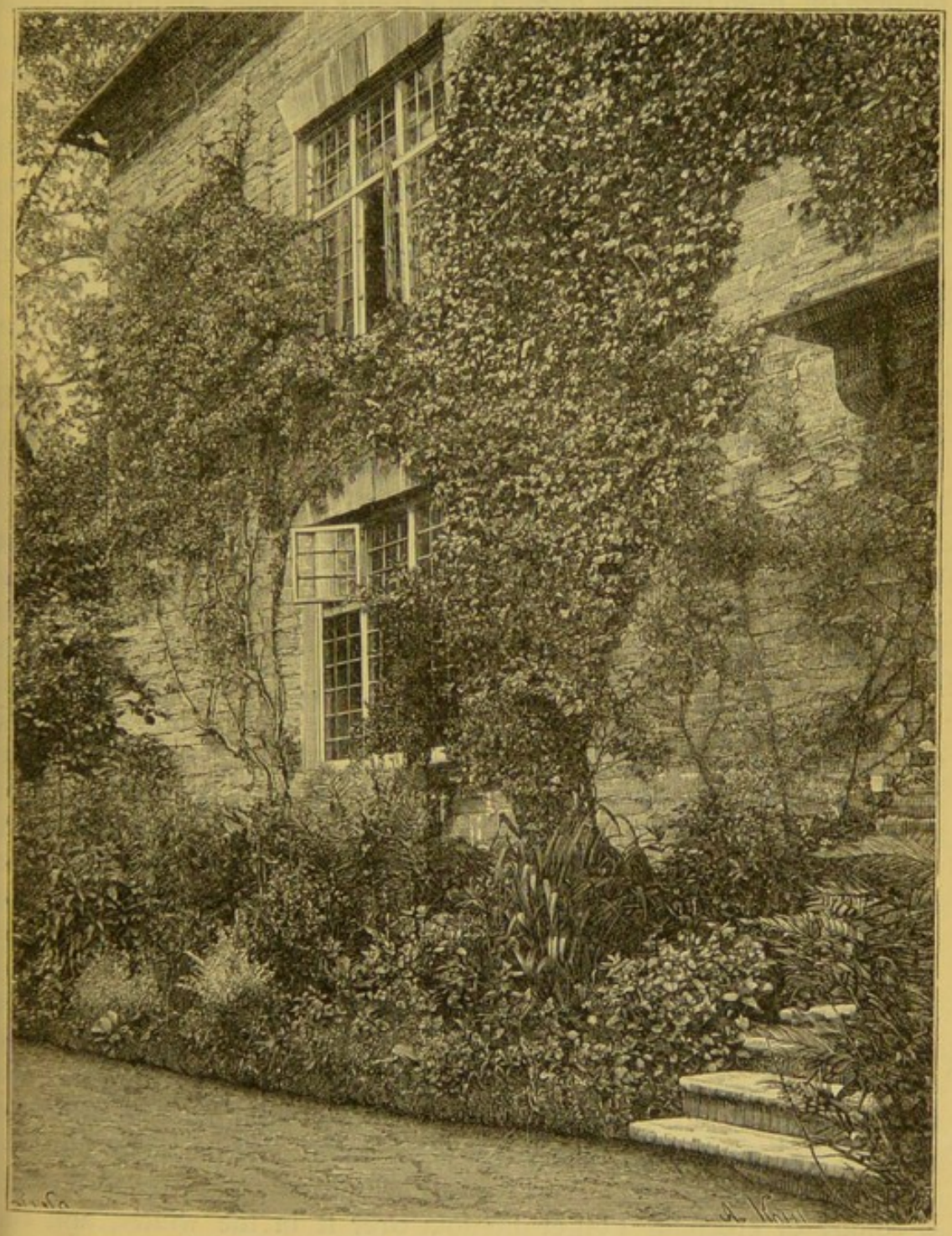
Starworts in October. Not only hardy flowers, but graceful climbers like the wild Clematis, and lovely corners of light and shade may be made instead of the walls of sombre Evergreens. If we want the ground green with dwarf plants, we have no end of delightful things in the Ivies and other Evergreens like Cotoneaster. There is no need for the labour and ugliness of clipping. I have seen places with acres of detestable clipped Laurels, weary and so ugly! With all these grubbed and burnt, what places, too, for such beautiful things as the giant Fennels with their more than Fern-like grace, and all our strong, hardy Ferns which want no rocks, with Solomon's Seal and Foxgloves among them. Such walks may pass from open spaces into half-shady ones or through groves of old Fir or other trees, and so give us picturesque variety apart from their planting with flowers.



Flower border against wall at Sidbury Manor.

FLOWER BORDERS AGAINST WALLS AND HOUSES.—In many situations near houses, and especially old houses, there are delightful opportunities for a very beautiful kind of flower border. The stone forms fine background, and there are no thieving tree roots. Here we have conditions exactly opposite to those in the shrubbery; here we can have the best soil, and keep it for our favourites; we can have Delphiniums, Lilies, Pæonies, Irises, and all choice plants well grown. Walls may be adorned with climbers of graceful growth, climbing Rose, Wistaria, Vine, or Clematis, which will help out our beautiful mixed border. Those must to some extent be trained, although they may be allowed a certain degree of abandoned grace even on a wall. In this kind of border we have, as a rule, no contrasts from shrubs, and therefore we must get the choicest variety of plant life into the border itself and we must try to have a constant succes-

sion of interest. In winter this kind of border may have a bare look when seen from the windows, but the variety of good hardy plants is so great, that we can make it almost evergreen by using evergreen



Flower border against house.

rock-plants. Where walls are broken with pillars, a still better effect may be obtained by training Vines and Wistaria along the top and over the pillars or the buttresses.

THE FLOWER BORDER IN THE FRUIT OR KITCHEN GARDEN.—We have here a frequent kind of mixed border often badly made, but which may be delightful. A good plan is to secure from about eight to ten feet of rich soil on each side of the walk, and cut the borders off from the main garden by a trellis of some kind from seven feet to nine feet high. This trellis may be of strong iron wire, or, better still, of simple rough wooden branches. Any kind of rough permanent trellis will do on which we may grow Climbing Roses and Clematis and all the choicer but not rampant climbers. Moreover, we can grow them in their natural grace along the wires or rough branches, or up and across a rustic wooden trellis—Rose and Jasmine showing their grace uncontrolled. We fix the main branches to the supports, and leave the rest to the winds, and we form a fine type of flower border in this way, as we have the graceful climbing plants in contrast with the flowers in the border.

Flower borders may be made in various ways ; but it may be well to bear in mind the following points : Select only good plants ; throw away weedy kinds ; there is no scarcity of the best. See good collections. Put, at first, rare kinds in lines across four-feet nursery beds, so that a stock of plants may be at hand. Make the choicest borders where they cannot be robbed by the roots of trees ; see that the ground is good and rich, and that it is at least two and a half feet deep, so deep that, in a dry season, the roots can seek their supplies far below the surface. In planting, plant in naturally disposed groups, never repeating the same plant along the border at intervals, as is so often done with favourites. Do not graduate the plants in height from the front to the back, as is generally done, but sometimes let a bold plant come to the edge ; and, on the other hand, let a little carpet of a dwarf plant pass in here and there to the back, so as to give a varied instead of a monotonous surface. Have no patience with bare ground, and *cover* the border with dwarf plants ; do not put them along the front of the border only. Let Hepaticas and double and other Primroses, and Saxifrages, and Golden Moneywort and Stonecrops, and Forget-me-nots, and dwarf Phloxes, and many similar plants cover the ground among the tall plants betimes—at the back as well as the front. Let the little ground plants form broad patches and colonies by themselves occasionally, and let them pass into and under other plants. A white Lily will be all the better for having a colony of creeping Forget-me-nots over it in the winter, and the variety that may be thus obtained is infinite.

Thoroughly prepared at first, the border might remain for years without any digging in the usual sense. When a plant is old and rather too thick, never hesitate to replant it on a wet day in the middle of August any more than in the middle of winter. Take it

up and put a fresh bold group in fresh ground; the young plants will have plenty of roots by the winter, and in the following spring will flower much stronger than if they had been transplanted in spring or in winter. Do not pay much attention to labelling; if a

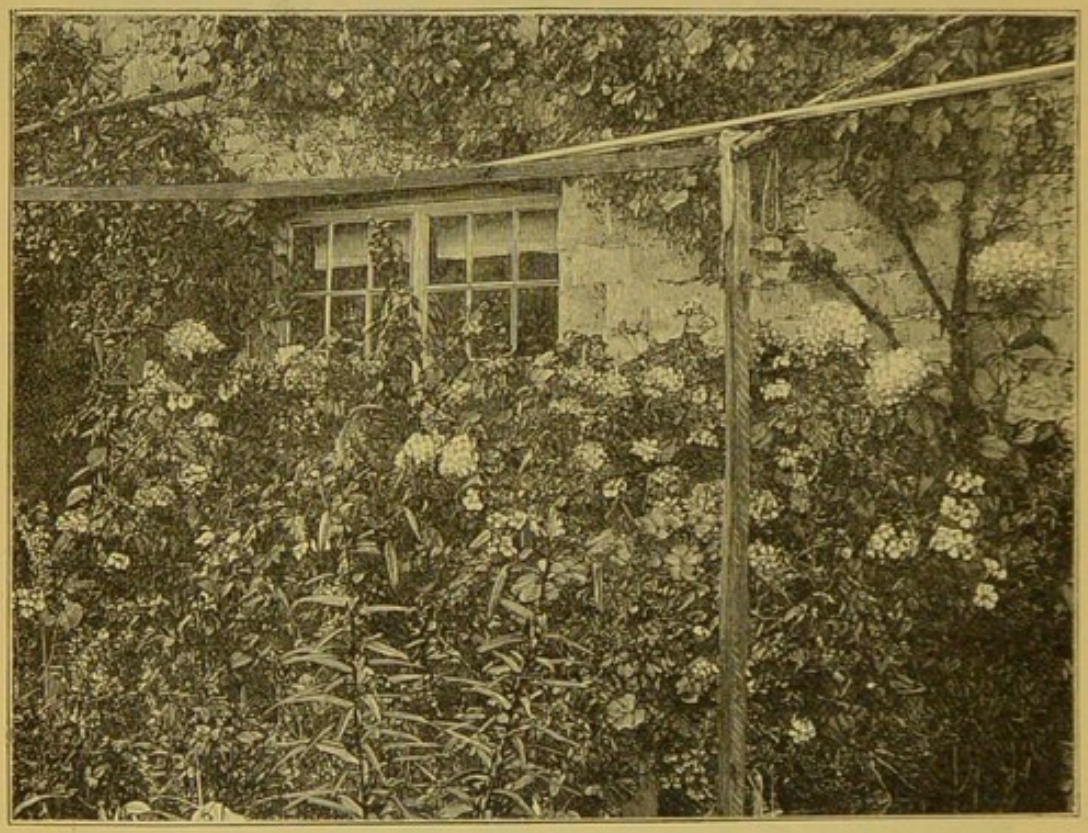
Portion of group of Pink Japan Anemone in flower border at Mirehouse, Keswick.

plant is not worth knowing, it is not worth growing; let each good thing be so bold and so well grown as to make its presence felt.

MR. FRANK MILES ON THE FLOWER BORDER.—Among the first to see the merits of naturally carpeting beds, and who made the border suggested in my *Hardy Flowers*, was the late Mr. Frank

Miles, the artist, and an excellent flower gardener. His own account of his work I give here.

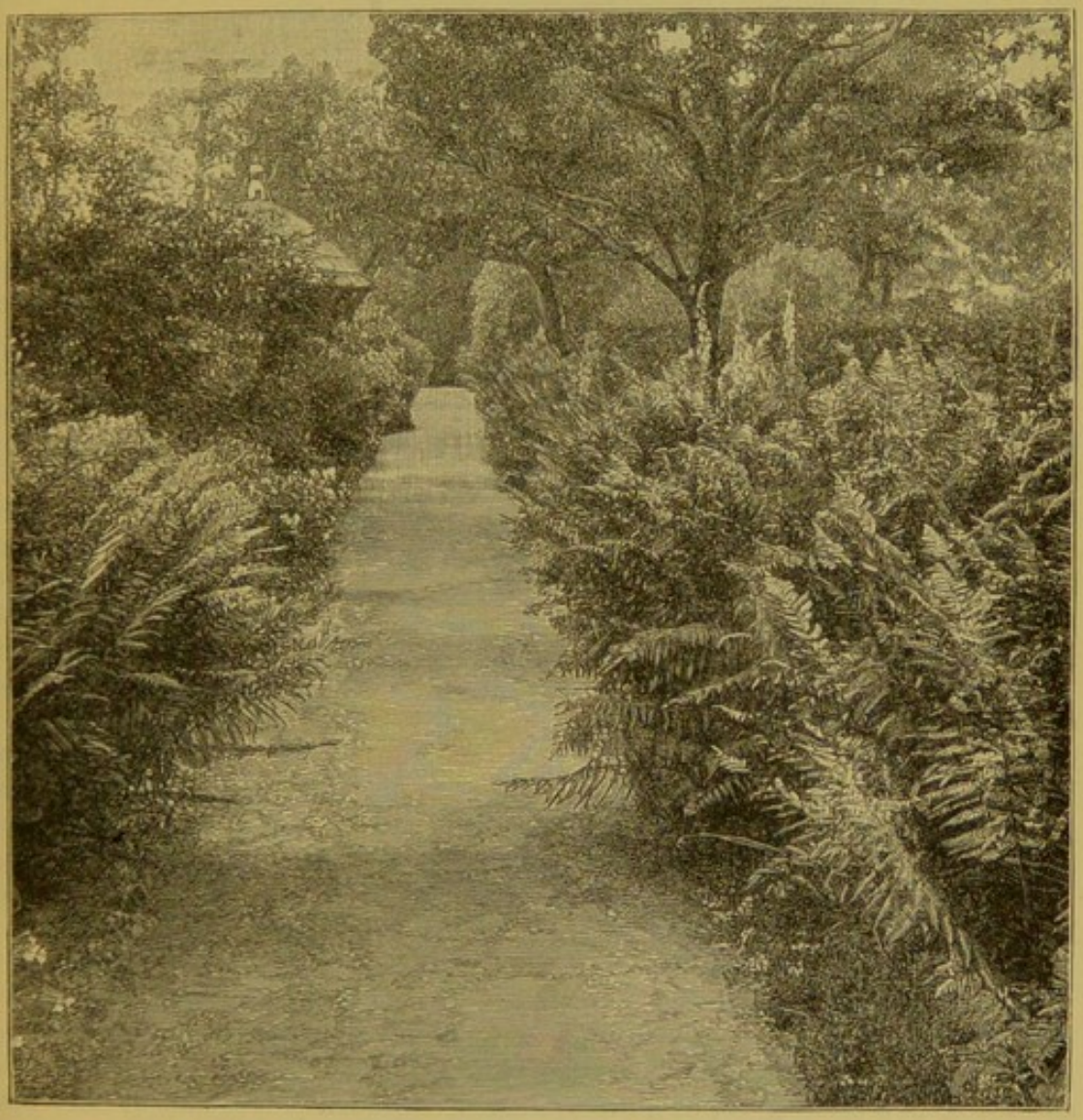
If we are to have mixed borders of herbaceous plants, one thing is quite certain—we can never go back to the borders of our ancestors, in which every plant had a bare space of ground round it. In the spot where once a plant had bloomed, there was an end for the year of any flowers. Now a yard of ground should have bloom on it at least eight months in the year, and this applies to every yard of ground in a really good mixed border. I am certain that, once a border is well made, it need not be dug up at all. But the question is—what is a well-made border? I think a border is not well made, or suitable for growing the most beautiful plants to perfection, unless it is as well made as a Vine border



Flowers at the window without intervening walk.

in a vinery. Why we should not take as much trouble with the garden border as the border of a conservatory I cannot imagine, seeing that Lilies will grow 11 feet high in the open air, not less than 10½ inches across the flower, and Irises little less than that. The more I garden the deeper I get my drainage, and the fuller of sand and fibre my soil. I consider, first, that a border must have a bed of broken bricks or other drainage, with ashes over that, to prevent the drainage from filling up; secondly, that that bed of drainage must have 2 feet of light soil over it; thirdly, that that soil must have equal parts of sand, soil, and vegetable matter. A soil of these constituents and depth is never wet in winter and never dry in summer. During the dry weather I found soil like this, in which quantities of auratum Lilies were growing, to be quite moist an inch below the surface, and I know in winter it always appears dry compared with the natural garden soil.

But, for all practical intents and purposes, every 6 inches of ground could contain its plant, so that no 6 inches of bare ground need obtrude on the eye. Almost any kind of bare rock has a certain beauty, but I cannot say bare ground is ever beautiful. Well, supposing the back of the border filled with Delphiniums, Phloxes, and Roses, pegged down, and other summer and autumn-blooming plants, and supposing the border to be made as I have described it, I should carpet the ground at the back with spring-blooming flowers, so that when the Roses are bare and the Delphiniums and Phloxes have not pushed above ground, the border should



A Fern border with flowers here and there.

even then be a blaze of beauty. Crocuses, Snowdrops, Aconites, and Primroses are quite enough for that purpose. The whole space under the Roses I should cover with the Common Wood Anemone, and the golden Wood Anemone, and early Cyclamens, and the earliest Dwarf Daffodils. And among the Roses and Pæonies and other medium-sized shrubs I would put all the taller Lilies, such as require continual shade on their roots; and such as pardalinum and the Californian Lilies generally, the Japanese, Chinese, and finer American Lilies. Now we come more to the front of the border, and here I would have com-

binations, such as the great St. Bruno's Lily and the delicate hybrid Columbines, Primroses planted over hardy autumn Gladioli, so that when the Primroses are at rest the Gladioli should catch the eye: Carnations and Daffodils, planted so that the Carnations form a maze of blue-green for the delicate creams and oranges of the Daffodils. When the Daffodils are gone there are the Carnations in the autumn. A mass of Iberis correæfolia happens to have been the very best thing possible for some Lilium Browni to grow through, for the Iberis flowered early and then made a protection for the young growth of the Browni, and then a lovely dark green setting for the infinite beauty of the Lily flowers. As for saying that this cannot be done, I say that it is nonsense, for the Iberis flowered beautifully under such circumstances, and the Lilies too. If once you get it into your head that no bit of ground ought ever to be seen without flowers or immediate prospect of flowers, heaps of combinations will immediately occur to those conversant with plants and the deep-rooting habits of most bulbs and the surface rooting of many herbaceous plants—for instance, Colchicums and Daffodils, with a surface of Campanula pusilla alba. The big leaves of the Colchicum grow in spring, and there would be nothing but leaves were it not for the masses of Daffodils. By and by the leaves of the Colchicums and Daffodils are dry enough to pull away, and then the Campanula, be it pusilla, pusilla alba, or turbinata alba, comes into a sheet of bloom. Before the bloom has passed away the Colchicum blooms begin to push up, and as some of my Colchicums are 5 inches across, of the richest rose colour, I do not exactly feel that this is a colourless kind of gardening, and as I have a hundred different kinds of Daffodils, this little arrangement will not be without interest in spring.

THE DAFFODILS and Colchicums root deeply and grow mostly in winter, requiring water then, and not in summer, when the Campanula carpet is taking it all. There are some, however, which one must be careful about—the common white Lily, for instance, which wants exposing to the sun in the autumn. I do not mind the exquisite French Poppies among these candidum Lilies, because the Poppies die about August, and then the Lilies get their baking and refuse to show the bare earth, soon covering it all with their leaves. For the extreme front of the border hundreds of combinations will occur—Pansies over Daffodils, Portulacas over Central Asian bulbs, Christmas Roses and Hellebores over the taller Daffodils, with Gladioli, Tritomas, and giant Daffodils, Hepaticas, and autumn-blooming and spring-blooming Cyclamens, with Scillas and Snowdrops. When Anemone japonica is low, up come the taller Tulips, sylvestris for instance, and higher still out of the dark green leaves come the bejewelled Crown Imperials.

As for the cultural advantages, I can imagine this system in the hands of a skilful gardener to be the best of all. In the first place, the plants suffer much less from drought, because there is so much less surface exposed to sun and wind. Examine, not right under the root, but under the spreading part of a Mignonette, and see if, on a broiling hot day, the ground is not much cooler and moister than on the bare ground. Irises are almost the only plants I know of that do require the soil bare about their rootstocks, but then Irises are a carpet of green always, and a few clumps of Tiger Lilies or Tiger Irises will not seriously injure their flowering prospects. And what cannot be done with an herbaceous border edge when that edge is the green Grass? Crocuses and Crocuses all the autumn and winter and spring in the Grass. The tiniest Scillas, and Hyacinths, and Daffodils, and Snowdrops are leading into the border without any break. So I believe, and I think many others will believe by and by, that every bulbous plant ought to be grown in combination with something else, as Amaryllis Belladonna, for instance, which I plant with Arum italicum pictum. In spring the Arum comes up extremely early, and its leaves protect the far more delicate leaves of the Amaryllis

Border of Delphiniums in the garden at Hall Green, showing effect of grouping hardy flowers instead of "dotting." Engraved from a photograph.

till they are growing freely and the Arum dies down. The ground is surfaced with Violets, so that the Belladonnas are now coming into bloom, not with the bare ground but with a setting of Violet leaves in beautiful contrast with their pink blossoms. Christmas Roses of all kinds would probably be a more beautiful setting still, but the Belladonnas want a good deal of summer drying up, which the Hellebores could not stand so well.

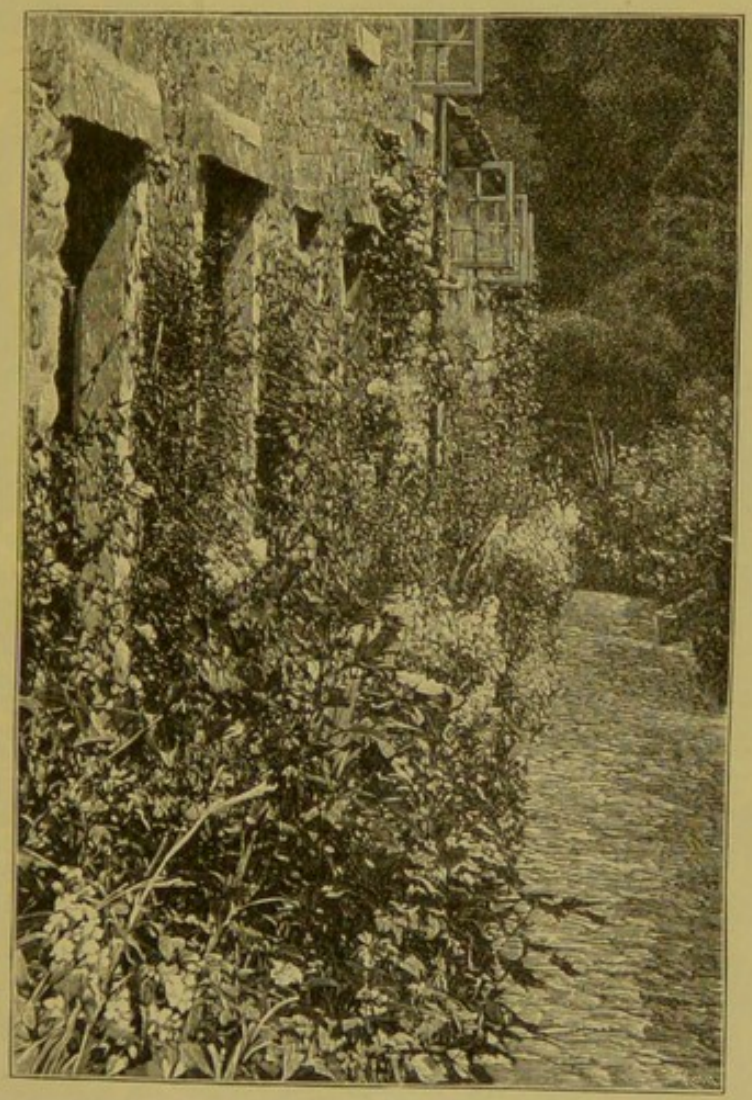
WE CAN NEVER GO BACK to the mixed border of our ancestors; we have been spoilt for such blank, flowerless spaces as they had by the gorgeousness of bedding out. But we have now a wealth of hardy plants, especially bulbs, which they never had, and this combination of bulbous plants and herbaceous plants will certainly lead to a preparation of the borders which has been hardly dreamt of by people who do not care what they spend on tropical flowers; for it seems to be forgotten that we have Irises as big as a plate and Lilies as tall as a tree, all hardy and requiring little attention when once they have been properly planted. The time that used to be spent year after year in digging acres of borders might now be spent in properly making or re-making a few yards of border, till the whole outdoor borders are as exactly suited for the growth of plants to the uttermost perfection—as many as possible being put in the given space—as the borders of a large conservatory. It is in such a border as this that we attain the utmost variety, unceasingly beautiful, every yard different, every week varying, holding on its surface at least three times the value of plant life and successional plant beauty of any ordinary garden. The chief enemy to the system is the slug; but while the Belladonna Delphinium, which is usually half eaten by slugs in most gardens, grows 6 feet high with me, I am not going to give up my system.

One of the prettiest garden borders I know is against a small house. Instead of the walk coming near the windows, a bed of choice shrubs, varying from 9 feet to 15 feet in width, is against the house. Nothing in this border grows high enough to intercept the view out of the windows on the ground floor, from which were seen the flowers of the border and a green lawn beyond. Among the shrubs were tall Evening Primroses, and Lilies, and Meadow Sweets, and tall blue Larkspurs, which after the early shrubs have flowered bloom above them. The ground is always furnished, and the effect is good, even in winter.

The way so well described by Mr. F. Miles, and which he carried out admirably in his father's garden at Bingham—one of the few really lovely mixed borders I have seen—is to some extent that carried out in many pretty cottage gardens, owing to the plots being stored with all sorts of hardy flowers; those are the cottage gardens where one often sees a charming succession of flowers.

EVERGREEN BORDERS OF HARDY FLOWERS.—The plants of the older kind of mixed border were—like the Grasses of the meadows of the northern world—stricken to the earth by winter, and the border was not nearly so pretty then as the withered Grass of the plain or copse. But since the revival of interest in hardy and Alpine flowers and the many introductions of recent years, we have a great number of beautiful plants that are evergreen in winter and that enable us to

make evergreen borders. The great white blanket that covers the north and many mountain ranges in winter protects also for months many Alpine plants which do not lose their leaves in winter, such as Rockfoils, Stonecrops, Primroses, Gentians, and Christmas Roses. The most delicate of Alpine plants suffer when exposed to our winter from excitement of growth, to which they are not exposed in their own home, but many others do not mind our winters much, and it is easy



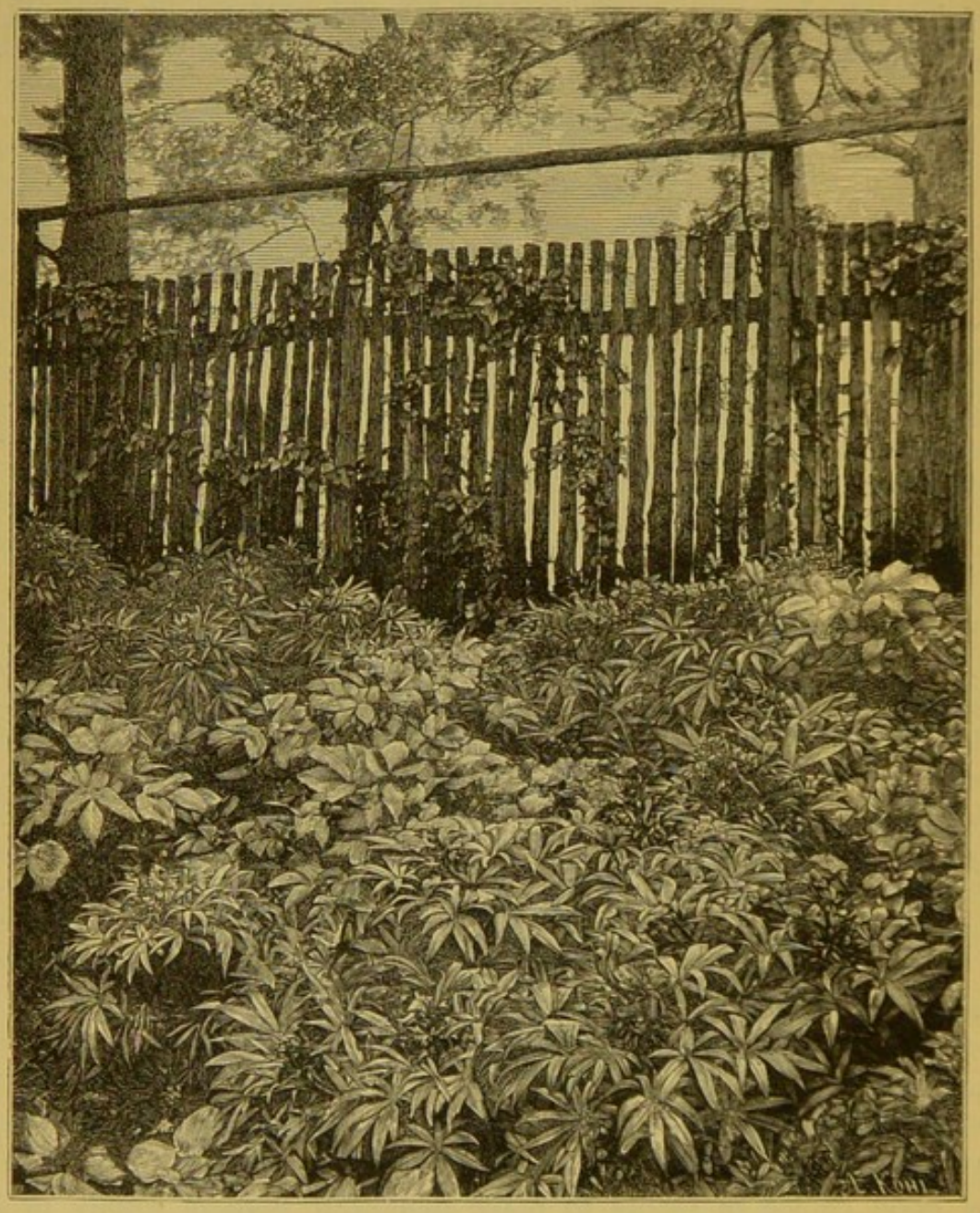
A cottage garden border with old double Rockets. From a photograph by Mr. S. W. Fitzherbert.

by good choice of plants to make delightful borders wholly or in greater part evergreen.

These are not only good as evergreens, but they are delightful in colour, many being beautiful in flower in spring, and having also the charm of assuming their most refreshing green just when other plants are dying in autumn. Along with these rock and herbaceous plants we may group a great many shrublets that come almost between the true shrub and the Alpine flower—little woody evergreen creeping

things like the dwarf Partridge Berry, Canadian Cornel, hardy Heaths Sand Myrtles, often delightful in colour when grouped.

Among these various plants we have plenty for evergreen borders, and this is important, as, while many might object to the bare earth



Evergreen hardy flowers in waste corner.

of the ordinary border of herbaceous plants near the house or in other favourite spots, it is different with borders of evergreen plants, which may be charming and natural in effect throughout the year.

Of garden pictures, there are few prettier than Crocus, Snowdrops, or Scilla coming through the green, Moss-like carpets in these ever-

green borders, far prettier to those who love quiet and natural colour than more showy effects. Often narrow evergreen borders are the best things that can be placed at the foot of important walls, as the way of allowing Grass to go right up to the walls is a foolish one, and often leads to injury to the wall trees. A narrow border (18 inches will do), cut off with a natural stone edging from the Grass or walk, is best: even a border of this size may have many lovely things, from early Cyclamen to the rarer Meadow Saffrons in the autumn. Besides the flowers already named, we have Violets, Periwinkles, Yuccas, Carnations, Pinks, white Rock Cress, Barrenworts, charming in foliage, purple Rock Cresses, Omphalodes, Iris, Acanthus, Indian and other Strawberries, Houseleeks, Thymes, Forget-me-nots, Sandworts, Gentianella, Lavender, Rosemary, hardy Rock Roses, and many native and other hardy evergreen Ferns in all their fine variety; these are an essential aid in the making of evergreen borders.

CHAPTER V.

THE RESERVE AND CUT-FLOWER GARDENS.

NOTHING is more unfortunate in gardens than the way in which plants of all kinds are huddled together without regard to fitness for association in stature, in time of blooming, or in needs of culture. The common scene of confusion is the shrubbery border, into which Carnations, annuals, Alpine flowers, and rampant herbs are often thrown, to dwindle and perish. There is no shrubbery border that could not be made beautiful by carpeting it with wood and copse plants of the northern world in broad groups, but many of our favourite flowers are not wood plants, and many—for example, Carnations—cannot maintain the struggle against the bushes and trees.

Another series of vigorous perennials requires isolation if we want their fullest beauty, as the Lilies, Irises, and Pæonies, though Lilies will certainly do among bushes in peat soil. Of all causes which tend to make the garden unsatisfactory, this inconsiderate placing of many things along the fringes of the garden shrubbery is the chief. *Hardy plants should be divided into two broad series at least—those which thrive in and near woody growth, and those which must perish there.* The Solomon's Seal and the blue Apennine Anemone are types of plants that one may grow in any shady place: Carnation, Pink, Auricula represent the flowers which must have good soil and be kept away from tree roots.

One good plan that all can follow is the growing of various lovely plants for their own sakes, without heed to their place in any design, but not in any kind of "mixed border" or in other mixed arrangements. Many important families of hardy flowers are worthy of special culture, and good results cannot be got without it. Whether we grow Carnations, Pinks, Pansies, Phloxes, Lilies, Stocks, double

Wallflowers, Cloves, or tall scarlet Lobelias, in every case they ought to have separate attention. Even an annual, such as the Rhodanthe or a beautiful Grass, it is not easy to succeed with unless it has a fair chance, away from the confusion of the ordinary mixed border.

This special culture of favourite flowers is possible either in the beds of the flower garden or in a plot of ground set aside for simple beds of the choicer flowers.

A good way is to have a piece of ground in or near the kitchen garden or any other open position, sheltered, but not shaded. Such ground should be treated as a market gardener would treat it—well enriched, and open. It can be thrown into four-foot beds, and the

Portion of bed of White Trumpet Lily (Lilium Longiflorum).

little pathways need not be gravelled or edged, but simply marked out with the feet. With the aid of such a division of the garden, the cultivation of many fine hardy plants becomes a pleasure. When the plants get tired of the soil, or require a change, it is easy to make the Carnation bed of past years the bulb one for the next year, and so on. It would be easy to change one's favourites from bed to bed, so that richly feeding plants should follow those of a surface-rooting kind, and thus the freshness of the garden would be kept up. If any edging is used, it should be of thin stone sunk in the earth, as natural stone edgings are not offensive, troublesome, or costly. The abolition of all edgings, beyond one or two main lines through the plot, would tend to

more careful culture, as the whole spot could be so readily attended to. Such a plot is excellent for giving cut flowers in quantity, and is also a great aid as a nursery. It would also be a help to exchanges with friends or neighbours, in the generous way of all true gardeners. The space occupied by it will depend upon the size and wants of the place; but, wherever the room can be spared, an eighth of an acre might be devoted to the culture in simple beds of favourite flowers, and even the smallest garden should have a small plot of this kind.

WHAT TO GROW IN THE RESERVE GARDEN.—Among the fair flowers which in this way may be cultivated, each separately and well, are the delightful old Clove Carnations—white, crimson, and scarlet, as well as many other kinds; the tall and graceful Phloxes, so fair in country gardens in the autumn; the scarlet Lobelias, splendid in colour; Pinks of many kinds, white and coloured, and hybrid; pretty Persian and Turban Ranunculus; bright old garden Anemones, and the finer species of Anemone, like the scarlet A. fulgens; Lilies, commencing with the beautiful old white Lily, and as many as possible of the splendid species introduced into our gardens within the past dozen years from California and Japan; the tall perennial Delphiniums or perennial Larkspurs, with their spikes of lovely blue; the old double Rockets; beautiful Irises, English, Spanish, Japanese, and German; Pansies in great variety, the old Tiger Flowers the beautiful species of Columbine, including the lovely A. cœrulea of the Rocky Mountains and the golden Columbine of the same region; the blue African Lily in various forms, and with it the Belladonna Lily; Pyrethrums, showy and varied; Verbenas, which may be raised from seed during the current year; Chinese Pinks, rich in colour, large, and finely fringed; the old garden Scabious; the blue Cornflower, one of our most precious things; Sweet Williams; Stocks of many kinds; Wallflowers, double and single; the annual Phlox, which has now broken into a fine series of different colours; Zinnias, which, if grown as grown abroad—that is to say, well and singly grown—are very fine in colour and sometimes as large as Dahlias; China Asters, quilled and others; the Sweet Sultan, in two or three forms; showy tricolour Chrysanthemums; Grasses of the more useful kinds, suitable for cutting in winter; Grape Hyacinths; Narcissus in choice variety; Meadow Saffrons, pretty in the autumn; Lilies of the Valley, of which a variety of kinds are now coming into cultivation, differing in length and size of raceme; Crocuses, the autumnal as well as the vernal kinds; the hardy Cyclamens, which are at home on the mountains of Europe and hardy in our own gardens; Dahlias, double and single; Evening Primroses; Pæonies, in splendid variety; Primroses, double

and single, of many kinds; Pentstemon, graceful autumn flowers; Polyanthus, richly coloured vigorous kinds, for borders; Oxlips; Tulips, many early and late kinds; Sweet Violets; American Cowslips; Gladioli, stately flowers of autumn; Christmas Roses; and lastly, Everlasting Flowers, which may be grown with the Grasses, and, like them, be gathered for the house in winter. All these fair flowers deserve special care in the smallest garden, and should not be trusted to the too often ill-tended and ill-cultivated slips called "mixed borders."

In these special gardens for hardy flowers are included the various hardy florists' flowers. The term "florists' flowers" was once applied to flowers supposed to be popular with amateurs and florists, but it had

Christmas Roses in bed in reserve garden.

never any clear meaning. A Rose is a florist's flower; but it is more—it is everybody's flower, and we call it a Rose, having no use for any other term. The reserve garden is the best place to grow flowers for cutting. The enemy in the way of plenty of cut flowers has hitherto been the gardener; but he was limited in his cutting operations to glass-houses, which he naturally wished to have gay. A supply equal to that of a dozen plant houses can be got from an open square in the kitchen garden or any piece of good ground. For eight months there is a continual procession of open-air flowers, which can easily be grown in sufficient quantity to allow the cutting of plenty for every want. A bed or a few lines of each favourite in a patch of good soil would give a great number of flowers, and these, aided by the Roses and other bush and tree flowers about the garden, would

yield all the flowers that the largest house would require, and many besides for hospitals and for those who have not gardens. Flowers grown for cutting should be carefully selected as regards odour, form, and colour. The gardener should do all he can to carry out an idea tending so much to give people pleasure at home, and the smallest country place can afford a spot of ground to grow flowers for cutting. From this and the general open garden collections and the woods and hedgerows, every charm of flower life might be gathered for the house. Here flowers, the most choice and elegant in form, should be brought near the eye, not in coarse, ill-considered jumbles, but each placed where it would look best, and in such a quantity and such simple, well-shaped vessels as best to show its form.

Gardens of One Flower.

Branching away naturally from the reserve garden, with its flowers in formal and close masses, we may have gardens of one hardy flower and its forms, for the purpose of studying a family or adding to it by collecting or cross-breeding. Such gardens now and then owe their existence to the difficulty of cultivating a flower, as was the case of a charming garden of the lovely forms of our native Primrose formed by a friend of mine, who thus describes it :—

"A Primrose Garden.—No flower better deserves a garden to itself than the Primrose. It is so old a favourite, and has been cultivated into so many forms, that any one determined to have a Primrose garden may choose the kind he likes best, and set to work accordingly. There are the single-stalked Primroses, the earliest of all, flowering from the middle of March onwards, while some may be had in bloom as soon as the end of February. They range in colour from pure white to deep primrose, and from palest pinky-lilac through strong red-purples to a colour nearly approaching blue, and there are also rich reds of many shades. There is not as yet any Primrose of a true pink colour, nor, though the type colour is yellow, are there as yet any strong yellows of the orange class. There are also double Primroses in nearly all the same colourings. The florist's Polyanthus, with its neat trusses of small flowers, though beautiful in the hand and indispensable in the good garden of hardy flowers, is not a plant for the Primrose garden, as it makes no show in the mass. The grand Primroses for garden effect are the large bunch-flowered kinds, white, yellow, and orange-coloured, red, crimson, and rich brown ; of infinite variety in form, texture, habit, and colouring, easy to raise to any amount by seed, as also by division of the older plants. A Primrose garden (part of which is here illustrated), that for some years has been an ever-increasing source of pleasure and interest to its owners,

A Primrose garden in small clearing in wood in Surrey.

was formed a few years ago by making a cutting about 70 yards long, and varying from 10 yards to 15 yards wide, through a wild copse of young Birch trees. The natural soil was very poor and sandy, so it was prepared by a thorough trenching and a liberal addition of loam and manure, which has to be renewed every year. No formal walks are made, but one main track is trodden down about 2 feet wide near the middle of the space, dividing into two here and there, where a broader clearing makes it desirable to have two paths in the width. The older divided plants are put into groups of a colour together, from twenty to fifty of a sort. The groups of seedlings are of necessity more various, though they are more or less true to the parent colour, so that a patch of a hundred seedlings —from yellows, for instance—will give a general effect of yellow throughout the group. The whites and yellows are kept at one end of the garden, and the reds at the other; the deepest yellows next to the reds. Seen from a little distance, the yellow and white part of the Primrose garden looks like a river of silver and gold flowing through the copse. The white stems of the Birches and the tender green of their young leaves help to form a pretty picture, which is at its best when the whole is illuminated by the evening sunlight."

Some of the Plants for Reserve Garden and for Cutting Flowers

Carnations	Chinese Pinks	Anemone	Dahlia, in var.
Phloxes	Scabious	Lilies	Pæonies
Scarlet Lobelias	Blue Cornflower	Delphiniums	Pentstemon
Pinks	Sweet Williams	Narcissus	Primroses
Double Rockets	Stocks	China Asters	Polyanthus
Iris, finer kinds	Wallflowers	Campanula	Oxlips
Pansies	Grape Hyacinths	Chrysanthemums	Tulips
Alstrœmeria	Grasses, the more	Meadow Saffrons	Violets
Tigridia	graceful kinds	Lilies	American Cowslips
Columbines	Phloxes	Crinum	Gaillardia
Pyrethrum	Zinnias	Crocus	Gladiolus
Schizostylis	Sweet Sultan	Cyclamen, hardy	Everlasting flowers
Verbenas	Ranunculus	species	Helleborus

CHAPTER VI.

HARDY BULBOUS AND TUBEROUS FLOWERS, AND THEIR GARDEN USE.

At no distant time lists of these things were mostly looked at for the sake of setting a few bulbs to force, but that day is past, at least, for all who now see the great part which hardy bulbous and tuberous plants must take in the outdoor gardens of the future. Since those days the hills of California and of Japan alone have given us a noble lily garden, and the plants of this order in cultivation now form a lovely host. We are not nearly so likely to want novelties as knowledge of how to make effective use of the nobler plants, such as the Narcissus, the glory of the spring, as the Lily is of the summer garden.

We may indeed be often tempted with Zephyr flowers, and Ixias and other plants, beautiful in warmer countries than ours, but delicate here, and only living with us as the result of care which is quite needless, as there are so many lovely things from the mountains and plains of the northern world, and from the mountains in all parts, as hardy as the wild Hyacinths of British woods, so that our search will be more for the nobler materials and how to make artistic use of them than in quest of novelty as such.

Lilies.—It would be fair to begin with the Snowdrop, but we will take the plants in the order of their value; and, having regard to past service and the present beauty of the Lilies, they should take the first place among hardy bulbs. Who of those who remember the Orange and White Lilies of all English and Irish gardens would have looked for the splendid Lilies that have come to us within less than a generation? For size, and form, and lovely colour they surpass all we had ever dreamt of even among tropical flowers. The variety is so great that a volume would be required to describe them; the catalogues give us many of their names. The main thing for all who

care for them is how to possess their beauty with the least amount of care and disappointment; and, happily, the question has been solved for many handsome kinds by planting them in the peat beds that were made at first wholly in the interest of the American shrubs. Some of the finest Lilies thrive admirably in these, and by adding here and there deep leaf-mould, rotten cow manure, and the like, other kinds may be grown, for some Lilies thrive best in such soil. Nor need we neglect the mixed borders because we have new ways for our Lilies, as several of the European Lilies thrive perfectly in ordinary borders. They may be naturalised too, or some of them, in deep moist peat bottoms; for example, the American swamp Lily (L. superbum). The mania for draining everything might even lead to evil in the case of some Lilies which inhabit the cold northern woods, and which do with a very different degree of moisture from that required by the Lilies of California, where the soil in summer is as road dust on a dry hill in summer. Lilies are so varied in their nature and stature that they may adorn almost any aspect in sun or shade. The new and rare among them will have special beds or borders, and we have Lily men and even Lily maniacs who will have Lily gardens. And as these lovely flowers tumble into our lap, as it were, from the woods and hills of Western China, Japan, and California, untouched by man until he found them made to his hand a few years ago, it is reasonable to suppose that some of them would take care of themselves, if trusted in likely spots, with us. I put some of the Panther Lily deep in a leafy hollow in a Sussex wood, just to see if it would survive in such conditions. Whether owing to a series of cold wet seasons and the want of the glorious sun of the hills in Nevada County, California, where I found it, we know not, but after the first season it did not come up. I thought no more of it, but a friend going into the same wood some years afterwards found a colony of it in bloom. So that we must not always cry out if Lilies do not come up, as they have a way of resting for a year now and then.

NARCISSUS.—Next to the Lily in value as an outdoor flower is the Narcissus, though when we know the Iris better it may find a high place. But the wondrous development of the garden forms of Narcissus during recent years, and their fitness for our climate, give it great value. Mountain plants in origin, for the most part they are as hardy as riverside rushes, and those few southern forms that will only live in dry banks and at the foot of warm walls need not concern us who look for pictures of Narcissi in the open air. We have not to ask where the Narcissi will grow, as there are few places they will not grow in with the usual garden culture, and in some cool, loamy soils they take to the turf as ducks to water. Hence it is easy

Group of Giant Indian Lily in half-shady place (Surrey).

on many soils to have a spring garden of these flowers, naturally grouped and massed, set in turf, and giving us many flowers for the house as well as pictures in lawn and meadow. For this purpose what is chiefly wanted is that the bulb growers should offer the best hardy sorts for the wild garden by the thousand at low rates. These precious early flowers will also have their place in the garden for cut flowers or the nursery bed, where the many new forms of Narcissi raised in England must take their place until they become plentiful. The true hardiness of the flower allows of its being enjoyed in all parts of these scattered islands, from Scilly, where it is grown in quantities for the markets, to the north of Scotland. In Ireland the Narcissus is at home, and there are excellent collections in the

Narcissus princeps at St. Nicholas House, Scarborough.

College Botanic Gardens at Dublin and also at Glasnevin, while there is a very well-grown one at Cork, and Miss Currie, of Lismore, grows many of the most precious kinds. In old days the white Narcissi grown in the gardens spread here and there into orchards and fields, and so it happens that now we have to seek in Ireland some of the graceful white Narcissi.

IRIS.—The Iris is one of the oldest of our garden flowers, in many forms too, but, like the Lily, it has come to us in greater novelty and beauty of recent years, and as districts in Central Asia and Asia Minor are opened to collectors, we must have our Iris gardens too. And what so fair as an Iris garden? They are the Orchids of the north, many of them as hardy as reeds, and with more richness of

colour than Orchids. The old Irises of our gardens are usually of the Germanica class ; there is much variety among these groups, and they are very hardy and precious, and excellent for the adornment of gardens and even walls and thatched roofs, as we see in France, the Iris of this great group having a valuable power of thriving on such surfaces as well as on good soil.

There is a group of waterside and water-loving Iris, much less seen in our gardens than the above, and some of them not yet come to us, but of great value. They are allied to the common yellow Iris of our watercourses, but are taller and richer in colour, the golden Iris (Aurea), Monnieri, and Ochroleuca being the best known so far, and very free, hardy, and beautiful plants they are, thriving, too, almost anywhere, but best in rich, moist soil. And we have the distinct gain of the splendid Japanese Iris, in its many strange forms, the Japanese surpassing all waterside Irises in its wide range of colour, though most beautiful perhaps in its simple forms, white and purple. This plant, though its beauty suggests that of the tropics, will grow side by side with our great water dock by any lake side, or even in a clay ditch, where only the coarsest weeds live. The Siberian Iris and the forms near it are very graceful beside streams or ponds, either in open or copsy places, and far more graceful and charming in such positions than in set borders. All these water-loving Irises will do for the wild garden in bold groups when we can spare them.

Then there are the brilliant purple and gold Iris reticulata and its allies, little bulbous Irises, for the spring garden, early and charming things, many beautiful ; Irises that flower in winter and early spring, like the Algerian Iris ; others happy in Britain on warm soils and warm corners, and Iris for the rock garden, like the crested Iris ; and the many pretty forms of Iris pumila, of some of which edgings were made in old gardens. The foliage of the evergreen Iris is so graceful and usually so nice in colour that artistic use may be made of it in that way. The most novel of all the groups of Iris, however, are the cushion Irises, which promise much beauty, but are yet too little known to see how far that beauty may be preserved in our gardens. The old Iris Susiana has been known for many years, and some of its allies like I. Lorteti and the Wolf Iris, seem more hardy and not less beautiful.

TULIPS.—The old garden tulip, a favourite for generations, grown in the so-called florist varieties, and the source once of severe mania, is but one of a large number of wild Tulipa, many of which have come to us of late years from Central Asia. The old tulips are the forms of an Italian species (T. Gesneriana), and these varieties are worthy of all the attention they ever had; but the wild form is as good as any of its varieties for splendid effect, and a selection should be made of its

simpler colours, including a good white and yellow. The bedding tulips, which are earlier in blooming, are forms of T. scabriscapa, though useful, are not nearly so valuable for their effect as the late tulips. The new species coming from Central Asia and other lands promise to be very valuable, too, for their effect, though our climate may not suit all of them, as it does the fine hardy Gesneriana. The colour of these tulips is too fine to be missed, and, as the bloom is too short-lived to give beds under the windows to it, the best way is to plant them in borders, and, when scarce, in the nursery ; when plentiful in the wild garden. I put some in new hedgerow banks a few years ago, and also the wood tulip in a meadow regularly mown, and now have a splendid bloom every spring. As wild tulips abound in the south of Europe—travellers might often get many roots which could be tried in this and other ways. Some of the bedding tulips have very ugly slaty colours, and there is much waste in planting them. The Dutch bulb raisers care more for variety than beauty of colour, but the aim in our gardens should be to get more of the fine simple colours, and the wild kinds planted so far as we may in effective ways; a few trials in that way will show that it is a much more effective one than setting out the plants in tile or other patterns. The later these wild tulips come into bloom the better, as it brings their nobler colour in when the harsh changes of the spring are nearly over, and in the north they will come in with the early summer days. These ideas of the more picturesque planting of the hardier Tulips need not take from the lover of the old florist kinds his Tulip garden, which was very charming with its long beds of good soil, and at its best in some sheltered—hedged in or walled—garden.

CROCUS.—If the Crocus has any fault it is courage in coming so early that it has to face every trouble of the spring, and green winters induce it to open too early. Yet what promise it brings us of the many-blossomed spring in border and in lawn ; for, in addition to the old and good way in garden borders, the Crocus, at least all the forms and series and the hardy and vigorous European kinds, is easily naturalised in lawns or meadow turf, and others even under Beech trees as in Crowsley Park. As regards this question, it should be remembered that the Crocus is wild in rich meadow grass in various parts of England, at Nottingham and in Essex. The autumnal kinds may be naturalised too, but they ask perhaps for a warmer soil than the vernal kinds. Recent years have brought us many new Crocuses. The effect of the old kinds is not surpassed, but their beauty may be more fully shown than in lines and dots by scattering them in natural-looking groups in grassy places among trees or in the open turf.

SNOWDROP AND SNOWFLAKE.—The old Snowdrop gives as good an effect as any other, but the many new varieties give the Snowdrop

Tulip garden at the Castle, Dingwall.

more value. Whether these new forms are species or varieties matters little; their value as garden plants is the only question that concerns flower-gardeners. Who would have thought a few years ago that our Snowdrop was only one of a large number taking care of themselves in the mountains of Asia Minor and other regions? Others are coming, and when these increase in our gardens we shall have fresh aids to make our spring gardens more beautiful. As these new kinds are mostly plants from cool regions, they will probably be easily naturalised in many soils. The snowflake must not be

The Spring Snowflake.

forgotten—few spring flowers are more free than the vernal and late snowflakes.

SCILLAS, HYACINTHS, AND LIKE PLANTS.—The lovely early group of plants allied to our Wood Hyacinth—Scilla, Chionodoxa, and Hyacinthus (the more tiny and dwarf wild species are referred to here under this last name)—ask for some thought as to their artistic use. The Scillas are well known, but the newer forms of Chionodoxa give an unlooked-for loveliness of blue very early in the spring, and show a pretty variety in their delicate colours; and yet there is no more lovely thing among them than the Taurian Scilla a large form of

the long-neglected Scilla bifolia. It is so early and so deep a blue that one may get rich effects with it very early. The more tiny and select of all these plants are alpine, delightful for rock-gardens, and all the more so if we can use them in visible groups. The stouter kinds, such as the larger Chionodoxa, are coming in such numbers that we may try their effects in many ways ; it is impossible to omit them from whatever kind of spring gardening we adopt.

The common Hyacinth—in its double forms at least—is so stiff that we take little interest in it for the flower garden ; but the simpler colours of the single kinds deserve a place. Would it not be worth while growing the single Hyacinth provincialis from which these all come? Hyacinths will come up year after year in flower beds, and throwing away the roots after once blooming, is a mistake.

OTHER LILIES.—Apart from the true Lilies there are certain plants to which the name is also given betimes, such as the Torch Lily (Kniphofia), the Day Lily (Hemerocallis), the Peruvian Lily (Alstrœmeria), the African Lily (Agapanthus), the Belladonna Lily (Amaryllis), the Cape Lily (Crinum), the Plantain Lily (Funkia), the Wood Lily (Trillium), the Mariposa Lily (Calochortus), besides other Lilies that do not come under our present heading, or which do not ask for thought as regards their effective use.

The Torch Lilies are brilliant in colour, and have been added to of recent years, but severe winters have thinned them, and they will always be best in dry soils and in sunny positions, protected in winter. They are best kept apart from flowers more refined in colour, such as the Tea Rose. The Day Lilies are a really hardy race, and most of them will grow anywhere. With their fine leaves and showy, well-formed flowers, they may be used with good effect in various ways. The Peruvian Lily is valuable, but far more beautiful on warm soils. If on cool soils—and in cool districts it fails—we must prepare beds for it, but the best way in gardening is always to grow the flowers that thrive without great labour in the soil we have. The Belladonna Lily can be grown in no more effective way than the old one of planting it under south walls. The Cape Lilies have increased of late years from hybrids and otherwise, and are worth attention in deep soil in warm corners near walls that protect them from the north. The African Lily is most important for its unrivalled blue, but, save in the warmest parts of the south, where it may live in the open air protected, it is essential to give it greenhouse or like protection in winter. It is one of the plants for which the expense of tubs or large pots is worth indulging in, and there are new and handsome kinds, which make the culture more interesting. The Wood Lilies are valuable because they give us effects both distinct and beautiful in peat borders or bog gardens.

Shade is not essential, though we think the best effects are attained in half-shady spots.

The Mariposa Lilies are beautiful indeed, some of them almost surpassing any flowers of the old world; but they come from one of the best climates and warmest soils in the world, and one can hardly hope that they will thrive in our climate without special care. Yet such charming flowers will always have a place in curious gardens, where they will thrive in frames and warm corners. Such plants, however, cannot be depended on for much effect in the open garden, though new kinds are being brought from Western America which may thrive in our climate, and help to show us the beauty of these singularly lovely things.

ANEMONES AND RANUNCULUS.—The Poppy Anemone has been a welcome flower in our gardens for hundreds of years, and it should never be forgotten, save in soils where it dwindles away. Many now grow it well from seed, but the old way of planting the tubers of favourite kinds and colours should be carried out in the flower garden in Rose beds or in any beds to spare. The Scarlet Anemone and its varieties is also precious; the Star Anemone, so charming in Italy and Greece in spring, is rarely seen happy in our gardens which are too cold for it, no doubt, so it may well be left out in favour of the hardier sorts. Valuable as the brightest Anemones are, the old Turban and Persian Ranunculus, and other forms were once a yearly charm of the flower garden from which they are now often left out. It should not be so; they require a little care, but are worth it.

VARIOUS.—The old Dog's-Tooth Violet of the mountains of Europe has been joined in our gardens of recent years by a number of its American relations, graceful plants for peat borders, but as yet not so valuable as the European kind in its various forms, which are among the prettiest early spring flowers. They are, moreover, true wild garden plants, which thrive in turf, coming up every year even more faithfully than Crocus or Snowdrop. The Snake's-head, too (Fritillaria), is a charming wild garden plant, thriving in grass in rich or wet meadows; where not native it may well be introduced. The new yellow Fritillaries give a greater interest to this group of plants, some of which are fitted for the wild garden, but we never could see the charms of the Crown Imperials, with their offensive odour. The Stars of Bethlehem (Ornithogalum) thrive in grass, and are pretty in it. Unfortunately the handsome Arabian kind is not hardy. The Montbretias are plants of somewhat recent appearance in our gardens, and they have a vigour and hardiness we do not look for in Cape plants, and a tenacious way of growing and increasing even in cold poor soil, and are, therefore, valuable where we wish to have close tufts of graceful leaves and gay blossoms below flowering shrubs not

set too closely on the ground. Grape Hyacinths (Muscari) are often very pretty, and nearly always hardy. I use them freely in grass, where their blue is very pretty in spring. The choicer newer kinds will find a place in the nursery beds or rock-garden till more plentiful.

Among the new plants we have one of fine distinction in the Giant Asphodels (Eremurus), plants of noble part and vigour, but which, though here and there grown and flowered well, are not as yet proved for our climate, with its often open, snowless winters. We must find out the kinds really hardy and that bloom handsomely with us before we can judge of their value in the flower garden.

The old tiger flowers (Tigridia) should not be forgotten, especially on limestone or other warm soils, where they are most at home. There are several new kinds, which make the family of more value. Plants that give much pleasure from their good colours are the Triteleia and Brodiaca. Some new and pretty effects will be given by the best of these as soon as plentiful.

So noble a plant as the Gladiolus should not, perhaps, have been left to the end, but the fact that the finest class are only half hardy, and require care, makes them less important in our country than Lilies and Narcissi, that give so much beauty with little or no care. The years pass so swiftly, and are so full of cares, that things demanding two important attentions yearly—*i.e.*, taking up and planting—must take a minor place, except in the case of growers who make a special care of them. The groups known as Lemoinei and Saundersi hybrids, being hardier, give better results, but generally our climate is against the older Gladioli, and disease very often comes with any large attempt to grow them.

HARDY BULBS FOR CUT FLOWERS.—The special or reserve garden includes beds for hardy bulbs—a very good way of growing them, and for supplying flowers for the house. A curious habit of the flowers of bulbs is that, cut from the plants when just opening and put into water, they get larger than they would if left on the plants out of doors, and this should lead us to encourage many lovely flowers among hardy bulbs that are among the best for our rooms. Hitherto the horror of the gardener has been cutting flowers for the house; but if cutting prolongs his bloom, strengthens his plants, and gives all who care for his flowers a fuller enjoyment of them, we may secure his powerful aid. Consider what one may escape in storms, frosts, and other dangers if a flower, cut just on arriving at maturity, lasts longer indoors than out, and actually, as in the case of the Narcissus, gets larger! Narcissi, through their hardiness and drooping heads, endure our climate better than any other flowers, and yet severe storms will beat them about and destroy flowers that might have lived for days in the house. Large showy flowers like Tulips, suffer with

every heavy shower. Anything which makes it easier to have flowers in the house is a real gain ; their exquisite forms are best seen, and tell their story best when brought near to the eye. A flower of our yellow wood Tulip opening and closing, and showing its exquisite form in a room, gives ideas of beauty which cannot be gleaned by glancing at a bed of bulbs. A variety of hardy bulbs should therefore be grown for their value as cut flowers, apart from their use in the garden.

Vase of Narcissus and Ilex leaves.

HARDY BULBS AMONG CHOICE SHRUBS.—One of the most marked improvements is the planting of handsome bulbs in masses of Rhododendrons and like bushes. These beds, as usually planted, are interesting only when in flower, and not always then, owing to the flat surface into which the shrubs are pressed ; Lilies, therefore, and the finer bulbs may with great advantage be placed among the shrubs. In many cases where this plan has been carried out, it has almost changed the entire aspects of gardens, and given various beautiful types of life instead of only one, and many fine rare bulbs

find a home in such beds, which should be sacred from the spade. In placing choice, peat-loving shrubs, give the bushes room to fully attain their natural forms, and plant the interspaces with finer bulbs. Light and shade, relief and grace, are among the merits of this mode of planting. Beds of the smaller shrubs will do admirably for the smaller and more delicate bulbs, the shelter of low shrubs being an advantage to many little bulbs whose leaves are apt to suffer from cold winds. In this way we get relief, variety, and longer bloom, and the shrubs show their forms better when they have free play of light and air about them.

BULBS IN BEDS ON TURF.—Bold beds of Lilies and the taller bulbs are admirable for the lawn, and for quiet corners of the pleasure-

Bed of Narcissus.

ground. The showy beds of bulbs which are to be seen in public and other gardens, and which come so largely into spring gardens, are familiar to all. The beds suggested here are of a higher and more permanent nature, and are intended to be placed where they will be let alone. At Moulton Grange some years ago I saw on the turf in a quiet corner a bed of Tiger Lilies which had no other flowers near to mar its beauty. It was a large oval bed, and the colour of the finely grown Lilies was brilliant and effective seen through the trees and glades. In point of colour alone, nothing could be better; the mass of bloom was profuse, and the plants, about 6 feet high, told well in the garden landscape. The plants had a great advantage in habit, form, and colour over the usual dwarf type, of showy "bedding" plant.

Many hardy flowers of the highest beauty would have as effective colour if we took equal pains with them. Colour on a 6-foot plant is usually more effective than on a plant 6 inches or 12 inches high, and some hardy Lilies are well over 6 feet high. This Lily bed was on one of those little strips of turf which occur by most shrubberies, and within a few yards of a walk, so that it could be easily seen. Among the most lovely beds are those of the nobler Lilies, while Iris, and many beautiful Day Lily, Pæony, Gladiolus, and Cape Hyacinth may be grouped with them or near them. It may be as well to note that what is meant here is not wild gardening with bulbs, but very good cultivation of them, and surfacing and edging the beds with spring flowers.

Some Hardy Bulbous and Tuberous Plants for British Flower Gardens.

Acis
Agapanthus
Allium
Alstrœmeria
Amaryllis
Anemone
Anthericum
Arum
Calla
Calochortus
Chionodoxa
Colchicum
Convallaria
Crocus
Cyclamen
Erythronium
Fritillaria
Galanthus
Gladiolus
Galtonia
Hyacinthus
Iris
Ixiolirion
Leucojum
Lilium
Montbretia
Muscari
Narcissus
Orchis
Ornithogalum
Oxalis
Pæonia
Pancratium
Puschkinia
Ranunculus
Schizostylis
Scilla
Sparaxis
Sternbergia
Tigridia
Trillium
Triteleia
Tritonia
Tropæolum
Tulipa

Vase of Sweet Peas.

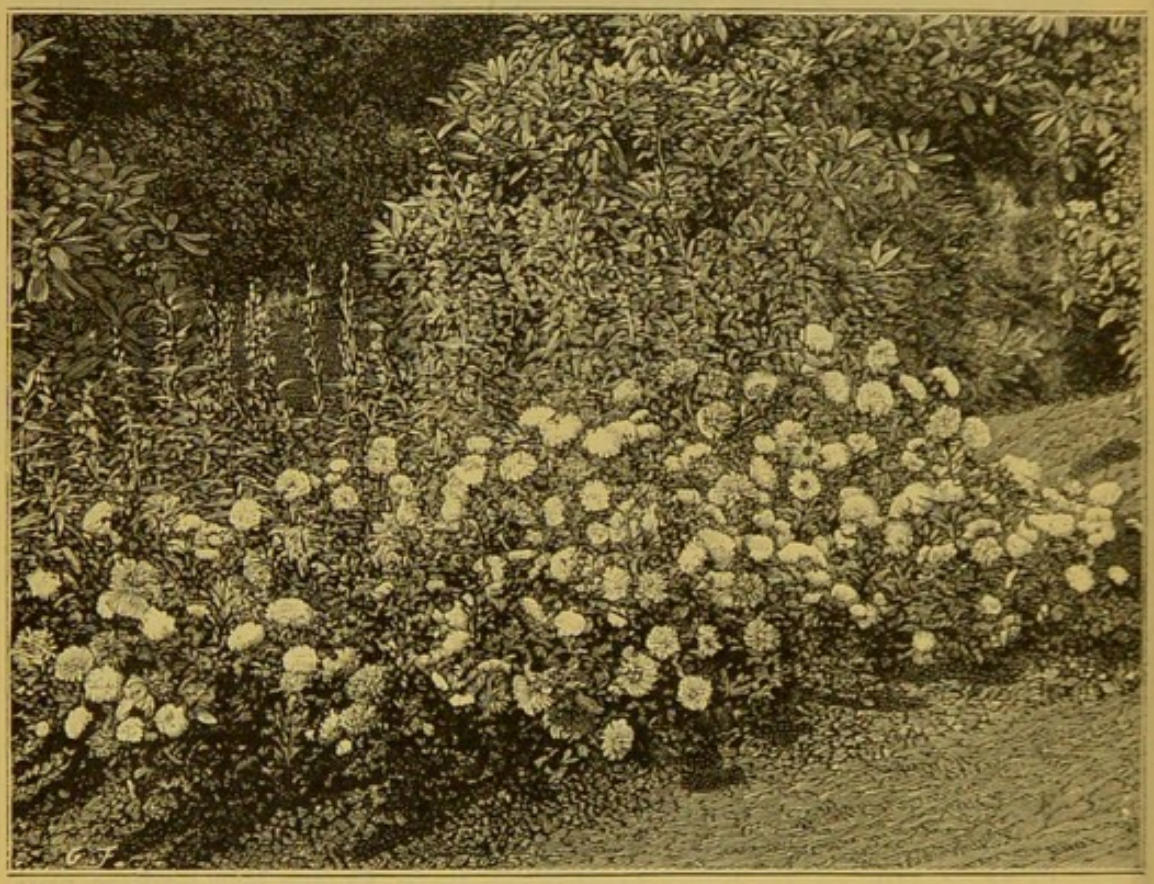
CHAPTER VII.

ANNUAL AND BIENNIAL PLANTS FOR THE FLOWER GARDEN.

AMONG the most pleasant memories of flower-garden things are often those of annual or biennial plants: tall and splendid Stocks in a farmhouse garden on a chalky soil, seen on a bright day in early spring; Wallflowers in London market gardens and in cottage gardens, when not cut down by cruel winters; Snapdragons on old garden walls, and bright Marigolds everywhere; Hollyhock lines, Sweet Pea hedges, and Mignonette carpets; Evening Primrose, Poppies, Sweet Scabious, and Sweet-williams.

Among annual and biennial flowers we have the lovely Everlastings of Australia, which have an order of beauty quite distinct from those we see in gardens into which annuals do not enter. Carefully gathered, they have the additional charm that they may adorn our houses during the winter. The Pimpernels, which with their pretty blue flowers were once made charming use of in gardens, are much neglected. The Mexican Poppy is a pretty flower and quite distinct. Among annuals we often find plants of fine habit, such as the Hemp. The annual Chrysanthemums of Southern Europe and Northern Africa, and indeed of our own fields, are charming in effect. The annual Convolvuli or

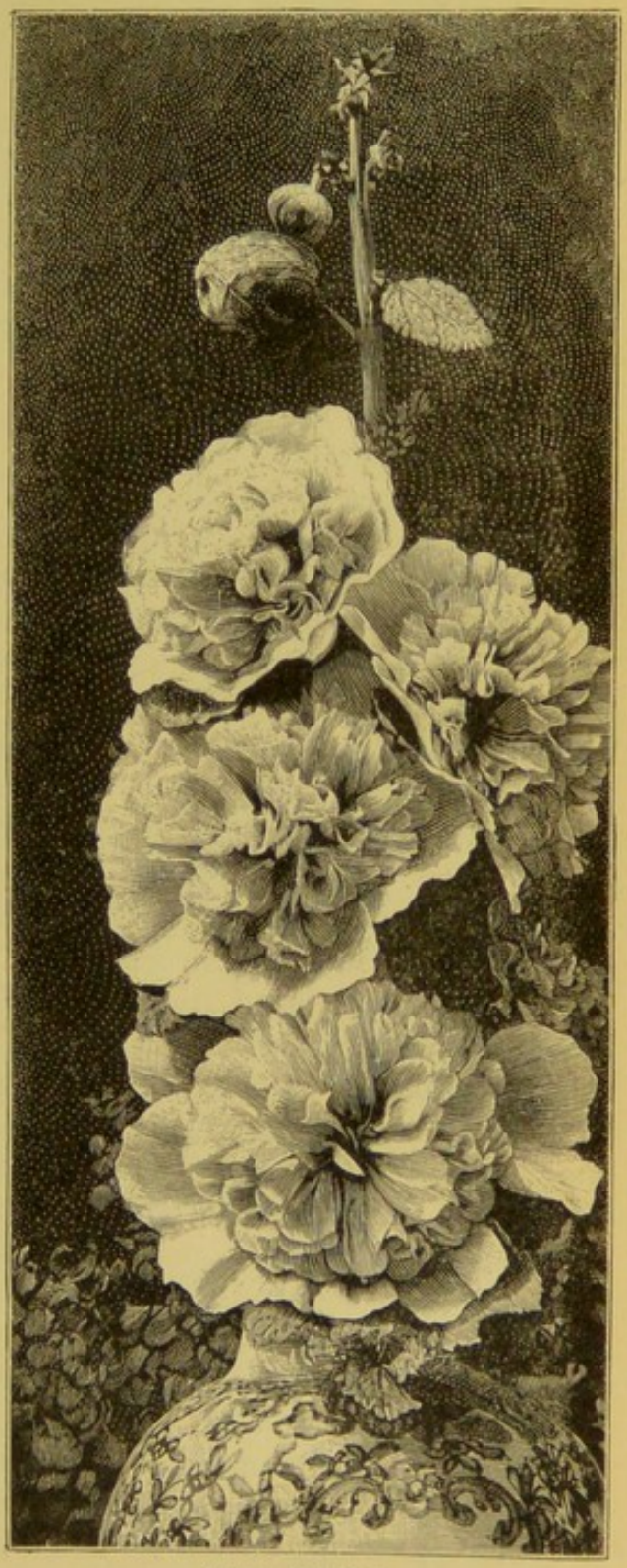
Bindweed are very pretty indeed and in southern gardens may be used charmingly. The annual Larkspurs are so little used in gardens that it is only in seed farms that we have the pleasure of seeing them now and then in all their beauty. The annual Chinese Pinks are very charming grown in sunny beds and good soil. Our native Foxglove, which takes such good care of itself in many of our woodlands, breaks in the hands of the gardener into beautiful varieties well worth growing, if not in the garden, in shrubberies and in copses and woods. It is a good plan, when any ground is broken up for fence-making or



Bed of "China Asters": showing effect of well-grown annual plants in garden.

rough planting, to scatter a few seeds of the white and other pretty kinds and leave them to take care of themselves. The Californian annuals are charming in their delicate growth and pretty colours, and there are many of them. There are many graceful grasses which may be treated as annuals, and their flowers, like the Everlasting flowers, be in bloom through the winter. The night-smelling Stocks will appeal to some, but are rather too strong in odour for others. The annual Hibiscus when well grown are effective plants, and the same may be said of the Hollyhock, for which probably the best way is to raise it from seed, as in that way we can fight better against the fungus which destroys

it. The Single Hollyhock is worthy of much care and is often very effective. The Flaxes are very pretty annuals, red and blue, and even the common cultivated Flax is a beautiful plant. The beauty of the Ice plants, of which we see so little in our country, is fairly shown by the little annual one. In our day quite a series of beautiful forms of Mignonette have come to add to the charms of that always welcome plant. The annual and biennial Evening Primroses are often extremely valuable and showy.



Double Hollyhock.

Among the most delightful plants in the garden are Scabious, which are so pretty and varied in colour and so fragrant. Of Sweet Peas there is a delightful series in our own day, when so many kinds have been raised that one could easily make a garden of them. Zinnea is extremely fine in colour, but in our country it wants warm soils and the best positions in order to do well. In Italy, Austria, and South Germany they are much more beautiful and vigorous than with us.

Among the beautiful things which "carpet-bedding" put aside were the good annuals and like plants which once formed such pretty beds in the flower garden. While it is not well to depend too much on annuals or biennials, not a few are indispensable, like Stocks, where they can be grown. Some are neglected, like the Rhodanthe, grown as an open-air flower, while many are badly grown, like the Zinnia, as a rule, in England. Some, like the Corn-flower,

Sweet Sultan, Sweet Pea, Scabious, are charming for cutting; others are good for trellis-work, and others for surfaces we wish to adorn with pretty climbers, such as Canary Creeper, Maurandya, Adlumia, Gourds, Convolvulus; some are plants of good habit, such as the Castor-oil plant, the crisp Mallow, the annual Wormwood Indian Corn, Cotton Thistle, Blessed Thistle, Olympian Mullein.

In wet seasons and in wet northern districts annuals surprise us by their vigour and beauty. In warmer counties the effect of the heat may in the case of the hardy kinds be met by autumn-sowing in good rich ground. The autumn sowings are the best. The plants not only flower much sooner, but, where the soil and climate suit them, they are stronger and more beautiful. The reason why they are so often seen in poor condition is that they are sown on hungry soil and are crowded.

Concerning these "Salmoniceps" writes: "I have just measured a plant to-day (October 4) of Nemophila insignis, sown more than a year ago. It has been in flower since May, and measures now 4 feet by 3 feet 10 inches. It would take a long time to count the blossoms, although they are not so large as the earlier ones. The plant grows in a new and rich border. According to the ordinary way of sowing annuals, this single plant occupies the space which is usually allotted to a whole packet of seed."

In nature, annuals are usually autumn-sown and gather strength in the winter. In growing a number of annuals from various countries we must remember that our winters can be faced by the hardy ones only, such as the Sweet Pea, Corn-flower, Silene, Nemophila, Viscaria, Limnanthes, Larkspur, Poppy, and Scabious. Annuals are best in masses or groups, and they are never perhaps so full of colour and beauty as on an old rich vine border.

HALF-HARDY PLANTS TREATED AS ANNUALS.—It is not every one who has the means to winter a large number of tender bedding plants. No matter how favourable the situation, the keeping of a large stock involves a good deal of trouble and takes up space that might be better occupied. But a garden may be made very gay in summer with seedlings alone, and without keeping a single plant over the winter in the greenhouse. In seedlings there may be differences in habit and colour, but this should be no objection. There are a few plants which come from seed true to the type through many generations, like Verbena venosa, one of the best and most pleasing of hardy bedding or border plants. Can anything be more effective than a mass of seedling Petunias? Seedling Verbenas make a handsome bed, and usually do much better so grown than from cuttings. Balsams, again, are not half so much used for open-air decoration as they deserve to be, and those who

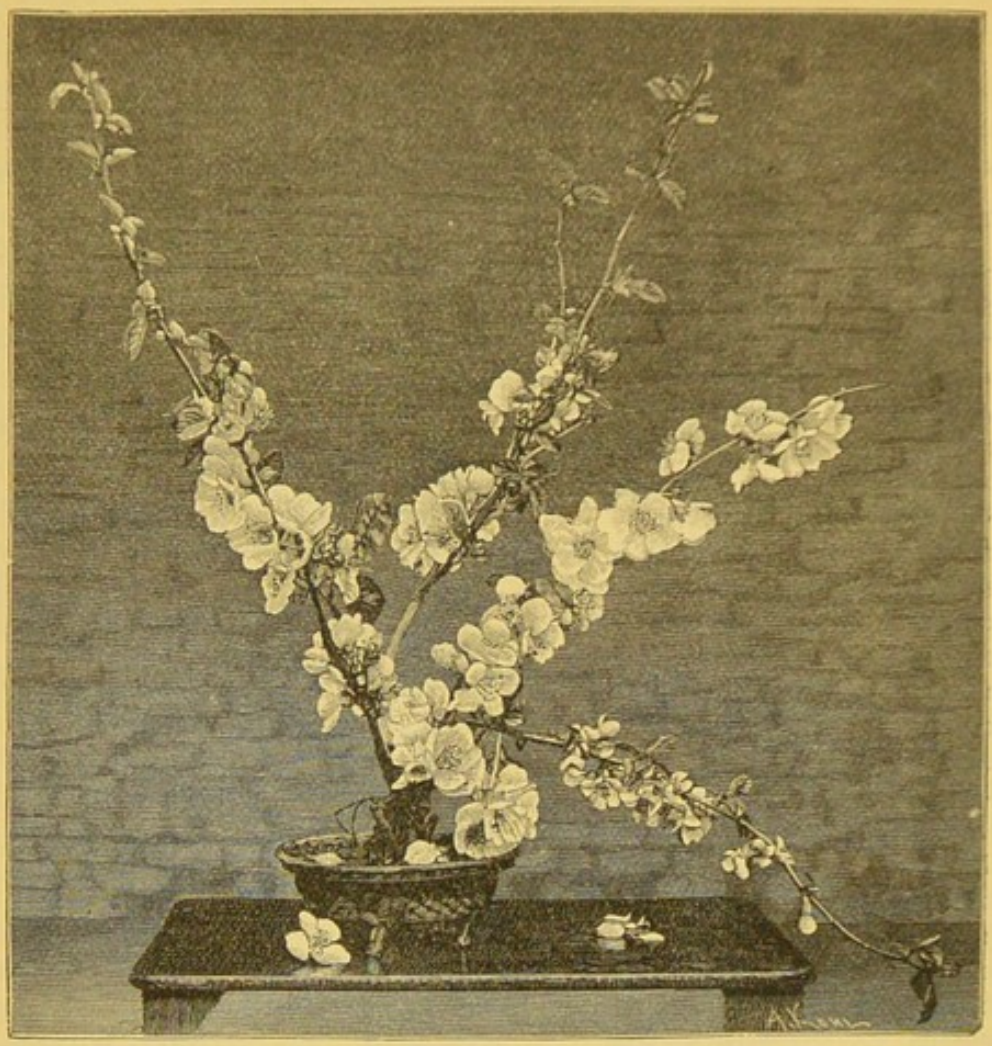
White Foxglove. Engraved from a photograph by H. Hyde of a self-sown plant in shrubbery at Gravetye Manor.

have only seen them starving in small pots cannot form an idea of their beauty when planted out in good open soil, away from trees and in warm soils. The dwarf kinds of Ageratum, if selected and saved with care, may be raised in a gentle heat, and, with a little management, very effective masses may be easily had in summer. The tuberous Begonias form a good feature in sheltered positions ; they will display all the colours of the Pelargonium without liability to be washed out by rain, and they require no expensive preparation to keep them through the winter. Take the large family of Violas, in almost all shades of purple, yellow, and white. Now that selection and fertilisation have so much improved them, varieties may be raised in the early spring for bedding out the same summer. This applies especially to such plants as the Verbena and Pansy, Pelargonium, Pyrethrum, Salvia patens, S. argentea, Heliotrope, and Antirrhinum, which should be sown in heat in January ; to the Petunia, Phlox Drummondi, Dianthus, Indian Pink, Ageratum, and Lobelia, which in February should be sown in pans in heat, and, if kept growing will be ready for planting out in May. Begonias for bedding may be grown from seed in the same year, but are more effective if raised during the preceding year, selected according to colour, and stored in winter ready for bedding out early in summer. Fuchsias sown in January flower well in August. Of fine-leaved plants which can be raised from seed, there are Amaranthus, Celosia, Centaurea, Cineraria maritima, and Humea, Canna, Chamæpeuce, Nicotiana, Ricinus, Solanum, and Wigandia.

Old plants kept through the winter harbour the eggs of vermin always ready to eat up the collection if it is neglected for a week, but, starting with clean houses and frames, and with seeds in early spring, the gardener could make a better fight against his many insect enemies. As regards the plants one would like to raise in this way, a point to desire is that seedsmen should select and fix distinct colours of different races of plants. It would not be difficult to select a bluish or purple Verbena which one might count on as coming pretty true from seed. We have so much relied upon cuttings and old plants that the raising of seedlings in robust health has never had fair attention. Many raise seeds, but few give the early thinning, the perfect exposure to light, the sturdy growth, and the unchecked culture that seedlings require.

Some of the more important Families of Annual and Biennial Flowers for the Flower Garden.

Acroclinium
Adlumia
Ageratum
Agrostemma
Alonsoa
Alyssum
Amaranthus
Amberboa
Ammobium
Anagallis
Antirrhinum
Arctotis
Argemone
Artemisia
Bartonia
Begonia
Boerkhausia
Brachycome
Calandrinia
Calceolaria
Calendula
Calliopsis
Campanula
Cannabis
Cape Marigold
Catananche
Celosia
Celsia
Centranthus
Cheiranthus
China Aster
Chrysanthemum
Clarkia
Clintonia
Convolvulus
Coreopsis
Cosmidium
Cosmos
Crepis
Cuphea
Datura
Delphinium
Dianthus
Didiscus
Digitalis
Erysimum
Erythræa
Eschscholtzia
Eucharidium
Eutoca
Gaillardia
Gilia
Glaucium
Godetia
Gourds
Grasses
Gypsophila
Hedysarum
Helichrysum
Heliophila
Hesperis
Hibiscus
Hollyhock
Iberis
Impatiens
Ionopsidium
Ipomæa
Ipomopsis
Isotoma
Kaulfussia
Lasthenia
Lavatera
Leptosiphon
Leptosyne
Limnanthes
Linaria
Linum
Loasa
Lobelia
Lophospermum
Lupin
Maize
Malope
Malva
Martynia
Maurandya
Mesembryanthemum
Mignonette
Mimulus
Mirabilis
Myosotis
Nemesia
Nemophila
Nicotiana
Nigella
Nolana
Nycterinia
Œnothera
Onopordon
Oxalis rosea
Oxyura
Papaver
Petunia
Phacelia
Pharbitis
Phlox
Platystemon
Podolepis
Polygonum
Portulaca
Pyrethrum
Rhodanthe
Ricinus
Salpiglossis
Salvia
Saponaria
Scabious
Schizanthus
Schizopetalon
Senecio
Silene
Solanum
Sorghum
Specularia
Sphenogyne
Stenactis
Stocks
Sweet Peas
Sweet William
Tagetes
Tropæolum
Verbascum
Verbena
Viola
Virginia Stock
Viscaria
Waitzia
Whitlavia
Zea
Zeranthemum
Zinnia



CHAPTER VIII.

FLOWERING SHRUBS AND TREES, AND THEIR ARTISTIC USE.

SPRING comes to us wreathed in honeysuckle, and summer brings the Wild Rose and the May bloom. These are but messengers of a host of lovely shrubs and low trees of the hills and plains of the northern and temperate regions, and also of the high mountains of countries like India, where there are vast alpine regions with shrubs as hardy as our own, as we see in the case of the white Clematis that covers many an English cottage wall with its fair white bloom. It is not easy to give an idea of the lovely host we have to deal with, but the fact that there are hundreds of Wild Roses as pretty as our Dog Rose, and dozens of Hawthorns as good as our native one, should go some way to let light into the minds of the many who think that flower-gardening is only a matter of potting and pinching a number of little half-hardy plants that give us the result we see in the French gardens as mosaic culture, and our own carpet bedding. If we think of the pictures formed in thousands of places in England,

Scotland, and Ireland, by the May alone, we may get an idea of the precious beauty there is in the American, Asiatic, and European kinds, some of which flower later than our own and make the May bloom season longer. Nothing is lovelier among flowering trees than a group of the various thorns, beautiful also in fruit, and the foliage of some kinds is finely coloured in autumn. The Thorns are but one branch of, perhaps, the most important order of flowering trees, embracing the Apples (a garden in their varied flowers alone); Pears, wild and cultivated; Crabs, pretty in bloom and bright in fruit; Quinces, Medlars, Snowy Mesipulus, Almonds, Double Cherries, Japan Quinces, Plums (including Sloe and Bullace), not to speak of a number of less important families. Among these, the larger and more important branches of this great order of plants, there is some likeness in habit and size, which allows of similar use as regards position.

It is generally not easy to use these flowering trees in the flower garden when that is very near the house, except in an orchard flower garden, like that at Penshurst; it is absolutely essential that their beauty should be seen about every country house where the life of spring is welcome, and where there is room to place them. For nothing ever set in parterre or winter garden has such precious beauty as these trees, clad as they are in clouds of white or pink or delicately shaded shell-like hues: the best of them should be massed or grouped where they will come into the picture—whether seen from the house or otherwise. The Double Peaches are among the most precious of trees of this order, but for some reason we rarely see them in any but a miserable state in England. In France they are sometimes lovely not only in the flower, but in the mass of colour from healthy growth. It may be the failure of the shoots to ripen in our cool climate is owing to some weakness through grafting on a bad stock. There is such a great and noble variety among these trees that there is room for distinct effects. An excellent point in favour of trees like Thorns, Crabs, Almonds, and Bird Cherries is that, in their maturity, they, in groups or single specimens, stand free on the turf—free, too, from all care; and it is easy to see how important this is for all who care for English tree-fringed lawns—a long way more beautiful than any other kind of tree garden.

It is not only the flowers on the trees we have to think of, but also in the house—as cut flowers gathered when the buds are ready to open—gathering the branchlets and long twigs before the flowers are quite out and placing them in vases in rooms. In very bad weather this way will prolong the bloom for us, or even save it in the case of very hard frost, and in a cold spring it will advance the bloom a little, the warmth of the house giving a few days' gain in time of opening. As to the kinds of shrubs that may be cut for the house in this way,

there are many of the same race, from the Sloe to the beautiful kinds of Apple. There is a good deal in putting them into the right sort of glass. The Japanese are very clever in fitting the flowers into vases so that each may show its form and beauty best. Mr. Alfred Parsons says he noticed that flowers seem to last longer in bronze, in which, it may be, the action of the light is less than in an ordinary vessel.

While such trees as the Almond or Crab will usually be in the more distant parts of the garden picture, the variety of flowering shrubs is so great that we may choose from among them for the most precious of flower garden beds. Take an ordinary flower garden under the windows of the house, often with the beds in winter as bare as oilcloth. What beautiful groups of flowering evergreens we might plant in them! Mountain Laurels (Kalmia), Japan and American Andromeda, Azaleas, choice Evergreen Barberries, alpine Cotonaster, Evergreen Daphne, Desfontainea, in the south; the taller hardy Heaths, Escallonia, Ledum, alpine and wild forms of Rhododendron, Sweet Gale, Star bush, and various Laurustinus, leaving out not a few which thrive only in the warmer districts. Charming gardens might be made of such bushes, not lumped together, but in open groups, with the more beautiful American hardy bloomers between them, such as the Wood Lily and Mocassin flower, many rare Lilies, and beautiful bulbous flowers of all seasons. The light and shade and variety in such beds of choice evergreens and flowers mingled are charming, and the plan would be a permanent one as it would tend to abolish the never-ending digging in the flower garden. Beds of flowering shrubs in the flower garden are not always so well suited for small gardens; but in bold ones, now naked in winter, it would make them sightly even at that season, and much easier to deal with in early summer.

The Rhododendrons of the hybrid sorts are too much used, and, as they are nearly always grafted, the common stock that bears them in the end kills the plant it should support, and so we too often see the common pontic kind. Yet there are many beautiful things among these hybrids. The good colours are well worth picking out from them, and the aim of the planter should be to show the habit and form of the plant. This does not mean that they may not be grouped or massed just as before, but openings of all sizes should be left among them for light and shade, and for handsome herbaceous plants that die down in the winter, thus allowing the full light for half the year to evergreens.

In the south and west the various Arbutus are charming for lawns and ravines, and for sheltering the flower garden, as is also the sweet Bay Laurel, but the common Cherry Laurel and the Portugal should not be planted near anything precious.

The hardy Azaleas are, considering their great number and variety, perhaps the most precious flowering shrubs we have; they are fine in form of bush, even when they get little freedom, and superb in colour, the foliage in autumn, too, being rich in colour in sunny places. The Hydrangeas are noble plants in warm valleys, and on soils where they

Rhododendron garden at Bidston, Cheshire.

are not too often cut down by the winter; not only the common one of the markets, which, in soils where it turns blue, is so effective in the garden, but a variety of good kinds, among which should always be the oak-leaved Hydrangea, as old plants of it are so handsome. As these are plants that cannot be grown everywhere, this is a

good reason why they should be made much of where the climate suits them. There are few garden sights more interesting than groups of Hydrangeas well grown and placed, and it is one we rarely see.

The Brooms have many effective plants and none more so than the common and the Spanish Brooms, which should be massed on banks, or where they will come into the picture, and some of the smaller Brooms are excellent for rock-gardens. The Furze in all its obtainable forms is just as precious, as it blooms so early, it will grow almost anywhere, and it brightens up a landscape as no other plant does. We have only to place it in any rough spots to enjoy it without care. Native shrubs should not be neglected ; the wild single Guelder Rose is as pretty a shrub as any from across the sea, while all the hardy kinds may give us good and bold effects grouped with or near such bushes as Deutzias, Weigelas, Mock Oranges—all plants of high value and much variety.

From an artistic point of view nothing is better than groups of our hardy Heaths in any open place where room can be found for them, including white heather and all other strong varieties of heather, as well as all other kinds of hardy Heaths. After planting they give little trouble, and they are good in colour even in winter, being generally happiest out of the garden proper, where any other wild plants may be allowed to grow among them. No doubt, the choicest and smallest of these Heaths deserve careful garden culture, but for effect the forms of our common Heather, the Cornish and Irish Heaths, are the best, and in bold masses not primly kept, but, once well rooted, allowed to mingle with any pretty wild plants. We might even assist this idea by sowing or planting other things, such as Foxgloves, Harebells, or the small Furze, among the Heaths. When Heaths are grown in this way their bloom is charming from the first peep of spring, when the little rosy Heath of the mountains of central Europe begins to open, till the autumn days, and even the mild winter ones, when the delicately tinted Portuguese Heath (E. codonodes) blooms in the south and west of England.

We take little notice of such minor things as the Fire-bush, so lovely in Cornwall, and pretty also in other seashore districts, as it may not be enjoyed in the country generally, and we also leave out some others, like the Witch and Japan Hazels, the Winter-sweet, and the Allspice bushes, which, though pretty seen near at hand, do not give us those definite effects in the garden landscape which it is well to seek if we wish to get out of the fatal jumble of the common shrubbery. The Escallonias, though very precious in seashore gardens and in the south on warm soils, are apt to go into mourning after hard winters elsewhere. So many of our island gardens are near the sea

that we must not undervalue these shrubs, but a constant source of waste is the planting of things not really hardy in districts where they perish in hard winters, such as the Arbutus about London and in the midlands. And, even where things seem hardy, some of them, like Fuchsias, never give the charming effects we get from them in the west of Ireland, in Wales, and in warm coast gardens, whatever care we take. Such facts should not discourage, because they only emphasise the lesson that the true way in a garden is for each to do what soil and climate allow of, and in that way we arrive at the most important artistic gain of all, *i.e.* that each garden has its own distinct charms.

A very lovely group is the Lilacs, much enriched of recent years by the introduction of new species and many charming varieties of the common old Lilac—lovely plants, worthy of the finest days of our English summer. Few of the forms found in France seem to thrive in our gardens, owing to grafting on the Privet, which often, after a year or two's poor bloom, kills the plant and begins to take care of itself. How much evil has been done to English ideas of flowering shrubs by thrusting this Privet everywhere! Lilacs, being hardy in all parts of Britain, deserve our best care, and should always be grouped together in the open sun. They should always be bought from nurserymen who raise them from layers or suckers in the good old way, and should be, once grown up, always kept a little open and free by simple pruning, so that we may get handsome trusses. With these, too, must be grouped such lovely things as the Snowdrop tree, the Stuartias, and bush Magnolias. The Magnolias have recently become more numerous, and it will be easy soon to have a Magnolia garden, at least in favoured places. The tree Magnolias should come among the taller flowering trees in the distant parts of our flower grove—Horse Chestnuts, Buckeyes, Tulip Trees, Laburnums, Catalpa, and Yellow Wood. The Alpine Laburnum, so very beautiful in bloom, becomes a tall slender tree where not overcrowded, and the flowering Ash (Ornus) must not be forgotten among the taller flowering trees. For the Paulownia, so beautiful in France and Italy in spring, our climate is not warm enough to secure full size or health, save in the most favoured places in the south.

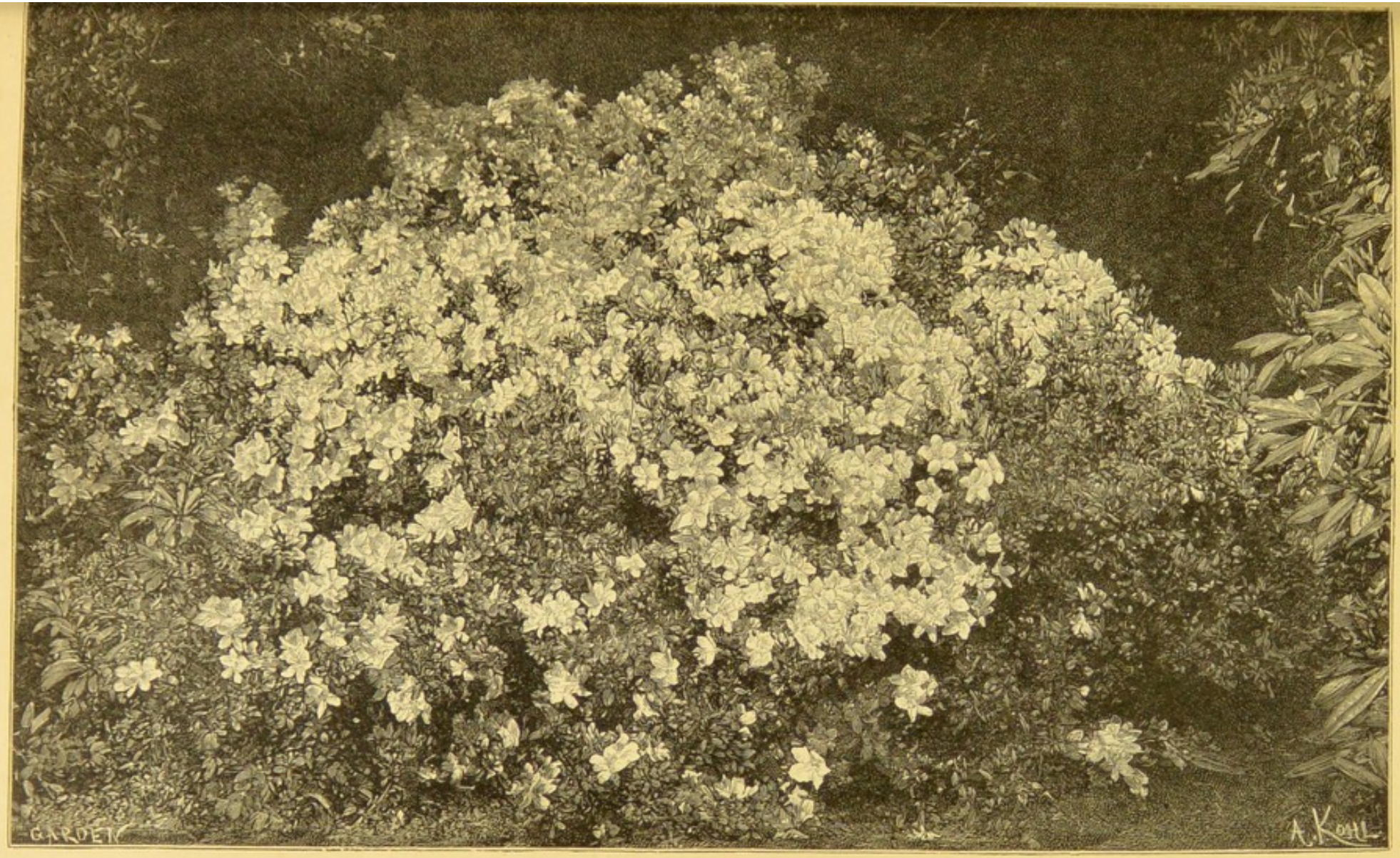
Some shrubs of modest charm as to their flowers give very pretty effects in well-placed groups, such as the flowering Currant, Tamarix, and Ceanothus on walls. But none are more charming than the wild Roses in summer, the Sweet Briar being taken as representing our native wild Roses; the Glossy Rose (R. lucida), the American wild Roses; the many-flowered Rose (Polyantha), and the Japanese (R. rugosa). These and others I have planted in hedgerows and

rough fences, and have never planted anything that has given a more beautiful return.

The Judas Tree is neglected in England, and rarely planted in an effective way. In the Parc Monceau in Paris there is a beautiful grove of it in which trees of various ages form one family party, so to say, showing some differences in colour and earliness. Such slight but often valuable differences arise when we raise trees from seed and do not slavishly follow the habit of grafting one thing on another. They are one of the gains of following a more natural mode of increasing trees than is usual in nurseries, as those raised from seed have a chance of interesting variations, whereas grafting from the same identical form shuts out all chance of it. It is curious that a tree so effective in bloom, and so distinct in habit as the Judas Tree is, should be so little planted with us, and, when planted, so often left to the scant mercy of the shrubbery border. All such trees have their own ways and wants, and should not be jumbled up in the common crowded and ignorant way of planting.

I have never seen anything with greater pleasure than a bush of Citrus Trifoliata which I saw in the School Garden at Versailles —a sheet of large and beautiful flowers—on April 19. I had previously no idea that any Citrus could have borne such a beautiful and distinct bloom in the open air, and yet this was borne by a hardy shrub standing for years among Crabs, Almonds, and trees of that degree of hardiness.

Of Indian Azaleas in the open air Mr. C. R. Scrase-Dickens writes: "The hardy Azaleas of the American races are very popular, but few know the value of the white Indian Azalea for the open garden in the south of England. Few plants give so little trouble when once established, even though the late frosts may now and again spoil the beauty of the flowers. When planted out and left alone, it is not much more than three or four feet in height, dense and spreading. The engraving shows a bush over ten feet across with a shadow thrown over the upper part by a tree of Magnolia which grows at the side. It gets shelter from cold winds and from too fierce a sun on the flowers. Any one who intends to plant this Azalea should remember that it flowers naturally at a time when there may still be late frosts and cold winds hovering about, and that it would be a mistaken kindness to choose any place, such as under a south wall, which would tend to make the blossoms open earlier in the season. We have some plants under a north wall which do admirably, but they seem to like association with other things. The variety which does best here is the old typical white. Overgrown plants of other colours from the greenhouse have been turned out



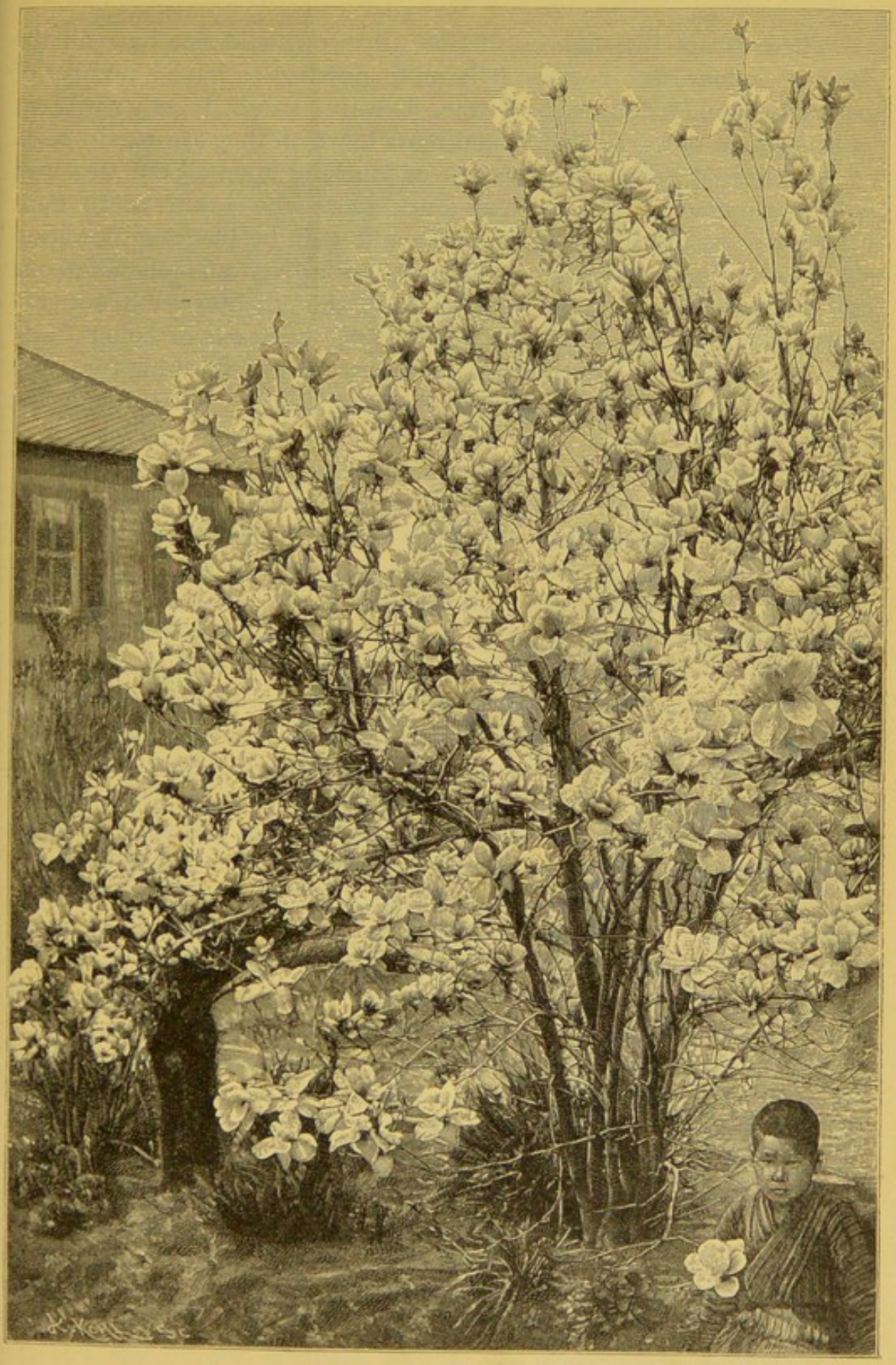
The White Indian Azalea A. Indica), in a wood at Coolhurst, Sussex

sometimes, but they do not seem so happy or produce so good an effect."

If one-tenth the trouble wasted on "carpet-bedding" plants and other fleeting and costly rubbish had been spent on flowering shrubs, our gardens would be all the better for it. There are no plants so much neglected as flowering shrubs, and even when planted they are rarely well grown, owing to the "traditions" of what is called the shrubbery. The common way is to dig the shrubbery every winter, and this is often carried out as a matter of form without giving the soil any manure, while much harm is done by mutilating the roots of the shrubs. The labour and time wasted in this way, if devoted to the proper culture of a portion of the ground each year, would make our gardens delightful indeed. Many shrubs, as fair as any flower requiring the shelter of glass, have been introduced into this country; but for the most part they have been destroyed by the muddle "shrubbery."

The idea of the murderous common shrubbery is so rooted in the popular mind that it is almost hopeless to expect much change for the better. The true way is to depart wholly from it as a mass of *mixed* shrubs and beautiful families should be grouped apart. Each family or plant should have a separate place free from the all-devouring Privet and Laurel, and each part of the shrubbery should have its own character, which may easily be given to it by grouping instead of mixing, which ends in the starvation of the choice kinds. We do not allow stove and green-house plants to be choked in this way, yet no plants are more worthy of a distinct place and of care than hardy shrubs. Low flowering trees, like Hawthorns, group admirably on the turf, but the finer kinds of flowering shrubs should be planted in beds. The shrubbery itself need no longer be a dark dreary mass, but light and shade may play in it, its varied life be well shown, and the habits and forms of each thing may be seen. Plants of high quality or rare deserve to be well grown. Any one who thinks how much less trouble is given by hardy plants than by pot plants will not begrudge attention to outdoor things, and some may even consider a garden of beautiful shrubs as a conservatory in the open air, no kind of flower gardening being more delightful or enduring. We have often to rearrange vigorous herbaceous plants, and constantly to work with the lovable Carnation, but shrubs give us little trouble.

It is not only flowers that suffer from being stuck in lines and patterns; our beautiful flowering shrubs are injured in the same way. The Rhododendron and the Azalea, and what are commonly called American plants, are often put in such close masses that their forms cannot be seen. We may get the flowers to some extent, but they are not so enjoyable as when the plants are allowed to show their individual forms in picturesque and open ways.



Magnolia in a Japanese garden.

There is not the slightest reason why we should not have all the force of colour, too, because it is quite possible to have a number of beautiful Rhododendrons and other flowering shrubs together without putting them in the serried formal mass in which they are usually seen.

So, without going into varieties or touching upon all the treasures within our reach, it is clear how much those who care to adorn their gardens in the most enduring way have to gain by planting flowering shrubs after their own tastes. Those who have given a fair chance to one half the groups of plants referred to in this chapter need not care much about garden coal bills, hot-houses, "contrasts of colour," and the many other considerations, as the beauty of the flowering trees and shrubs will come year after year as certainly as the wind through the Cherry-blooms.

Some Flowering Trees and Shrubs Hardy in British Gardens.

Abelia
Æsculus
Akebia
Amelanchier
Amygdalus
Andromeda
Aralia
Arbutus
Arctostaphylos
Asimina
Azalea
Azara
Berberidopsis
Berberis
Bignonia
Buddleia
Calycanthus
Camellia
Caragana
Catalpa
Ceanothus
Cerasus
Cercis
Chimonanthus
Chionanthus
Cladrastis
Clematis
Clethra
Colletia
Colutea
Comptonia
Cornus
Corylopsis
Cotoneaster
Cratægus
Cydonia
Cytisus
Daphne
Desfontainea
Desmodium
Deutzia
Edwardsia
Embothrium
Erica
Escallonia
Eucryphia
Euonymus
Exochorda
Fabiana
Forsythia
Fothergilla
Garrya
Gaultheria
Genista
Gleditschia
Halesia
Hamamelis
Hibiscus
Hypericum
Hydrangea
Illicium
Indigofera
Jasminum
Kalmia
Kerria
Kœlreuteria
Laburnum
Ledum
Leiophyllum
Lespedeza
Leycesteria
Liriodendron
Lonicera
Lupinus
Magnolia
Mahonia
Malus
Mespilus
Olearia
Ononis
Ornus
Ozothamnus
Paulownia
Pavia
Pernettya
Philadelphus
Phlomis
Piptanthus
Prunus
Pterostyrax
Pyrus
Raphiolepis
Rhododendron
Rhodora
Rhodotypos
Ribes
Robinia
Rosa
Rubus
Sambucus
Sophora
Spartium
Spiræa
Staphylea
Stauntonia
Stuartia
Styrax
Syringa
Tamarix
Ulex
Veronica
Viburnum
Virgilia
Weigela
Wistaria
Xanthoceras

*** *Some of the evergreens, though hardy under almost any conditions in the southern and shore lands, may perish in severe winters in cold inland districts.*

CHAPTER IX.

CLIMBERS AND THEIR ARTISTIC USE.

THE splendid squadrons of the Pine, with crests proud in alpine storm, massed in serried armies along the northern mountains—the Oak kings of a thousand winters in the forest plain—are lovely gifts of the earth mother, but more precious still to the gardener are the most fragile of all woody things that garland bush and tree with beautiful forms and blossoms, like Clematis, Jasmine and Honeysuckle, and the many lace workers of the woods and brakes. It is delightful to be able to turn our often ugly inheritance from the builder almost into gardens by the aid of these, from great yellow Roses to Ivy in many lovely forms ; but it is well to take a wider view of these climbing and rambling bushes and their places in the garden and in the pleasure-ground. It is for our own convenience we go through the labour of nailing them to walls, and though it is a charming and necessary way of growing them it is well to remember that many climbers may be grown in beautiful ways without such laborious training. The tendency to over-pruning of the climbers on walls ends often in a kind of crucifixion. So the more freely things are trained the better. Proof of this is in the handsome masses of climbers on the high walls of the Trinity College Gardens at Dublin and in many private places where climbers have been liberally and well planted on walls.

But it should never be forgotten that many of these plants will grow by themselves, like the Honeysuckles, which, while pleasant to see on walls, are not less so on banks, or even on the level ground. Pretty fences and dividing screens may also be easily formed by hardy climbers. The wild kind of Clematis are charming, and, apart from their use in the garden, they should be encouraged for trees and banks.

The Ivy of our northern woods has broken into a number of beautiful varieties often distinct in form and even in colour ; they deserve far more attention for evergreen bowers, evergreen fences, and dividing lines, apart from their growth on walls and trees. The bush

forms of these may form broken hedge-like garlands 2 feet to 3 feet high round little isolated flower gardens. Almost equally beautiful plants in form of leaf are the Green Briers (Smilax), some of which are hardy in England, but seen in few gardens, and rarely treated in an artistic way, though excellent for walls and rocks. In the eastern counties they may be seen doing well in the open ground, as in Cambridge.

Of the beauty of the Jasmine of all plants introduced there is least need to speak, yet how rarely one sees the old white Jasmine made true use of in large gardens. It should be in bold wreaths or masses where it thrives, and so also the winter Jasmine, which is a precious thing for our country, should not be put in as a plant or two in bad conditions, but treated as a fine distinct thing in masses round cottages and outhouses. These plants are easy to increase and should not be grown in a niggardly way. The finest of hardy climbers, the Wistaria, is much more frequently and rightly planted in France than in our gardens, though it thrives in the Thames valley as well as in the Seine valley. It should be, in addition to its use on walls and houses, made into bold covered ways and bowers and trained up trees, and even along Oak fences.

VIGOROUS CLIMBERS ON TREES.—It is not only that stout climbers are more beautiful and natural, and show their form better growing amongst trees, but it is the only way that many of them can be grown with safety owing to their vigour. The way the common Ivy wreaths the trees in rich woods and the wild Clematis throws ropes up trees on the chalk shows what the larger hardy climbers would do if allowed a chance, and therefore the way is to put them in the way of getting over trees or rough or open copses, or even now and then in hedgerows. Some vigorous climbers would in time ascend the tallest trees, and there is nothing more beautiful than a veil of Clematis montana suspended from the branch of a tall tree. Besides the well-known climbers, there are many species of Clematis which have never come into general cultivation, but which are as beautiful for such uses, though not showy. The same may be said of the Honeysuckles, wild Vines, and various other families with which much of the northern tree and shrub world is garlanded. Occasionally one sees a climbing Rose rambling over a tree, and perhaps among our garden pictures nothing is more lovely than such a Rose when in flower. By a selection of the hardiest of climbing Roses very beautiful pictures might be formed in our pleasure grounds and plantations, and we might often see as the result of design what is now mainly an accident. A number of Roses lend themselves admirably to growing "free" among trees and large shrubs.

CLIMBERS OF CLASSIC BEAUTY OR RARITY are often found a home for on walls, and in our country some variety of wall surface is

a great gain to botanic gardens and private gardens like Offington, in which a great variety of shrubs from all countries is seen. In the

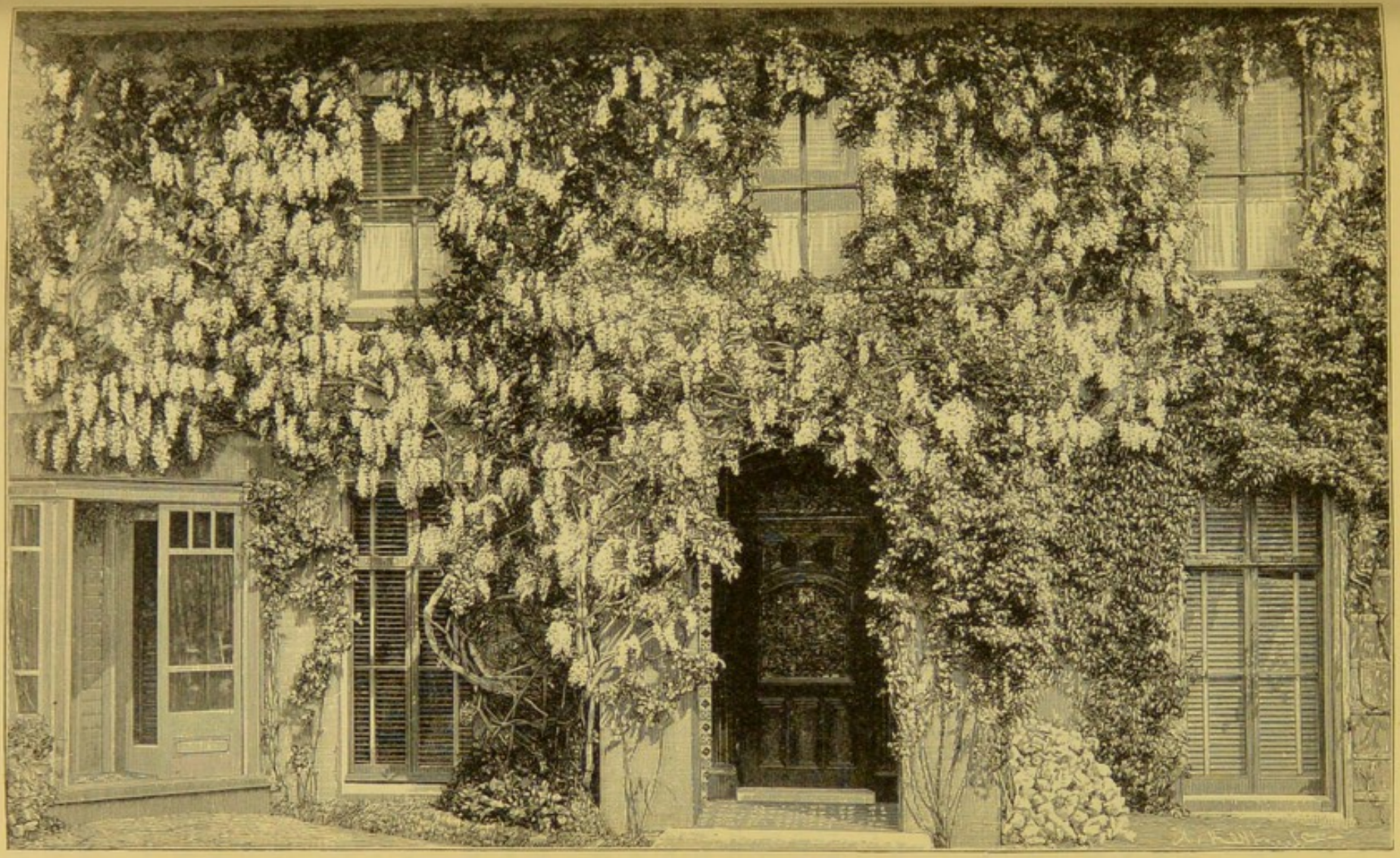
Climbers on the Vicarage, Odiham.

milder districts of the country all round the coast some of the finest exotics, such as Lapageria, and some greenhouse plants of great beauty, like Clianthus, which about London can only be enjoyed in a green-

house, may be grown on walls in the open air. Some of the fine plants of Chili also may be grown on walls of various aspects. Abelia, Lardizabala, Berberidopsis and Rhynchospermum are among the plants sometimes so grown, but there is no limit as to selection. Many who have visited our best gardens will probably have stored away in their memories some of the pictures they have seen given by noble wall plants well grown in this way—as, for example, the New Zealand Edwardsia at Linton, so fine in form and colour, and the handsome Fremontia. Hard winters settle the fate of many beautiful things among these, but, happily, some of the loveliest things are hardy, like the Winter Sweet, Bignonia, Magnolia, and sometimes the splendid colour of the Pomegranate buds is seen among them.

It may be noted here that among the unfortunate attempts of certain architects who designed gardens to get rid of the gardener and his troublesome plants were instructions that no climbers were to be allowed on walls. There was not some years ago at Shrubland a single spray of any climber allowed to grow on the house or extensive terrace walls there, as if in a garden death were better than life.

FRAGILE CLIMBERS ON SHRUBS.—Apart from the vigorous climbers that we may trust in shrubberies, woods, and on rough banks, and which, once fairly started, take care of themselves, there are fragile things which deserve to be used in rather a new way as far as most gardens are concerned, namely, for throwing a delicate lace-work of flowers over the evergreen and other choice shrubs grown in our gardens—Rhododendron, Kalmia, Andromeda, Azalea, and even taller shrubs. A group of Hollies will not look any the worse for wreaths of fragrant Clematis in autumn. Often stiff, unbroken masses of Rhododendrons and Evergreen flowering shrubs will be more varied if delicate flakes of Clematis (white, lavender, or claret-red) or the bright arrows of the Flame Nasturtium come among them here and there in autumn. The great showy hybrid Clematises of our gardens are not so good for this use as the more elegant wild Clematises of N. America, Europe, and N. Africa, such as the Hairbell and others of the less vigorous Clematis. These are so fragile in growth that many of them may be trusted among groups of choice shrubs like Azaleas, training themselves and throwing veils over the bushes here and there. Among these nothing is better than the various forms of Clematis Viticella, and there is also a number of not very showy plants which might be used in this way, such as Apios and even the climbing Fern of N. America, and some Bomareas and the wild Nasturtiums. Two lovely twining shrubs must never be left out in any scheme of this kind, the Atragene or Alpine Clematis of the mountains of Europe, hardy as the Oak and tender in colour



Wistaria sinensis on a Sussex house.

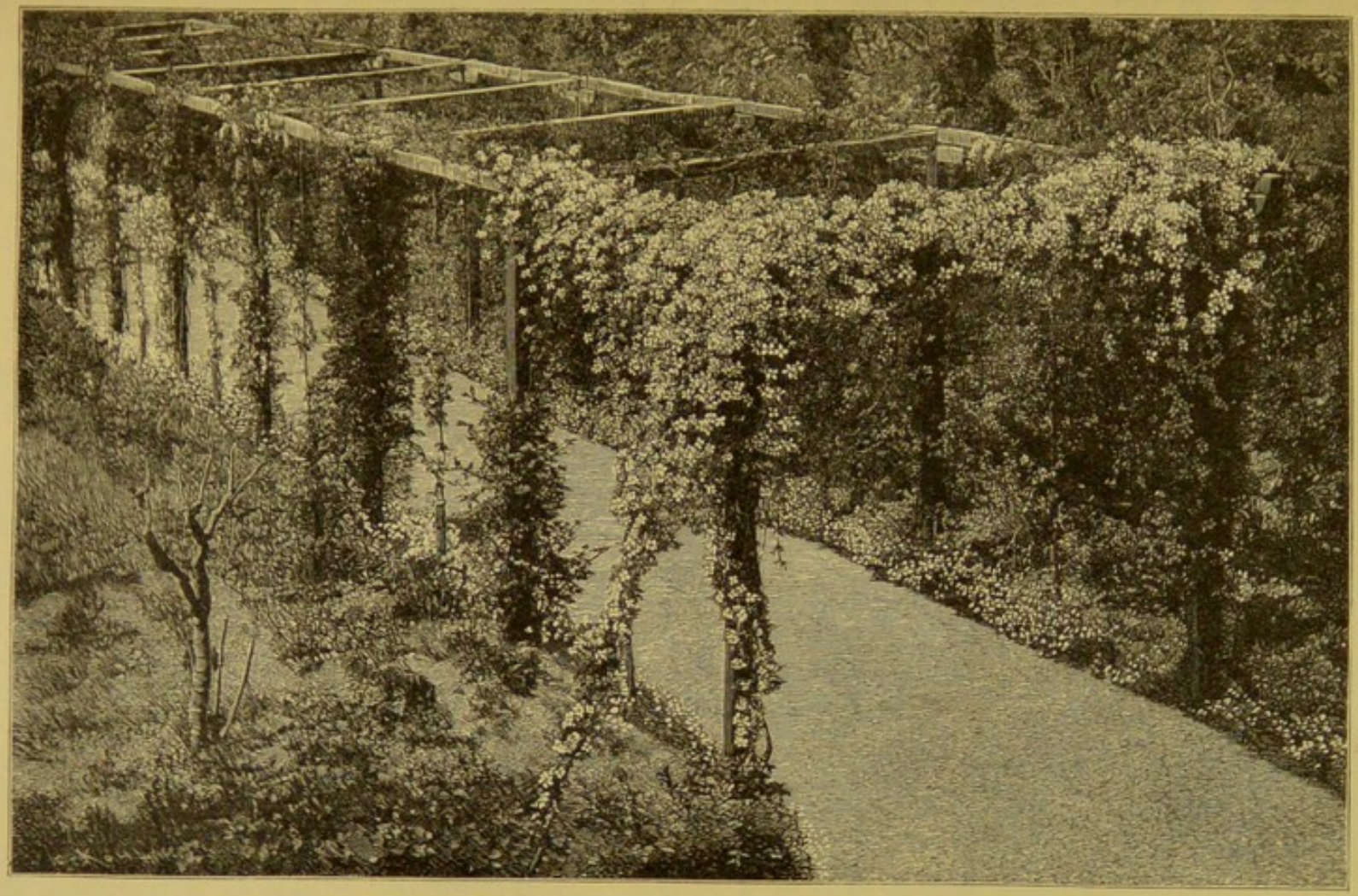
as the dove, and in all the warmer districts the winter-flowering Clematis of the islands of the Mediterranean and the North African coasts, where it garlands with the Smilax millions of acres of hyena- and jackal-haunted scrub.

ROSES AS CLIMBERS.—It would be difficult to overpraise the value of the Rose in all arrangements of climbing plants. Many of the more vigorous Wild Roses of the northern world are naturally almost climbing plants, and some of them are seen 20 ft. high or so among trees. In gardens many varieties might be mentioned which in past years were a great source of beauty and gave a very showy effect when well used, but, in our own time, and within the past generation or two, since the raising of Gloire de Dijon, a noble series of Roses, wholly distinct from the old climbing kinds, have been raised in France, the most precious flowers that have ever adorned the garden.

The old Climbers and Garland Roses were almost too vigorous for the garden, and their bloom did not last long enough to justify their getting a place there; but now, with the great Climbing Tea Roses we have for the southern parts of these islands, we may count on a bloom for months. Hence we have in these Roses, where they thrive the best, the most precious of all ornaments for walls of houses, trellis work, pergolas. In southern parts of the country we even get fine results from these Roses on the north side of walls, where some Roses flower better than on the south side. Also, we can grow them in the open on trellises, or away from walls. In the northern parts of the country, where these great climbing Tea Roses may not thrive so well, walls come in to help us more and more by their shelter and warmth, and the encouragement they give to early bloom.

Apart from these great Roses of garden origin, which will long be among the most precious, some Wild Roses are of the highest importance in warm districts and good soils, particularly the Indian R. Brunonis and the Many-flowered Roses (R. polyantha) of Japan; but in the presence of the need of so much wall space for the Garden Roses these Wild Roses will usually be best in the shrubbery or some place apart, where they may be let alone as regards the attention Roses usually obtain in gardens. No good can arise from choice, place being given to Roses like R. polyantha which are more vigorous than our own wild Dog Rose when at its best.

In Europe perhaps the country that pleases one most by its fitness for Rose culture is that along the shores of the Mediterranean, where the Banksian and other more delicate Roses may be seen literally "abandoning themselves"—up trees, forming hedges, and arranging themselves in other delightful ways. I remember being very much struck with the beauty of the single Banksian Rose in such



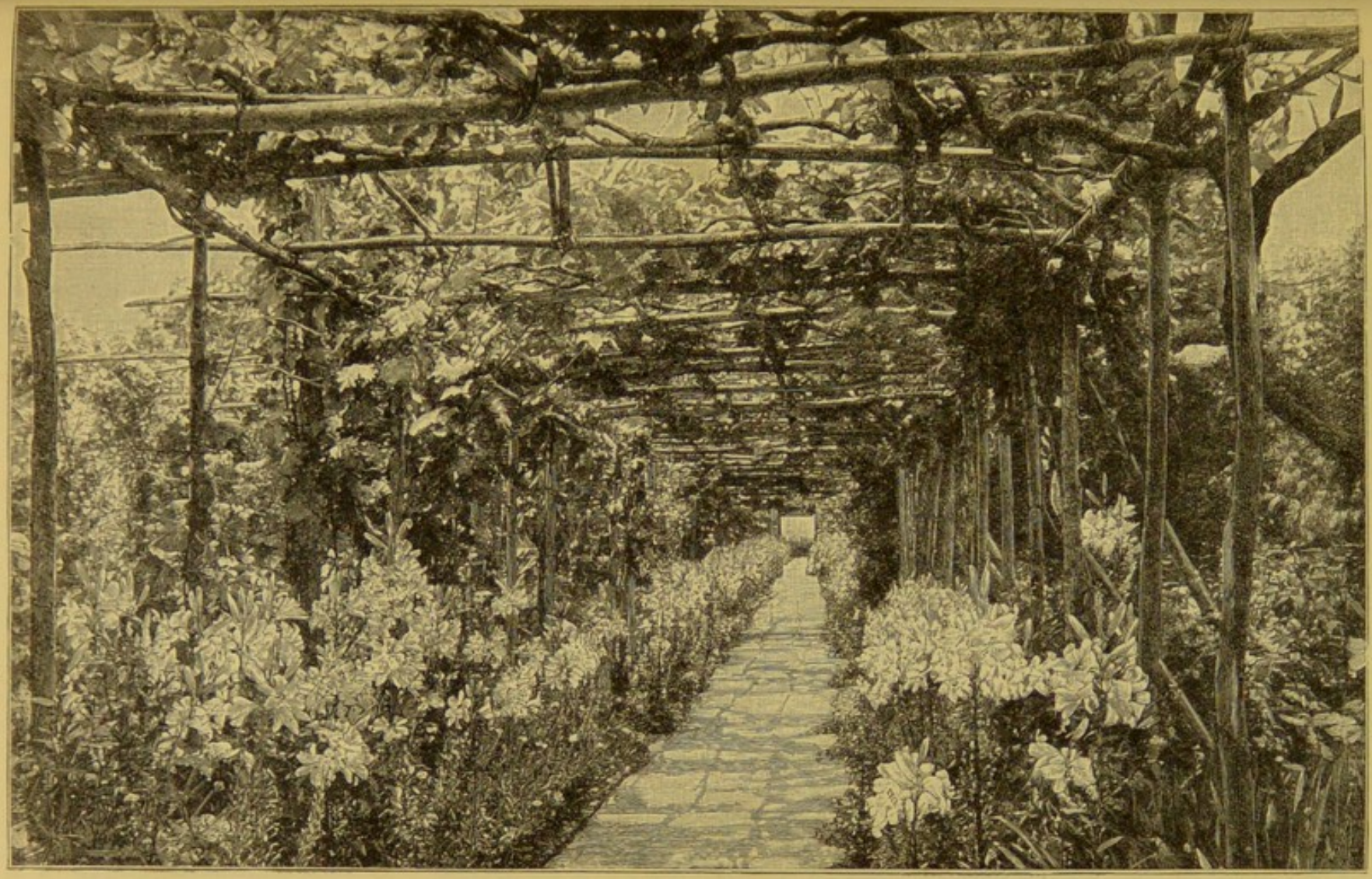
Pergola at Tresserve.

positions, and often wondered why it was not secured for our own gardens, even though it might not grow so freely as there. It is only, however, by making use of our walls that we may enjoy the tender Roses, and with their aid even our spring often gives us a few early Roses on walls, for the old pink China is the earliest as well as the latest to bloom, and Gloire de Dijon opens its first flowers early in May.

VINES FOR THEIR BEAUTY OF FORM.—Going back some thousands of years to the earliest sculptured remains of some of the oldest peoples, we see evidence that the Grape Vine was as well known as it is now, and it is no doubt much older than we have any evidence of. Among the Kabyle villages of North Africa I passed many Vines of great age trailing over very old Olive trees in the little orchard fields. In many of these cases in such countries there was the value of the fruit, but in our country, where the Grape ripens so rarely out of doors, the charm of the plant is so great that we see many cottages in Surrey and Norfolk set deep in Vine leaves. The Grape Vine, however, is but one of a large family of plants, and though we may not see in our country its garlands from tree to tree purple with fruit we may see much of its fine forms of leaf. But the wild Vines are too vigorous for use except on walls occasionally, though excellent for banks and trees and for any place outside the flower garden. I have seen them clambering up forest trees, spreading into huge masses of fine foliage on the ground, and sending out long arms in search of the nearest trees. Wild Vines, strong and handsome climbers, are hardy, graceful, vigorous, and will soon cover dry banks, rocks, and trees also.

To the Vines (Vitis) have now been joined by the botanists Virginian Creepers (Ampelopsis), and between the two groups it need not be said what noble things they offer for garlanding trees, walls, bowers, rocks, and banks. It cannot be said that we neglect these Virginian and Japanese creepers, but the Vines are so far seldom well used with us, although easy of cultivation.

PERGOLAS.—Though our summer is often not sunny, there are seasons when shaded walks may be enjoyed, and numbers of free-growing climbing plants give an abundant and lovely choice of living drapery for them, Aristolochia, Wistaria, Virginian Creeper, rambling Roses, Honeysuckles, Jasmines and the free Clematises doing well over such. In Italy and warm countries one often sees in gardens the pergola—as the creeper-shaded walk is called—often serving the two-fold purpose of supporting Grape Vines and giving pleasant coolness during the summer heat. As a rule, these pergolas are rude trellis-work structures of wood, sometimes supported by stone posts where these are at hand. In the gardens in the neighbourhood of Rome,



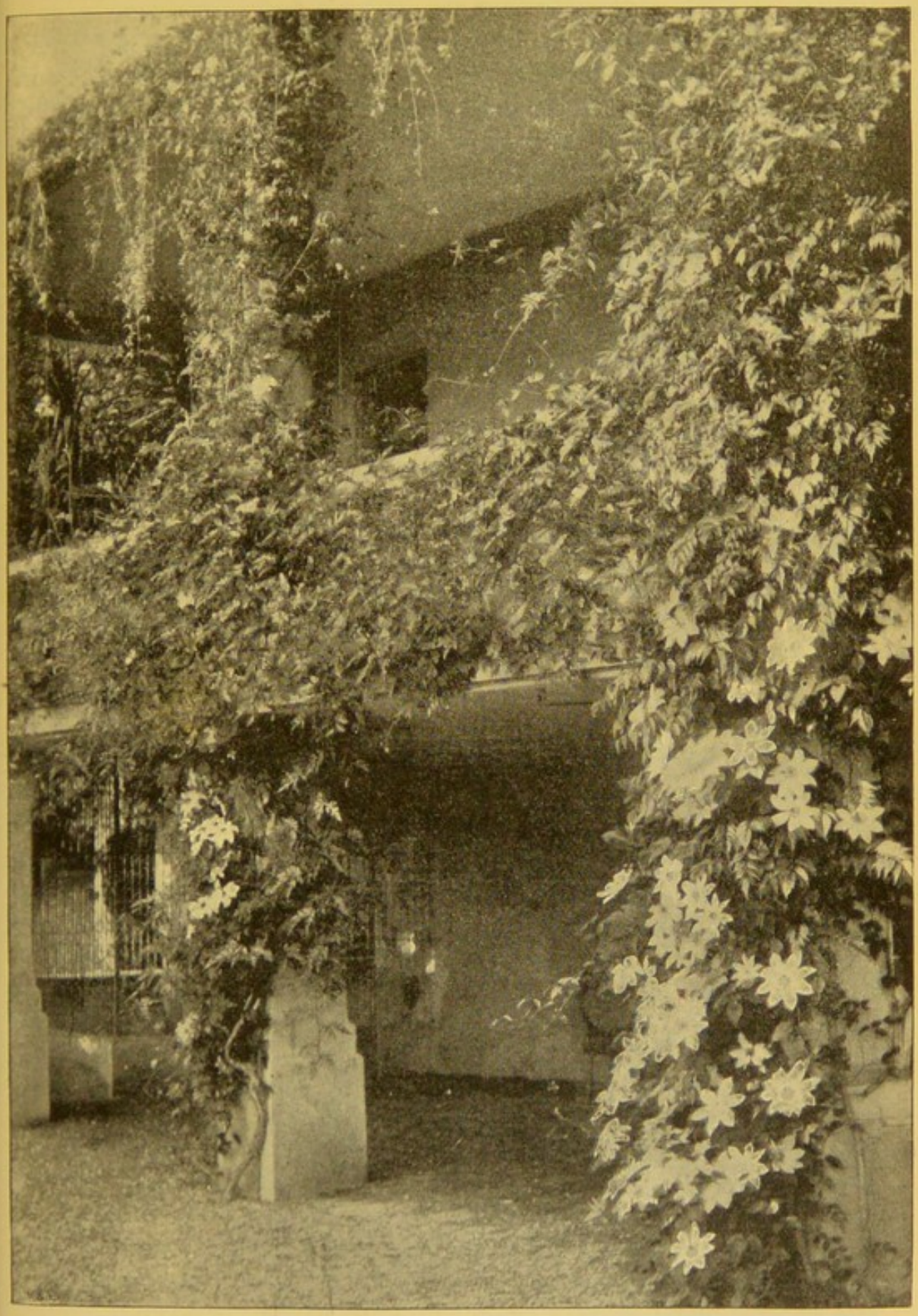
Pergola in Mrs. Eden's garden at Venice.

Naples, and Florence there are beautiful examples of the pergola—stately structures, the supports of which were massive columns of stone covered and festooned with Banskian Roses, Wistaria, Periploca, Clematises, Honeysuckles, blue Passion Flowers scarlet Trumpet Flowers, and other climbers which form cool retreats in flower-time and in the hot days. But such pergolas seldom occurred outside the gardens of the great villas, and near humbler dwellings the pergola was usually a simple structure made for the purpose of supporting the Grape Vine, but nearly always pretty.

These creeper-clad covered ways should usually lead to somewhere and be over a frequented walk, and should not cut off any line of view nor be placed near big trees, especially such trees as the Elm, whose hungry roots would travel a long way to feed upon the good soil that the climbers should be planted in. A simple structure is the best. The supports, failing the Italian way of making posts of stone—also seen, by the way, in gate-posts in Northern England—should be Oak tree stems, about 9 inches in diameter, let into the ground about 2 feet; the better if on a bed of concrete. The posts must be connected and firmly secured to each other by long pieces along the sides, while the top may be formed of smaller pieces to make a firm structure. On no account let the "rustic" carpenter begin to adorn it with the fantastic branchings he is so fond of.

LIGHT ARCHES OVER WALKS AND BORDERS.—When a quiet walk leads from one part of the garden to another, and that walk is spanned at intervals with slender iron or other light arches clothed with Honeysuckle, Clematis, or Jasmine, it gives an added grace to the walk. This also is a delightful way of framing, so to say, a flower border, the light arches springing up from the line of the trellis, which should be used to cut off the borders from the kitchen garden.

ANNUAL AND HERBACEOUS CLIMBERS.—However rich we may be in perennial and shrubby climbers, we must not forget the climbing things among annual and like plants to help us, especially in the smaller class of gardens and those on which we depend more on annual flowers. Hedges of Sweet Peas there are few things to equal; the fragile annual Convolvuli in many colours are pretty for low trellises, the vigorous herbaceous Bindweeds for rough places outside the flower garden. Most showy of all annual climbers are the many Gourds, which, treated in a bold way, give fine effects when trained over outhouses, sheds, or on strong stakes as columns. The showy annual climbing Tropæolums, as well as the brilliant herbaceous and tuberous rooted kinds, are most precious, and Apios, Adlumia, Eccremocarpus, Maurandya and Cobæa in mild districts are among the plants that help us to make walls into gardens. Nor must we forget the Hop, a vigorous, graceful, herbaceous climber, of much value where



Climbers on Loggia (Tresserve).

well placed. Among these climbers we may place the Passion Flower, because so often short-lived in the cold and more inland parts of our islands. It is best for sheltered and sea-coast places and is not quite hardy there in our coldest seasons; still, if its base be sheltered with some dry Fern, it will spring up again.

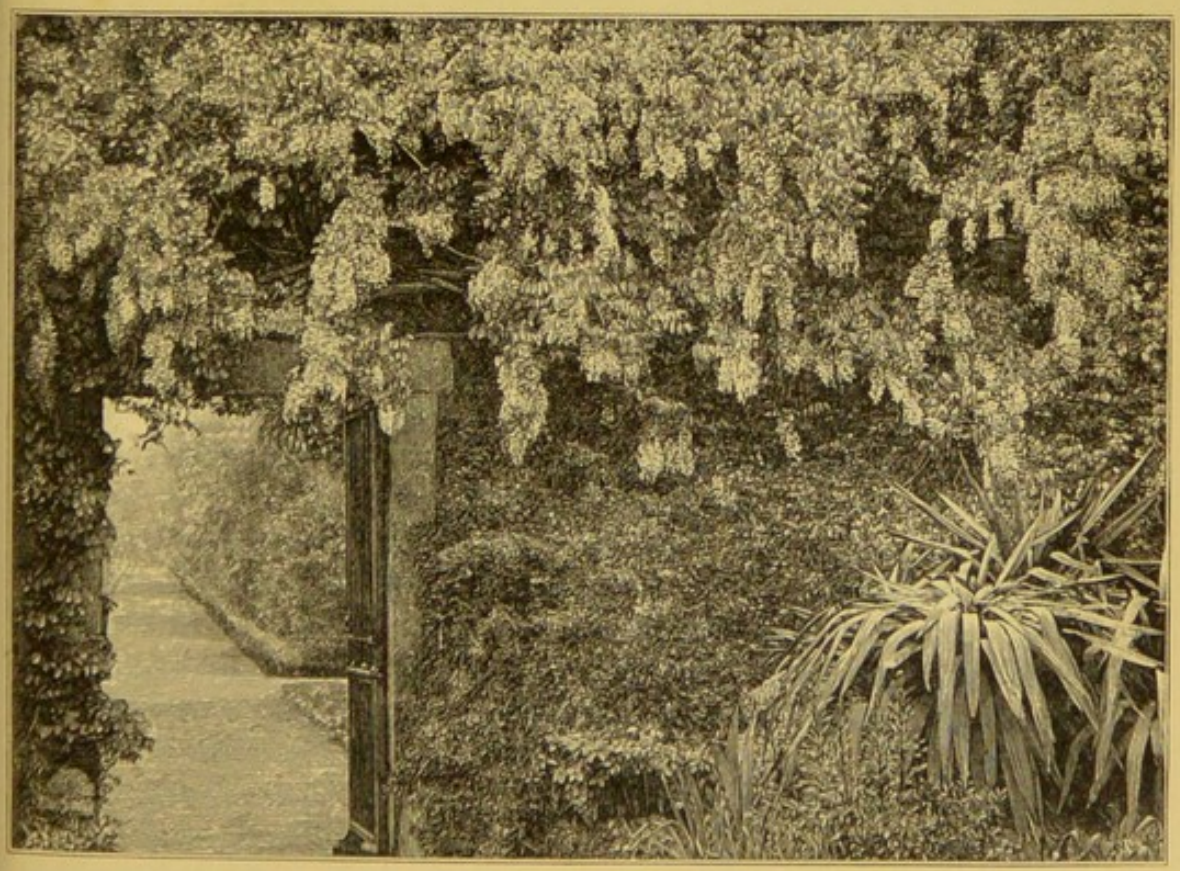
COVERED WAYS OF FRUIT TREES.—This way of growing fruit trees and shading walks is not often seen, though few things would be prettier or more useful in gardens if fruit trees of high quality were chosen. Although in our gardens the shaded walk is not so necessary as it is in Italy and Southern France, in hot seasons shade is welcome in Britain; and, as in many gardens we have four times as many walks as are needed, there is plenty of room for covering some of them with fruit trees which would give us flowers in spring, fruit in autumn, and light shade. The very substance of which walks are made is often good for fruit, and those who know the Apricot district of Oxfordshire and the neighbouring counties may see how well fruit trees do in hard walks. It is not only in kitchen and fruit gardens that their shade might be welcome, but in flower gardens, if we ever get out of the common notion of a flower garden which insists on everything being seen at one glance and the whole as flat as a pancake.

In some old gardens there was a habit of "plashing" trees over walks—trees like the Lime, which grew so vigorously that they had to be cut back with an equal vigour, this leading in the end to ugliness in the excessive mutilation of the trees. One result of the frequent cutting was a vigorous summer growth of shoots, which cast a dense shade and dripped in wet weather. The purpose of such walks would be well fulfilled by training fruit trees over them, as they are trees which much more readily submit to training and give the light and airy shade which is best in our country. The fruit trellis, whatever it was formed of, need not be confined to fruit trees only, but here and there wreaths of Clematis or other elegant climbers might vary the lines.

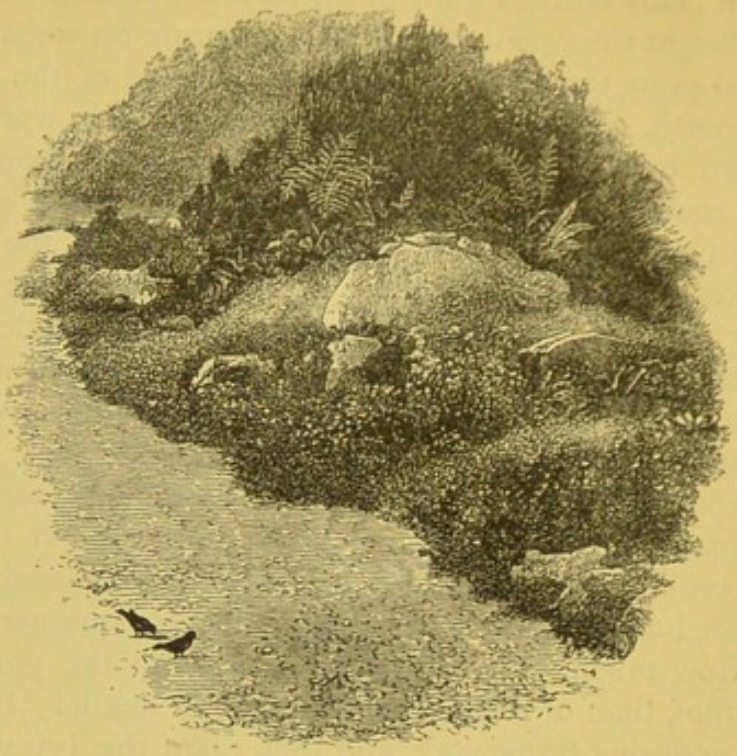
EVERGREENS AS CLIMBERS.—Those who live in sheltered valleys on warm soils, or among pleasant hills above the line of hard frosts, may be so rich in evergreens that they will keep their walls for the fairest of true climbers. But in cold, exposed, and inland parts people are often glad to have good evergreens on walls, even bushes not naturally climbers in the habit, such as Garrya elliptica, choicer evergreen Barberries, Camellias on the north sides of walls, Azara, Escallonia, Cotoneaster, and evergreen Enonymus. In walking between Brighton and Newhaven I once came upon a square house, on an exposed and bare eminence, which was set all over in the scarlet berries of Cratægus pyracantha, a proof with many others of the fine qualities of this southern shrub for some walls. The Laurustinus, too, is

charming on many cottage walls in winter and may escape there when it would suffer in the open ; the Myrtle is happy on walls in northern districts, and even the poet's Laurel may be glad of the shelter of a wall in the north. The evergreen Magnolia, which in warmer Europe is a standard tree, in our country must usually be grown on walls, even in the south, and there is no finer picture than a good tree of Magnolia on a house. The beautiful Ceanothus of the Californian hills often keep company with these evergreens on walls ; but even in the warmer soils of the home countries they are tender, and their delicate sprays of flowers are much less frequently seen with us than in France, although we cannot resist trying them on sunny walls, and on chalky and sandy soils they have better chances.

Apart from true shrubs as evergreens, so frequently seen in Britain, we have some natural climbing plants for walls. First of all is our native Ivy, broken into all its beautiful forms, and capable of varied use for walls, houses, borders, screens, and even summer-houses and shelters. How much better to make bowers in the garden of Ivy, as a living roof, than of rotten timber, straw, or heath ! If we make a strong and enduring framework, and then plant the Ivy well, we soon get a living roof, which, with little care, will last for many years and always look well.



Wistaria sinensis over a gate in the College Botanic Gardens, Dublin.



CHAPTER X.

ALPINE FLOWER- AND ROCK-GARDENS.

THERE was an idea common that the exquisite flowers of alpine plants cannot be grown in gardens in lowland regions. This was not confined to the public; it has been propagated by botanists and horticulturists whenever they have had to figure or describe alpine flowers; while many travellers have regretted that we could not enjoy in our gardens these most charming of all flowers.

So far from its being true, however, that high mountain plants cannot be cultivated, there is no alpine flower that ever cheered the traveller's eye that cannot be grown in these islands.

What are alpine plants? The word *alpine* is used to denote the vegetation that grows naturally on all high mountain-chains, whether they spring from tropical plains or green northern pastures. Above the cultivated land these flowers begin to occur on the fringes of the woods; they are seen in multitudes in the broad pastures with which many mountains are robed, enamelling their green, and where neither

grass nor tall herbs exist; where mountains are crumbled into slopes of shattered rock by the contending forces of heat and cold; even there, amidst the glaciers, they spring from the ruined ground, as if the earth-mother had sent up her loveliest children to plead with the spirits of destruction.

Alpine plants fringe the fields of snow and ice of the higher hills, and at great elevations often have scarcely time to flower before they are again deep in snow; while sometimes, if the past year's snow has been very heavy, and the present year's heat below the average, many of them may remain beneath the surface for more than a year. Enormous areas of the earth, inhabited by alpine plants, are every year covered by a deep bed of snow. Where tree or shrub cannot exist from the intense cold, a deep mass of down-like snow falls upon alpine plants, like a great cloud-borne quilt, under which they rest free from alternations of frost and biting winds with moist and spring-like days as in our green winters.

But these conditions are not essential for their growth in many cases. The reason that they abound in very high regions is because no taller vegetation can exist there; were these places inhabited by trees and shrubs, we should find few alpine plants among them; on the other hand, were no stronger vegetation found at a lower elevation, these plants would often there appear. Also, as there are few hard and fast lines in nature, many plants found on the high Alps are also met with in rocky or barish ground at much lower elevations. Gentiana verna, for example, often flowers very late in summer when the snow thaws on a very high mountain; yet it is also found on much lower mountains, and occurs in England and Ireland. In the close struggle upon the plains and low tree-clad hills, the smaller species are often overrun by trees, trailers, bushes, and vigorous herbs, but, where in far northern high regions these fail from the earth, the lovely alpine flowers prevail.

Alpine plants possess the charm of endless variety, and include things widely different:—tiny orchids, tree-like moss, and ferns that peep from crevices of alpine cliffs, often so small that they seem to cling to the rocks for shelter, not daring to throw forth their fronds with airy grace; bulbous plants, from Lilies to Bluebells; evergreen shrubs, perfect in leaf and blossom and fruit, yet so small that a glass would make a house for them; dwarfest creeping plants, spreading over the brows of rocks, draping them with lovely colour; Rockfoils and Stonecrops no bigger than mosses, and, like them, mantling the earth with green carpets in winter; in a word, alpine plants embrace nearly every type of the plant-life of northern lands.

In the culture of alpine plants, the first thing to be remembered is

that much difference exists among them as regards size and vigour. We have, on the one hand, a number of plants that merely require to be sown or planted in the roughest way to flourish—Arabis and Aubrietia, for example ; and, on the other, there are some kinds, like Gentians and the Primulas of the high Alps, which are rarely seen in good health in gardens. It is as to the less vigorous species that advice is chiefly required. And nearly all the misfortunes which these little plants have met with in our gardens are due to a false conception of what a rock-garden ought to be, and of what the alpine plant requires. It is too often thought that they will do best if merely raised on tiny heaps of stones and brick rubbish, such as we frequently see dignified with the name of "rockwork." Mountains are often "bare," and cliffs devoid of soil ; but we must not suppose that the choice jewellery of plant-life scattered over the ribs of the mountain lives upon little more than the air and the melting snow. Where else can we find such a depth of stony soil as on the ridges of shattered stone and grit flanking some great glacier, stained with tufts of crimson Rockfoil? Can we gauge the depth of that chink from which peep tufts of the beautiful little Androsace helvetica, which for ages has gathered the crumbling grit, into which the roots enter so far that we cannot dig them out? And if we find plants growing from mere cracks without soil, even then the roots simply search farther into the heart of the flaky rock, so that they are safer from drought than on the level ground.

We meet on the Alps plants not more than an inch high firmly rooted in crevices of slaty rock, and by knocking away the sides from bits of projecting rock, and laying the roots quite bare, we may find them radiating in all directions against a flat rock, some of the largest perhaps more than a yard long. Even smaller plants descend quite as deep, though it is rare to find the texture and position of the rock such as will admit of tracing them. It is true we occasionally find in fields of flat hard rock hollows in which moss and leaves have gathered, and where, in a depression of the surface, without an outlet of any kind, plants grow freely enough ; but in droughts they are just as liable to suffer from want of water as they would be in our plains. On level or sloping spots of ground in the Alps the earth is of great depth, and, if it is not all earth in the common sense of the word, it is more suitable to the plants than what we commonly understand by that term. Stones of all sizes broken up with the soil, sand, and grit prevent evaporation ; the roots lap round them, follow them down, and in such positions they never suffer from want of moisture. It must be remembered that the continual degradation of the rocks effected by frost, snow, and

heavy rains in summer serves to "earth up," so to speak, many alpine plants.

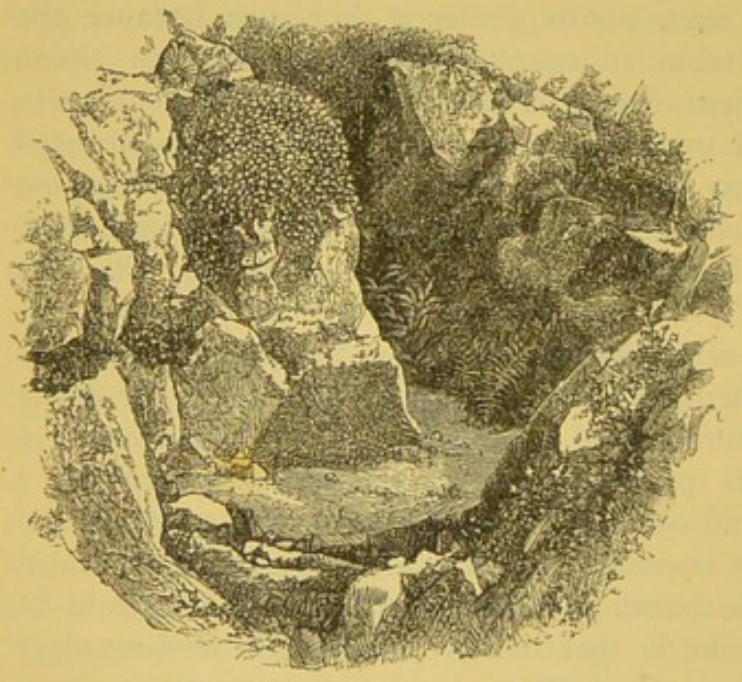
In numbers of gardens an attempt at "rockwork" has been made; but the result is often ridiculous, not because it is puny when compared with Nature's work, but because it is generally so arranged that rock-plants cannot exist upon it. The idea of rockwork first arose from a desire to imitate those natural croppings-out of rocks which are often half covered with dwarf mountain plants. The conditions which surround these are rarely taken into account by those who make rock-gardens. In moist districts, where rains keep porous stone in a humid state, this straight-sided rockwork may support a few plants, but in the larger portion of the British Isles it is useless and ugly. It is not alone because they love the mountain air that the Gentians and such plants prefer it, but also because the great elevation is unsuitable to coarser vegetation, and the alpine plants have it all to themselves. Take a patch of Silene acaulis, by which the summits of some of our highest mountains are sheeted over, and plant it 2,000 feet lower down in suitable soil, keeping it moist and free from weeds, and it will grow well; but leave it to Nature, and the strong herbs will soon cover it, excluding the light and killing it.

Although hundreds of alpine flowers may be grown without a particle of rock near them, yet the slight elevation given by rocky banks is congenial to numbers of the rarest kinds. The effect of a well-made rock-garden is pretty in garden scenery. It furnishes a home for many native and other plants which may not safely be put in among tall flowers in borders; and it is important that the most essential principles to be borne in mind when making it should be stated. The usual mistake is that of not providing a feeding-place for the roots of the plants. On ordinary rockwork even the coarsest British weeds cannot find a resting-place, because there is no body of soil for the roots to penetrate and find nourishment sufficient to keep the plant fresh in all weathers.

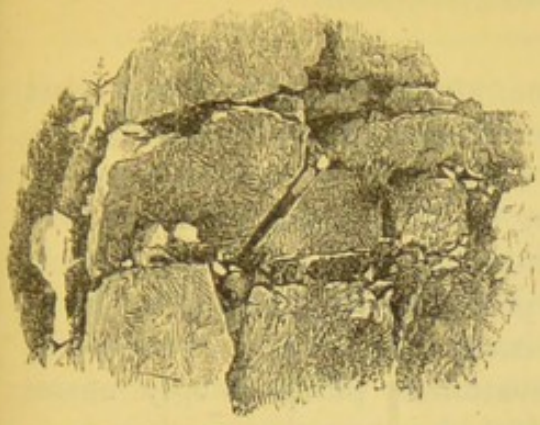
POSITION FOR THE ROCK-GARDEN.—The rock-garden should never be near walls; never very near a house; never, if possible, within view of formal surroundings of any kind, and it should be in an open situation. No efforts should be spared to make all the surroundings, and every point visible from the rock-garden, graceful and natural as they can be made. The part of the gardens around the rock-garden should be picturesque, if possible, and, in any case, be a quiet airy spot with as few jarring points as may be. No tree should be in the rock-garden; hence a site should not be selected where it would be necessary to remove favourite trees. The roots of trees would find their way into the masses of good soil for the

alpine flowers, and soon exhaust them. Besides, as these flowers are usually found on treeless wastes, it is best not to place them in shaded places.

As regards the stone to be used, sandstone or millstone grit would perhaps be the best; but it is seldom that a choice can be made, and almost any kind of stone will do, from Kentish rag to limestone: soft and slaty kinds and others liable to crumble away should be avoided, as also should magnesian limestone. The stone of the neighbourhood should be adopted, for economy's sake, if for no other reason. Wherever the natural rock crops out, it is sheer waste to create artificial rockwork instead of embellishing that which naturally occurs. In many cases nothing would be necessary but to clear the ground, and add here and there a few loads of good soil, with broken stones to prevent evaporation, the natural crevices and crests being planted where possible. Cliffs or banks of chalk, as well as all kinds of rock, should be taken advantage of in this way: many plants, like the dwarf Harebells and Rock Roses, thrive in such places. No burrs, clinkers, vitrified matter, portions of old arches and pillars, broken-nosed statues, etc., should ever be seen in a garden of alpine flowers. Never let any part of the rock-garden appear as if it had been shot out of a cart. The rocks should all have their bases buried in the ground, and the seams should not be visible; wherever a vertical or oblique seam occurs, it should be crammed with earth, and the plants put in with the earth will quickly hide the seam. Horizontal fissures should be avoided as much as possible. No vacuum should exist beneath the surface of the soil or surface-stones, and the broken stone and grit should be so disposed that there are no hollows. Myriads of alpine plants have been destroyed from the want of observing this precaution, the open crevices and loose soil allowing the dry air to destroy

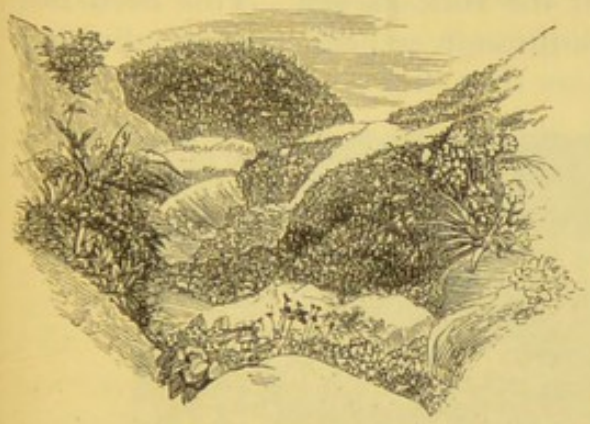


Passage in rock-garden.



Wrong way of forming rock-garden.

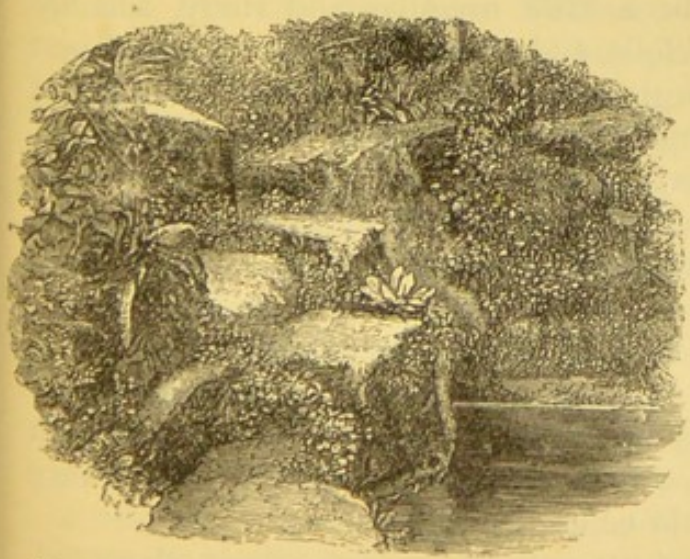
Right.



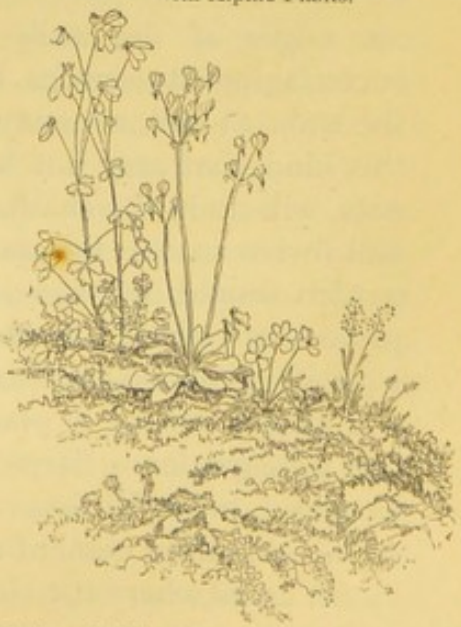
Alpine Plants growing at the bottom of a sloping ridge.

Alpine Plant on border surrounded by half-buried stones.

Corner of a ledge of natural rock with Alpine Plants.



Steps from deep recess of Rock-garden, mossed over with Alpine Flowers.



Ledge of Alpine Flowers (a Garden Sketch).

the alpine plants in a very short time, and so one often sees what was meant for a "rock-garden" covered with weeds and brambles, and forgotten!

In all cases where elevations of any kind are desired, the true way is to obtain them by a mass of soil suitable to the plants, putting a "rock" in here and there as the work proceeds; frequently it would be desirable to make these mounds of earth without any strata. The wrong and usual way is to get the elevation by piling up ugly masses of rock, vitrified bricks, and other rubbish.

No very formal walk—that is to say, no walk with regularly trimmed edges—should come near the rock-garden. This need not prevent the presence of good walks through or near it, as by allowing

Steps in a garden at Coneyhurst.

the edges of the walk to be a little irregular and stony, and by encouraging Stonecrops, Rockfoils, and other little plants to crawl into the walk at will, a pretty margin will result. There is no surface of this kind that may not be thus adorned. Violets, Ferns, Forget-me-nots, will do in the shadier parts, and the Stonecrops and many others will thrive in the full sun. The whole of the surface of the alpine garden should be covered with plants as far as possible, except a few projecting points. In moist districts, Erinus and the Balearic Sandwort will grow on the face of the rocks; and even upright faces of rock will grow a variety of plants. Regular steps should never be in or near the rock-garden. Steps may be made quite picturesque, and even beautiful, with Violets and other small plants jutting from every crevice; and no cement should be used.

In cases where the simplest type of rock-garden only is attempted

and where there are no steps or rude walks in the rock-garden, the very fringes of the gravel walks may be graced by such plants as the dwarfer Stonecrops. The alpine Toadflax is never more beautiful than when self-sown in a gravel walk. A rock-garden so made that its miniature cliffs overhang is useless for alpine vegetation, and all but such wall-loving plants as Corydalis lutea soon die on it. The tendency to make it with overhanging "peaks" is often seen in the cement rock-gardens now common. Mr. G. H. Cammell writes as to one of the simple and right ways of forming rock-gardens:—

"A rocky mound similar to the one here shown can be constructed in any garden, however small. It was my first attempt at rock-gardening, and is a mound of heath soil, among which rocks are embedded. It is planted with many varieties of Rockfoil, Sun Roses, Maiden Pink, Soapworts, alpine Linaria, alpine Aster, Rock Speedwells, Erinus, Silene, and other free-growing alpines. After a time all the ground has been covered and each kind holds its own, determined not to give way to its neighbour. Podophyllum peltatum appears here and there in unlooked-for places, and American Bird's-foot Violet finds a place on the shady side. The result is pretty not only when the plants are flowering, but throughout the year."

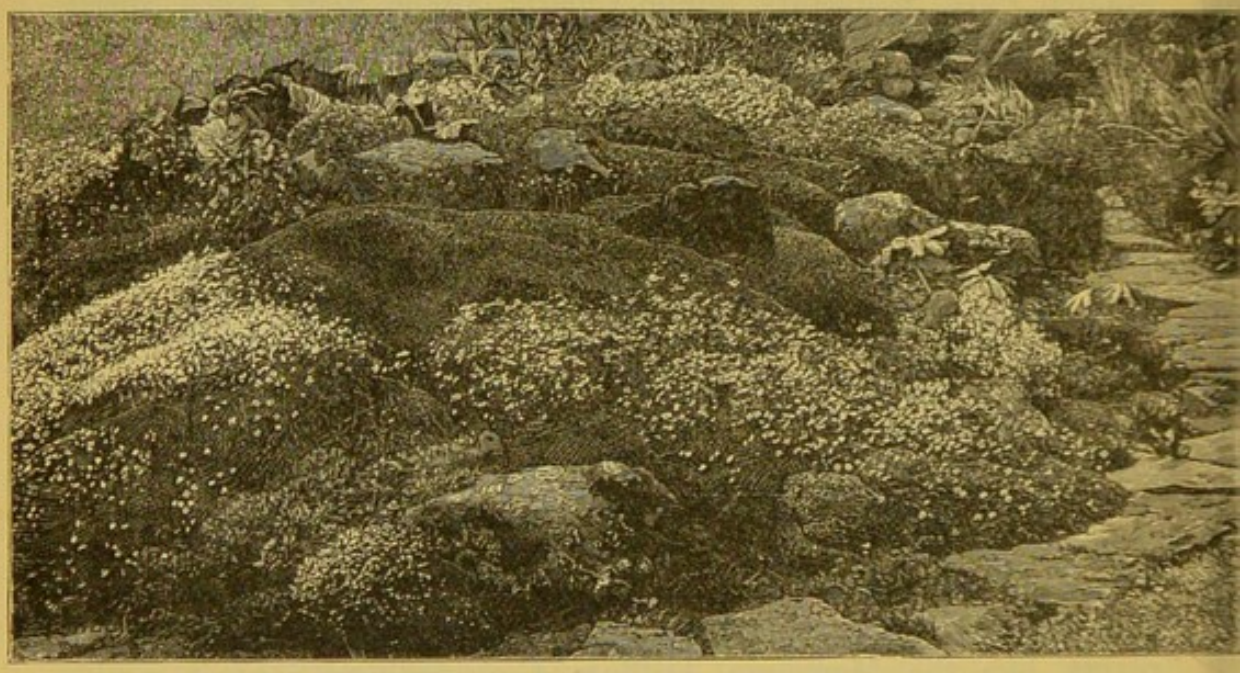
SOIL.—The great majority of alpine plants thrive best in deep soil. In it they can root deeply, and when once rooted they will not suffer from drought, from which they would quickly perish if planted in the usual way. Three feet deep is not too much for most kinds, and in nearly all cases it is a good plan to have plenty of broken sandstone or grit mixed with the soil. Any free loam, with plenty of sand and broken grit, will suit most alpine plants. But peat is required by some, as, for example, various small and brilliant rock-plants like the Menziesia, Trillium, Cypripedium, Spigelia, and a number of other mountain and bog-plants. Hence, though the body of the soil may be of loam, it is well to have a few masses of peat here and there. This is better than forming all the ground of good loam, and then digging holes for the reception of small masses of peat. The soil of some portions might also be chalky or calcareous, for the sake of plants that are known to thrive best on such formations, like the Milkworts, the Bee Orchis, and Rhododendron Chamæcistus. Any other varieties of soil required by particular kinds can be given as they are planted.

It is not well to associate a small lakelet or pond with the rock-garden, as is frequently done. If a picturesque piece of water can be seen from the rock-garden, well and good; but water should not, as a rule, be closely associated with it. Hence, in places of limited extent, water should not be thought of.

In the planting of every kind of rock-garden, it should be remembered that *all* the surface should be planted. Not alone on slopes, or favourable ledges, or chinks, should we see this exquisite plant-life, as many rare mountain species will thrive on the less trodden parts of footways; others, like the two-flowered Violet, seem to thrive best in the fissures between steps; many dwarf succulents delight in gravel and the hardest soil.

In cultivating the very rarest and smallest alpine plants, the stony, or partially stony, surface is to be preferred. Full exposure is necessary for very minute plants, and stones are useful in preventing evaporation and protecting them in other ways.

Few have much idea of the number of alpine plants that may

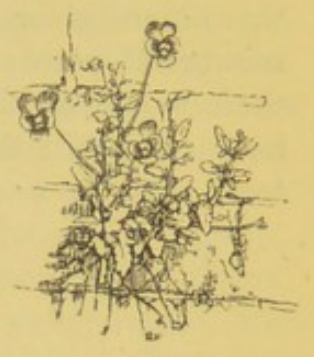


Part of the rock-garden at Brookfield, Hathersage.

be grown on fully exposed ordinary ground. But some kinds require care, and there are usually new kinds coming in, which, even if vigorous, should be kept apart for a time. Therefore, where the culture of alpine plants is entered into with zest, there ought to be a sort of nursery spot on which to grow the most delicate and rare kinds. It should be fully exposed, and sufficiently elevated to secure perfect drainage.

ALPINE AND ROCK-PLANTS ON WALLS.—A wall, or ruin, give places for these which no specially prepared situation could equal. Those who have observed how alpine plants grow on stony ground must have noticed in what arid places many flourish, and what fine plants may spring from a chink in a boulder. They are often stunted

and small in such places, but more free-flowering and long-lived than when growing upon the ground. Now, numbers of alpine plants perish if planted in the ordinary soil of our gardens. This results from over-moisture in winter, the plants being more susceptible of injury when growth is induced in our winters. But if many of these delicate plants are placed where their roots are dry in winter, they may be kept in health. Many plants from countries a little farther south than our own, and from alpine regions, will find on walls, rocks, and ruins that dwarf, sturdy growth and dryness in winter which make them at home in our climate. There are many alpine plants now cultivated with difficulty in frames that may be grown on walls with ease!



Pansy on dry brick wall.

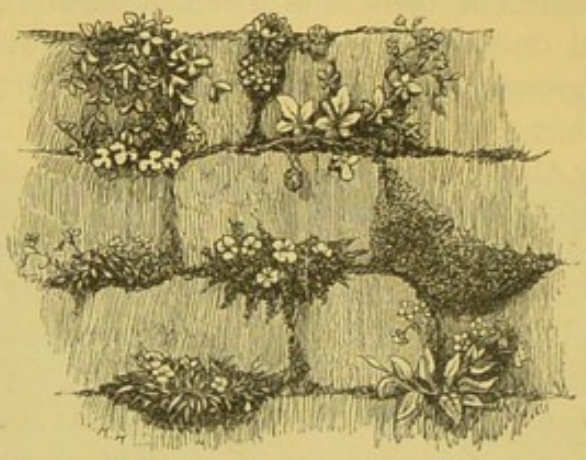
The best way to establish plants on walls is by seed. The Cheddar Pink, for example, grows on walls at Oxford much better than I have ever known it do on rockwork or on level ground. A few seeds of this plant, sown in an earthy chink, and covered with a dust of fine soil, soon grow, living for years on the wall and increasing.

Where no old walls exist, by building a rough stone wall, and packing the spaces between the stones as firmly as possible with loam, a host of rock plants may be grown. As such walls, usually made with a batter or slope, are often useful as supports to steep banks and for other uses, it is easy, in forming them, to make them, with little addition to the cost, into pretty wall-gardens.

ALPINE PLANTS IN GROUPS.—Many vigorous alpine flowers will do perfectly well on level ground in our cool climate, if they are not overrun by coarser plants. Where there are natural rocks or good artificial ones it is best to plant them properly; but people who are particular would often be better without artificial "rockwork" if they wished to grow these plants in simpler ways. There is not the slightest occasion to have what is called "rockwork" for these flowers. I do not speak only of things like the beautiful Gentianella, which for many years has been grown in our gardens, but of the Rockfoils, the Stonecrops, and the true alpine plants in great numbers. Then, for the sake of securing the benefits of the refreshing rains, it would often be best, in the south of England at least, to avoid the dusty pockets hitherto built for rock flowers. In proof of what may be done in this way there is a little alpine garden, made in quite a level place in the worst possible soil for growing the plant, the hot Bagshot sand, where the soil is always fit for working after heavy rain, but in hot summer is almost like ashes. By making the soil rather deep, and by burying a few stones among the plants to prevent

dryness, this flower, which naturally thrives in loamy soil, grew well, and the plan suits many alpine plants.

The next point is the great superiority of natural grouping over the botanical or labelled style of little single specimens of a great number of plants. In a few yards of border, in the ordinary way, there would be fifty or more kinds, but nothing pretty for those who have ever seen the beautiful mountain gardens. Many rightly contend that, in a sense, Nature includes all, and that therefore the



Rock-plants established on an old fort wall.

term "natural" may be misapplied, but is a perfectly just one when used in the sense of Nature's way of arranging flowers as opposed to the lines, circles, and other set patterns so commonly followed by man. By adopting bold and natural grouping we may get all the colour of the "bedding" system without a trace of its formality. But most gardeners find it difficult to group in this natural way, because so used to setting things out in formal lines. This is a difficulty felt by all, but a little attention to natural objects will help us to get away from set patterns, and let things intermingle here and there and run into each other to form groups such as we may see among the rocks by alpine paths. After a little time the plants themselves begin to help us by growing irregularly. An excellent way is, if a number of plants are set out too formally—as in most cases they are—to pull up a number here and there after the whole are "set out," replanting them on the outer fringes of the groups or elsewhere.

A Bold Rock Garden.—Among rock-gardens formed of recent years, one of the most extensive and picturesque is that at Batsford Park. It differs from other rock-gardens in the close association of various types of vegetation, trailers, shrubs, and even low trees, and in fact it represents very prettily a rocky valley with a great variety of charming scenes—a miniature Val Anzasca. Many things grow in it

beautifully—alpine flowers, rock shrubs and climbers, delicate Ferns and creepers, bog flowers and water plants. Many Bamboos are scattered near, and delightful breaks of the red Oriental Poppy and other hardy flowers are seen in summer. The background is formed of alpine Pines, Bamboos, and shrubs, which, as we get near the stream by the rocks, are replaced by many rock shrubs and flowers, such as the various kinds of Thyme and Sandworts, alpine Pinks, charming in broad tufts on the rocks; Mountain Avens drooping over them; Erinus clothing their faces; Rockfoils in delightful variety; purple Rock-cress, Houseleeks, Stonecrops, Gentians, alpine Phlox, Indian and other Primroses, the Welsh Poppy for shady nooks, and the many Hellebores now in cultivation. Very charming too is a pretty Strawberry (Fragaria nitida), which is effective in covering banks. In such a place the smaller Sun Roses (Helianthemum) are happiest of all, and the alpine and Iceland Poppies are very effective and pretty. One Rock Knotweed (Polygonum vaccinifolium), a little rock plant seldom made use of, is charming beside the water here. The Meadow-sweets massed beside rocky streams of this kind form groups handsome in leaf and flower, the shrubby ones coming well in the background. Among the many hardy plants grown, some of them, like the Rubi and the showier St. John's Worts, are particularly well suited for a rock vale. Excellent use is made here of the fine double-flowering Gorse in bold groups for associating with Pinus montana, and the alpine forest Heath (Erica carnea) is seen in great sheets of rosy bloom in spring, while the alpine Rhododendrons of Europe also come in well, in addition to the hybrid American and other Rhododendrons and Azaleas in the background. The wild Roses of Japan and Europe lend their charms in the rougher parts, climbing over Juniper and the dwarf Pine of the Alps. In such a varied garden the Barberries, evergreen and others, lend much aid, as do the various Brooms and Gorses. Some parts of the rocks are delicately draped with Feather Ferns, Lady Ferns, Hart's-tongues, Maidenhairs, and many others. The delicate little American Ourisia, which, though a long time in our gardens, is seldom used to good effect, here creeps about in pretty ways in the angles of steps and moist corners, and is very beautiful. In the formation of this rock-garden many thousand tons of stone were brought from the Bourton quarry on the estate. The dwarfer and bushy Pines of Europe are used near the rock-garden, and also some of the dwarfer forms among American Pines, and there is a very large collection of Bamboos containing between forty and fifty kinds; a collection recently formed, and which will be most interesting a few years hence, when we shall see which are the hardiest and most graceful of these fine plants for our country.

In the rock-garden at Batsford.

Alpine and Rock-Plants for British Gardens.

Where the name of a large and varied family is given, as in Phlox, Iris, Rhododendron, Pentstemon, Salix, Antirrhinum, it is the alpine, or dwarf mountain kinds, that are meant.

Acæna
Acantholimon
Achillea
Acis
Æthionema
Alyssum
Andromeda
Androsace
Anemone
Antennaria
Anthyllis
Aquilegia
Arabis
Arenaria
Armeria
Asperula
Astragalus
Aubrietia
Bellis
Bryanthus
Bulbocodium
Calandrinia
Campanula
Cardamine
Cerastium
Cheiranthus
Chimaphila
Colchicum
Cornus
Coronilla
Crocus
Cyclamen
Cypripedium
Daphne
Dianthus
Diapensia
Dodecatheon
Draba
Dracocephalum
Dryas
Epigæa
Erigeron
Erinus
Erodium
Erpetion
Erysimum
Erythronium
Galanthus
Gaultheria
Genista
Gentiana
Geranium
Globularia
Helianthemum
Helleborus
Houstonia
Hutchinsia
Hyacinthus
Iberis
Iris
Isopyrum
Jasione
Leiophyllum
Leontopodium
Leucojum
Linaria
Linnæa
Linum
Lithospermum
Loiseleuria
Lychnis
Lycopodium
Mazus
Meconopsis
Menziesia
Mertensia
Muscari
Myosotis
Narcissus
Nertera
Œnothera
Omphalodes
Ononis
Onosma
Ophrys
Orchis
Orobus
Oxalis
Papaver
Parnassia
Petrocallis
Phlox
Polemonium
Polygala
Potentilla
Primula
Puschkinia
Pyrola
Pyxidanthera
Ranunculus
Rhexia
Rhododendron
Sanguinaria
Saponaria
Saxifraga
Scilla
Sedum
Sempervivum
Senecio
Silene
Smilacina
Soldanella
Spigelia
Statice
Thalictrum
Thlaspi
Thymus
Trientalis
Trillium
Triteleia
Tulipa
Tunica
Vaccinium
Veronica
Vesicaria
Viola
Waldsteinia

Early Spring in the Wild Garden. From photograph by Mr. S. W. Fitzherbert.

CHAPTER XI.

THE WILD GARDEN.

O universal Mother, who dost keep
From everlasting thy foundations deep,
Eldest of things, Great Earth, I sing of thee.

IN a rational system of flower-gardening one of the first things to do is to get a clear idea of the aim of the "Wild Garden." When I began to plead the cause of the innumerable hardy flowers against the few tender ones put out in a formal way, the answer sometimes was, "We cannot go back to the mixed border"—that is to say, to the old way of arranging flowers in borders. Thinking, then, much of the vast world of plant beauty shut out of our gardens by the "system" then in vogue, I was led to consider the ways in which it might be

brought into them, and of the "Wild Garden" as a home for numbers of beautiful hardy plants from other countries which might be naturalised, with very little trouble, in our gardens, fields, and woods—a world of delightful plant beauty that we might make happy around us, in places bare or useless. I saw that we could grow thus not only flowers more lovely than those commonly seen in what is called the flower garden, but also many which, by any other plan, we should have little chance of seeing.

The term "Wild Garden" is applied to the placing of perfectly hardy exotic plants in places where they will take care of themselves. It has nothing to do with the "wilderness," though it may be carried out in it. It does not necessarily mean the picturesque garden, for a garden may be picturesque and yet in every part the result of ceaseless care. What it does mean is best explained by the winter Aconite flowering under a grove of naked trees in February; by the Snowflake abundant in meadows by the Thames; and by the Apennine Anemone staining an English grove blue. Multiply these instances by adding many different plants and hardy climbers from countries as cold as our own, or colder, and one may get some idea of the wild garden. Some have thought of it as a garden allowed to run wild, or with annuals sown promiscuously, whereas it does not meddle with the flower garden proper at all.

I wish the idea to be kept distinct from the various important phases of hardy plant growth in groups, beds, and borders, in which good culture may produce many happy effects; from the rock-garden or borders reserved for choice hardy flowers; from growing hardy plants of fine form; from the ordinary type of spring garden. In the smaller class of gardens there may be little room for the wild garden, but in the larger gardens, where there is often ample room on the outer fringes of the lawn, in grove, park, copse, or by woodland walks or drives, new and beautiful effects may be created by its means.

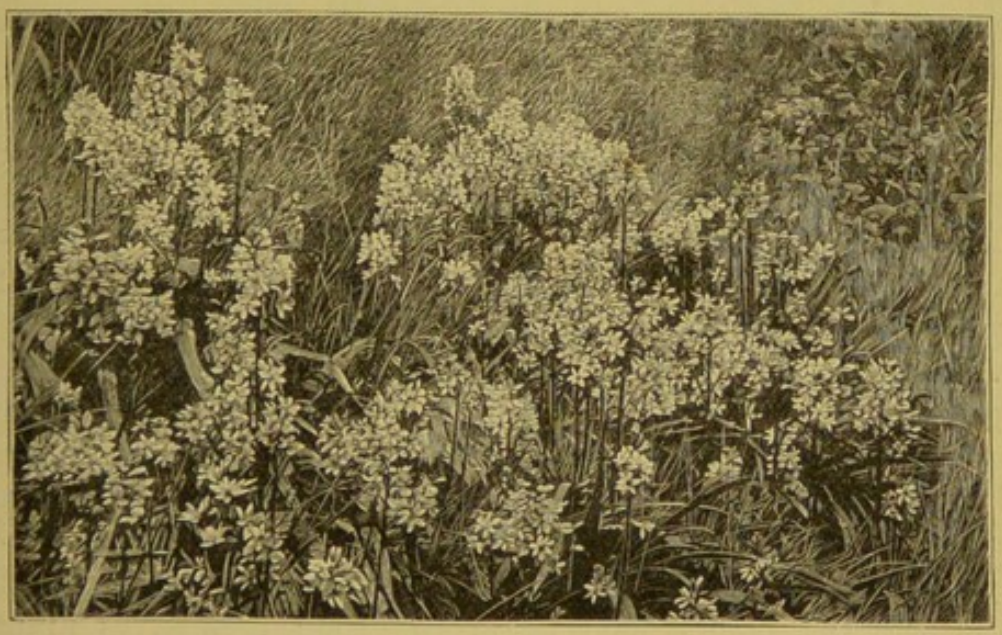
Among reasons for advocating this system are the following:—1. Because hundreds of the finest hardy flowers will thrive much better in rough and wild places than ever they did in the old-fashioned border. Even comparatively small ones, like the beautiful Ivy-leaved Cyclamen, are perfectly naturalised and spread all over the mossy surface of woods. 2. Because, in consequence of plant, fern and flower and climber, grass, and trailing shrub, relieving each other in delightful ways, they will look infinitely better than in gardens. 3. Because no ugly effects will result from decay and the swift passage of the seasons. After the first flush of spring and early summer bloom had passed, the raggedness of the old mixed border with its bundles of decayed stems tied to sticks was intolerable. When Lilies are sparsely dotted through masses of shrubs their

flowers are far prettier than if planted in isolated showy masses; and when they pass out of bloom they are not eyesores, like rigid unrelieved tufts in borders. In a semi-wild state the beauty of individual species will proclaim itself when at its height; and when out of bloom they will be succeeded by other kinds, or lost among the numerous objects around. 4. Because it will enable us to grow many plants that have never yet obtained a place in our "trim

Group of Mullein, near Scotch Firs, in Surrey Heath.

gardens"—multitudes that are not showy enough to be considered worthy of a place in a garden. An isolated tuft may indeed be unsuitable to a formal border, but when the plants are grouped naturally in some glade, or wood, or little colony, the effect may be charming. Among the plants usually considered unfit for garden cultivation are a goodly number that, grown in gardens, are no gain to them—like the coarser American Asters, Golden Rods, and such plants, which overrun the choicer border-flowers when

planted among them. Such plants would be quite at home in copses and woody places, where their blossoms might be seen in due season, and their vigorous vegetation form a covert welcome to the game-preserver. To these might be added plants like the winter Heliotrope, and many others, which, while interesting in the garden, are apt to spread so rapidly as to become a nuisance. 5. Because in this way we may settle the question of spring flowers, and the spring garden, as well as that of hardy flowers generally; and many parts of the garden may be made alive with spring flowers, without in the least interfering with the geometrical beds that have been the stock-in-trade of the so-called landscape gardener for centuries. The blue stars of the Apennine Anemone will be seen



The Spanish Wood Hyacinth (Scilla campanulata) naturalised. From a photograph by Mr. E. H. Woodall.

to greater advantage when "wild' in shady or half-shady bare places, under trees, or in the meadow grass, than in any conceivable formal arrangement, and this is but one of hundreds of sweet spring flowers that will succeed perfectly in like ways. 6. Because there can be few more agreeable ways of communion with Nature than naturalising the native plants of countries in which we are more interested than in those from whence come our hothouse plants.

It is not only to shrubberies, and plantations, and belts of grass in the rougher parts of the pleasure-ground, and shady moss-bordered wood walks, that these remarks apply; the suburban garden, with its single fringe of planting, may show like beauty; it may have the Solomon's Seal arching forth from a shady recess, behind tufts of the sweet-scented Narcissus, and wild fringes of

strong and hardy flowers in the spring sun—flowers which cannot be cut off by harsh winds as when exposed in the open garden. Rough banks in or near the pleasure-ground or flower garden, at present perhaps containing nothing but weeds, and any rough or unused spot about the garden—such are the places for them. Even where all the lawn must be mown, the Snowdrop may be enjoyed in early spring, for its leaves die down, or at all events ripen sufficiently, before there is any occasion to mow the grass. But the prettiest results are attainable only where the grass need not be cut till the meadows are mown ; then we may have gardens of Narcissi, such as no one ever thought possible in Britain. In grass not mown at all we may even enjoy many of the Lilies, and many of the lovelier and more stately bulbous flowers of the meadows and mountain lawns of Europe, Asia, and America. Copses and woods offer still better situations, as in these there is no destruction of the foliage by harrow, roller, or mower. On a stretch of good grass which need not be mown, and on fairly good soil in any part of our country, we may enjoy such beauty as has hitherto only gladdened the heart of the wanderer on the high mountain lawns and copses in early summer, when the hill flowers bloom in multitudes in the alpine grass.

All planting in the grass should be in natural groups or prettily fringed colonies, growing to and fro as they like after planting. Lessons in this grouping are to be had in the woods, copses, heaths, and meadows, by those who look about them as they go. At first many will find it difficult to get out of formal masses, but they may be got over by studying natural groupings of wild flowers. Once established, the plants soon begin to group themselves in pretty ways.

Where the branches of trees, both evergreen and summer-leafing, sweep the turf in pleasure-grounds many pretty spring-flowering bulbs may be naturalised beneath the branches, and will thrive without attention. It is chiefly in the case of deciduous trees that this can be done ; but even in the case of Conifers and Evergreens some graceful objects may be dotted beneath the outermost points of their lower branches. We know that a great number of our spring flowers and hardy bulbs mature their foliage and go to rest early in the year. In spring they require light and sun, which they obtain abundantly under the summer-leafing tree ; they have time to flower and grow under it before the foliage of the tree appears ; then, as the summer heats approach, they are gradually overshadowed, and go to rest ; but the leaves of the tree once fallen, they soon begin to reappear and cover the ground with beauty.

By experiments in naturalising bulb flowers in meadow grass, I

Snowdrops in wood at Monreith.

found that certain flowers with broad leaves will not thrive where the harrow and roller are used as they are in pastures and meadow land. The Wood Tulip suffers in this way in meadow grass, while in copses or woody places it is quite free. Narcissi generally thrive in meadow grass, but owing to the injury to the leaves, and the struggle for life, they are not so vigorous as in woods. I might have had a better and more interesting result if I had put in open woods the same large numbers of bulbs that I put in pastures. On the other hand, some flowers—such as the Apennine Anemone, Snowdrop, Scillas, Winter Aconite, Dog's-tooth Violet, and Snake's-head—thrive perfectly in meadow grass. Even the Narcissi are very pretty in the grass, though they do not grow so large as by woodland walks in rich soil.

At most country seats there is so much pleasure-ground that delightful things of this kind are quite easy to have. In my own garden, in Sussex, meadows come quite close to the house, and I made a delightful spring garden by planting in the grass early bulbs, which quite disappear, leaf and all, before the grass is mown at the usual time.

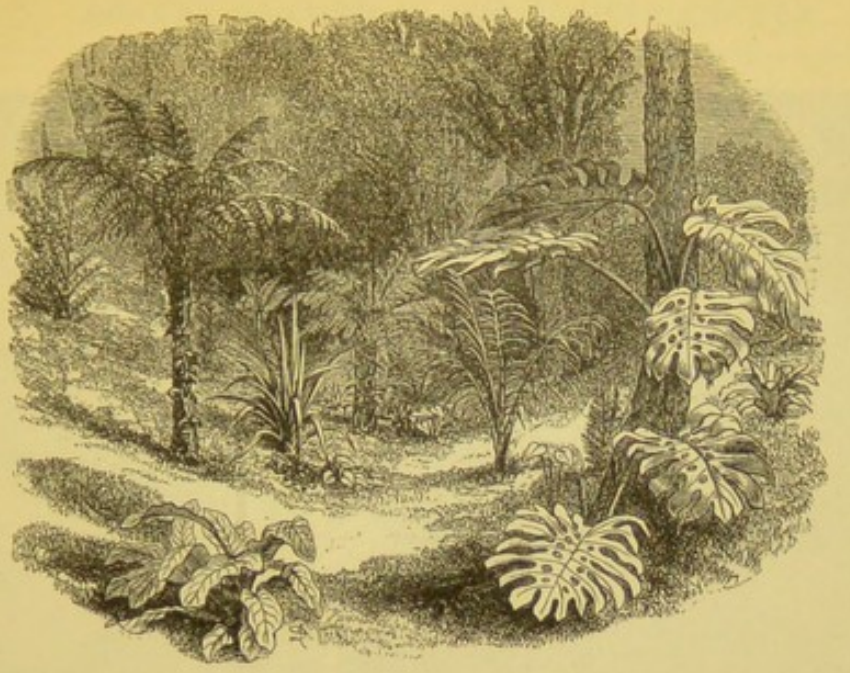
Plants for the Wild Garden.

The following are the chief families of plants that may be used in the wild garden. Where families are named which are British as well as natives of the Continent of Europe, as in the case of, say, Scilla, the foreign kinds are meant. In considering what may be done in naturalising plants in a given position, it may be well to cast the eye over the families available. Success will depend on how the plants are chosen to go in any one position, and about country seats, soils and situations are so much varied that it is not easy to generalise. The degree of moisture must be thought of. I failed with the American Wood Lily in a delightful shady lane in my Sussex garden owing to want of moisture.

Acanthus
Aconite
Aconite, Winter
Arabis
Asphodel
Aubrietia
Barrenwort
Bee Balm
Bellflower
Bindweed
Bitter Vetch
Blood Root
Borage
Broom
Christmas Rose
Clematis
Columbine
Comfrey
Compass Plant
Cornflower
Coronilla
Cotton Thistle
Cow Parsnip
Crane's-bill
Crocus
Cyclamen
Daffodil
Day Lily
Dog's-tooth Violet
Ferns, Hardy
Flax
Forget-me-not
Foxglove
French Willow
Giant Fennel
Giant Scabious
Gladioli (hardy European kinds)
Globe Flower
Globe Thistle
Goat's-rue
Golden Rod
Grape Hyacinth
Heath
Heliotrope, Winter
Hepatica
Holly, Sea
Honesty
Honeysuckle
Houseleek
Iris
Jasmine

The wild garden; view in Moat Mead Gravetye Manor, with Poet's Narcissus in bloom in early summer. Engraved from a sketch by W. E. Norton.

Jerusalem Sage
Knotwort
Lavender
Leopard's-bane
Lily
Lily-of-the-Valley
Loosestrife
Lungwort
Lupine
Lychnis
Mallow
May-apple
Mayflower
Meadow Rue
Meadow Saffron
Meadow Sweet
Mimulus
Monk's-hood
Mountain Avens
Mullein
Narcissus
Omphalodes
Ox-eye Daisy
Pæony
Pea, Everlasting
Periwinkle
Phlox
Plantain Lily
Pond-flower
Poppy
Primrose, Evening
Rest Harrow
Rocket
Rockfoil
Rock Rose
Rose, wild kinds
Rosemary
St. Bruno's Lily
St. John's Wort
Sandwort
Scabious
Scilla
Snake's-head
Snapdragon
Snowdrop
Snowflake
Solomon's Seal
Star of Bethlehem
Starwort
Stonecrop
Sun Rose
Sunflower (Perennial)
Thyme
Tulip
Viola
Virginian Creeper
Virginian Poke
Wallflower
Water Lily
Windflower
Winter-green
Wistaria
Wood Lily
Yarrow



Sheltered dell, with tree ferns and stove plants placed out for the summer (Battersea).

CHAPTER XII.

BEAUTY OF FORM IN THE FLOWER GARDEN.

WITH our many fine-leaved plants from temperate and cool climes it is possible to have beautiful groups of hardy fine-leaved plants, for trees like the Ailantus and Paulownia make fine growth if cut down close to the ground every year. We have also the hardy Palm (Chamærops), the Yuccas, and graceful Bamboos, and Siebold's Plantain Lily (Funkia), Acanthuses, and plants of a similar character. Amongst those annually raised from seeds, and requiring only the protection of glass to start them, we have much variety from the stately Castor-oil-plant to the dwarf Centaurea. One advantage of using permanent plants in pots for central objects in groups or as isolated specimens on the turf is that, while they add variety to the arrangement during summer, they can be taken indoors when the beauty of the garden begins to fade. Although tender plants in pots are effective in summer in special positions, plants that cannot stand out-of-doors from the beginning of June until the end of September can hardly be called fit for summer gardening. Among the most suitable are several kinds of Palm, such as Seaforthia elegans, Chamærops excelsa, and C. humilis; Aralias, various; Dracænas, do.; Phormium tenax and its variegated form; Yucca aloifolia variegata, Ficus elastica, and Eucalyptus globulus, the bluish-gray tint of which is pretty. Erythrinas make fine autumn

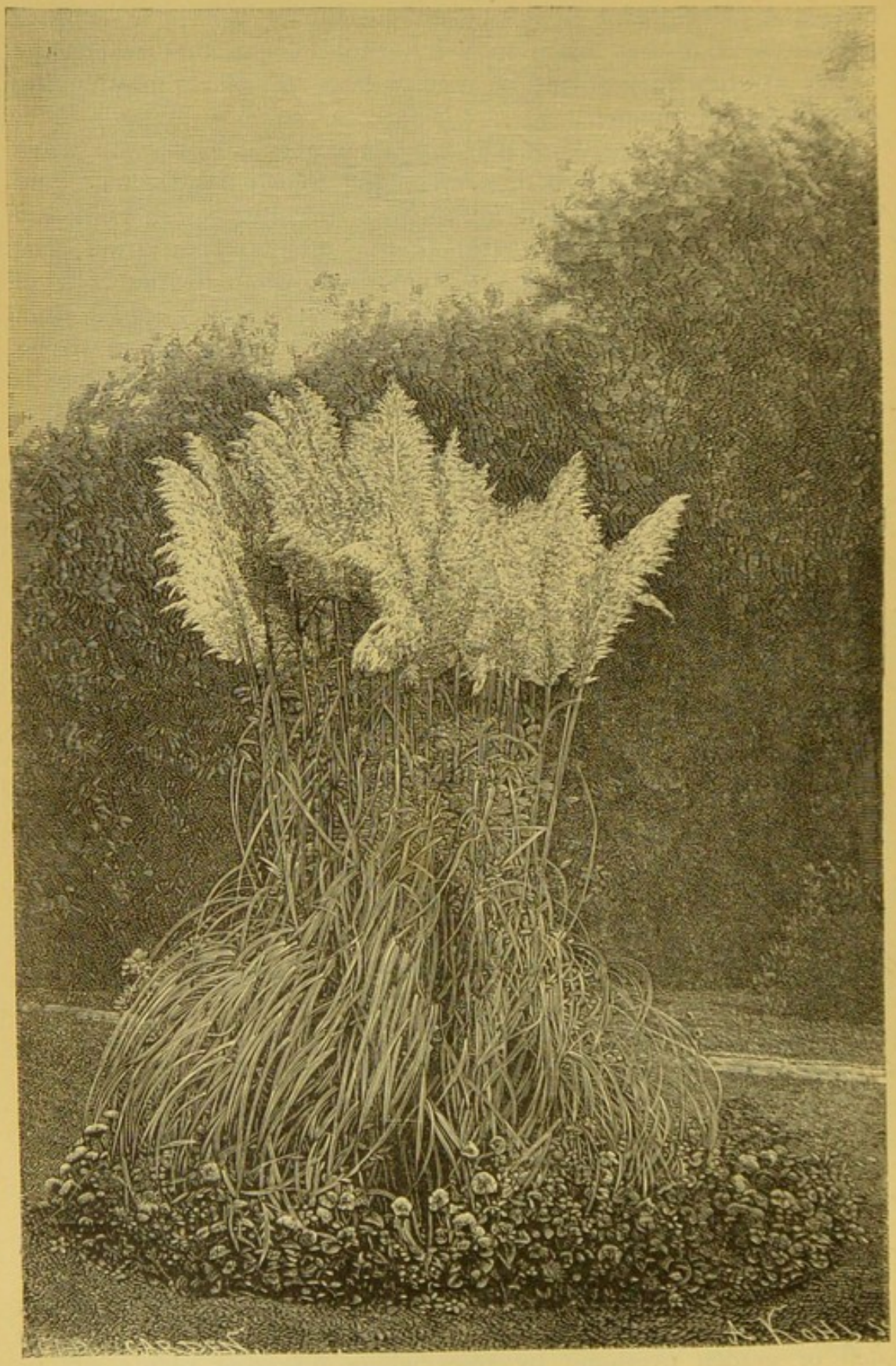
Hardy Palm in the open air in Southern England.

beds, and are brilliant in colour, and useful for lighting up masses of foliage. Bamboos have such beautiful foliage, that where the winter is severe they should be used as large pot plants for plunging out-of-doors in summer.

The hardiest Tree Fern, Dicksonia antarctica, looks well when plunged in shady dells with overhanging foliage for shelter; and several varieties of dwarf Ferns, such as the Bird's-nest Fern, are admirable for undergrowth to this Fern. Plants raised from seed will, however, usually form the majority, owing to the lack of room under glass for many large plants. Of plants raised from seed the most useful are Cannas. If sown in February in strong heat, they make handsome bedding plants as their foliage is graceful and their flowers are rich in colour. The roots increase yearly in size and strength. They may be taken up and wintered under glass, or securely protected in the soil by means of external coverings. The Cannas in London public gardens are protected in winter.

Most of the tall light green-foliaged varieties flower freely and make excellent centres for groups, while the dwarf bronze-foliaged sorts are good for edging. Solanums are also effective. The spiny-leaved S. robustum, the elegant cut-leaved S. laciniatum, and S. Warscewiczi make good single specimens, or edgings to groups of taller plants. Wigandias, Ferdinanda eminens, and Melianthus major are all good as annuals; and among dwarf things that can be raised with them I may mention Brazilian Beet, with its richly tinted leaves and mid-ribs; Acacia lophantha, Amaranthus, Cineraria maritima, and Centaureas, with their silvery cut leaves. Bocconias, with their tall spikes of graceful flowers and noble foliage, are effective and permanent plants for isolated groups. The beautiful Pampas Grass and Arundo ought also to find a place. Several varieties of Rhus or Sumach have good foliage, Rhus glabra laciniata being elegant. Aralia japonica is useful, and so are the Tritomas, with their Rush-like foliage and flame-like spikes of flower, and the Plantain Lilies.

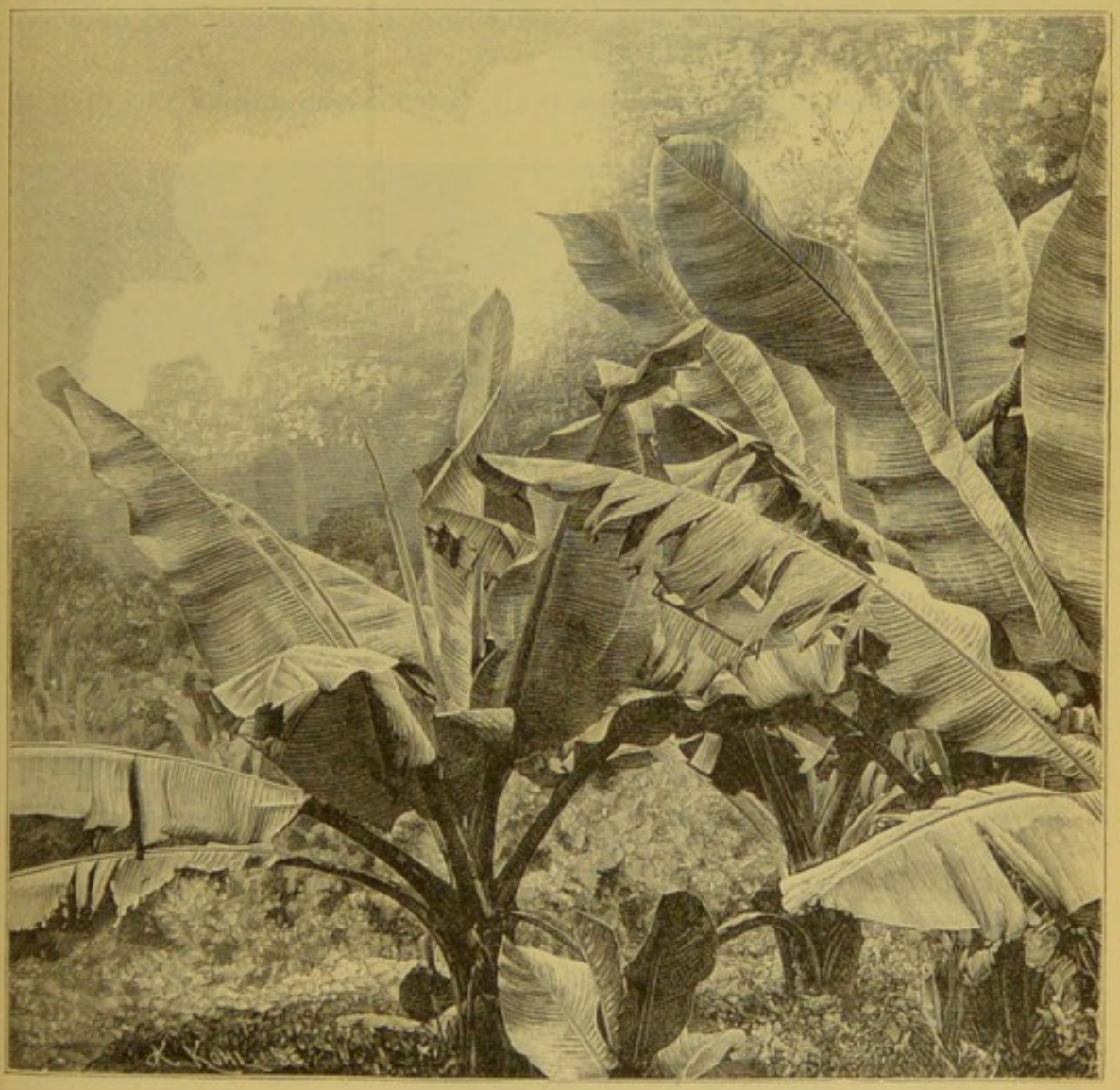
As to arrangement, the best beds or sets of beds are those of the simplest design. Shelter is of importance, and recesses in shrubberies or in banks clothed with foliage form the most fitting background for beds or groups to nestle in. Avoid Musas or Caladiums, the leaves of which tear to shreds if winds cannot be shut out, and also plants that look unhappy after a cold night or two. Make the most of plants that grow under nearly all conditions, and use any dell or garden overhung by trees where flowering plants run to leaf and refuse to flower for fine-leaved plants. A garden where each plant spreads forth its delicate foliage will form a pleasant



Pampas Grass in a Sussex garden (Chichester).

change from brilliant bedding plants, or severely geometric carpet beds.—J. G.

But are we, like Mr. Gibson when he was superintendent of Battersea Park, to adopt this system in its entirety? Certainly not. To do so in private gardens would entail enormous expense; but we can introduce most of its better features into our gardens, and by its aid we can vary their contents, and render them more



Musa Ensete in the open garden in Devonshire. From a photograph sent by Mr. Hodder.

interesting. A better effect may be obtained from hardy plants only than from tender ones. There is the Pampas Grass, unsurpassed by anything requiring protection; there are the Yuccas, thoroughly hardy, and unsurpassed by anything of like habit grown in a hot-house; the Arundos, conspicua and donax; fine hardy plants like Crambe cordifolia, Rheum Emodi, Ferulas, and umbelliferous plants, as graceful as tenderest exotics. Acanthuses, too, when well grown

are very suitable. Then we have a hardy Palm that through all our recent hard winters has preserved its health and greenness wherever its leaves could not be torn to shreds by storms.

As an example of fine form from hardy plants, I cannot do better than give the New Zealand Reed (Arundo conspicua). This handsome Grass produces its blossom-spikes earlier than the Pampas, and is more elegant in habit, the silky white tufts bending like ostrich plumes at the end of slender stalks. It is best adapted to a sheltered corner, where it is protected from rough winds, and relieved by a background of darker foliage.

As to tender plants in the open air, it would be difficult to give a

Bed of fine-leaved plants in Hyde Park. From a sketch by H. G. Moon.

better illustration than the stately Musa Ensete in Berkshire. In sheltered nooks in the southern counties this plant makes a very fair growth in the summer. In 1877 I was struck with its health and vigour at Park Place, Henley-on-Thames. Mr. Stanton, the gardener raised a batch from seed, and it was surprising what fine plants they became in fifteen months. They were sown in April, and planted out early in June. Placed indoors early in October, they remained throughout the winter in a warm greenhouse, and were again planted out in the following June, when they formed fine young leaves. The plant is quite as effective in a conservatory in winter as out-of-doors in summer.

Here is an illustration of a bold mass formerly near Hyde Park

Corner, which seemed to illustrate the best features of recent fine-leaved gardening. It had a great Abyssinian Plantain in the middle, and was fringed by a few sub-tropical plants, and edged by an extraordinary fringe of the fine hardy Siebold's Plantain Lily, long-enduring in beauty. The reason of the success of this bed is clear; it was not a finicking angle or a wormy scrawl, but a bold circle, and presented no confusion to the observer, who simply saw the plants rising in a well-defined group from the roomy turf. It was by itself, could be seen unopposed, and was not hedged in by a lot of other beds. Lastly, the plant forms were strong and well selected, and contrasted well with the ordinary tree vegetation near, as there was plenty of Grass about the bed to allow of contrasts. The way in which the Plantain Lilies began early in the year to adorn the spot, and continued to do so throughout the whole summer and autumn, was a pleasure to see. The drawing

Yucca gloriosa, Salisbury.

was made about the end of September, shortly after some heavy storms which tore the Musa a little, but the effect remained excellent till October. Some of the Plantain Lily leaves had begun to fade but they still produced a very fine effect.

YUCCAS IN GROUPS.—Wherever space can be afforded, and suitable situations found, hardy Yuccas should be grown. Few hardy subjects are so distinct in foliage and manner of growth; but they appear to best advantage arranged in bold groups, near

Group of house plants placed out for summer. Harrow Lodge, Dorking.

trees and shrubs, and forming a harmonious contrast to them. Perhaps the best situation is a sloping ground fully exposed to the mid-day sun, and backed by evergreens. If allowed space for development, they will every year add beauty to the place. The handsome spikes of their large cream-coloured flowers are extremely effective, especially when relieved by a background of verdure. Yuccas like a well-drained soil, and thrive on a subsoil of pure chalk. They delight in full exposure to the sun, and enjoy shelter from rough winds. Hence the advisability of planting them near trees or shrubs. The Yucca

is hardy, but the foliage of several of the best species, such as filamentosa, is apt to get torn when much exposed.

American Aloe. Example of greenhouse plants set in open air in summer. Engraved from a photograph taken in Knightwick Rectory Garden, Worcestershire.

In grouping Yuccas, a more natural effect is obtained if some of the specimens have the head of their foliage from 3 feet to 6 feet above the soil. These tall plants should not, however, be placed in

a back line, but some should be allowed here and there to advance into the foreground, some of the smaller specimens nestling at their feet. The effect of a group thus arranged charms by its irregularity and quaint beauty.

The use in gardens of handsome-leaved plants of fine form has taught us the value of grace and verdure amid masses of flowers, and how far we have diverged from artistic ways. In a wild state brilliant blossoms are usually relieved by a setting of abundant green. Where mountain and meadow plants of one kind produce a sea of colour at one season, there is intermingled a spray of pointed grass and leaves, which tone down the colour masses.

Hardy free-flowering Yucca.

We may be pleased by the wide spread of purple on a heath or mountain, but when we go near we find that its most exquisite aspect is seen in places where the long moss cushions itself beside the ling, and the fronds of the Polypody come up around little masses of heather. We cannot attempt to reproduce this exactly, but it will be found the chief source of the beauty and interest of our garden; and the more we keep it before our eyes the nearer shall we be to success.

Few human beings have violated nature's laws more than flower-gardeners. We may have in our gardens without making wildernesses of them all the shade, the relief, the grace, and the beauty of Nature. By selecting from the vast number of hardy plants in the country and by associating them, where convenient, with house-plants placed out for the summer, we may have as much variety and beauty of form as can be desired for the flower-garden or pleasure-ground.

Among the more tender plants, we must choose such as grow healthily in sheltered places in the warmer parts of England. The kinds with permanent foliage, such as the New Zealand Flax and the hardier Dracænas, will be as effective here as they are around London and Paris, and to them the northern gardener should direct his careful attention. Even if it were possible in all parts to cultivate the softer-growing kinds to the same perfection as in the south of England, it would not be always desirable, as they cannot be used indoors in winter. The best are the many evergreen plants that stand out in summer without injury, and may be transferred to the conservatory in autumn, to produce through the cold months as fine an effect as in the flower garden in summer. But the hardy plants are of far greater importance; for, while few can afford the tender plants, many may enjoy hardy ones, and that too with far less trouble than tender ones. One kind of arrangement in particular must be guarded against. I mean the geometro-picturesque one, which is seen in some parts of the London parks devoted to sub-tropical gardening. The plants are often of the finest kinds and in the most robust health, and all the materials for the best results are abundant; yet the scene fails to satisfy, owing to the needless formality of the beds and the heaping together of many specimens of one kind in long masses straight or twisting, with high raised edges of hard-beaten soil.

Plants hardy or half-hardy, with fine Foliage or Form, for use in British Gardens.

Acacia
Acanthus
Agave
Ailanthus
Alsophila
Amaranthus
Andropogon
Aralia
Aristolochia
Artemisia
Arum
Arundo
Asparagus
Asplenium
Astilbe
Bambusa
Berberis
Bocconia
Bupthalmum
Caladium
Calla
Canna
Cannabis
Carduus
Carex
Carlina
Carludovica
Caryota
Centaurea
Chamædorea
Chamæpeuce
Chamærops
Cordyline
Corypha
Crambe
Cucurbita
Cyathea
Cycas
Cynara
Cyperus
Datisca
Dicksonia
Dimorphanthus
Dipsacus
Dracæna
Equisetum
Eryngium
Eucalyptus
Farfugium
Ferdinanda
Ferula
Ficus
Funkia
Gourds
Gynerium
Gunnera
Gymnocladus
Hedychium
Helianthus
Heracleum
Inula
Jubæa
Kochia
Kœlreuteria
Latania
Ligularia
Megasea
Melia
Melianthus
Molospermum
Montagnæa
Morina
Mulgedium
Musa
Nicotiana
Nuphar
Onopordon
Osmunda
Paulownia
Petasites
Phœnix
Phormium
Polygonum
Polymnia
Rheum
Rhus
Ricinus
Rumex
Sagittaria
Scirpus
Seaforthia
Senecio

Plants hardy or half-hardy, with fine Foliage or Form, for use in British Gardens.—Continued.

Silphium	Struthiopteris	Uhdea	Woodwardia
Silybum	Thalictrum	Veratrum	Yucca
Solanum	Tupidanthus	Verbascum	Zea
Sorghum	Typha	Wigandia	

CHAPTER XIII.

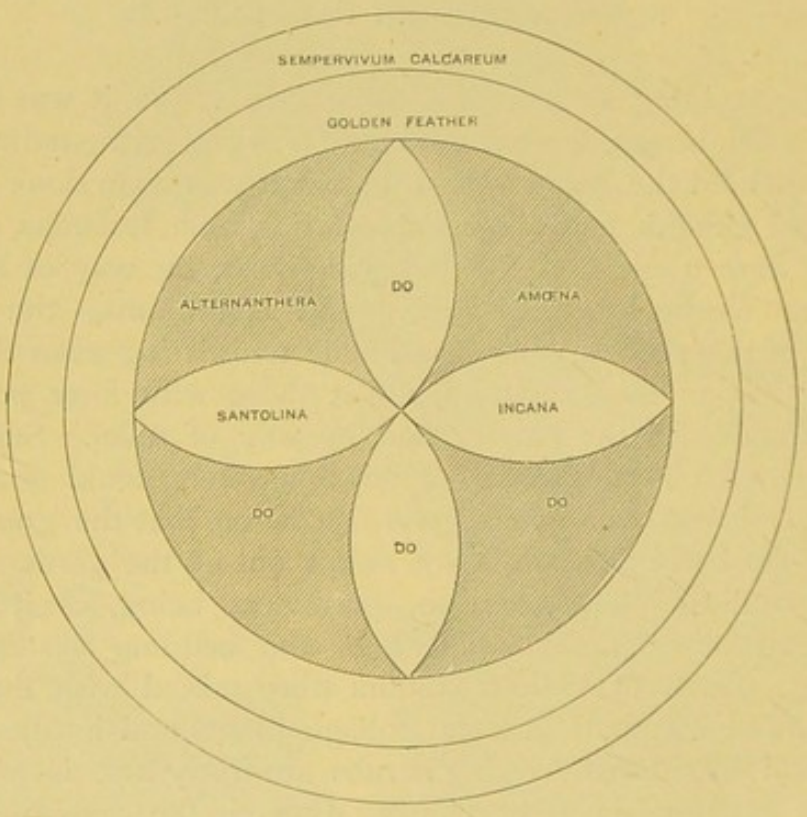
SUMMER-BEDDING GARDENING.[1]

WHEN the bedding system first came into vogue, it was no doubt its extreme brightness, or what we should now call its "gaudiness," that caused it to hold the position it did ; but it was soon done to death. Only scarlet Geraniums, yellow Calceolarias, blue Lobelias, or purple Verbenas were used ; and the following year, by way of a change, there were Verbenas, Calceolarias, and Geraniums,—the constant repetition of this scarlet, yellow, and blue nauseating even those with little taste in gardening matters, whilst those with finer perceptions began to inquire for the Parsley bed, by way of relief. Such a state of things could not continue ; but yet the system could not be given up for several reasons—a very good one being that the great bulk of hardy flowers had been ruthlessly swept out of the garden to make room for bedding plants, and so—gardeners being, as it were, in desperate straits—the development of the bedding system began, and foliage plants of various colours were mixed with the flowers. Then followed standard graceful foliage plants and hardy carpeting plants ; and now dwarf-growing shrubs are freely associated with the commoner types of bedding plants. Indeed, the system improved so rapidly that its most relentless opponents admitted that it had some redeeming qualities. I think, however, that the strongest reason of all for its retention is its suitability to formal or geometrical parterres.

Most people have their own notions as to what constitutes perfection of colour in bedding arrangements. This perfection I have not attained to, nor have I, perhaps, any decided preference for one colour over another ; but I have very decided notions that the various colours should be so completely commingled that one would be puzzled to determine what tint predominates in the entire arrange-

[1] As the aim of this book is to show in how many ways we can make a garden beautiful apart from the bedding system, that system is described by one who carries it out with great success.

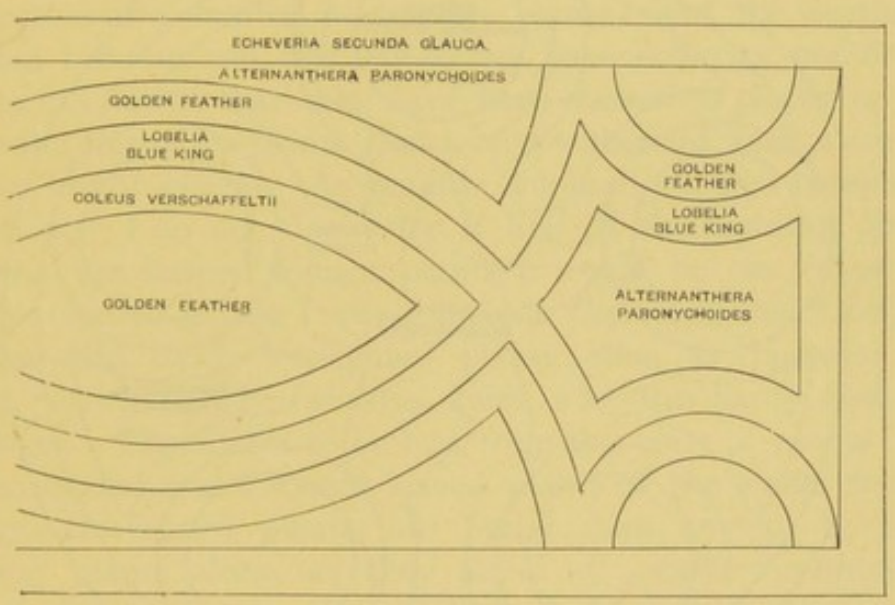
ment. This rule I have followed for years, and have had a fair amount of success in working it out. I am even still learning, my latest lesson being that, if any colour at all may predominate, it is "glaucous," that is, a light gray or whitish green. Of this colour the eye never tires, perhaps because it is in harmony with the tints of the landscape, and particularly of the lawn. To carry out my rule as to colour successfully, there are other rules which must be studied. The first is that high colours, such as scarlet and yellow, must be used in much less proportion than colours of a softer tint, for high colours overweigh all others; the second is that there must be no



Bed of hardy and half-hardy plants.

violent transition from one colour to another—the contrast of colours must as far as possible be avoided in favour of their gradual intermingling or harmonising; the third, that the most decided or high colours, being the heaviest, ought to occupy the most central part of the beds, or be distributed in due proportion over the entire garden, so as to ensure an even balance throughout. Further, when dealing with such colours, use them in necessary proportion, and no more, and, if you err at all, err on the side of niggardliness. By close adherence to these rules, I have for years had no difficulty in producing a harmony of colour that has worn so well as to be as welcome at the end of the season as at the beginning; for the quieter the

colouring the more lasting is the enjoyment of it. And it is pleasant to observe the great advance yearly made in favour of the quieter tints—gaudiness, in bedding-out, having become the exception rather than the rule. To fully carry out the ideal of colour here advocated, a great variety of plants is needed, though not more than is generally grown where bedding-out is practised to any extent. But there is *colour* and *colour;* and those who cannot have elaborate designs and variety in colour, may have an equivalent in graceful foliage and beautiful tinted shrubs of hues varying from deep green to bright yellow, and in habit tapering, weeping, or feathery. Cypresses, Yews, Yuccas, and many others, not only associate well with all kinds of bedding plants, but with the various kinds of hardy Sedums, Saxifrages, and Veronicas. These are all within the means of most

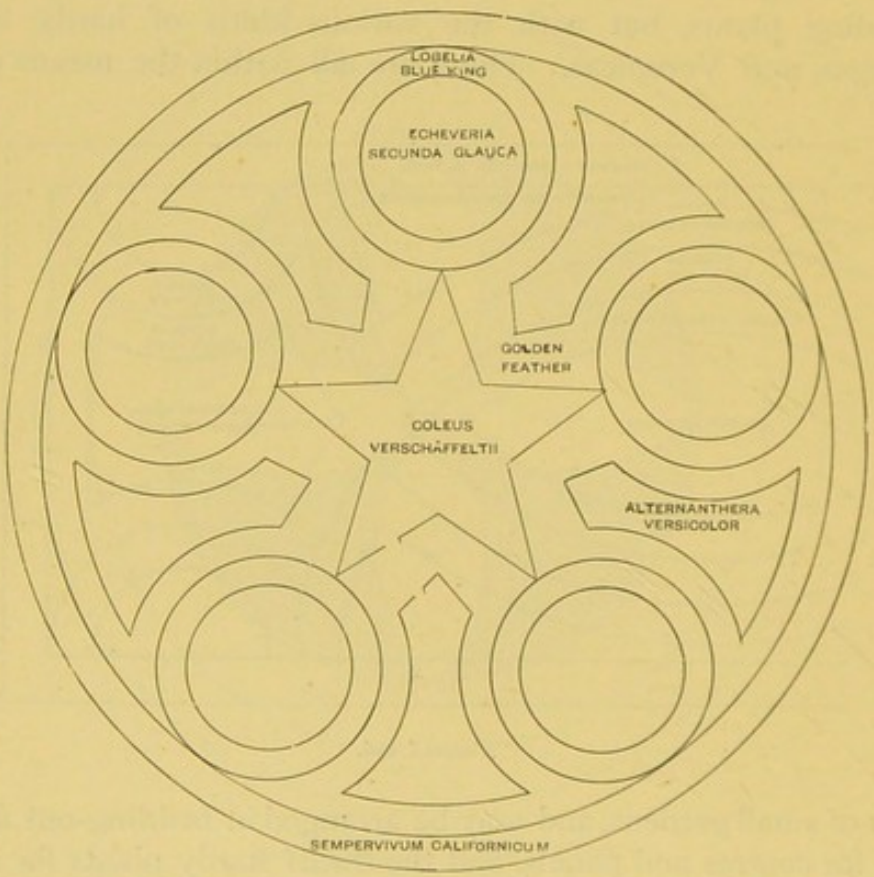


"Carpet" bed.

owners of small gardens, and may be arranged in bedding-out form, the shrubs for centres and panels, and the dwarf hardy plants for massing and carpeting.

Soil and Cultivation.—Next to position, soil is the most important element in the formation of a garden. In selecting a soil, two things should be kept in view—first, that an open or well-drained soil assists climate (that is, the more porous a soil is, the warmer is the ground, and the better able to withstand extreme cold are the plants); and secondly, that the soil should be deep. Unless there is depth, permanent things will not flourish satisfactorily. And for less permanent things, depth of soil is just as important, as it renders unnecessary frequent dressings of fresh soil to maintain fertility. Wherever these conditions of soil exist, flower-gardening is easy; but in many cases opposite conditions have to be dealt with,

and though it is hopeless to attempt to rival a naturally suitable soil, a very near approach can be made to doing so. The best soil is good loam, that is, soil of a clayey nature, but sufficiently sandy not to be sticky. Of the two states, light and heavy, the light is the better, because it is the warmer, and the more easily cultivated. In dealing with heavy soil, we must have drainage, deep tilth, and the working-in of material rendering it more porous, such as half-decayed leaves, mortar or brick rubble, charcoal, and ashes. If manure be needed, it should be used in the long straw state as it comes from the stables. One mistake frequently made with regard



to soil is, that sufficient attention is not paid to the kind of plants that the soil of a given district is best suited for. Were this always remembered, we should see fewer garden failures, and the gardening in different districts would possess an interest from variety. If each possessor of a garden were to strike out a line for himself, the question of suitability of soil would soon be settled, for a man would be too observant to plant a Rhododendron in chalky soil because he had admired a friend's Rhododendrons in peaty or vegetable soil. A healthy Yew or Box is infinitely preferable to a sickly Rhododendron. The annual dressing of flower-beds is needed to get the best effects; and by all means continue it, but not to the entire

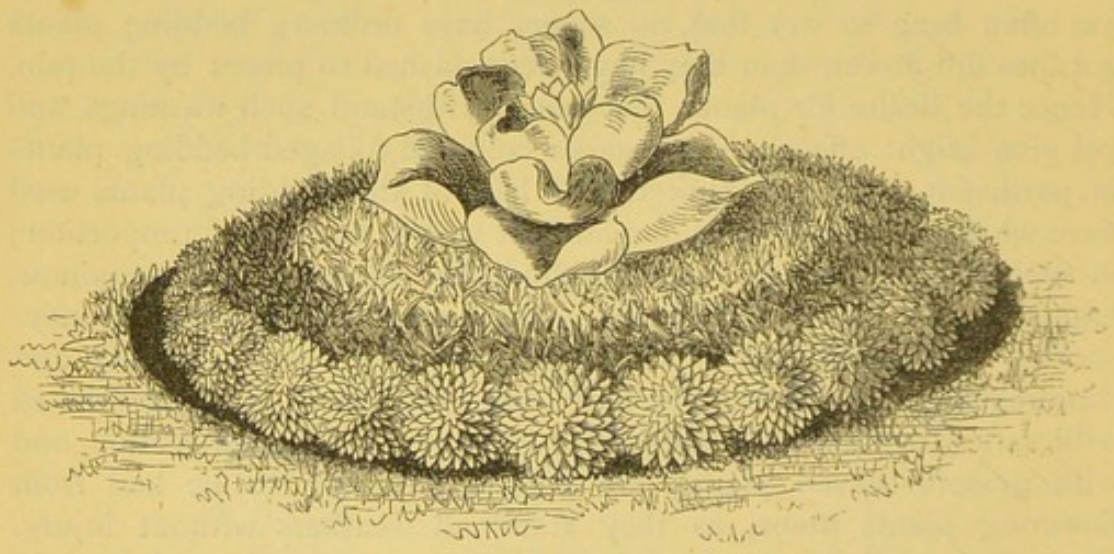
neglect of hardy flowers and shrubs. These, though they will do a long time without fresh food, enjoy rich top-dressings of good soil or manure; it is only by so treating them that their best effects are developed.

Flower-beds occasionally require to be deeply dug. Trenching is perhaps the proper term, but it scarcely expresses what I mean. The time to do it is when the beds are empty. I trench up my flower-beds once in two years—in autumn, after the summer bedders are removed, and before the spring-flowering plants are put in. Stirring flower-beds creates a wider field of action for the roots, and gives them an opportunity of getting out of the reach of drought in a dry season.

COLOURED FOLIAGE.—The use of coloured and fine-leaved plants in the flower garden has increased, the causes being, the introduction of a number of suitable plants; and the weather, which has often been so wet that, no sooner have ordinary bedding plants got into full flower, than they have been dashed to pieces by the rain. Hence the desire for plants that would withstand such washings, and yet give bright effects. As regards coloured-foliaged bedding plants in particular, I do not think that if half of the bedding plants used were what are termed foliage plants, it would be out of proportion; in such coloured foliage I would include the variegated Pelargoniums, together with hardy variegated plants, such as Japanese Honeysuckles, variegated Periwinkles, Ivies, and the hardy Sedums and Saxifrages. The effects to be had from this class of plants combined with variegated and coloured-leaved plants of the tender section, and with graceful-leaved plants, are better than any to be had from flowering plants alone, as they stand all weathers without injury. One of the brightest coloured beds I have ever seen planted in geometrical form for summer effect was composed of the following plants—viz. Sedum acre elegans, creamy white; Sedum glaucum, gray; Herniaria glabra, green; Mesembryanthemum cordifolium variegatum, light yellow; and the bright orange and scarlet Alternantheras, all dwarf plants; the standard or central plants being Grevillea robusta and variegated Abutilons.

BEDDING AND FINE-LEAVED PLANTS.—There can be no doubt that the use of the freer-growing green and graceful fine-leaved plants has done a great deal of good. In the South of England one may grow a great variety of plants of this kind. A number of greenhouse and even of stove plants may be placed in the open air without injury, and even with benefit to themselves. But some plants put out look sickly all the summer and make no good growth. Others always look well, even in the face of damaging storms. Where the climate is against the tenderer plants, a very good selec-

tion may be made from hardy things—from shrubs, plants like the Yucca, or young trees cut down and kept in a single-stemmed state. But there are errors in the system from which these things cannot save us. A geometrical bed is little the less geometrical because we place green-leaved or graceful plants in the middle of it. A more radical alteration is required, and that is the abolition of geometry itself, of formalism and straight lines, and of all the hateful gyrations which place the art of gardening on a level so much lower than it deserves to occupy. We can have all the variety, all the grace, all the beauty of form, all the glory of colour of the world of flowers and plants, without any of the pattern business which is now the rule. But we cannot make much progress in this direction except by suppressing the elaborate pattern beds as much as convenient, and by letting the vegetation tell its own story. The plants

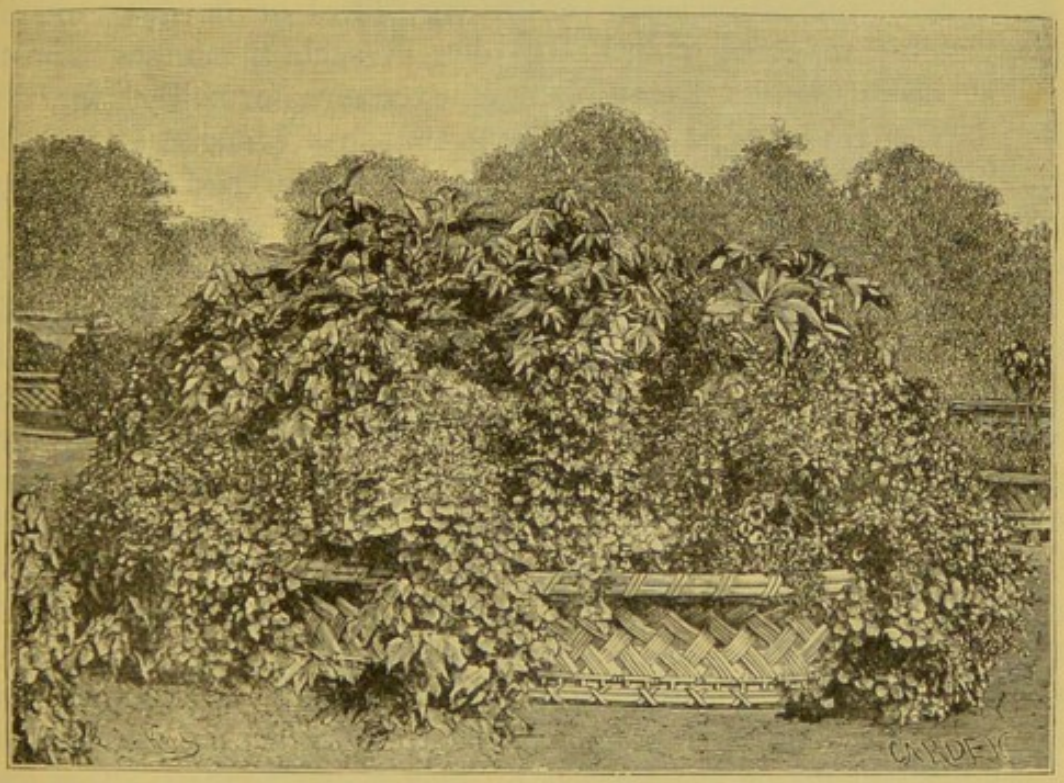


Bed of succulents and coloured-leaved plants.

we must feed and the soil we must enrich; but finicking beds, reminding one of the art on fire-shovels and such productions, are not necessary. Let us then begin by adopting a bold, large, and simple type of bed, from which the flowers will spring and make us think more of them than of the pattern. By way of variety, succulents are desirable plants for dry positions and under the shade of trees, where other bedding plants do not flourish satisfactorily. From their power of withstanding storms of wind and rain, and even drought and cold, they are always in good form; and they should have a place in summer flower-garden arrangements of any extent. They harmonise well with many hardy plants that may serve as cushions for them to display their quaintness on. The term "succulent" includes all plants of a fleshy character, the more common types

being the Echeverias, Cotyledons, and Kleinias. Agaves and Aloes are more rare, but are none the less valuable for bedding.

VASES.—In their proper place, and in due proportion, vases and baskets are useful in flower gardens, but they are frequently to a great extent out of all harmony with the style of the garden and its surroundings. Perhaps the tendency to over-decorate in this way is due to the geometrical plan of many gardens, when vases are placed on every pedestal and at every corner to square with many meaningless angles. Happily, this style of gardening is giving place to a less formal one in which vases and baskets can be used or not, according to the taste of the owner. When vases are used in large



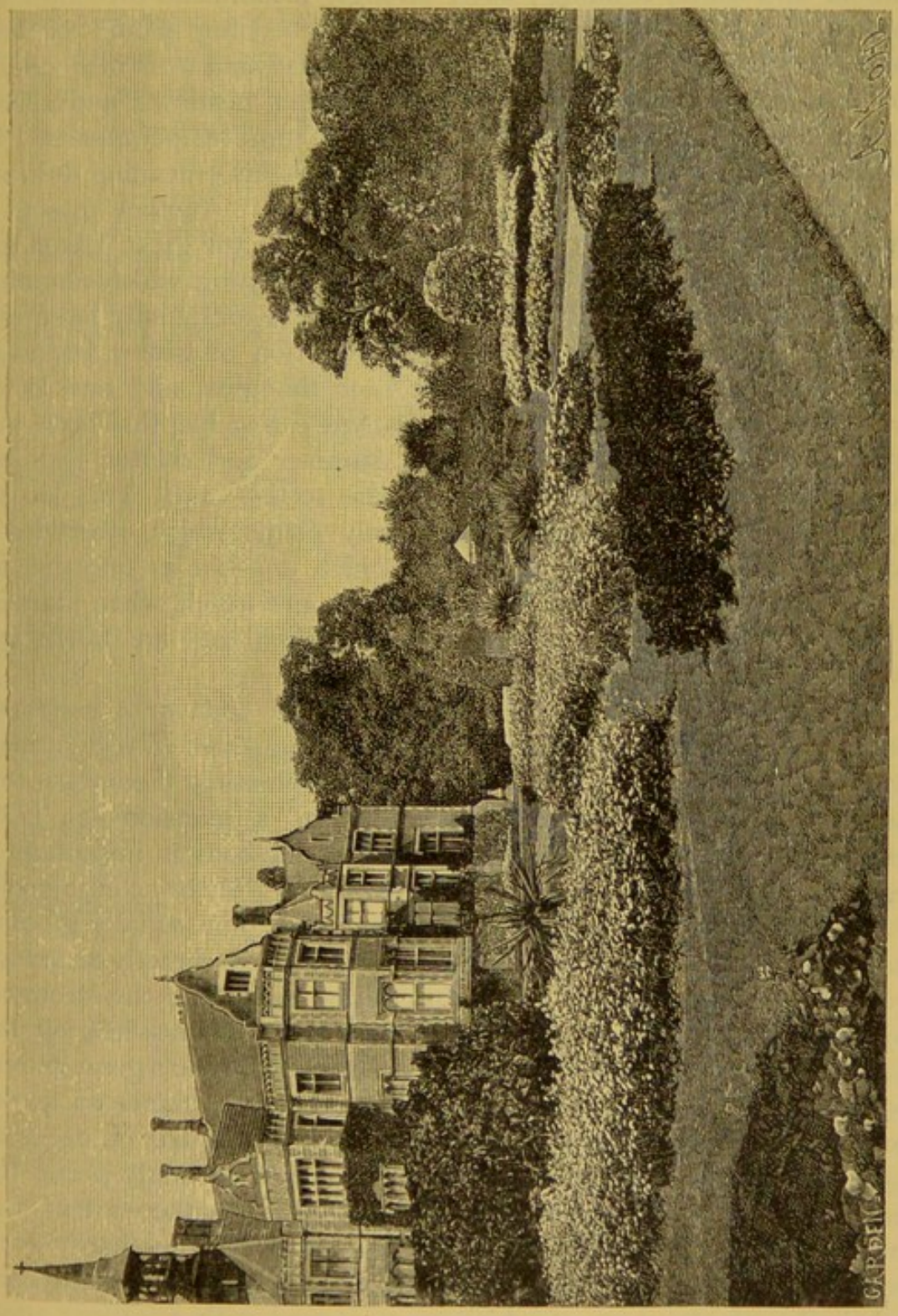
Stone basket of flowers and fine-leaved plants in the garden at Heckfield Place.

numbers, much may be done by planting plants of a drooping character in them; indeed, vases look most natural when trailers or climbers droop over the sides. Basket-formed beds are well suited to almost any position in pleasure-grounds; but the best of all spots is in an isolated recess on the turf, and next, in the central bed of a flower garden, where the surrounding beds are circles or ovals. I have one, the extreme length of which is 16 feet; it is 8 feet wide in the middle, stands 2 feet 6 inches above the turf, and is made of Portland cement. The principal plants in it are Marguerites, Pelargoniums, Heliotropes, Fuchsias, Marvel of Peru, Abutilons, Castor-oils, Cannas, Japanese Honeysuckles, and Tropæolums. More rustic-

looking baskets would be better suited for isolation on the turf and for distant parts of the pleasure-grounds ; and very good ones can be formed of wirework, lined inside with zinc, or made of barked Oak boughs instead of wirework. In baskets and vases of this kind permanent plants should be used, such as the variegated Ivies, Periwinkles, Japanese Honeysuckles, Clematises, and climbing Roses—space being reserved for flowering plants in summer and for small shrubs in winter.

SUB-TROPICAL BEDDING.—There are four types of summer flower-gardening : 1, the massing (the oldest) ; 2, the carpet ; 3, the neutral—quiet and low in colour, mainly through use of succulents ; and 4, the sub-tropical, in which plants of noble growth and graceful foliage play the chief part. To my mind, a mixture of the four classes is the very ideal of flower-gardening. It is possible to plant a formal garden in such a manner that the severest critic could not complain of excessive formality ; for, after all, it is the abuse of carpet bedding that has brought it into disrepute. And justly so, for when one sees bed after bed and arrangement after arrangement repeated without end, with no plants to relieve the monotony of flat surfaces, one has good reason to protest. I have charge of a terrace garden which has to be planted with a view to obtaining the best display from June to November, and I am therefore compelled to adopt the carpet-bedding system ; but I supplement it by dotting over the surface, of necessarily formal arrangements, plants of noble or graceful aspect, such as Acacia, Dracæna, and Yucca. In such arrangements a judicious blending of beds of flowering plants, principally Pelargoniums, adds brightness to the whole ; but, save under exceptional circumstances, flowers, and even fine-foliaged and flowering plants, should never be put in the same bed as succulents. The colour-massing or grouping style of summer-gardening is best adapted to a terrace or parterre that is well backed up or surrounded by evergreens, as these afford relief from the glare of brilliant colours, and at the same time set them off to advantage. A few plants of fine form distributed apart over the garden, and especially in beds of glaring colours, will be found to enhance the beauty of the whole. My view of sub-tropical gardening is, that it is only suitable for positions where it can be associated with water, or for sheltered nooks and dells, where the force of the wind is broken before it comes in contact with the plants. Where such positions are not at command, it is best to choose the hardier class of noble or handsome foliaged plants, many of which may be permanently planted, such as Ailantus, Rhus, Arundo, Salisburia, Yuccas, and the hardy Palm (Chamærops humilis). Of half-hardy plants that will withstand wind there are numbers, such as Araucaria, Acacia, Ficus, Cycas, Dracæna, Aralia. In planting

sub-tropical plants, care should be taken that the beds when fully furnished do not have a "bunchy" appearance. To avoid this, plant



Flower-garden at Madresfield Court.

thinly, and use as undergrowth dwarfer plants, of which there are many suitable kinds.

SUMMER AND WINTER BEDDING.—Now that there is such a wealth of plants suited for furnishing the flower-beds in winter, there

can be no excuse for their remaining empty after the summer-bedding plants are cleared away. Much labour is required to carry out both summer and winter bedding; but I strongly recommend this kind of decoration. There are reasons why winter bedding should be encouraged. First, winter is the season when all around us is bleak, dull, and bare—leaden skies, leafless trees, flowerless meadows, and silent woods, all of which have a depressing effect on most temperaments. It therefore behoves us to endeavour to neutralise this prevailing dulness by making our gardens as cheerful as possible. Another reason—which to those fond of summer bedding should be the great reason for adopting winter bedding—is the short period during which summer bedding continues in perfection. The thought is continually haunting one that it will fade all too soon. The adoption of winter bedding, however, in my own case obliterates such thoughts, and one looks forward to real pleasure from both systems. Nor has this been the only result. It being necessary that summer and winter bedding should meet, ingenuity had to devise means to this end. This led to my using as summer bedders many hardy plants which otherwise I should not have thought of using, but which are just as effective as tender exotics; nay, in some cases, more so; and which, when planted in the spring, serve till the following spring, when they are taken up, divided, and replanted for another year.

SHRUBS FOR WINTER BEDDING.—Isolated beds or a series of beds in parts of pleasure-grounds not much frequented in winter may not repay the labour and expense of thus planting them; but for gardens immediately under the windows of a mansion—as most bedded-out gardens are—the winter filling of the beds is important if permanent enjoyment is desired. There can certainly be no enjoyment in looking out upon bare beds, and that at a time usually gloomy enough without having a daily spectre of barrenness directly under our eyes. The naked beds in winter, no doubt, constitute the strongest objection to the bedding-out system, and, whilst acknowledging the justice of the objection, it is well to bear in mind that, to a great extent, the same objection is applicable to hardy herbaceous plants, as few of these do real furnishing service during the winter months. Indeed, for a garden overlooked from the windows, I should certainly prefer the bedding-out plan, supplemented by shrub-planting for the winter—and not necessarily the planting of shrubs alone, but of other hardy evergreen plants, particularly the dense-growing Sedums and Saxifrages, and similar plants, many of which are now used with excellent effect in combination with ordinary bedding plants in summer arrangements. The more plants of this type that it is possible to work in with the summer bedders, the less the labour when the time arrives for the winter planting; for, to furnish the parterre in winter, we do not require to

move more than half the plants that have done duty in summer. It now only remains to give a list of the best kinds of shrubs for the purpose, the list being strictly composed of kinds that bear removal well, do not grow fast, or change colour after planting. It is as follows:—Aucuba, Berberis, Cupressus, Euonymus, Hollies, Juniper, Laurustinus, Osmanthus, Pernettya, Portugal Laurels, Retinospora, Rhododendron, Thujopsis, Yews, Yucca.

W. W. HECKFIELD.

*** *This bedding of Evergreens in winter is one of the most expensive ana least artistic ways of flower-gardening. The true way with beds near the windows is to plant them to last the year round with* (1) *choicest evergreen shrubs, leaving spaces between for rare flowers;* (2) *beds of best Tea and other Roses, Carnations, Tufted Pansies, and rock-plants as surfacing;* (3) *or beds and borders of evergreen hardy plants.*—W. R.

Principal Families of Plants used for Bedding-out.

Abutilon
Agathæa
Ageratum
Ajuga
Alternanthera
Alyssum
Amaranthus
Anagallis
Anthemis
Begonia
Blue Marguerite
Brugmansia
Calceolaria
Canna
Centaurea
Cerastium
Cheiranthus
Chrysanthemum
Cineraria
Coleus
Convolvulus
Cotyledon
Cuphea
Dahlia
Daisies
Dianthus
Echeveria
Erigeron
Fuchsias
Gazania
Gladiolus
Gnaphalium
Heliotropium
Hollyhock
Iberis
Iresine
Lantana
Leucophyton
Lobelia
Matricaria
Mesembryanthemum
Mimulus
Myosotis
Nertera
Nierembergia
Œnothera
Oxalis
Pachyphytum
Pansies
Pelargonium
Pentstemon
Petunia
Phlox
Plantain Lily
Plumbago
Polemonium
Pulmonaria
Pyrethrum
Salvia
Santolina
Saponaria
Sempervivum
Senecio
Silene
Solanum
Stachys
Stocks
Tropæolum
Tussilago
Verbena
Veronica
Viola
Vittadena

CHAPTER XIV.

THE ROSE GARDEN AND ITS IMPROVEMENT.

THERE is great loss to flower gardens from the usual way of treating the Rose as a thing apart, and so it is absent at present from the majority of flower gardens. It is surprising to see how poor and hard many places are to which the beauty of the Rose might add delight, and the only compensation for all this blank is what is called the rosery, which in large places is often an ugly thing with plants that usually only blossom for a few weeks in summer. This idea of the Rose garden arose when we had a much smaller number of Roses, and a greater number of these were kinds that flowered in summer mainly. Even now enough account has not been taken of the many Roses that flower throughout the summer and autumn, among these being the best of Roses—Teas and Chinas. The old standards had something to do with this separate treatment of Roses, it being laid down in the books that the standards did not "associate" with other shrubs, and so it came about that all the standards were placed in the rosery and there held up their buds to the frost! The nomenclature, too, in use among Rose-growers—by which Roses that flower the shortest time were given the name of Hybrid Perpetuals—has had something to do with the absence of the Rose from the flower garden in large places. Shows, too, have had a bad effect on the Rose in gardens, where it is many times more important than as a show flower. The whole aim of the man who shows Roses, and who is too often taken as a model by his fellows of the garden, was to get a certain number of large flowers, and any stock which enabled him to get this at the least cost was what he thought most of; so, if we go to any Rose-showing friend, we shall probably find his plants for show grown in the kitchen garden with a deep bed of manure on the surface, and about as pretty as so many broomsticks. This idea of the Rose only as a show flower leads to the cultivation of Roses that have not a high value as garden flowers. Certain Tea Roses that do not open well in our country and are not really

successful in it are grown because they happen to produce flowers now and then that suit the shows. So altogether the influence of the shows has been against the Rose as a garden flower, and a cause why large country gardens, beginning with Osborne and Windsor, are as yet quite bare of the grace of the queen of flowers.

If we free our minds from the incubus of these traditions and practices, many delightful things in Rose gardens may be formed. For garden adornment, with the most beautiful of the flowers known to man born on plants of noble grace and habit—and wonderfully varied, too—from the wild Roses of Japan, India, and Europe, which take care of themselves in our shrubberies, to the more refined Roses of garden origin which deserve the best culture—what is wanted mainly

Climbing Rose (Rosa alba) on cottage porch, Surrey.

is that the very finest Roses, and above all long-blooming ones like Monthly Roses and such Tea Roses as George Nabonnand, Marie Van Houtte, and Anna Ollivier, should be brought into the flower garden in bold masses and groups. To give variety and long bloom, use the choicest Tea Roses in the flower garden and freely on covered ways, with wreaths of yellow climbing Roses swinging in the air, and on walls especially the great climbing Tea Roses.

ROSES AND MANURE.—In most gardens where people pay any attention to Roses the ground in which they grow is in winter densely coated with manure, very often raw and ugly to see in a nice garden. This is the regulation way advised in catalogues, but it is needless and impossible in a beautiful Rose garden. Most of our garden Roses being grafted on the Brier (that is, the Dog Rose of our fields and

hedgerows), the conditions which suit it are well known. The Dog Rose does best in the heavy, cool loams of the midlands, and if we want the ordinary Garden Rose to do well we must give it not less than 30 inches in depth of like soil. In forming Rose beds, people who know what they are about always use stiff soil when they can get it. This is often of a rich nature, and it is very easy to add, in putting the soil in, all the manure which the Rose may want. Therefore the surface of the bed might be open soil, and one of the prettiest ways of dealing with that is to surface it with rock plants like the Rockfoils, and Pansies or Violets. I have beds of Tea Roses over which the Irish mossy Rockfoil has been growing for years without the roses suffering. Beautiful groups of mossy plants of all sorts, or pretty little evergreen alpines associated with the earliest Scillas, show that the surface of the Rose garden itself might be a charming garden of another kind, and not a manure heap. In the old way of having what is called a "rosery" it did not matter so much about covering the surface with manure, but where we put our Rose beds in the centre of the very choicest flower garden or under the windows of the house it is a very ugly practice. The Rose can be nourished for six or eight years without adding any manure to the surface, and after six, eight, or ten years most beds will probably require some change, or we may change our view as regards them.

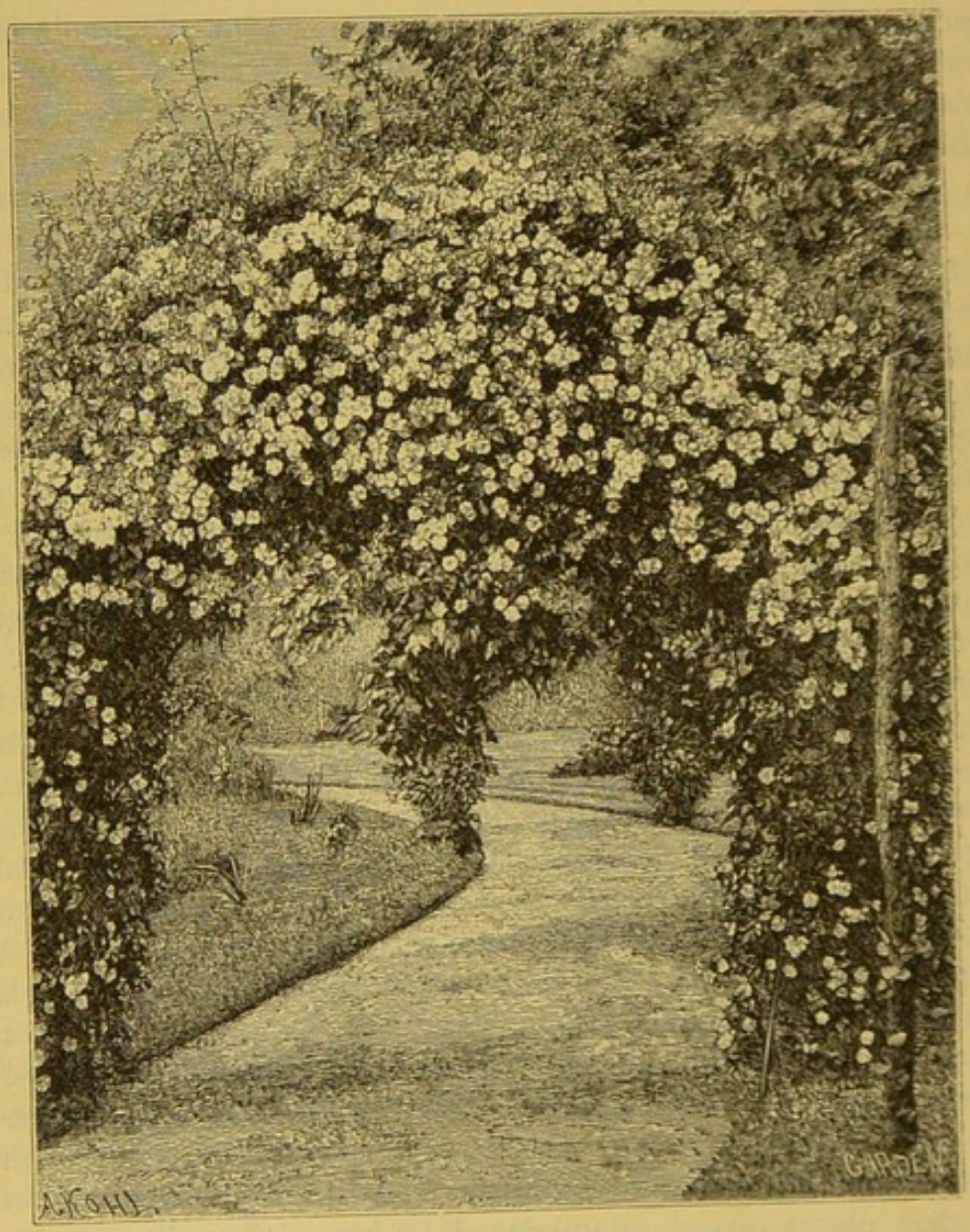
PLACES FOR ROSES.—They may be placed with good effect wherever they will grow. We cannot have too many Roses, or Roses in too many places. But in order to extend Rose plantations, especially where the cost of procuring and keeping up a stock is a consideration, we must abolish the "Rosery." The walls, fences, and shrubberies, etc., will always absorb as many of the climbing or trailing varieties as can be spared and cultivated to good purposes, and various aspects and positions can always be found for bushes. Rose bushes may be in beds, borders, or shrubberies; and if it be true that the most pleasing effects with garden flowers are produced by planting them in good and visible groups then assuredly that is the way to use the Rose. At present we mix indiscriminately summer and autumn flowering sorts and their varieties; but, on the grouping principle, we should have to divide these, or, as occasion required, mix them with a view to a succession of bloom, keeping the colours as far as possible to themselves. For the ramblers many suitable positions could be found, where, Brier-like, they could grow at their own sweet will and produce masses of bloom to be estimated by square yards, such as we not unfrequently see on older varieties that, aided by a good soil and favourable position, have by chance established themselves and made headway. It would be as easy to cultivate Roses in this way as in a formal rosery, and it would enable

us to choose the most favourable positions for the more tender and select kinds. The plants could be manured, pruned, and tended just as readily as under any other system, they would look in their natural and proper place, and would afford more pleasure than they could possibly do in a formal and perhaps inconveniently situated "Rosery."

Certain varieties of Roses could also be mixed with other suitable flowering subjects in the same way that we now plant Gloire de Dijon among the purple Clematis. Roses would do well among some shrubs and would be benefited by the shelter, and would flower when the bloom of the sheltering plants was over; they would also succeed with many other things that will suggest themselves to the reader. The Rose groups, wherever they happened to be, could also be carpeted over to better purposes than beds of most other things. They might be packed with spring and summer flowers of dwarf, low habit, including many kinds of bulbs and free-growing rock plants, which would just suit the Roses and protect their roots in winter—an important matter, for no cultivator doubts that one of the causes of mortality among Roses is the absence of a covering to the soil. Even the Brier dies in bare ground, while in the hedgerow and the copse it braves our hardest winters; and many good old Roses do the same as the Brier, but no cause of death among Roses equals that of grafting all kinds on the Brier whether they like it or not.

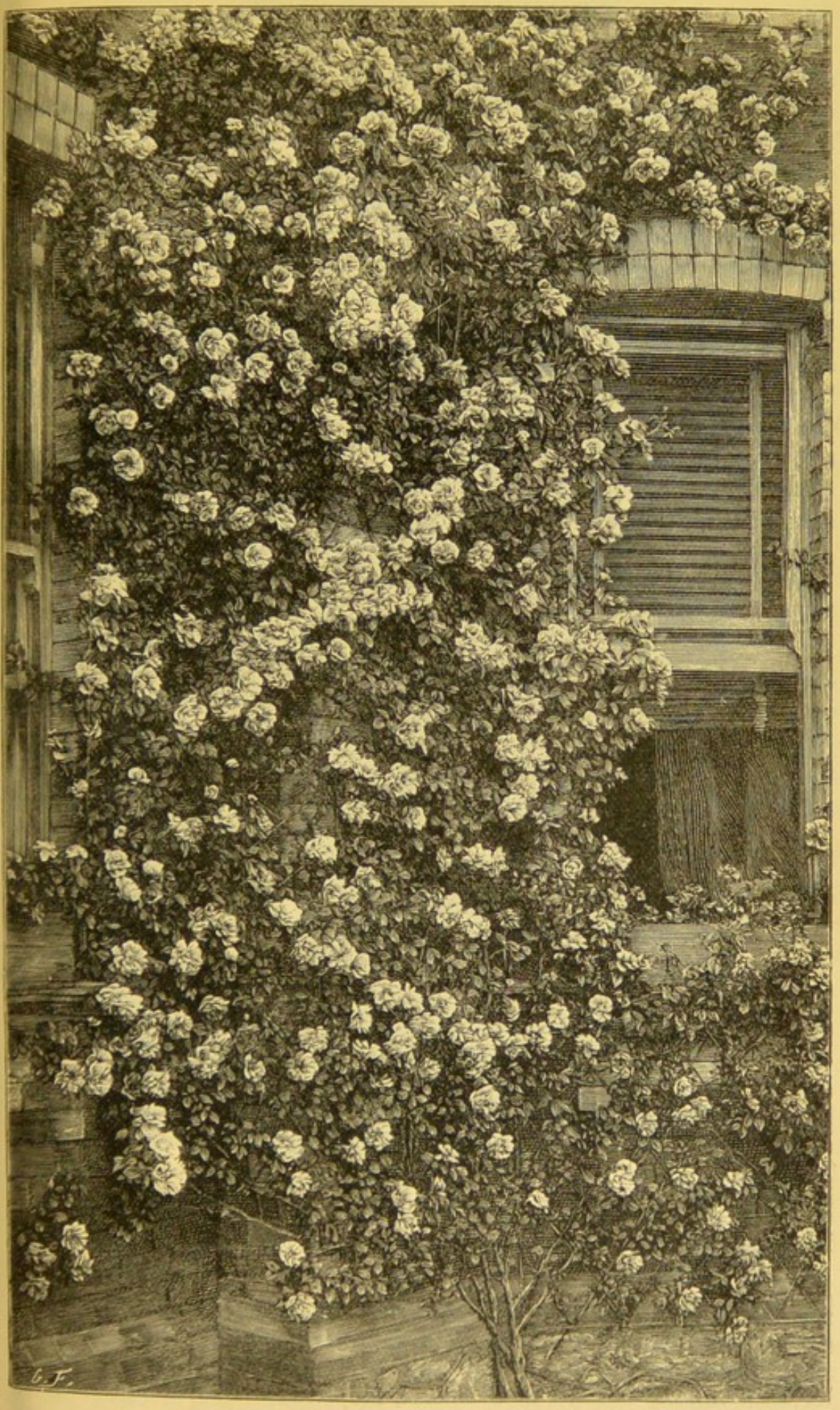
OVER-PRUNING OF CERTAIN FREE-GROWING ROSES.—It is a pertinent question to ask whether Rose-pruning is not carried a trifle too far in general culture. There is no bush in the garden annually cut so close as the Rose, and it is to be feared that the advantages of the practice are more apparent than real. Close pruning is said to induce vigorous growth, and hence the weaker varieties are pruned most severely. Under good management and protection this system answers well enough, and it is the best plan for the nurseryman, who for commercial reasons has to keep his plants within bounds; but in private gardens, where a show of Roses is desired, and desired soon, severe pruning is best avoided. It may be different in the case of Roses for exhibition. It is pretty well ascertained that the most severely pruned plants suffer most in severe winters, and are shorter-lived than plants grown as unpruned bushes. It is quite an error to suppose that many Hybrid Perpetuals or Bourbons grow poorly by being left to develop their tops as large as they will. All the ordinarily vigorous kinds will make quite large bushes if allowed, and will continue to grow and do well for many years. Climbers excepted, the plants never grow above a certain height, but they spread out and annually throw up strong shoots which produce vast numbers of flowers every season. The cottager's Roses are never pruned, and they are sometimes of remarkable age and size. Thirteen years ago, I split up

and planted as a hedge a large number of Hybrid Perpetuals, Teas, and other Roses, and ceased pruning them ; they are now all fine large bushes 4 feet and 5 feet high. The vigour and length of their annual shoots is surprising. They are often over 5 feet long and an inch in diameter near the base—just like Brier shoots, in fact. None of them



Climbing cluster Rose at Belmot.

have died, and the plants must now be twenty years of age—some of them probably a good deal older—while in the borders, among the pruned and select Roses, my losses have been great. During the severe winters of recent years these old bushes have stood unscathed, and are at present as vigorous as ever. The number of Roses they produce is surprising, and the productions of the highly cultivated,



Portion of plant of climbing yellow Tea Rose on house in Devonshire.

much-pruned plants are quite put into the shade. From them in the course of an hour a man has frequently filled several large vegetable baskets with Rose petals for drying, and that without making much difference to the show of flowers. The way the unpruned Rose behaves is this: the plant, as soon as fairly established in a good soil, throws up plenty of strong shoots, and the following year these shoots break their buds freely along the stem, and each branch produces a mass of bloom, which, after a shower, weighs the branch almost down to the ground. The older branches flower equally well, but what pruning such bushes need consists principally in thinning out the oldest branches, and leaving the younger ones. What takes place in the case of dwarf bush Roses happens in climbers, only the mass of blooms is ten times greater. It is the climbing or scrambling Roses that show what the Rose is capable of when cultivated in this free and natural manner. One of my most attractive specimens is an old double white Ayrshire Rose growing in the shrubberies among a group of common Laurel. I cannot tell how old the plant is, but it has probably been in its present situation for more than thirty years, struggling to keep its place among the tall-growing Laurels—sending out a shoot of white flowers sometimes on this side, and sometimes on that side of the clump of bushes, and sometimes scrambling up to the tops of the tallest branches, and draping them with blossoms throughout June and July. Nearly six years ago I headed the Laurels down to within 6 feet of the ground, leaving the straggling branches of the Rose which were found among them, and since then this Rose has grown and thriven amazingly, and now fairly threatens to gain the mastery. Some time ago I measured the ground covered by the plant and found it rather over 70 feet in circumference. Within this space the bush forms an irregular undulating mound so densely covered with Roses that not a handsbreadth is vacant and the Laurel branches are quite hidden, and in fact are now dying smothered by the Rose. A finer example of luxurious development I never saw. The plant was a perfect sheet of bloom for a month or more, and hundreds of buds were cut just at the opening stage. The tree never received the least attention, with the exception of the removal of the Laurel tops to let in the light. It is growing in a tolerably deep and strong dry loam, and this, together with head room seems to be all it requires. There are far too few examples of this kind, for our efforts have not been in the direction of showing what could be done with the Rose as a tree or bush. The common Brier teaches us a good lesson in Rose-pruning. No one has ever ventured to say the wild Rose was out of place in the hedgerow; and how does it behave there? It forms a mighty mound of branches, the older stems dying down as the young ones accumulate, till a large bush is formed, covered with

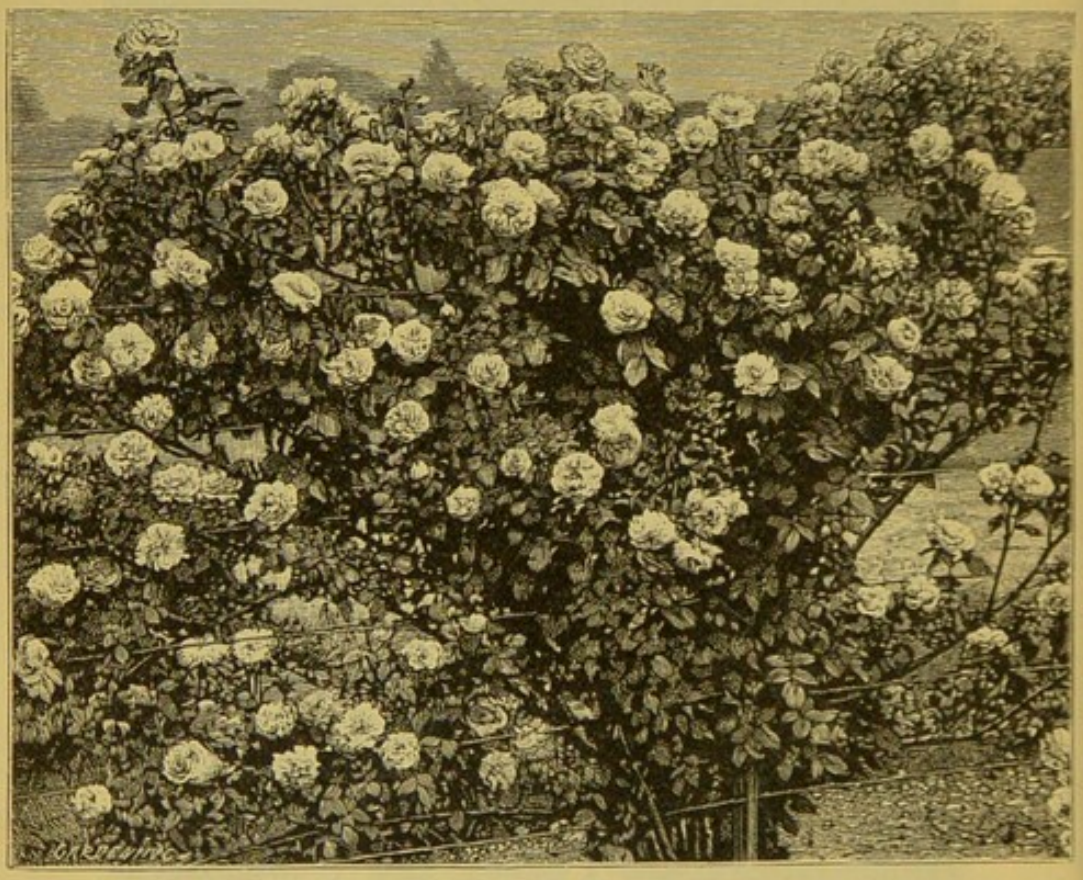
flowers. On the roads and lanes I have seen wild Roses which old people said had been there ever since they remembered, and I have taken note of Briers in the woods that, to all appearance, have been more than fifty years of age; and yet our strongest-growing Roses on Brier stocks in gardens are short-lived. From these facts the Rose-grower may learn that to have Rose bushes and plenty of Roses he should plant good kinds of known repute for hardiness and vigour,

Tea Rose, Marie van Houtte, grown in open air.

and should mainly confine the use of his knife to thinning out the shoots.—J. S.

ROSES ON PLEASURE GROUND LAWNS.—Climbing and strong-growing Roses make handsome bushes in a few years. Such climbers want support at first; but after the first or second year they may be left alone. The supports are soon covered, and a picturesque mound of Roses is the result. I have seen specimens of this kind

twenty years old in which the wood had accumulated about 2 feet, or more deep, and yet nowhere was any dead wood to be seen, owing to the plants throwing out annually fresh shoots which covered the old ones. The plants, in fact, grow exactly in the same manner as the wild Brier, which keeps sending up from its centre long shoots, increasing its size every year. Except against walls and in similar situations, there is no occasion to prune climbing Roses. They make the finest display when left to themselves, and it is only necessary to provide them with a deep, strong soil, and to let them



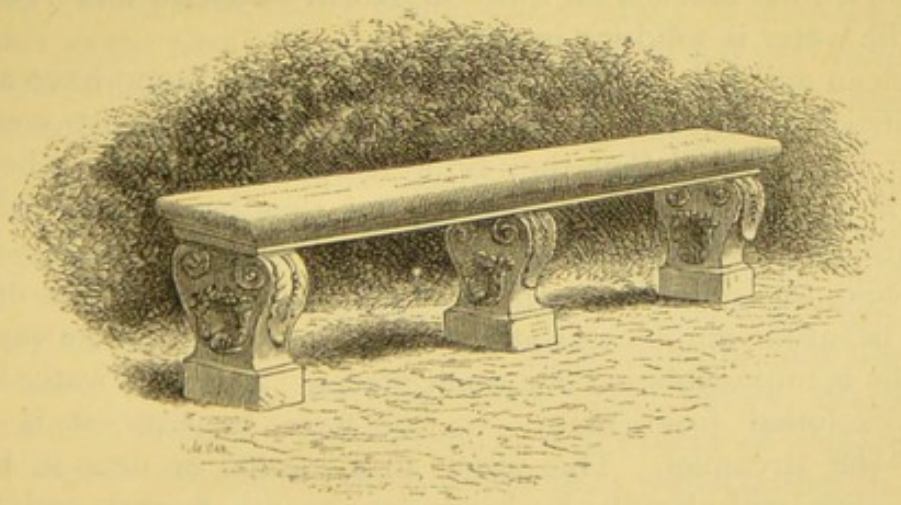
Rose, John Hopper, on fence.

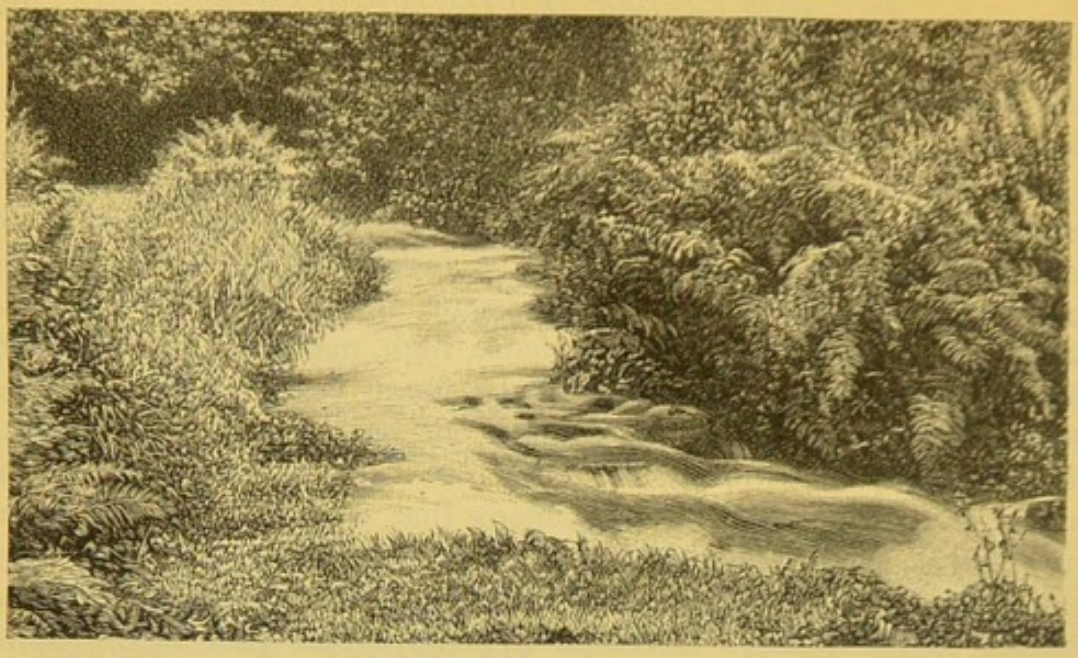
have light on all sides. Whether planting be carried out with the object above described, or for the purpose of covering naked tree-stumps or branches, or for draping any unsightly object whatever, liberal treatment in the first instance is the main thing. A good soil makes all the difference in quickness of growth, and in the permanent vigour of the tree. Among the best plants for such purposes are the Ayrshire Roses. These are all double, or semi-double, and the best of them are white or of a pinkish colour. Almost equally hardy and useful is the evergreen Rose, so called on account of the length of time it retains its leaves in winter. There are several good varieties,

and they are vigorous and rapid growers, and need little or no attention, except thinning when they are trained to pillars or walls.

ROSES ON PALINGS.—One of the prettiest and most useful purposes to which the Rose can be turned as a climbing plant is to cover palings or split oak fences. The varieties best adapted for this purpose are Noisettes, Chinas, with some few of the Bourbons. If the exposure be northerly or the fence high, many of the Boursault, Ayrshire, and evergreen Roses will be found very suitable. When pruned the plants should not be much cut back, but the weak shoots should rather be removed altogether, as it is masses of flower, in preference to individual fine specimens, that are to be sought after. It would be well to try in all cases where possible strong and hardy Roses on their own roots on trellises of this kind, as where kinds do well in this way, there is reason to believe that they bloom more freely, live longer, and do not perish in hard winters.

The noble and varied use of the Rose on walls, trellises, pergolas, and such surfaces being dealt with in the chapter on climbers, need not be repeated here. The species of Wild Rose, British and American and Japanese, will frequently take their place in the wild garden. The cultivation and much other details of the Rose as a garden flower is given in the second part of the book.





Streamlet in a Devonshire garden.

CHAPTER XV.

WATER GARDENS.

It is not only from the mountain's breast, dyed with Violet and Gentian, the Sunflower-strewn prairie of the north, or the sunny fields where Proserpine gathered flowers, that our garden flora comes. River and stream are often fringed with handsome plants, and little fleets of Water Lily (silvery fleets they look as one sees them from the bank) sail on the lakelets far away in North America and Asia, even where the water is solid ice in winter.

Unclean and ugly ponds deface our gardens ; some have a mania for artificial water, the effect of water under its best conditions pleasing them so well that they bring it near their houses, where they cannot have any of its good effects. But they have instead the filth that gathers in stagnant water, and its evil smell on many a lawn. In our cold, wet climate, too, it is desirable that the effects of water —even beautiful and clean water—should be kept a little away ; and, since this is impossible in very small places, "artificial" water is often better excluded from them. In one form, however, it is always pretty—the streamlet. This may, in a garden or near it, be kept always alive with beauty by bordering it with flowers and trailing shrubs, broken by little bits of turf. A hundred yards of a clear chalk stream alive with fish, such as one may see among the Wiltshire Downs, is better than many pretentious pieces of "artificial water." A defect of the ugly duck ponds—and, indeed, of all kinds of artificial water in gardens—is the way they fill up with mud, the cost of

cleaning them being great. Where in a large park the effect of water in the distance is good, "mudding" may be worth doing, but in places where the scum and the smell are the main results, and the best part of the lawn is cut up for the sake of an ugly pond, a good way often is to cut a drain from it and make it into a little garden for Rhododendrons, Ferns, and Lilies.

WATER-SIDE PLANTS.—But the water-margin offers to lovers of hardy flowers a site easily made into a fair garden. Hitherto we have used in such places aquatic plants only, and of these usually a very meagre selection; while the improvement of the water-side will be most readily effected by planting the banks near with hardy flowers. A number of the finest plants, from Irises to Globe-flowers, thrive in moist soil and often near water. Waterside plants have this advantage over water plants that we can fix their position, whereas water plants spread much, and some one kind often exterminates its neighbours; therefore it would always be better to form colonies of stout hardy flowers along the banks. The repeating of a favourite plant at intervals would spoil everything; groups of free hardy things, different in each place as one passed, would be best: Day Lilies; Meadow Sweets; Phloxes, which love moisture; Irises, mainly the beardless kinds, which love wet places, and all the German Irises; Gunnera; Aster; American swamp Lilies in peaty or boggy soil; the rosy Loosestrife; Golden Rods; Spider Worts; the Compass-plants; Everlasting Peas; Monk's-hoods; the Giant Knotworts; the stouter kinds of Yarrow (Achillea); the common Lupin—these are some of many types of hardy flowers which would grow freely near the waterside. With these hardy plants, too, a variety of the nobler hardy ferns, such as the Struthiopteris and Osmunda, would also come well.

WATER PLANTS of northern and temperate regions, associated with our native plants, add much beauty to a garden. If the soil be rich, we usually see the same monotonous vegetation all round the margin of the water, and where the bottom is of gravel there is often little vegetation, but an unbroken, ugly line of washed earth. A group of Water Lily is beautiful; but Water Lilies lose their charm when they spread over the whole of a piece of water, and waterfowl cannot make their way through them. The Yellow Water Lily (Nuphar lutea), though less beautiful, is well worthy of a place; and so is the large N. advena (a native of America), which pushes its leaves boldly above the water. The American White Water Lilies (Nymphæa odorata and tuberosa) are hardy and beautiful.

Of recent years much interest has been aroused in the hybrid hardy Water Lilies raised by M. Latour-Marliac, who has added the large and noble forms and the lovely colour of the Eastern Water Lilies to the garden waters of northern countries. The

splendid beauty of these plants should lead people to think of true and artistic ways of adorning garden waters. Our own poor Water Lily was always neglected and rarely effective, except in a wild state; but when people see that they may have in Britain the soft yellow and the fine rose and red flowers of the tropical Water Lilies throughout summer and autumn they will begin to take more interest in their garden water flowers. Even the wretched duck ponds which disfigure so many country seats will begin at last to have a reason to be. The change should be the means of leading us to think more of the many noble flowers and fine-leaved plants of the waterside, apart from Water Lilies. A great many handsome plants frequent the banks of rivers and lakes, and are never seen so well anywhere else. The rich soil brought down by rivers is a great aid in the growth of waterside plants, and those who have never seen them in this their natural position have little idea of their beauty or even size.

Should there be limits to cultivating these handsome Nymphæas in the open garden in the north, it will be quite easy to keep them in houses in the winter and turn them out in the summer. Another interesting aspect is what may be done in greenhouses and warm houses in cold or unsuitable places, and many may in that way enjoy their fine forms and lovely colours quite near the eye, though the greatest charm of the plants is the giving us new and beautiful pictures in the open garden. The new hybrid kinds continue blooming long after our native kind has ceased, and from the middle of May to nearly the end of October flowers are abundant.

Among native water plants one of the prettiest effects I have seen was afforded by a sheet of Villarsia nymphæoides near a woody recess, belting round the margin of a lake with a group of Water Lilies before it, nearer the deep water.

Not rare—growing, in fact, in nearly all districts of Britain—but beautiful and singular, is the Buckbean, with flowers fringed inside with white filaments, and with round unopened buds blushing on the top with a rosy red like an Apple-blossom. It will grow in any moist place, in a bog, or by the margin of any water.

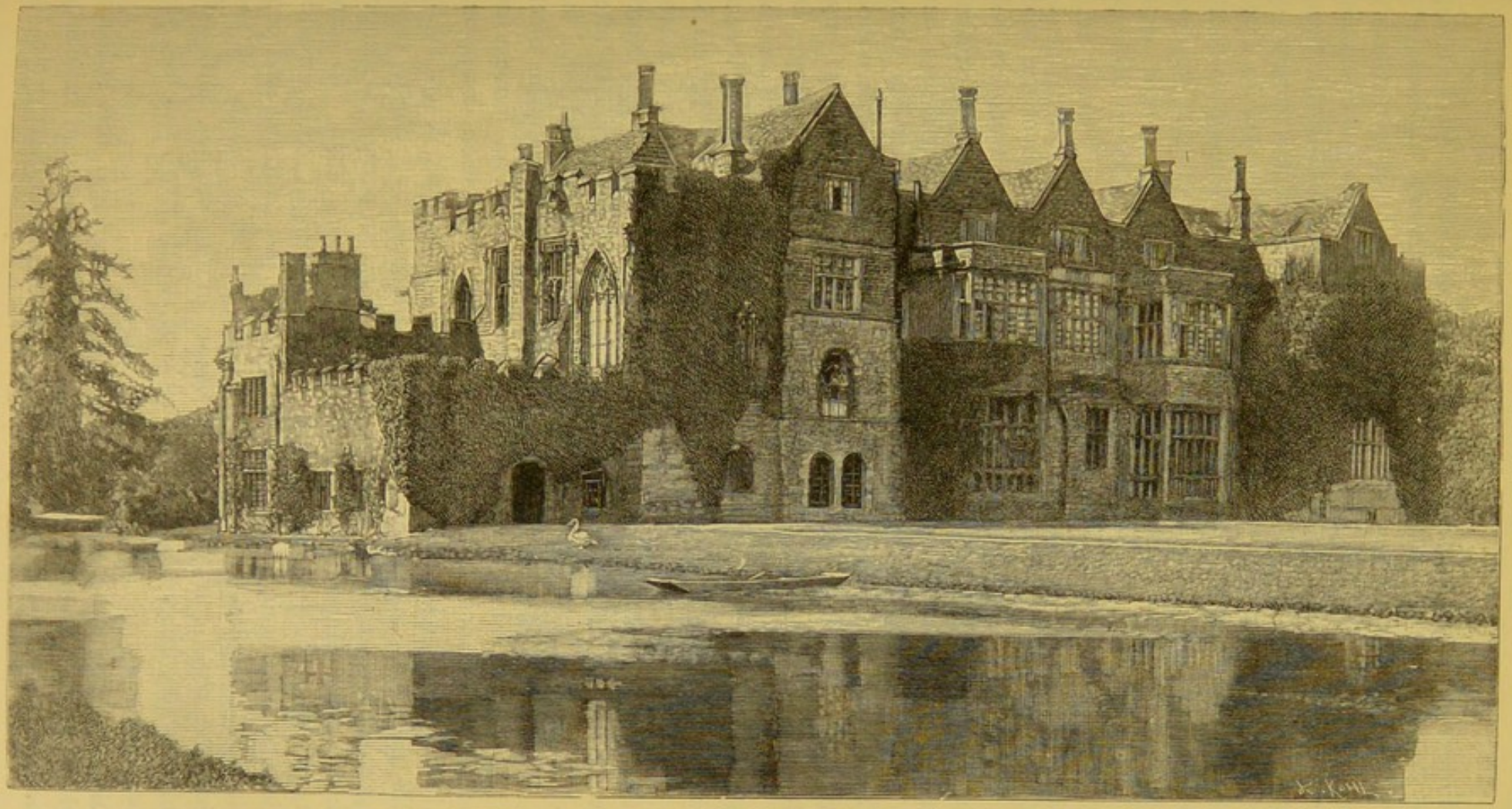
For a bold and picturesque plant there is the great Water Dock; its great leaves become a fine red in autumn. It forms a handsome mass of foliage on rich muddy banks, and, unlike many water plants, does not spread much. The Reed-mace (Typha) must not be omitted. But it should not be allowed much liberty. The narrow-leaved one is more graceful than the common one (T. latifolia). Carex pendula is excellent for the margins of water, its elegant drooping spikes being quite distinct in their way. Carex paniculata forms a strong and thick stem, sometimes 3 feet to 4 feet high, somewhat like a tree Fern, and it has luxuriant masses of drooping leaves: on that account it is

A water-garden at Fota, Co. Cork. Photograph by Miss Armstrong.

sometimes transferred to moist places in gardens, though these large specimens are generally difficult to remove and soon perish. The Bulrush is too distinct to be omitted, its stems sometimes attaining a height of more than 7 feet and even 8 feet; and Cyperus longus is also good, and recalls Papyrus in flower. Poa aquatica and Cladium Mariscus are distinct British aquatic plants worth a place.

Those who have seen the flowering Rush (Butomus umbellatus) in blossom are not likely to omit it from a collection of water plants. Place it not far from the margin, for it likes rich muddy soil. The common Arrow Head (Sagittaria), very frequent in England and Ireland, might be associated with this; but there is a much finer double exotic kind, which is really handsome, with white flowers resembling those of the old white Double Rocket, but larger. The Bog Arum is a beautiful plant, and I know of nothing prettier on rich, soft, boggy ground. It will also grow by the side of water. The well-known Lily of the Nile is hardy in some places if planted rather deep, and in nearly all may be placed out for summer; but it is best in the south of England and Ireland in quiet waters. The Sweet-flag will be associated with the Water Iris (I. pseudacorus), and in wet ground a number of exotic Irises will thrive, *e.g.* I. sibirica, ochroleuca, graminea, and many others. The Pond-flower is a native of the Cape of Good Hope, and is a singularly pretty plant, hardy enough for our climate, sweet and quaintly beautiful. It frequently succeeds where there are springs that keep the water a little warmer than usual. The Water Violet occurs in eastern and central counties and is pretty for muddy banks. A fine companion for the Marsh Marigold and its varieties is the large and showy Ranunculus Lingua, which in rich ground grows to a height of 3 feet or more.

The placing near together of plants which naturally inhabit somewhat different situations—(1) water plants, (2) waterside plants, and (3) land plants which thrive in moist ground—would prevent a running together of the whole mass, as we often see in the case of water plants. Distinct effects could be obtained from the beauty of the various flowers close at hand, and from that of the more conspicuous kinds at a distance or from the other side of a stream or lakelet.



Boughton: one of many fine but neglected sites for water gardens.

CHAPTER XVI.

THE BOG GARDEN.

THE bog garden is a home for the numerous children of the wild that will not thrive on our harsh, bare, and dry garden borders, but thrive cushioned on moss or in moist peat soil. Many beautiful plants, like the Wind Gentian and Creeping Harebell, grow on our own bogs and marshes, much as these are now encroached upon. But even those who know our own bogs have, as a rule, little notion of the multitude of charming plants, natives of northern and temperate countries, whose home is the open marsh or bog. In our own country we have been so long encroaching upon the bogs and wastes that some of us come to regard bogs and wastes as exceptional tracts all over the world, but when one travels in new countries in northern climes one soon learns what a vast extent of the world's surface was once covered with bogs. In North America, even by the margins of the railways, one sees, day after day, the vivid blooms of the Cardinal-flower springing erect from the wet peaty hollows; and far under the shady woods stretch the black bog pools, the ground between being so shaky that you move a few steps with difficulty. And where the woody vegetation disappears the Pitcher-plant (Sarracenia), Golden Club (Orontium), Water Arum (Calla palustris), and a host of other handsome bog plants cover the ground for hundreds of acres, with perhaps an occasional slender bush of Laurel Magnolia (Magnolia glauca) among them. In some parts of Canada, where the painfully long and straight roads are often made through woody swamps, and where the few scattered and poor habitations offer little to cheer the traveller, a lover of plants will find beside the road conservatories of beauty in the ditches and pools of black water fringed with a profusion of stately ferns, and bog and water bushes.

Southwards and seawards, the bog flowers, like the splendid kinds of herbaceous Hibiscus, become tropical in size and brilliancy, while far north and west and south along the mountains grows the

queen of the peat bog—the beautiful and showy Mocassin-flower (Cypripedium spectabile). Then in California, all along the Sierras, a number of delicate little annual plants continue to grow in small mountain bogs long after the plains are quite parched, and annual vegetation has quite disappeared from them. But who shall record the beauty and interest of the flowers of the widespreading marsh-lands of this globe of ours, from those in the vast wet woods of America, dark and brown, hidden from the sunbeams, to the little bogs of the high Alps, far above the woods, where the ground often teems with Nature's most brilliant flowers, joyous in the sun? No one worthily; for many mountain-swamp regions are as yet little known to us. One thing, however, we may gather from our small experience—that many plants commonly termed "alpine,"

Mocassin-flower in rocky bog.

and found on high mountains, are true bog plants. This must be clear to any one who has seen our pretty Bird's-eye Primrose in the wet mountain-side bogs of Westmoreland, or the Bavarian Gentian in the spongy soil by alpine rivulets.

In many country seats there are spots that with a little care can be made into pretty bog gardens. Where there are no natural sites a bog garden may be made by forming a basin of brickwork and Portland cement, about one foot in depth; the bottom may be either concreted or paved with tiles laid in cement, and the whole must be made water-tight; an orifice should be made in the side, at the height of 6 inches, to carry off the surplus water, and another in the bottom at the lowest point, with a cork, or, better still, with a brass plug valve to close it. Five or six inches of stones and bricks are

to be first laid in, and the whole must be filled with good peat soil, the surface being raised into uneven banks and hillocks, with large pieces of sandstone imbedded in it, so as to afford drier and wetter spots. The size and form of this garden may be varied at discretion; it should be in an exposed situation; the back may be raised with a rocky bank of stones imbedded in peat, and the moisture, ascending by capillary action, will make the position a charming one for Ferns and numberless other peat-loving plants. It is in every way desirable that a small trickle of water should constantly flow through the bog; ten or twelve gallons daily will be sufficient, but if this cannot be arranged it may be kept filled by hand. Such a bog may be bordered by a very low wall of flints or stones, built with mortar, diluted with half its bulk of road-sand and leaf-mould, and having a little earth on the top; the moisture will soon cause this to be covered with moss, and Ferns and all kinds of wall-plants will thrive on it.

Where space will permit, a much larger area may be converted into bog and rockwork intermingled, the surface being raised or depressed at various parts, so as to afford stations for more or less moisture-loving plants. Large stones should be freely used on the surface, so as to form mossy stepping-stones; and many plants will thrive better in the chinks between the stones than on the surface of the peat. It is not necessary to render water-tight the whole of such a large area. A channel of water about 6 inches deep, with drain-pipes and bricks at the bottom, may be led to and fro or branched over the surface, the bends or branches being about 3 feet apart. The whole, when covered with peat, will form an admirable bog, the spaces between the channels forming drier portions, in which various plants will thrive vigorously.

Perhaps the best place for an artificial bog is on sloping ground. The water flows in at the top, and the surface must be rendered water-tight with Portland cement or concrete. Contour or level lines should then be traced on the whole surface at distances of about 3 feet apart, and a ridge, two bricks in height, should be cemented along each of the horizontal lines. These ridges, which must be perfectly level, serve to hold the water, and the surplus escapes over the top to the next lower level. Two-inch drain tiles, covered with coarse stones, should be laid along each ridge to keep the channel open, and a foot of peat should be thrown over the whole. Before adding the peat, ridges may be built on the surface, the stones being built together with peat in the interstices. These ridges need not follow the horizontal lines. The positions thus formed are adapted both to grow and to display Ferns and alpine bog plants to advantage.

Perhaps the most charming plants to commence with are our own native bog plants—Pinguicula, Drosera, Parnassia, Menyanthes, Viola palustris, Anagallis tenella, Narthecium, Osmunda, Lastrea Oreopteris, Thelypteris spinulosa, and other Ferns; Sibthorpia europæa, Linnæa borealis, Primula farinosa, Campanula hederacea, Chrysosplenium alternifolium and oppositifolium; Saxifraga Hirculus, aizoides, stellaris, Caltha, and Marsh Orchises. These, and a host of plants from our marshes and the summits of our higher mountains, will flourish as freely as in their native habitats, and may all be grown in a few

A bog garden.

square feet of bog; while Rhododendrons, Kalmias, dwarf Ferns, and Sedges will serve for the bolder features.

One of the great charms of the bog garden is that everything thrives and multiplies in it, and nothing droops or dies, but the real difficulty is to prevent the stronger plants from overgrowing, and eventually destroying, the weaker. A small pool of water filled with water plants is a charming addition to the bog garden. The only precaution needed is to destroy the weeds before they gain strength—a single plant of Sheep Rot (Hydrocotyle), for example, would smother and ruin the entire bog in a season.—LATIMER CLARK.

In the bog garden many of our most beautiful plants, which in a summer like that of 1895 have been languishing for moisture in the borders, may be grown to perfection surpassing in beauty all our former impressions of them. Of primary importance, of course, is the position, and where this is naturally of a moist, boggy or swampy character, matters will be much simplified. We will assume we have such a spot at disposal, a swampy, treacherous, and, as we are wont to regard it, useless piece of land, under water the greater part of the year. Such a spot will be sure of its crop of naturally water-loving plants, such as Rushes, Sedges, or the like, and the first care must be to root them out one and all. In doing so, be careful that 12 inches or so of the margin be overhauled, as in all probability there will be here roots and seeds of all these wildlings. According to the nature of the boggy piece and also the depth of the water, it may be necessary for cleansing the ground to cut a deep trench and allow the water to pass away, as, without the moisture, the whole is much more convenient for preparation, and roots are more readily eradicated. The ground thoroughly cleansed at the outset, attention should next be directed to the soil. This may be variable, according to the variety of plants it is intended to introduce. For instance, strong growing subjects like the Astilbes and Meadow Sweets are all at home in a fairly stiff and moist soil. On the other hand, Iris Kæmpferi, Trilliums, Cypripediums, Lilium pardalinum, L. superbum, and other such things have a decided preference for soil of a vegetable character, such as peat, leaves, and the like. These latter, again, have a preference for the drier parts of the bed, while such as the Calthas and Menyanthes trifoliata revel in wet mud. To meet the varied degrees of moisture which the plants prefer will be quite an easy matter in an artificially constructed bog by the adoption of an undulating surface throughout. Slightly raised mounds are by far the most convenient, and certainly the most economical, way of providing for the greatest number of plants.

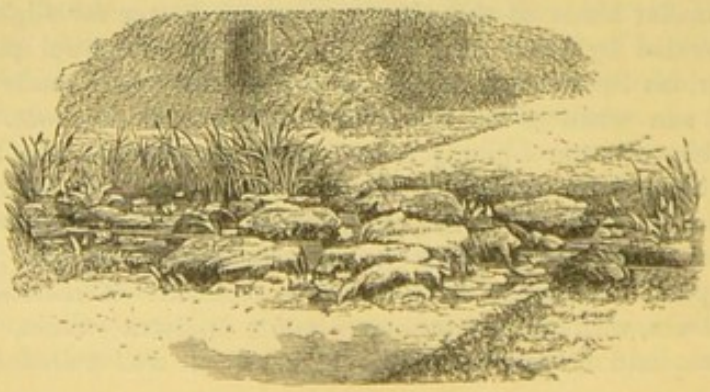
FORMATION.—The shape, of course, should be irregular, and, unless a depression of the whole exists, let this receive the next attention, and in such a way that the highest part will be 9 inches below the average surrounding soil. The paths should next be dealt with, excavating these nearly a foot deep in the central parts and gradually rising at the entrances. The soil taken from the paths may, if good, be used to form the raised beds for the planting of moisture-loving plants, such as are content if their roots only reach water. The sides of these beds may need rough support, such as rude sandstone blocks, to keep the soil in its place. These, or similar things, may also form stepping-stones in the wetter parts, as by this means the plants may be viewed without inconvenience. Beds of various sizes will be needed in proportion to the kind of plants that shall hereafter occupy them. For instance, the sloping banks at the edge, which may also take the form of a slightly projecting mound, would constitute excellent positions for some of the hardy Bamboos. Similar opportunities may occur at intervals throughout the margin for planting with such things as Acanthus, Yuccas, Eulalias, Astilbe rivularis, Spiræa Aruncus, Bocconia cordata, and others of similar proportions, while the lower slopes and depressions between these would make excellent places for Osmunda regalis, Lilium giganteum, L. pardalinum, L. canadense, and L. superbum in peaty beds. The latter three of these are really swamp-loving by nature, and it is scarcely possible to see them in anything approaching perfection elsewhere. In the moisture so close at hand such things simply revel, and the owner of them may for years see them towering far above his head in their day of flowering—a picture of health and beauty. With such things it should always be borne in mind that constant saturation is not absolutely essential, though, indeed, they receive it more or less in their native habitats.

Where space for bog gardens is limited, a very charming carpet to the Lilies just named would be the Wood Lily of North America (Trillium grandiflorum). The two things may be planted or replanted at the same season when necessity arises. The Trillium, moreover, would come in spring-time and would protect the growth of the Lilium against our late spring frosts. For the Liliums a foot deep of peat, leaf-soil, and turf, with sharp river grit, would form a good bed, and with a mulch each year of leaf-soil and a little very rotten manure would serve them for many years. It may surprise many to know that under such conditions these Trilliums would in a few years, if left alone, attain to nearly 2 feet and be lovely in the size and purity of their flowers. In another of these depressions Cypripedium spectabile could easily be established, or a bed may be devoted to the more showy hardy species, giving 6 inches of peat or more, with leaf-soil added. The species named is rather late in sending up its growth, and affords plenty of time for a carpet of Trillium to flower before much headway is made. Other beautiful carpeting plants for these would be found in the American Mayflower (Epigæa repens) or Pratia angulata, and if the position be shaded, as it should be for the Cypripediums, a charming, yet delicate, fringe may be found in Adiantum pedatum. Besides C. spectabile, C. pubescens and C. parviflorum are well deserving attention, together with Orchis foliosa, the beautiful "Madeira Orchis," and the Habenarias, especially H. ciliaris and fimbriata; all delight in moisture and require but little root room. Then if a glow of rich colour was needed in such places it could be supplied in Spiræa venusta or S. palmata, both delighting in moist soil. Another fine effect may be had by grouping Lobelia fulgens, or indeed any of the scarlet Lobelias. In wet parts may be planted Osmunda regalis, Onoclea sensibilis, Struthiopteris germanica, and Astilbe rivularis, allowing room for each. Groups of the herbaceous Phloxes in their best and most distinct shades, particularly of salmon scarlet and the purest white, would find their natural wants completely satisfied in the bog garden and give fine colour. In English gardens it is only in a moist season that we see the Phlox in even fair condition, for the reason that the original species is a native of wet meadows. This condition we can best imitate by deep digging and heavy manuring, and so much the better if the beds of these be saturated with water. Only in the constant cooling moisture of the bog can Primula japonica be seen in perfection, for here will it produce rosettes of leaves 2½ feet across, and giant whorls of its crimson flowers, attaining to nearly the same height. Another charming Primrose is that from the swampy mountain meadows of the Himalayas, P. sikkimensis, essentially moisture-loving; but to get the best results this must be treated as a biennial, grown on quickly, and planted in the bog as soon as large enough to handle. Other species of Primula suited to the higher and drier parts of the bog would be found in P. cashmeriana, capitata, denticulata, rosea, farinosa, involucrata, viscosa, and others, all alike beautiful in their way, and attaining greater vigour with the abundant moisture. Some of the smaller kinds of the viscosa type are better for slight shade, such as may be provided by Dielytra spectabilis (a really delightful plant in boggy ground) and various Spiræa. It should be noted that many shade-loving plants delight in full sun when given abundant moisture at the root. Particularly noticeable is this with the Liliums I have noted previously. In the early part of the year the bog garden should be aglow with such things as Marsh Marigolds, in single and double forms. In the wet mud in the lower parts and about the stepping stones these would appear quite natural, and in like places Ficaria grandiflora, a plant too rarely seen, with its blossoms of shining gold; then Senecio Doronicum, with golden orange flowers, Dielytra eximia, Trollius: any of the Dentarias and Dodecatheons likewise are all well suited for the raised

parts where the roots will touch the moisture. The Dodecatheons in peat, loam, and leaf soil in equal parts, particularly D. Jeffrayanum, grow to a large size: Hepaticas, too, are greatly improved in company with these last, while the charming effects that may be produced are almost without end. Corydalis nobilis in peat and loam, C. lutea, together with the Water Mimulus (M. luteus), all provide rich masses of yellow. Gentiana asclepiadea, G. Andrewsi, as well as G. verna, grow charmingly in the bog. Nor is the list of plants exhausted; indeed, they are far too numerous to give in detail, but yet to be mentioned as among the grandest are many Irises, I. Kæmpferi in particular. Meconopsis Wallichiana (the blue Poppy of the Himalayas) produces quite a unique effect in the moister parts. Saxifraga peltata, S. Fortunei, S. Hirculus, S. granulata plena, Soldanellas, Senecio pulcher, Sisyrinchium grandiflorum, and many more are all benefited by the varying degrees of noisture to be found in the bog garden.

In gardens where no moist piece of ground exists, such as those with gravel or sandy subsoils, it will be necessary to select a low part and mark out an irregular outline. Next dig out the soil 18 inches or 2 feet in depth, so as to allow of at least 6 inches of clay being puddled in the bottom to retain the moisture. For bog plants clay is far better than concrete, because it supplies food for many moisture-loving plants. To keep the clay in position, sloping sides will be best, and for the soils named it will scarcely be necessary to have more than a small outlet for excessive moisture, and this at about 12 inches high from the deepest part. For this a narrow clinker or rough brick drain will suffice, so placed that the outlet may be blocked, if necessary, for affording greater moisture. By digging a shallow trench around the upper margin of the bog-bed, and using Bamboos, such as Metake or glaucescens, or Bocconia cordata—the last two valuable for their rapid annual growth—such things would give the needful shade in summer.

In large gardens and cool, hilly districts the bog garden should always be found. Some years ago I had charge of just such a garden: in the flower garden was a fountain basin wherein water plants were grown; the overflow from this went tumbling in many ways over a series of rocks into the rock garden pond containing Orontium aquaticum, Nymphæas, and Sagittarias. In turn the overflow from the rock garden was conducted to the bog garden proper, where many masses of Cypripedium spectabile, with fully a score spikes of its beautiful flowers to each tuft, grew in luxuriance in peat and leaves under a welcome shade. In the swampy watercourse, before the bog was entered, the Marsh Marigold in variety abounded, being very conspicuous. Here, too, Osmundas were rampant, together with Primula japonica and a variety of plants already mentioned, and Ourisia coccinea, tightly pressing the surface of a stone, flowered splendidly.—E. J.



CHAPTER XVII.

HARDY FERNS.

THE marriage of the fernery and the flower garden is very desirable, our many hardy evergreen Ferns being excellent for association with hardy flowers. There are many varieties of our native Polystichums, Hart's-tongues, Blechnums, which would be excellent companions to evergreen herbaceous plants suited for sheltered, half-shady nooks. There are also many hardy and vigorous exotic kinds. Graceful effects may be developed in foregrounds, in drives through glades, and in many other positions, by the bold use of the larger hardy Ferns. The Bracken is everywhere; but there are others more graceful in form, which delight in the partial shade of open woods and drives, and succeed even in the sun. Ferns have, as a rule, been stowed away in obscure corners, and have rarely come into the garden landscape at all, though they may give us beautiful aspects of vegetation not only in the garden, but in parks and by drives.

In countries where hardy Ferns abound, they are often seen near water and in hollow and ditch-like places, and it is perhaps best to group them here with the waterside and bog plants. Many of the boldest and best may well be thus grouped. This is a way of treating them more artistically than arranging them in the prim and very special "hardy fernery."

In the home counties there is probably not a better fernery than that at Danesbury. It is on a sloping bank in a rather deep dell, overhung with trees and Ivy, in the shade of which the Ferns delight. As regards the planting, the various families are arranged in distinct groups, and each group has a position and a soil favourable to its requirements. The best way to grow Ferns, however, is with flowers, as in Nature, and a hardy fernery may be very beautiful. As a rule, Ferns have in their natural state both soil and locality exactly suited to their requirements; and the soil is yearly enriched by the decaying foliage of surrounding trees, which protects them in winter. In arranging a fernery, study the

Foreground of Native Fern.

habits and requirements of each species, and allot to it the position most likely to give the best results. At Danesbury the most sheltered, moist spot is given to the evergreen Blechnums, which delight in a damp atmosphere, and to the delicate forms of Asplenium. Osmunda, which thrives amazingly, is in a low swamp, The soil used for these Royal Ferns is a mixture of good loam and fibrous peat. The better deciduous kinds of Polypodium, such as P. Phegopteris and P. Dryopteris, have sheltered positions; and in quiet nooks may be found charming groups of the Parsley Fern, and Cystopteris fragilis, a most delicate and graceful Fern. Lastrea Filix-mas and its varieties occupy the more exposed positions in company with fine colonies of the evergreen kinds, comprising some unique varieties of the Polystichums, Scolopendriums, Polypodiums, etc. A plentiful supply of water is available.

The beauty of a fernery is much enhanced if the larger kinds of Ferns grow out of some plant of dwarfer habit. The Ferns themselves are much benefited by this, because there is not excessive evaporation during hot weather; but the small Ferns are best without any carpet. The Fern-lover will remember that not only have we our own beautiful native Ferns for adorning our gardens, but also the hardy Ferns of America, Asia, and the continent of Europe.

Royal Fern (Osmunda regalis).

CHAPTER XVIII.

SPRING FLOWERS.

IN our islands, fanned by the winds of iceless seas, spring wakes early in the year, when the plains of the north and the mountains of the south and centre are cold in snow. In our green springs the flowers of northern and alpine countries open long before they do in their native places, hence the error from an artistic point of view of any system of flower-gardening which leaves out of account the myriad flowers of spring.

The usual way of "spring gardening" is "bedding" of Forget-me-nots, Pansies, Daisies, Catchflies, and Hyacinths in beds and in ribbons; but this way of cultivating spring flowers is far too narrow, and the best is to scatter spring flowers wherever they will grow. Many country gardens are as bare and ugly in their dug borders as a London cemetery or park, while every pleasure-ground, or open space for grass with trees on it, may be made delightful with winter Aconite and Snowdrop, spring Snowflake, blue Anemone, and many other flowers dotted in the grass, and under the branches of summer-leafing trees. Some little plants that flower and ripen their leaves early find a home under Beech or Oak or other deciduous trees; they complete their season's work before the leaves come on the trees, and in spring are seen happy under the branches. Wherever wild flowers grow well, numerous additions from other countries may be made to them. If we have a grove where the wood Anemone grows naturally (a common occurrence enough), nothing is easier than to associate the blue Apennine Anemone with it. A delightful addition also, if the soil be chalky, is the yellow Anemone (A. ranunculoides). Or does the Bluebell or wood Hyacinth grow with us? Then certainly in the same place, or near it, will also grow the bell-flowered Scilla and S. bifolia—not native plants, but perfectly hardy in our country. Various kinds of Daffodils or Narcissus, as, for example, the different forms of Poet's or Pheasant-eye Narcissus, will grow in any place where the common Daffodil will. The beautiful wood Forget-me-not may be sown in any wood, copse, or shrubbery,

and thus it may be that, apart from the garden proper, much may be done in adding the glory of spring flowers to any place where there are trees and grass. The corners in an old orchard are delightful for experiments of this kind.

In the garden proper, we may look at the many positions in which spring flowers may be grown before we come to the "spring bedding." The fashion of leaving beds of Roses, choice shrubs, etc., bare of all but what might be called their proper occupants should be given up. In many places the half-bare Rose beds alone would be a home for numerous beautiful spring flowers—Pansies, Violets, choice Daffodils, Scillas, and for pretty dwarf plants established in colonies between the Roses, double Primroses being particularly happy in such positions. The slight shade such plants receive in summer from the other tenants of the bed assists them, and they do better here than in bare borders. Where the Rhododendron beds are planted in an "open" way, as they often are (and they never ought to be jammed together), we may have a garden of another delightful kind, the peat-loving plants will be quite at home there—much more so than in any bare borders. The white wood Lily of America, the Virginian Lungwort, the Canadian Bloodroot, and the various Dog's-tooth Violets enjoy peat beds. When we come to borders and beds of favourite spring flowers, such as Polyanthus, Primroses in their coloured forms, Cowslips, Auriculas, which in the self-coloured and border kinds are delightful, we can "cut and come again" for the flowers, and they are also convenient for division and exchange. Then along favourite walks in quiet places, a rich border for those glorious Polyanthuses and coloured Primroses and any other favourite free spring flowers may be made, and so before we come to the pattern "massing" of spring flowers we have a variety of ways of enjoying them more artistic than spring "bedding-out" pure. That may follow the fashion of the hour, and be arranged according to taste, with a considerable variety of material—Forget-me-nots, Daisies (both variegated and green), Silene, Pansy, Violet, Hyacinth, Anemone, Tulip. If we have a group of beds, and, say, a parterre under a window or in any other conspicuous position, a bright and pretty effect may be formed; but even without any such thing, fair gardens of spring flowers may be made in every place. If they are so made, the problem of the design for the few formal beds of the parterre will not be so terrible.

Of late a number of beautiful forms of well-known flowers have been collected from various countries or have been raised from seed. It is believed that there now exists over a dozen different forms of the Lily-of-the-Valley, differing in size of bloom, in size of plant, and even in time of flowering. So, too, the Hepaticas, which we knew in two or three bright forms only, have broken into a much

greater number. It needs only a small effort of the imagination to see what we can do with such treasures when they are sufficiently increased to be valuable for general garden decoration. Apart from these new forms of old friends, many wholly new species are being introduced yearly, thus adding to the store from which we may draw to make our spring gardens rich in form, colour, and fragrance.

SPRING FLOWERS IN SUN AND SHADE.—It is important to know the difference that occurs in the blooming of a hardy plant, according to the aspect in which it is put. I have had a border of the beautiful Chionodoxa Alleni from Asia Minor on the north side of a wall, and they were beautiful for several weeks, owing to being saved from the sun ; I have also planted Aubrietia and Arabis in the shade of a house, and the difference is very marked in the time of blooming between the plants that see the sun and those that are in the shadow. Forsythia suspensa is on each side of a wall running nearly east and west, and there is fully a fortnight's difference in the blooming time. So also with Wistaria planted on the sunny side, but hanging over the shady side, of a wall. Daffodils do better in half shade than in full sunshine. Bluebells (Scilla) are like the Daffodils in their preference of half-shady positions in woods or copses ; so too Crown Imperials, which, like the Scillas, bleach badly if fully exposed to the sun. Such facts may be taken advantage of in many ways, especially as regards the nobler flowers that we make broad and artistic use of and those of the spring, when we are much more liable to sudden storms of rain, snow, and sleet, that may destroy an early bloom. If fortunate enough to have the same handsome plant on the north side of a hill or wall, as well as in a warm place, we have a chance of a second bloom, and there may be a difference of even three weeks in one place in the blooming of a plant. Country gardens are generally fortunate in wall surfaces and shady groves, so that frequent opportunities of securing this variety in the blooming of our favourites occur, and by following out such trials we may find a difference even in vigour in different situations, but the greatest advantage is in prolonging the bloom. The question is worth the thought of all who are fond of hardy flowering shrubs and hardy flowers.

Let all who love the early flowers (the joy of our climate) look at the following list, remembering that it is not a list of the kinds of spring flowers (which are innumerable), but of the families, and some of these, such as Narcissus and Rockfoil, are large groups of lovely flowers. There is no need to enlarge more upon the kinds, as many are already so fully discussed in the chapters on hardy bulbs, border flowers and flowering shrubs, and the story of these is the story of the spring.

Some Spring and Early Summer Flowers Hardy in English Gardens.[1]

Adonis
Alyssum
Andromeda
Androsace
Anemone
Aquilegia
Arabis
Arenaria
Armeria
Asperula
Asphodelus
Aubretia
Bellis
Caltha
Centaurea
Cerastium
Clematis
Crocus
Convallaria
Cyclamen
Daphne
Dentaria
Dianthus
Dicentra
Dodecatheon
Doronicum
Draba
Epimedium
Eranthis
Erica
Erinus
Erodium
Erythronium
Ficaria
Fritillaria
Fumaria
Galanthus
Genista
Geranium
Geum
Gypsophila
Helleborus
Hepatica
Hesperis
Houstonia
Hyacinthus
Iberis
Iris
Leucojum
Linaria
Linum
Lychnis
Meconopsis
Muscari
Myosotis
Narcissus
Nemophila
Omphalodes
Ornithogalum
Orobus
Pæonia
Papaver
Phlox
Polemonium
Potentilla
Primula
Pulmonaria
Ramondia
Ranunculus
Sanguinaria
Saponaria
Saxifraga
Scilla
Sedum
Silene
Soldanella
Solomon's Seal
Trillium
Triteleia
Trollius
Tulipa
Uvularia
Veronica
Vinca
Viola

[1] *Shrubs are excluded; they will be found in the chapter on "Flowering Trees and Shrubs."*

Torch lilies.

CHAPTER XIX.

THE FLOWER GARDEN IN AUTUMN.

Now who hath entered my loved woods,
And touched their green with sudden change?
Who blanched my Thistle's rosy face,
And gave the winds her silver hair?
Set Golden-rod within her place,
And scattered Asters everywhere?
Lo! the change reaches high and wide,
Hath toned the sky to softer blue;
Hath crept along the river side,
And trod the valleys through and through!

THE spring is so richly gifted with flowering trees, shrubs and flowers, that it might seem rash to say that the autumnal beauty of the garden could equal that of the spring; but recent additions to our garden flora have made a great difference, and now the flower garden in autumn may be even more beautiful than that of the spring.

The use of half hardy, or bedding plants, which are often showy in autumn, gives a certain amount of colour which is very precious; but the recent introduction of many beautiful hardy flowers gives us the power of making the autumn garden far more interesting and finer in colour than was ever anticipated. It would be easy to give the names of many things that are to be found in flower in gardens in autumn, but that is not nearly so important as getting an idea of many of the nobler class of plants which may be effectively used at that time, no matter almost what the season may be. Half hardy

plants for the garden depend very much on the weather of the summer, and certain seasons are so much against them that they make no show; but this cannot be said of the hardy flowers of nobler stature and beauty, which are so well fitted for our climate, like the many Sunflowers. Certain plants may depend for success on soil and situation, or even climate, even when they are hardy as the Fuchsia, which is so much better in the coast and west country gardens; but, when everything is left out that wants any extra culture or advantages of climate and soil, there remain for every garden many beautiful things for the garden in the fall.

Of those that can generally be trusted for our country, I should say that, of all the gains of the past generation, the brilliant groups of plants of the Sunflower order were the finest, handsomest, and most generally useful for their disregard of any weather likely to occur. The masses of fine form and colour one may have with these when grouped in picturesque ways are remarkable. With the Sunflowers are included not only the Helianthus strictly, of which there are so many good kinds now, but also other showy prairie flowers of the same natural order, which approach them in character, such as Rudbeckia, Silphium, Helenium, and other vigorous families of this numerous tribe of plants. The best character of many of these is that they thrive in any soil, and make their way in rough places and among shrubs, or in parts of gardens less precious than those we keep for our best flowers.

For delicate and fine colour, however, the first place belongs to Tea and monthly Roses, of which the best kinds should always be grown in the open air. Of the kinds which open best in England, a delightful garden may be made in autumn, in fine seasons enduring right to the end. Until quite recently no one trusted the Tea Rose out in bold masses in the flower garden, and hence the ordinary red Rose, not generally flowering late, was kept by itself. A greater mistake could not be, because these most precious of all Roses (the Teas) go on blooming throughout the summer and autumn, and very often they vary in bloom; that is to say, the flowers of September will not be the same as the flowers of June, the buds also varying. So we have not only lovely Roses throughout the fine season, but also variety every week, every shower seeming to influence the bloom. There is such great variety among them that every week seems to give us a new aspect of beauty. In my own garden were planted several thousands of Tea Roses in this way, not only for their beauty, but also with a view of testing the kinds best for our country. Some kinds which are fine abroad do not open well with us, but a number of beautiful kinds do, and we have never seen any picture of garden beauty equal to theirs in such a fine autumn as that of 1895.

We had thousands of blooms open until the end of September, almost as showy as bedding plants, but far more refined in colour, fragrance and everything that makes a plant precious. Almost the same thing may be said of the neglected monthly Roses, which have this charm of late flowering, in many cases even in cold northern districts.

But the most precious, perhaps, of all flowers of autumn for all parts of the country, grouped in an artistic way, are the hardy Asters of the American woods, which lived for ages in our gardens in mean bundles tied up in mixed borders like besoms. The best of these massed and grouped among shrubs or young plantations of trees, covering the ground, give an effect new and delightful, the colour refined and charming, and the mass of bloom impressive in autumn. Some kinds come in flower in summer, but nearly all the loveliest Asters in colour flower in September and October, and no such good colours of the same shades have ever been seen in the flower garden.

It is not only the Asters of America we have to consider, but the still more precious Asters of Europe, which, by their extraordinary beauty, make up for their rarity. Professor Green, of California, who knows the American Aster well, on seeing here a plant of Aster acris, said, "We have none so beautiful as that." This is the Aster with the beautiful blue purple flower, which is so effective when massed. Under different names this plant is grown in nearly allied forms, some having specific names, enabling us to enjoy plants of different stature but the same high beauty, flowering at slightly different times, but always at their best in autumn. With these should be grouped the handsome large Italian Aster, which also has its half-a-dozen forms, not differing much, but precious for their variety, and among the prettiest plants ever seen in our gardens. It is none the less valuable because as easily cultivated as the common Balm of the kitchen garden. For the last two years I have had several thousand plants of these European Asters beneath a group of half-grown Fir, just as they might be in their wild state, but rather thicker, as the spot is a cultivated one, and have never had the same return of beauty from anything else. Be the weather what it may, the lovely blue and purple was a picture, and landscape painters came to paint the scene.

The Sunflowers and Starworts we give the first place to because they are almost independent of soil or cool climates. Hardy as the Chrysanthemum is, the same cannot be said for it, because, as an outdoor flower, it must have a sandy soil and warm positions, and cool soils, even in southern England, are against it; whereas in warm and free soils, like that at Hazlemere, one may see delightful results from the cottage Chrysanthemums, which are very pretty where they can be grown against low walls or palings. Other plants which are of

the highest value in endurance and freedom of bloom are the Heaths of our own islands. Their effect is good, summer and winter; but in autumn some of them flower in a pretty way, particularly the Cornish and the little Dorset Heath, and the Irish Heath in its purple and white forms.

Among the half hardy plants of the garden perhaps the first place belongs to the Dahlia, which was always a showy autumn flower, but

Border of Michaelmas Daisies.

of late has become more precious through the beauty of what are called Cactus Dahlias, which are so much better in form and colour than the roundheaded Dahlias.

The hardy Fuchsia is in the warmer and milder districts often very pretty in autumn, especially where it is free enough to make hedges and form large bushes; but in cold and midland places the growth is often hindered by hard winters. Gladiolus is a splendid flower of the south, but coming more into a class of flowers requiring

care, and if they do not get it soon disappearing, liable also to disease, and, on the whole, not so precious as showy. Nurserymen are raising kinds of a hardier nature, but we have more precious flowers. The last few years have brought us magnificent varieties of the Cannas through the crossing of some wild species with the old hybrid kinds. Unfortunately, although in warm valleys and under special care here and there they do well, our country is not generally warm enough to show their fine form and colour as in France and Italy. Their use in pots is another matter.

The addition of Lilies to our garden flora within the past generation has had a good effect on the autumn garden. Where the finer kinds are well grown, the varieties of the Japanese Lilies, with their delicate and varied colours, are splendid autumn flowers for the open air. The Anemones, usually flowers of the spring, come in some forms for the autumn garden, particularly the white and pink kinds. The handsome Bignonia, or trumpet creeper, is precious on all warm soils, but generally it has not done so well with us as in France. Several kinds of Clematis come in well in autumn, particularly the yellow and the fragrant kinds. The Penstemons are handsome and very valuable in warm soils and districts where they may live out of doors in winter, but in London districts they are not so good. A splendid autumn flower is the Cardinal Flower, and happy should be those who can grow it well. It fails in many gardens in loamy soil, and where there is insufficiency of water, being a native of the bogs, and thriving best in moist and peaty soil. A number of fine varieties have been raised, and are brilliant in suitable soils ; but without these they are best left alone.

The Torch Lilies are extremely effective in autumn, and in warm soils they are often among the handsomest things, but, not being northern plants, are unable to face a northern winter. Happily this is not so with the beautiful new Waterlilies raised by M. Latour Marliac, which are hardy in the open air, even with such weather as that of the early part of 1895. Though perhaps the best bloom comes in summer, they flower through the autumn, varying, like the Tea Rose, according to the weather, but interesting always up to the end of September. Among the flowers of annual or biennial culture there are some handsome ones for the autumn garden like the blue Salvia, Sweet Scabious, Sweet Peas, in lovely variety of colour, and Zinnias, which last are splendid in colour when well grown, which they cannot well be in cold soils. We should also name the Hollyhock, which is, however, so liable to accident from disease, and those who care for it will do well to use seedling plants. Seedsmen are now saving seed of different colours which come fairly true.

A handsome group of vigorous perennials for the autumn are the

Polygonums. Some of the large kinds, such as the Japanese and Indian, are not showy, but massed picturesquely on margins of a wide lawn, and on pieces of stiff soil which are useless in any garden sense, are effective for many weeks in autumn, as the flower is pretty, and the foliage of one kind is often fine in colour. I have three kinds of them massed together, growing like great weeds, namely, P. cuspidatum, sachalinense, and complexum, and a very soft and good effect they gave together in a rough hollow where no garden plants less vigorous than these would have grown.

Thus we have a noble array before coming to some old flowers of autumn, the Meadow Saffrons or "autumn Crocuses," many of the common kind of which fleck the meadows in autumn. There are other kinds, too, which of recent years have been added in greater numbers to our gardens, some of them pretty, and the double kinds prettier than most double flowers. As they grow naturally in meadows, in turf is a delightful way to have them in gardens, though new and rare kinds should be grown in nursery beds until they are plentiful. They are not difficult to grow, and should often be placed in moist grassy places.

Then there are the true autumn Crocuses, which are very little seen in gardens, but are most delicate and lovely in colour. Coming for the most part from sunny lands, they do best in light soils; but some, like C. speciosus, grow in any soil, and all are worth growing. Among the best is C. nudiflorus, naturalised in Britain, in colour one of the most lovely flowers. To get little pictures from such plants we must have them happy in grass or among dwarf plants, and on sunny banks and grassy corners of the lawn or pleasure ground.

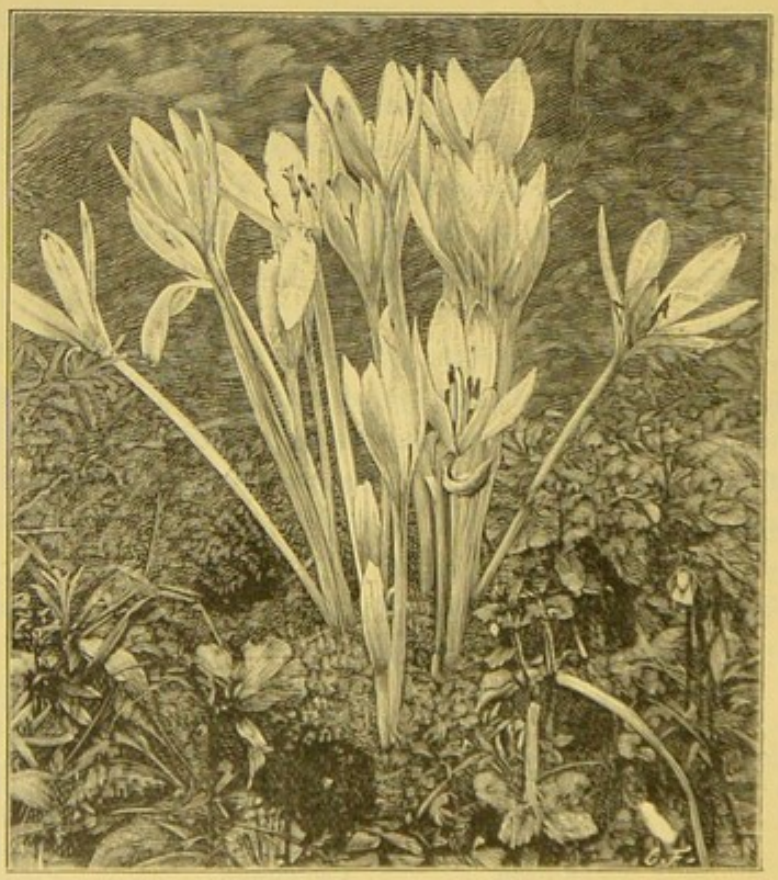
Thus, without touching on rarities or things difficult to grow, we have a handsome array of beauty for the autumn garden, even leaving out of the question the many shrubs and trees which are beautiful in foliage or fruit in autumn, and there are many of these in any well-stored garden.

Some Hardy and Half-hardy Plants blooming in British gardens September—October.

Abutilon	Bignonia	Clematis	Dianthus
Aconitum	Brugmansia	Colchicum	Diplacus
Agapanthus	Calceolaria	Convolvulus	Diplopappus
Ageratum	Campanula	Coreopsis	Eccremocarpus
Amaryllis	Canna	Crocus	Erica
Anagallis	Cassia	Cuphea	Escallonia
Anemone	Ceanothus	Cyclamen	Fuchsia
Arnebia	Celsia	Dahlia	Gaillardia
Aster	Centaurea	Delphinium	Geum
Berberidopsis	Chrysanthemum	Desmodium	Gladioli

Some Hardy and Half-hardy Plants blooming in British gardens September—October (continued).

Godetia
Gypsophila
Helenium
Helianthus
Heliotrope
Hieracium
Hollyhock
Honeysuckle
Hyacinthus
Hypericum
Iberis
Impatiens
Lantana
Lauristinus
Lavender
Liatris
Lilium
Linaria
Linum
Lobelia
Lonicera
Lupin
Lychnis
Lythrum
Magnolia
Marigold
Matthiola
Mignonette
Mimulus
Montbretia
Nicotiana
Nigella
Œnothera
Pampas Grass
Pansy
Papaver
Pentstemon
Petunia
Phlox
Phygelius
Physalis
Physostegia
Plumbago
Polygonum
Prince's-feather
Pyrethrum
Rose
Rudbeckia
Salpiglossis
Salvia
Scabious
Sedum
Senecio
Silene
Silphium
Snapdragon
Solanum
Solidago
Statice
Strawberry
Sweet Peas
Sweet William
Telekia
Trachelium
Tradescantia
Tritoma
Tritonia
Tropæolum
Tuberose
Valerian
Venidium
Verbascum
Verbena
Veronica
Viola
Yucca
Zephyranthes
Zinnia



A Meadow Saffron.

CHAPTER XX.

COLOUR IN THE FLOWER GARDEN.

ONE of the first things which all who care for gardens should learn, is the difference between true and delicate and false and artificial colour—between the mere showy dye of the colour printer with much glaring colour seen in gardens and the beauties and harmonies of natural colour. There are many lessons and no fees:—Oak woods in winter, even the roads and paths and hedgerows; leaves in many hues of life and death, the stems of trees: many birds are lovely studies in harmony and delicate gradation of colour; the cloud flocks in many aspects of light, and the varied and infinite beauty of colour of the air itself as it comes between us and the distant view.

Nature is a good colourist, and if we trust to her guidance we may be very good flower gardeners without deeply considering "laws" of colour. We never find wrong colour in wood, meadow, or on mountain. "Laws" have been laid down about colours which artists laugh at, and to consider the "laws" of colour laid down by writers on decoration is a waste of time. If we have to make coloured cottons, or to "garden" in coloured gravels, then it is well to think what ugly things will shock us least; but dealing with living plants in their infinitely varied tints of green, and with their beautiful flowers, is a different thing! If we grow well plants of good colour, all will be right in the end. The complicated pattern beds so often seen in flower gardens should be given up in favour of simpler beds, of the shapes best suiting the ground, and one reason for this is the colour. When we have little pincushion-beds where the whole "pattern" is seen at once, and where we use dwarf plants, the desire comes to bring in colour in a pattern and in inartistic ways. For this purpose the wretched Alternanthera and other pinched plant rubbish are grown —plants not worth growing at all.

When dwarf flowers are associated with bushes like Roses, a little taller than themselves, and with plants like Carnations and tall Irises, having pointed and graceful foliage, the colours are relieved against

the delicate foliage of the plants. By having the beds large enough we relieve the plants with taller plants behind. In a shrubbery, too, groups of flowers are nearly always right, and we can follow our desire in flowers without much thought of arranging for colour. But as the roots of the shrubs rob the flowers; the best way is to put near and around shrubberies free-running plants that do not want much cultivation, like Solomon's Seal and Woodruff, and other plants that grow naturally in woods and copses. With flowers like Pansies, Carnations, Roses, and other flowers that much depend for their beauty on good soil, the best way is to keep them in the open garden, and away from hungry tree-roots.

By having large simple beds we relieve the flowers, and enjoy their beauty of colour and the forms of the plants without "pattern" of any kind. Instead of "dotting" the plants, it is better to group them naturally, letting the groups run into each other, and varying them here and there with taller plants. A flower garden of any size could be planted in this way, without the geometry of the ordinary flower garden, and the poor effect of the "botanical" "dotty" mixed border. As, however, all may not be ready to follow this plan, the following notes on colour, by a flower gardener who has given much thought to the subject, will be useful:—

"One of the most important points in the arrangement of a garden is the placing of the flowers with regard to their colour-effect. Too often a garden is an assemblage of plants placed together haphazard, or if any intention be perceptible, as is commonly the case in the bedding system, it is to obtain as great a number as possible of the most violent contrasts; and the result is a hard, garish vulgarity. Then, in mixed borders, one usually sees lines or evenly distributed spots of colour, wearying and annoying to the eye, and proving how poor an effect can be got by the misuse of the best materials. Should it not be remembered that in setting a garden we are painting a picture,—a picture of hundreds of feet or yards instead of so many inches, painted with living flowers and seen by open daylight—so that to paint it rightly is a debt we owe to the beauty of the flowers and to the light of the sun; that the colours should be placed with careful forethought and deliberation, as a painter employs them on his picture, and not dropped down in lifeless dabs.

"HARMONY RATHER THAN CONTRAST.—Splendid harmonies of rich and brilliant colour, and proper sequences of such harmonies, should be the rule; there should be large effects, each well studied and well placed, varying in different portions of the garden scheme. One very common fault is a want of simplicity of intention; another, an absence of any definite plan of colouring. Many people have not given any attention to colour-harmony, or have

not by nature the gift of perceiving it. Let them learn it by observing some natural examples of happily related colouring, taking separate families of plants whose members are variously coloured. Some of the best to study would be American Azaleas, Wallflowers, German and Spanish Iris, Alpine Auriculas, Polyanthus, and Alstrœmerias.

"BREADTH OF MASS AND INTERGROUPING.—It is important to notice that the mass of each colour should be large enough to have a certain dignity, but never so large as to be wearisome; a certain breadth in the masses is also wanted to counteract the effect of foreshortening when the border is seen from end to end. When a definite plan of colouring is decided on, it will save trouble if the plants whose flowers are approximately the same in colour are grouped together to follow each other in season of blooming. Thus, in a part of the border assigned to red, Oriental Poppies might be planted among or next to Tritomas, with scarlet Gladioli between both, so that there should be a succession of scarlet flowers, the places occupied by the Gladioli being filled previously with red Wallflowers.

"WARM COLOURS are not difficult to place: scarlet, crimson, pink, orange, yellow, and warm white are easily arranged so as to pass agreeably from one to the other.

"PURPLE and LILAC group well together, but are best kept well away from red and pink; they do well with the colder whites, and are seen at their best when surrounded and carpeted with gray-white foliage, like that of Cerastium tomentosum or Cineraria maritima; but if it be desired to pass from a group of warm colour to purple and lilac, a good breadth of pale yellow or warm white may be interposed.

"WHITE FLOWERS.—Care must be taken in placing very cold white flowers such as Iberis correæfolia, which are best used as quite a high light, led up to by whites of a softer character. Frequent repetitions of white patches catch the eye unpleasantly; it will generally be found that one mass or group of white will be enough in any piece of border or garden arrangement that can be seen from any one point of view.

"BLUE requires rather special treatment, and is best approached by delicate contrasts of warm whites and pale yellows, such as the colours of double Meadow Sweet, and Œnothera Lamarckiana, but rather avoiding the direct opposition of strong blue and full yellow. Blue flowers are also very beautiful when completely isolated and seen alone among rich dark foliage.

"A PROGRESSION OF COLOUR in a mixed border might begin with strong blues, light and dark, grouped with white and pale yellow, passing on to pink; then to rose colour, crimson, and the strongest scarlet, leading to orange and bright yellow. A paler yellow followed by white would distantly connect the warm colours with the lilacs and

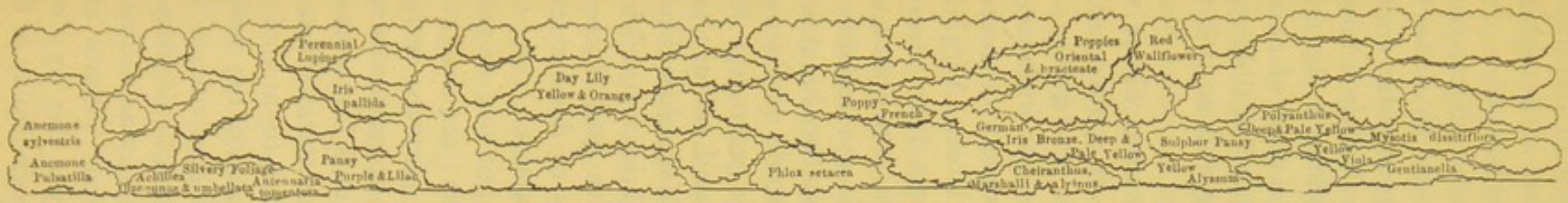
purples, and a colder white would combine them pleasantly with low-growing plants with cool-coloured leaves.

"SILVERY-LEAVED PLANTS are valuable as edgings and carpets to purple flowers, and bear the same kind of relation to them as the warm-coloured foliage of some plants does to their strong red flowers, as in the case of the Cardinal Flower and double crimson Sweet William. The bright clear blue of Forget-me-not goes best with fresh pale green, and pink flowers are beautiful with pale foliage striped with creamy white, such as the variegated forms of Jacob's-ladder or Iris pseudacorus. A useful carpeting plant, Acæna pulchella, assumes in spring a rich bronze between brown and green which is valuable with Wallflowers of the brown and orange colours. These few examples, out of many that will come under the notice of any careful observer, are enough to indicate what should be looked for in the way of accompanying foliage—such foliage, if well chosen and well placed, may have the same value to the flowering plant that a worthy and appropriate setting has to a jewel.

"IN SUNNY PLACES warm colours should preponderate; the yellow colour of sunlight brings them together and adds to their glowing effect.

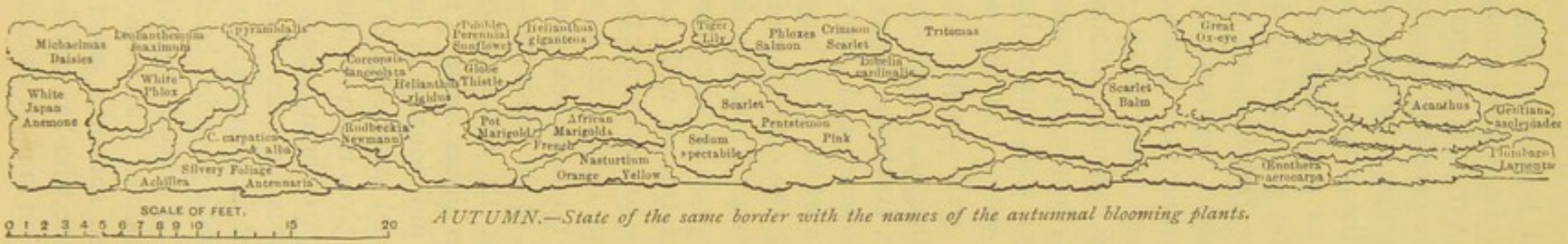
"A SHADY BORDER, on the other hand, seems best suited for the cooler and more delicate colours. A beautiful scheme of cool colouring might be arranged for a retired spot, out of sight of other brightly coloured flowers, such as a border near the shady side of any shrubbery or wood that would afford a good background of dark foliage. Here would be the best opportunity for using blue, cool white, palest yellow, and fresh green. A few typical plants are the great Larkspurs, Monkshoods, and Columbines, Anemones (such as japonica, sylvestris, apennina, Hepatica, and the single and double forms of nemorosa), white Lilies, Trilliums, Pyrolas, Habenarias, Primroses, white and yellow, double and single, Daffodils, white Cyclamen, Ferns and mossy Saxifrages, Lily-of-the-Valley, and Woodruff. The most appropriate background to such flowers would be shrubs and trees, giving an effect of rich sombre masses of dusky shadow rather than a positive green colour, such as Bay Phillyrea, Box, Yew, and Evergreen Oak. Such a harmony of cool colouring, in a quiet shady place, would present a delightful piece of gardening.

"BEDDED-OUT PLANTS, in such parts of a garden as may require them, may be arranged on the same general principle of related, rather than of violently opposed, masses of colour. As an example, a fine effect was obtained with half-hardy annuals, mostly kinds of Marigold, Chrysanthemum, and Nasturtium, of all shades of yellow, orange, and brown. This was in a finely designed formal garden before the principal front of one of the stateliest of the great houses of England. It was a fine lesson in temperance, this employment of a simple scheme



SPRING.—The names of flowers prevailing at this season are printed in plan.

SUMMER.—State of the same border with the names of flowers in full bloom at that season.



SCALE OF FEET.
0 1 2 3 4 5 6 7 8 9 10 15 20

AUTUMN.—State of the same border with the names of the autumnal blooming plants.

Plan showing the principal groups in a border of hardy flowers; the plants placed to form masses of harmonious colouring, and their progression simply, but carefully, arranged to produce a fine colour-effect. Many groups of small plants and bulbs, that could not be shown on the plan, are planted between and among the larger masses, their colour always agreeing with that of the surrounding flowers.

of restricted colouring, yet it left nothing to be desired in the way of richness and brilliancy, and well served its purpose as a dignified ornament, and worthy accompaniment to the fine old house.

"CONTRASTS—HOW TO BE USED.—The greater effects being secured, some carefully arranged contrasts may be used to strike the eye when passing; for opposite colours in close companionship are not telling at a distance, and are still less so if interspersed, their tendency then being to neutralize each other. Here and there a charming effect may be produced by a bold contrast, such as a mass of orange Lilies against Delphiniums or Gentiums against alpine Wallflowers; but these violent contrasts should be used sparingly and as brilliant accessories rather than trustworthy principals.

"CLIMBERS ON WALLS.—There is often a question about the suitability of variously coloured creepers on house or garden walls. The same principle of harmonious colouring is the best guide. A warm-coloured wall, one of Bath stone or buff bricks, for instance, is easily dealt with. On this all the red-flowered, leaved, or berried plants look well—Japan Quince, red and pink Roses, Virginian Creeper, Cratægus Pyracantha, and the more delicate harmonies of Honeysuckle, Banksian Roses, and Clematis montana, and Flammula, while C. Jackmanni and other purple and lilac kinds are suitable as occasional contrasts. The large purple and white Clematises harmonise perfectly with the cool gray of Portland stone; and so do dark-leaved climbers, such as White Jasmine, Passion Flower, and green Ivy. Red brickwork, especially when new, is not a happy ground colour; perhaps it is best treated with large-leaved climbers—Magnolias, Vines, Aristolochia—to counteract the fidgety look of the bricks and white joints. When brickwork is old and overgrown with gray Lichens, there can be no more beautiful ground for all colours of flowers from the brightest to the tenderest—none seems to come amiss.

"COLOUR IN BEDDING-OUT.—We must here put out of mind nearly all the higher sense of the enjoyment of flowers; the delight in their beauty individually or in natural masses; the pleasure derived from a personal knowledge of their varied characters, appearances, and ways, which gives them so much of human interest and lovableness; and must regard them merely as so much colouring matter, to fill such and such spaces for a few months. We are restricted to a kind of gardening not far removed from that in which the spaces of the design are filled in with pounded brick, slate, or shells. The best rule in the arrangement of a bedded garden is to keep the scheme of colouring as simple as possible. The truth of this is easily perceived by an ordinary observer when shown a good example, and is obvious without any showing to one who has studied colour effects; and yet the very opposite intention is most commonly seen, to wit, a garish display of the

greatest number of crudely contrasting colours. How often do we see combinations of scarlet Geranium, Calceolaria, and blue Lobelia—three subjects that have excellent qualities as bedding plants if used in separate colour schemes, but which in combination can hardly fail to look bad? In this kind of gardening, as in any other, let us by all means have our colours in a brilliant blaze, but never in a discordant glare. One or two colours, used temperately and with careful judgment, will produce nobler and richer results than many colours purposely contrasted, or wantonly jumbled. The formal garden that is an architectural adjunct to an imposing building demands a dignified unity of colouring instead of the petty and frivolous effects so commonly obtained by the misuse of many colours. As practical examples of simple harmonies, let us take a scheme of red for summer bedding. It may range from palest pink to nearly black, the flowers being Pelargoniums in many shades of pink, rose, salmon, and scarlet; Verbenas, red and pink; and judicious mixtures of Iresine, Alternanthera, Amaranthus, the dark Ajuga, and red-foliaged Oxalis. Still finer is a colour scheme of yellow and orange, worked out with some eight varieties of Marigold, Zinnias, Calceolarias, and Nasturtiums—a long range of bright rich colour, from the palest buff and primrose to the deepest mahogany. Such examples of strong warm colouring are admirably suited for large spaces of bedded garden. Where a small space has to be dealt with it is better to have arrangements of blue, with white and the palest yellow, or of purple and lilac, with gray foliage. A satisfactory example of the latter could be worked out with beds of purple and lilac Clematis, trained over a carpet of Cineraria maritima, or one of the white-foliaged Centaureas, and Heliotropes and purple Verbenas, with silvery foliage of Cerastium, Antennaria, or Stachys lanata. These are some simple examples easily carried out. The principle once seen and understood (and the operator having a perception of colour), modifications will suggest themselves, and a correct working with two or more colours will be practicable; but the simpler ways are the best, and will always give the noblest results. There is a peculiar form of harmony to be got even in varied colours by putting together those of nearly the same strength or depth. As an example in spring bedding, Myosotis dissitiflora, Silene pendula (not the deepest shade), and double yellow Primrose or yellow Polyanthus, though distinctly red, blue, and yellow, yet are of such tender and equal depth of colouring, that they work together charmingly, especially if they are further connected with the gray-white foliage of Cerastium.—G. J."

The Poet's Laurel.

CHAPTER XXI.

FRAGRANCE.[1]

A MAN who makes a garden should have a heart for plants that have the gift of sweetness as well as beauty of form or colour. And what a mystery as well as charm—wild Roses sweet as the breath of heaven, and wild Roses of repulsive odour all born of the earth-mother, and it may be springing from the same spot. Flowers sweet at night and scentless in the day; flowers of evil odour at one hour and fragrant at another; plants sweet in breath of blossom, but deadly in leaf and sap; Lilies sweet as they are fair, and Lilies that must not be let into the house; with bushes in which all that is delightful in odour permeates to every March-daring bud. The Grant Allens of the day, who tell us how the Dandelion sprang from the Primrose some millions of years ago, would no doubt explain all these things to us, or put long names to them—what Sir Richard Owen used to call "conjectural biology,"—but we need not care where they leave the question, for to us is given this precious fragrance, happily almost without effort, and as free as the clouds from man's power to spoil.

Every fertile country has its fragrant flowers and trees; alpine meadows with Orchids and mountain Violets; the Primrose-scented woods, Honeysuckle-wreathed and May-frosted hedgerows of Britain; the Cedars of India and of the mountains of Asia Minor, with Lebanon; trees of the same stately order, perhaps still more fragrant in the warmer Pacific breezes of the Rocky Mountains and Oregon, where

[1] First written for McDonald's *Sweet-scented Flowers*.

the many great Pines often spring from a carpet of fragrant Evergreens, and a thousand flowers which fade away after their early bloom, and stand withered in the heat, while the tall Pines overhead distil for ever their grateful odour in the sunny air. Myrtle, Rosemary, and Lavender, and all the aromatic bushes and herbs clothing the little capes that jut into the great sea which washes the shores of Greece, Italy, Sicily, and Corsica; garden islands scattered through vast Pacific seas, as stars are scattered in the heavens; enormous tropical forests, little entered by man, but from which he gathers on the outskirts treasures for stove and greenhouse; great island gardens like Java and Ceylon and Borneo, rich in spices and lovely plant life; Australian bush, with plants strange as if from another world, but often most delicate in odour even in the distorted fragments of them we see in our gardens.

It is not only from the fragile flower-vases these sweet odours flow; they breathe through leaf and stem, and the whole being of many trees and bushes, from the stately Gum trees of Australia to the sweet Verbena of Chili. Many must have felt the charm of the strange scent of the Box bush before Oliver Wendell Holmes told us of its "breathing the fragrance of eternity." The scent of flowers is often cloying, as of the Tuberose, while that of leaves is often delicate and refreshing, as in the budding Larch, and in the leaves of Balm and Rosemary, while fragrance is often stored in the wood, as in the Cedar of Lebanon and many other trees, and even down through the roots.

It is given to few to see many of these sweet plants in their native lands, but we who love our gardens may enjoy many of them about us, not merely in drawings or descriptions, but the living, breathing things themselves. The Geraniums in the cottage window bring us the spicy fragrance of the South African hills; the Lavender bush of the sunny hills of Provence, where it is at home; the Roses in the garden bring near us the breath of the wild Roses on a thousand hills; the sweet or pot herbs of our gardens are a gift of the shore-lands of France and Italy and Greece. The Sweet Bay bush in the farmer's or cottage garden comes with its story from the streams of Greece, where it seeks moisture in a thirsty land along with the wild Olive and the Arbutus. And this Sweet Bay is the Laurel of the poets, of the first and greatest of all poet and artist nations of the earth—the Laurel sacred to Apollo, and used in many ways in his worship, as we may see on coins, and in many other things that remain to us of the great peoples of the past. The Myrtle, of less fame, but also a sacred plant beloved for its leaves and blossoms, was, like the Laurel, seen near the temples of the race who built their temples as the Lily is built, whose song is deathless, and

the fragments of whose art is Despair to the artist of our time. And thus the fragrant bushes of our gardens may entwine for us, apart from their gift of beauty, living associations and beautiful thoughts for ever famous in human story.

It is not only odours of trees and flowers known to all we have to think of, but also many delicate ones, less known, perhaps, by reason of the blossoms that give them being without showy colour, as the wild Vine, the Sweet Vernal, Lemon, and other Grasses. And among these modest flowers there are none more delicate in odour than the blossoms of the common white Willow, the yellow-twigged and the other Willows of Britain and Northern Europe, which are all the more grateful in air coming to us

O'er the northern moorland, o'er the northern foam.

What is the lesson these sweet flowers have for us? They tell us —if there were no other flowers to tell us—that a garden should be a living thing; its life not only fair in form and lovely in colour, but in its breath and essence coming from the Divine. They tell us that the very common attempt to conform their fair lives into tile or other patterns, to clip or set them out as so much mere colour of the paper-stainer or carpet-maker, is to degrade them and make our gardens ugly and ridiculous, from the point of view of Nature and of true art. Yet many of these treasures for the open garden have been shut out of our thoughts owing to the exclusion of almost everything that did not make showy colour and lend itself to crude ways of setting out flowers.

Of the many things that should be thought of in the making of a garden to live in, this of fragrance is one of the first. And, happily, among every class of flowers which may adorn our open-air gardens there are fragrant things to be found. Apart from the groups of plants in which all, or nearly all, are fragrant, as in Roses, the annual and biennial flowers of our gardens are rich in fragrance—Stocks, Mignonette, Sweet Peas, Sweet Sultan, Wallflowers, double Rockets, Sweet Scabious, and many others. These, among the most easily raised of plants, may be enjoyed by the poorest cottage gardeners. The garden borders of hardy flowers bear for us odours as precious as any breath of tropical Orchid, from the Lily-of-the-Valley to the Carnation, this last yielding, perhaps, the most grateful fragrance of all the flowering host in our garden land. In these borders are things sweeter than words may tell of—Woodruff, Balm, Pinks, Violets, garden Primroses, Polyanthuses, Day and other Lilies, early Iris, Narcissus, Evening Primroses, Mezereon, and Pansies delicate in their sweetness.

No one may be richer in fragrance than the wise man who plants hardy shrubs and flowering trees—Magnolia, May, Daphne, Lilac, Wild Rose, Azalea, Honeysuckle—names each telling of whole

families of fragrant things. From the same regions whence come the Laurel and the Myrtle we have the Laurustinus, beautiful in our sea-coast and warmer districts, and many other lovely bushes happy in our climate; one, the Winter-sweet, pouring out delicious fragrance in mid-winter; Sweet Gale, Allspice, and the delightful little Mayflower that creeps about in the woodland shade in North America. So, though we cannot boast of Lemon or Orange groves, our climate is kind to many lovely and fragrant shrubs.

Even our ugly walls may be sweet gardens with Magnolia, Honeysuckle, Clematis, Sweet Verbena, and the delightful old Jasmine, still clothing many a house in London. Most precious of all, however, are the noble climbing Tea Roses raised in our own time. Among the abortions of this century these are a real gain—the loveliest flowers ever raised by man. Noble in form and colour, and scented as delicately as a June morn in alpine pastures, with these most precious of garden Roses we could cover all the ugly walls in England and Ireland, and Heaven knows many of them are in want of a veil.

The old way of having an orchard near the house was a good one. Planted for use, it was precious for its beauty, and not only when the spring winds carried the breath of its myriad blossoms of Cherry, Plum, Apple, and Pear. There were the fruit odours too, and the early Daffodils and Snowdrops, with Violets and Primroses on the

Winter Sweet, drawn by H. G. Moon from shoots gathered at Gravetye New Year's Day, 1895.

banks, and overhead the lovely trees that bear our orchard fruits, Apples, Pears, Cherries, Plums, Medlar, and Quince. To make pictures to last round the year and far along them, I should ask for many orchard trees on a few acres of good ground, all the better if too uneven for the plough; a rough belt of native Evergreens Hollies, Yew, and Scotch Fir on the cold sides to comfort trees and men; with careless garlands of Honeysuckle, Rose, and fragrant Clematis among them here and there, and in the fence bank plenty of Sweet Brier, and May, and Sloe.

The fence should not be cut in every year to a bare line, but Sloe, and May, and Sweet Brier, and Wild Rose left to bloom and berry, the hedge being a shelter as well as a fence; and not to be cut down oftener than every ten years or so. Then it should be woven together in the strong way seen in parts of Kent on the hills, that is to say, stout enough to keep back an elephant. On the cool sides of the fence banks, Primrose and Oxlip would bloom long and well, and on all sides of them Daffodils and Jonquils, with Snowflakes, Snowdrops, wild Tulips, or any bulbs like these one had to spare from the garden; and from the garden trimmings too, tufts of Balm and Myrrh to live for ever among the Grass of the bank. The robin would build in the moss of the bank, the goldfinch in the silvery "moss" of the trees, and the thrush, near winter's end, herald the buds with noble song.

Some Fragrant Plants for British Gardens.

Abelia
Abronia
Allspice
Almond
Alyssum
Apples, Crabs, and Orchard Fruits
Auricula
Azalea
Balm
Balm of Gilead
Bee Balm
Belladonna Lily
Blue Bells
Brugmansia
Burning Bush
Californian Poppy
Carnation
Clematis
Clethra
Columbine
Cowslips
Crinum
Cyclamen
Datura
Day Lily
Deutzia
Evening Primrose
Forsythia
Grape Hyacinth
Hawthorn
Heartsease
Heliotrope
Honeysuckle
Horse Chestnut
Hyacinth
Iris
Jasmine
Lavender
Lilac
Lily
Lily-of-the-Valley
Lupins
Magnolias
Marvel of Peru
May-flower
Meadow Sweet
Mexican Orange Flower
Mezereon
Mignonette
Mock Orange
Musk
Myrtle
Narcissus
Night-scented Stock
Pæony (some)
Pancratium
Pelargonium
Phlox
Polyanthus
Primroses
Rhododendrons
Rock Rose
Rocket
Rose
Rosemary
St. Bruno's Lily
Snowflake
Southernwood
Styrax
Sweet Bay
Sweet Cicely
Sweet Fern Bush
Sweet Flag
Sweet Gale
Sweet Pea
Sweet Scabious
Sweet Sultan
Sweet Verbena
Sweet Vernal Grass
Sweet William
Thyme
Tuberose
Tulip Tree
Tulips (some)
Twinflower
Vine
Violets
Wallflower
Water Lilies
Willows
Winter Green
Winter Heliotrope
Winter Sweet
Wistaria
Woodruff
Yarrow

CHAPTER XXII.

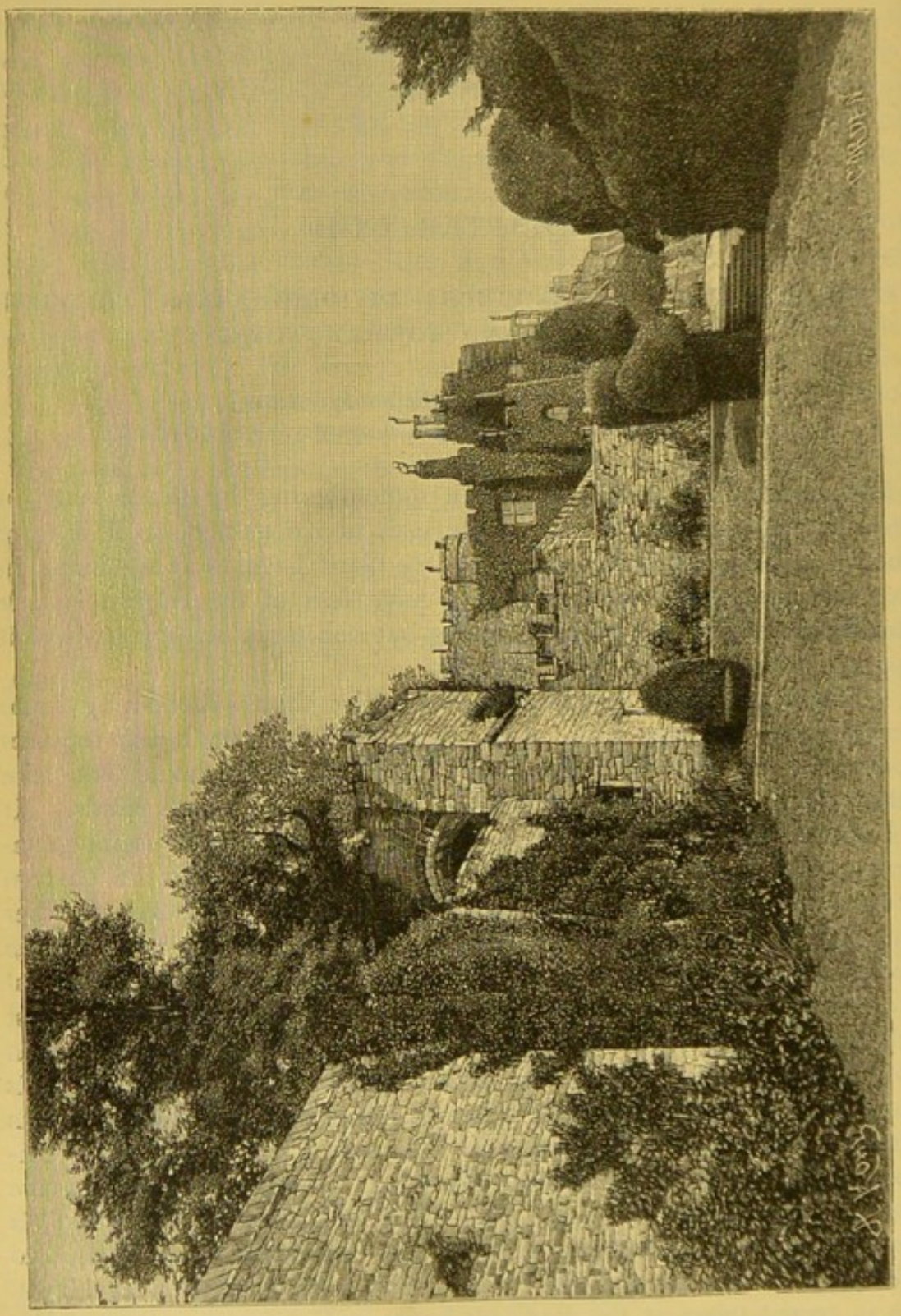
EVERGREENS AS BACKGROUNDS; DIVIDING LINES; HEDGES; SHELTER; AND TOPIARY WORK.

"Oh the oak and the ash and the bonny ivy tree,
They flourish at home in my own country."—*Old Ballad.*

THE above lines might be worth remembering by those bent on planting evergreens for any of the uses above named, as if it were borne in mind that the evergreens we plant have to face winters in an Oak and Ash land, we should have less of the frightful waste owing to the planting of free-growing but not hardy evergreens which perish in numbers after hard winters.

There are no background hues prettier than afforded by some evergreens like the Yew, Box, and Ilex; but their use requires care; we may have too many of them, and they should not take the place of flowering shrubs and flowers of many kinds. It is outside the flower garden that evergreens are most useful generally, and in a cold country like ours, especially on the eastern coasts and in wind-swept districts, Holly banks and hedges of other hardy evergreens are often a necessity. In our country we have the privilege of growing more evergreen shrubs and trees than continental countries, species resisting winter here which have not the slightest chance of doing so in Germany or Austria. The use of evergreens in old times was frequent, and in modern garden design the tendency is to overplant them. It should never be forgotten that in old gardens there was usually a clear motive for their use, and it is well to remember that in some circumstances there are serious drawbacks to the use of many evergreen lines. Very often the surface of the ground is too much cut up by them for repose, and this is sometimes carried to the point of absurdity, as when they cut up a once beautiful level lawn, as in recent years at the Ranger's house at Greenwich. Frequently, too, they hide or mar a view of a fine old house from important points, and then their effect is often bad. It is almost impossible to grow

delicate flowers and climbers in soil which is occupied by the roots of vigorous trees and shrubs. Where clipping is done on a large scale



Gardens at Berkeley Castle, with old terrace walls and old walls of clipped evergreens.

for no very good reasons, the expense of shearing acres of surface has to be thought, and its tendency also to produce ugly and impossible

forms, and to the death of the trees as we may so often see at Versailles. Where a dividing line is really needed, it is often best to have a wall, because while a stone wall is good in colour at first, we may in time make it a garden, and it does not rob the ground as tree roots do, but, on the contrary, a wall often is the best home we can give to a flower—even a rare one. But the need for it should be absolute, as among other reasons walls are not things we can take away as easily as hedges.

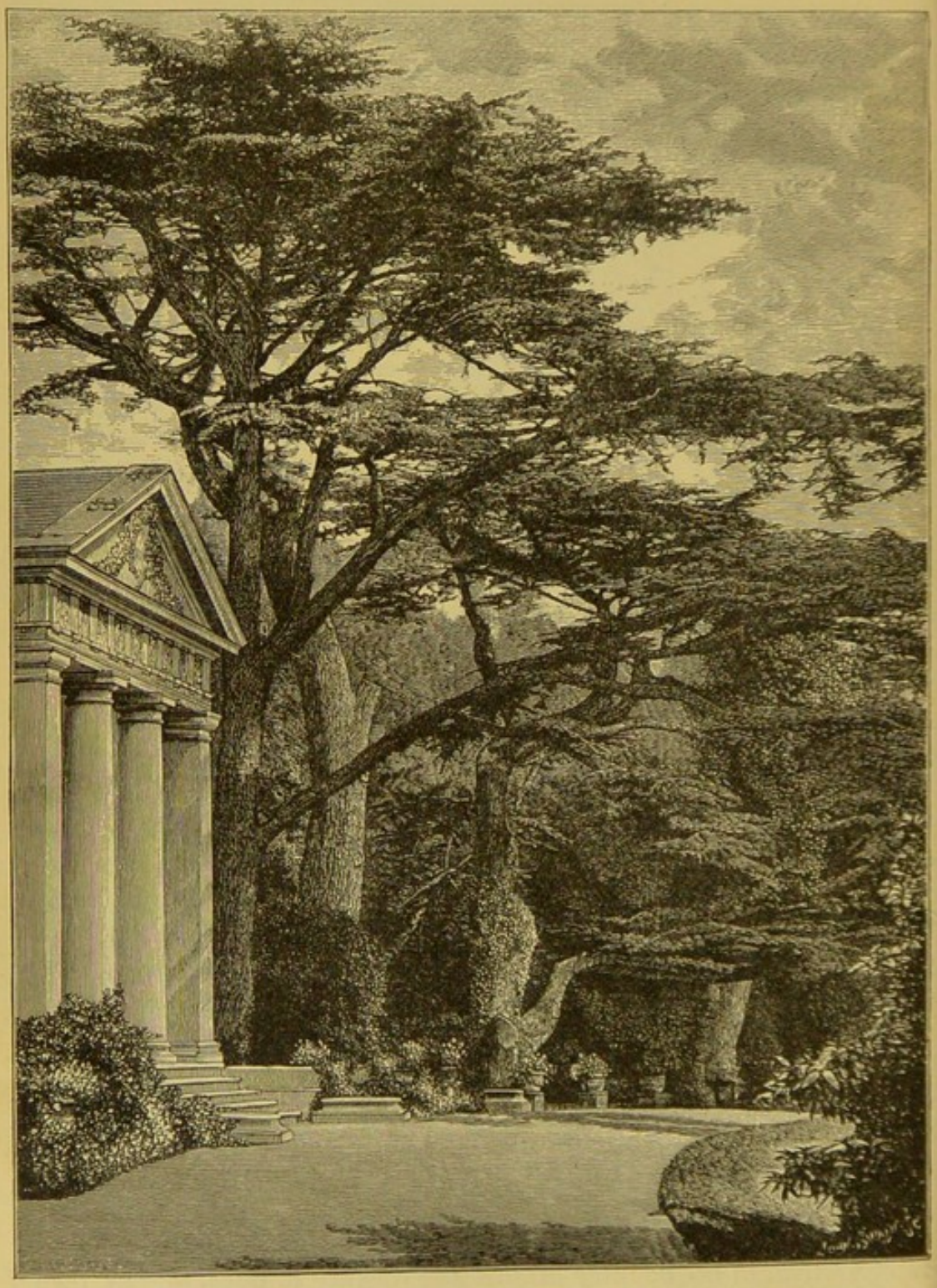
OUR NATIVE EVERGREENS.

Into our brown and frozen northern woods come a few adventurers from southern lands that do not lose their green in winter, but take then a deeper verdure—Ivy, Holly, and Yew enduring all but the very hardest frosts that visit our isles, some gladdening the eyes with berries as well as verdure; giving welcome shelter to northern and wind-swept gardens, and in our own time each varying into many noble varieties. These native evergreens and their varieties are, and for ever must be, the most precious of all for the British Isles.

When after a very hard winter we see the evergreen trees of the garden in mourning, and perhaps many of them dead, as happens to Laurels, Laurustinuses, and often even the Bay, it is a good time to consider the hardiness and other good qualities of our British evergreens and the many forms raised from them. If we are fortunate enough to have old Yew trees near us, we do not find that a hard winter makes much difference to them, even winters that brown the evergreen Oak. We have collected within the past 200 years evergreen trees from all parts of the northern world, but it is doubtful if any of them are better than the common Yew, which when old is often picturesque, and which lives for over a thousand years. Of this great tree we have many varieties, but none of them quite so good as the wild kind when old. In the garden little thought is given to it and it is crowded among shrubs, or in graveyards, where the roots are cut by digging, so that one seldom sees it in its true character when old, which is very beautiful. The Golden Yew is a variety of it, and there are other forms one of which, the Irish Yew, is well known, and its prim shape is too much seen.

After the Yew, the best of our evergreen shrubs is the common Holly, which in no country attains the beauty it does in our own; certainly no evergreen brought over the sea is so valuable not only in its native form, often attaining 40 ft. even on the hills, but in the almost innumerable varieties raised from it, many of them being the best of all variegated shrubs in their silver and gold variegation; in fruit, too,

it is the most beautiful of evergreens. Not merely as a garden tree is it precious, but as a most delightful shelter around fields for stock in



Evergreen trees in natural forms (Gunnersbury.)

paddocks and places which want shelter. A big wreath of old Holly unclipped on the cold sides of fields is the best protection, and a

grove of Holly north of any place we want to shelter is the best thing we can plant; the only thing we have to fear being the rabbits, which when numerous make Holly difficult to establish by barking the newly-planted trees, and in hard winters even barking and killing many old trees. As to the garden, we may make beautiful evergreen gardens of the forms of Holly alone.

Notwithstanding the many conifers brought from other countries within the past few generations, as regards beauty it is very doubtful if more than one or two equal our native Fir. In any case few things in our country are more picuresque than old groups and groves of the Scotch Fir; few indeed of the conifers we treasure from other countries will ever give us anything so good as its ruddy stems and frost-proof crests.

Again, the best of evergreen climbers is our native Ivy, and the many beautiful forms that have arisen from it. This in our woods arranges its own beautiful effects, but in gardens it might be made more delightful use of, and no other evergreen climber comes near it in value. The form most commonly used in Britain—the Irish Ivy—is by no means so graceful as some others, and there are numbers of delightful forms varying even in colour. These for edgings, banks, screens, covering old trees, and forming summer-houses, might be made far more use of. In many northern countries our Ivy will not live in the open air, and it is so common with us, that we rarely take advantage of our privileges in such a possession in making both shelters, wreaths, and screens, and many beautiful things of it that would need little care. It requires care in trimming on our houses and on cottage roofs or it will damage them; but there are many pretty things to make of it away from buildings, and among them Ivy clad and Ivy-covered wigwams, summer-houses, and covered ways, the Ivy supported on a strong open frame-work, and trained over sticks till it took hold.

Box, which is a true native in certain dry hills in the south of England, is so crowded in gardens, that one seldom sees its beauty as one may on the hills full in the sun, where the branches take a charming plumy toss. To wander among natural groves of Box is pleasant, and there is no reason why we should not plant it in colonies by itself full in the sun, so that one might enjoy the same charm of form that it shows wild on the hills. It is, I think, the prettiest of our native evergreens for garden use, making pretty low hedges, and for that purpose it suits certain positions better than Yew or Holly.

Also among our native evergreens is the common Juniper, a scrubby thing in some places, but on heaths in Surrey, and favoured heaths elsewhere, often growing over twenty feet high and very

picturesque, especially where mingled with Holly. There is an upright form, called the Irish Juniper, in gardens.

The Arbutus, which borders nearly all the streams in Greece, ventures into Ireland, and is abundant there in certain parts in the south. This beautiful shrub, though tender in midland counties, is very precious for the seashore and mild districts not only as an evergreen, but for the beauty of its flowers and fruit. Still, it is the one British evergreen which has to be planted with discrimination in places where the winters are severe in inland districts.

It is these precious native evergreens that deserve the preference instead of the heavy Laurels, and various evergreens not even hardy, so that after a hard frost we often see the suburbs of country towns black with their dead.

UGLY AND BEAUTIFUL EVERGREENS.

One of the most baneful things in our gardens has been the introduction of distorted and ugly conifers which often disfigure the fore-grounds of beautiful houses. These are often sports and variations raised in modern days, as is the case with the too common Irish Yew.

It is not only that we have to deplore the tender trees of California, which in their own country are beautiful, though, unhappily, not so in ours, but it is the mass of distorted, unnatural, and ugly forms—the names of which disfigure even the best catalogues—that is most confusing and dangerous.

In one foreign catalogue there are no less than twenty-eight varieties of the Norway Spruce, in all sorts of dwarf and monstrous shapes—two of them, indeed, dignified with the name monstrosa—not one of which should ever be seen in a garden. The true beauty of the pine comes from its form and dignity, as we see it in old Firs that clothe the hills of Scotland, California, Spain, or Switzerland. It is not in distortion or in little green pincushions we must look for the charm of the Pine, but rather in storm-tossed head and often naked stems; and hence all these ridiculous forms should be excluded from gardens of any pretence to beauty.

Another most unfortunate tree in this way, as helping to fill our gardens with graceless things, is the western Arbor vitæ (Thuja occidentalis). This, which is a very hardy tree but never a dignified one, even where it grows in the north about Lake Superior and through the Canadas, is, unhappily, also hardy in our gardens, and we may see in one catalogue no less than twenty-three forms of this tree all dignified with Latin names. There are plenty of beautiful

Evergreen trees robbed of their natural form, and clipped into ugly shapes. (Levens.)

things, new and old, worthy of the name, without filling our gardens with such monstrosities, many of which are variegated. Of all ugly things, nothing is worse than the variegated Conifer, which usually perishes as soon as its variegated parts die, the half dead tree often seeming a bush full of wisps of hay.

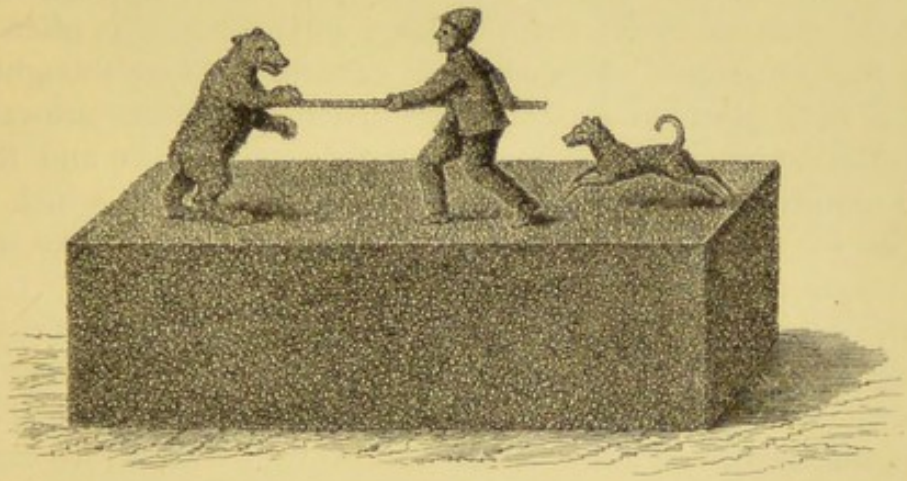
Apart from trees of poor or half-diseased forms, there are others which are stately in their own country but a doubtful gain to ours, like the Wellingtonia and other Californian trees, and the Chili Pine. Sometimes the foregrounds of even fine old houses are marred by such trees, and unfortunately people use them in the idea that they are by their use doing something old-fashioned and Elizabethan, whereas they are marring the beauty of the landscape and of our native trees, often so fine beyond the bounds of the garden. We ought not to spoil the beauty of our home landscapes by using such things, which are so abundant in many places that the nobler evergreen trees like the evergreen Oak are forgotten. This tree, from Holkar in Norfolk to the west coast of England and the east coast of Ireland, and in many gardens round the coasts, is a really noble tree for us and a fine background and shelter. Then there is the Cedar of Lebanon, which is perhaps the finest evergreen tree ever brought to our country and as hardy as our own trees. If we use evergreen trees they ought to be the noblest and hardiest. The Yew is one of the most beautiful of trees, but owing to its ignoble use in gardens, clipped into shapes of birds and beasts and to neglect by the gardener, it is rarely that we find a good Yew in gardens or pleasure grounds. People do not plant it as if they meant to plant a forest tree, and many do not know that it does grow into a noble tree. There is no finer shelter or colour among evergreen trees, and the common kind is far more precious than any of the varieties raised from it.

CLIPPING EVERGREENS IN AND NEAR THE FLOWER GARDEN.

There are a few unwise words at the foot of this page, which are worth reading in considering the clipping of trees or shrubs into shapes not natural to them. We cut Grass when we want hay or soft turf to play on, but disfiguring a noble tree is not a necessary part of our work either for our profit or pleasure. The Yew in its natural form is the most beautiful evergreen of our western world—finer than the Cedar in its feathery branching, and more beautiful than any Cedar

"A clipped Yew tree is as much a part of Nature—that is, subject to natural laws—as a forest Oak. . . . So far as that goes, it is no more unnatural to clip a Yew tree than to cut Grass."—*The Formal Garden.*

in the colour of its stem. In our own day we see trees of the same great order as the Yew gathered from a thousand hills—from British Columbia, through North America and Europe to the Atlas Mountains, and not one of them has yet proved to be so beautiful as our native Yew when unclipped root or branch. But in gardens the quest for the exotic is so active that few give a fair chance to the Yew as a tree, while in graveyards, where it is so often seen in a very old state, the cutting of the roots hurts the growth, though there are Yews in our churchyards that have seen a thousand winters. It is not my own idea only that I urge here, but that of all who have ever thought of the beauty of trees, foremost among whom we must place artists who have the happiness of always drawing natural forms. Let any one stand near the Cedar-like Yews by the Pilgrim's Way



Example of old topiary work.

on the North Downs, and, comparing them with trees cut into fantastic shapes, consider what the difference means to the artist who seeks beauty of tree form!

What right have we to deform things so lovely in form? No cramming of Chinese feet into impossible shoes is half so foolish as the wilful and ignorant distortion of the beautiful forms of trees. The cost of this mutilation alone is one reason against it, as we see where miles of trees cut into walls have to be clipped, as at Versailles and Schönbrunn. This shearing is a mere "survival" of the day when we had very few trees, and it passed as clever to clip them to fit the architect's notion of "garden design." This is not design at all from an artistic point of view; and though the elements which go to form beautiful landscape, whether home landscape or the higher landscape beauty of the open country, are often subtle, and infinitely varied, they are none the less real. The fact that men when

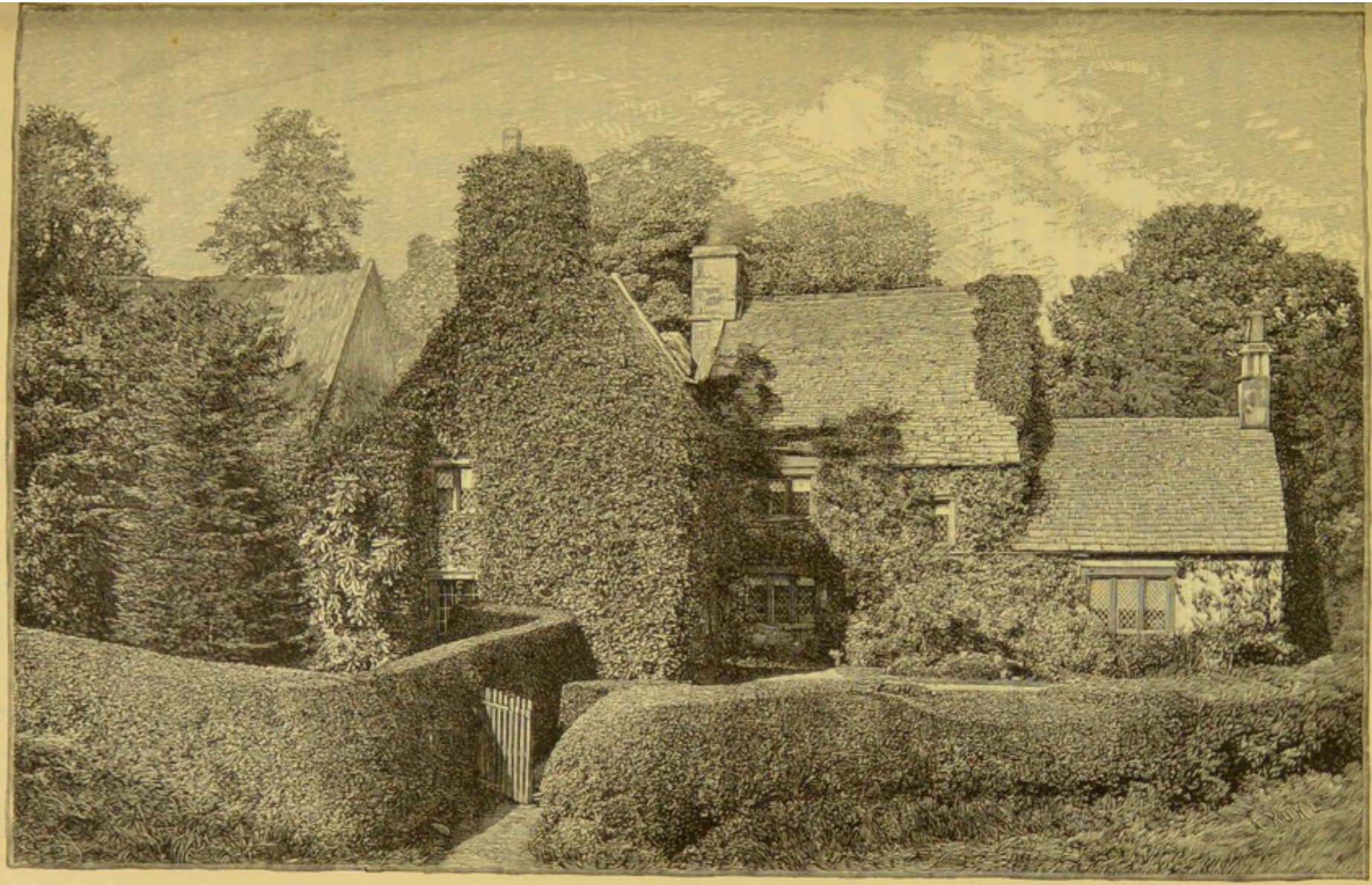
they had few trees made them into walls to make them serve their ways of "design" is no reason why we, rich in the trees of all the hills of the north, should go on mutilating them too.

Thus, while it may be right to clip a tree to form a dividing-line or hedge, it is never so to clip trees grown for their own sakes, as by clipping such we only get ugly, unnatural forms. In November 1891, in Hyde Park, I saw a man clipping Hollies at the "Row" end of the Serpentine, and, asking him why it was done, learnt that it was to "keep them in shape," though, to do him justice, he added that he thought it would be better to let them alone. Men who trim with shears or knife so handsome a *tree* as the Holly are dead to beauty of form. To give us such ugly forms in gardens is to show one's self callous to beauty of tree form, and to prove that one cannot even see ugliness.

Consider, too, the clipped Laurels by which many gardens are disfigured. Laurel in its natural shape in the woods is often fine in form; but it is planted everywhere in gardens without thought of its fitness for each place, and as it grows apace, the shears are called in, and its fine leaves and shoots are cut into ugly banks and formless masses, spoiling many gardens. There is no place in which Laurel is clipped for which we could not get shrubs of the right size that would not need the shears.

In the old gardens, where from other motives trees were clipped when people had very few evergreens, or where they wanted an object of a certain height, they had to clip. It is well to preserve such gardens, but never to imitate them. If we want shelter, we can get it in various delightful ways without clipping, and, while getting it, we can enjoy the natural forms of the evergreens. Hedges and wall-like lines of green living things are useful, and even may be artistically used. Occasionally we find clipped arches and bowers pretty, and these, when very old, are worth keeping. Besides, there is much difference between evergreen archways or bowers, hedges, and shelters, and the fantastic clipping of living trees into the shapes of bird or beast or coffee-pot. It is well to keep any interesting specimens of the toparian art when we find them, but clipping is better not carried out with our lovely evergreens on a large scale.

Now and then we see attempts on the part of those having more knowledge of some half-mechanical grade of decorative "design" to galvanise the corpse of the topiary art. Such an idea would not occur to any one knowing the many beautiful things now within our reach, or by any one like a landscape painter who studies beautiful forms of earth or trees or flowers, or by any lover of Nature in tree or flower. Sometimes these puerilities are set into book form, as in the case of Mr. J. D. Sedding's *Garden Craft*. For this author there



English cottage garden with protecting fence. Showing right use of clipped Yew. Great Tew, Oxfordshire.

is no art in gardening, but cutting a tree into the shape of a cocked hat is "art," according to him: he says:—

> I have no more scruple in using the scissors upon tree or shrub, where trimness is desirable, than I have in mowing the turf of the lawn that once represented a virgin world . . . and in the formal part of the garden my Yews should take the shape of pyramids, or peacocks, or cocked hats, or ramping lions in Lincoln green, or any other conceit I had a mind to, which vegetable sculpture can take.

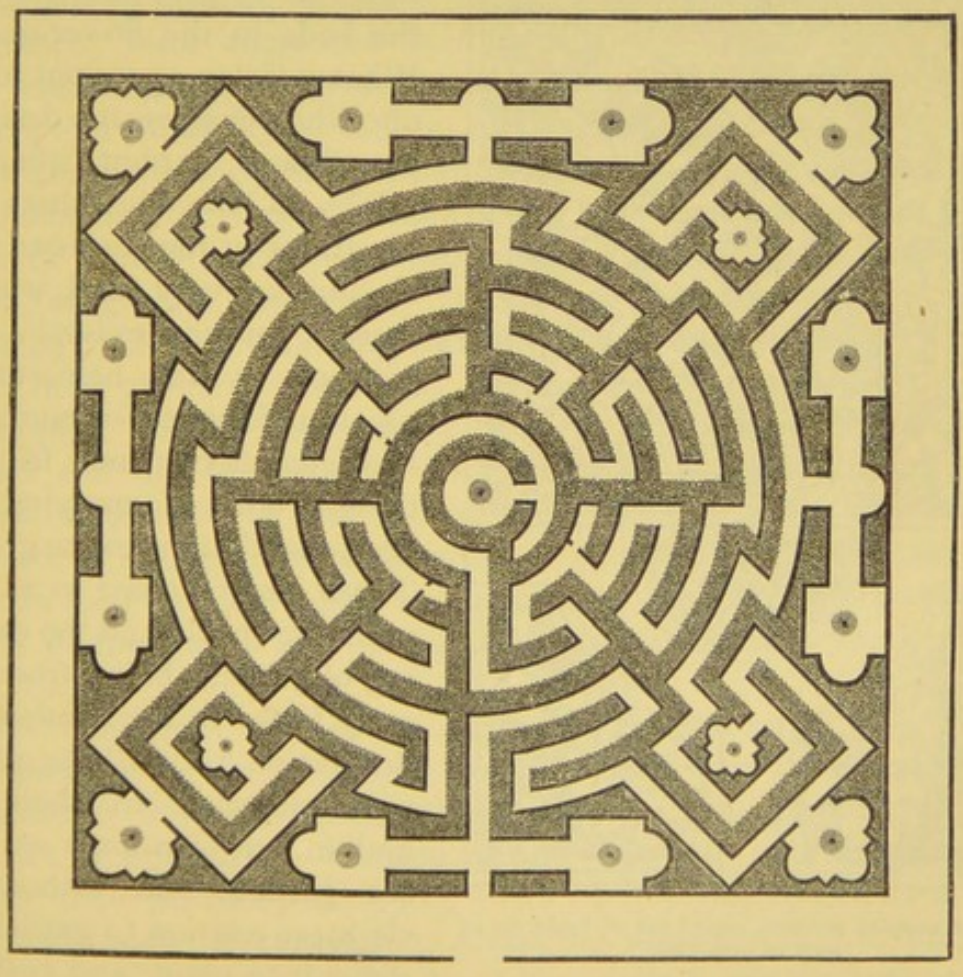
After reading this I thought of some of the true "vegetable sculpture" that I had seen; Reed and Lily, models in stem and leaf; the Grey Willows of Britain as lovely against our British skies as Olives are in the south; many-columned Oak groves set in seas of Primroses, Cuckoo flowers and Violets; Silver Birch woods of Northern Europe beyond all grace possible in stone; the eternal Garland of beauty that one kind of Palm waves for hundreds of miles throughout the land of Egypt—a vein of summer in a lifeless world; the noble Pine woods of California and Oregon, like fleets of colossal masts on mountain waves—thought of these and many other lovely forms in garden and wood, and then wondered that any one could be so blind to the beauty of the natural forms of plants and trees as to write as this author does.

From the days of the Greeks to our own time, the delight of all great artists has been to get as near this divine beauty as what they work in permits. But this deplorable *vegetable sculptor's* delight is in distorting beautiful forms; and this in the one art in which we have the happiness of possessing the living things themselves, and not merely representations of them. The old people from whom he takes his ideas were not so foolish, as when the Yew was used as a hedge or was put at a garden gate it was necessary to clip it to keep it in bounds. Apart from the ugliness of the cocked-hat tree or other pantomimic trees, the want of life and change in a garden made up of such trees, one would think, should open the eyes of any one to its drawbacks, as in it there is none of the joy of spring's life, or summer's crown of flowers, or winter's rest.

It would be absurd to call such things "architects' gardens," and no gardener would claim them as gardeners' gardens. In seeking a name for them, perhaps "barbers' gardens" would be the most fitting, although there is some injustice in it, as there is some need for barbers' work, while these poor trees do not ask us to cut them into ignoble shapes. The plea that such work gives variety does not hold, because wherever labour and time are wasted upon such things the true work of the garden does not, and very often cannot, get the attention it needs. In not one of the places where such work is done, from Elvaston to Minley, is seen much of beauty in the garden—that

is, beauty of flower and form and fine colour such as an artist would put in a picture, and which is a picture in itself to begin with.

THE MAZE is an inheritance from a past time, but not a precious one, being one of the notions about gardening which arose when people had very little idea of the dignity and infinite beauty of the garden flora as we now know it. Some people may be wealthy enough to give to the garden all the attention it deserves and show us all the beauty it is capable of, and at the same time exhibit such frivolities as this, but they must be few. The maze is not pretty as part of a home landscape or garden, and should be left for the most part to places of the public tea-garden kind. One of its drawbacks is the death and distortion of the evergreens that go to form its close lines, owing to the frequent clipping. If clipping be neglected for a year or two the end is still worse, and the whole thing is soon ready for the fire.



Plan of maze.

Type of complex parterre, copied out of books for all sorts of situations.

CHAPTER XXIII.

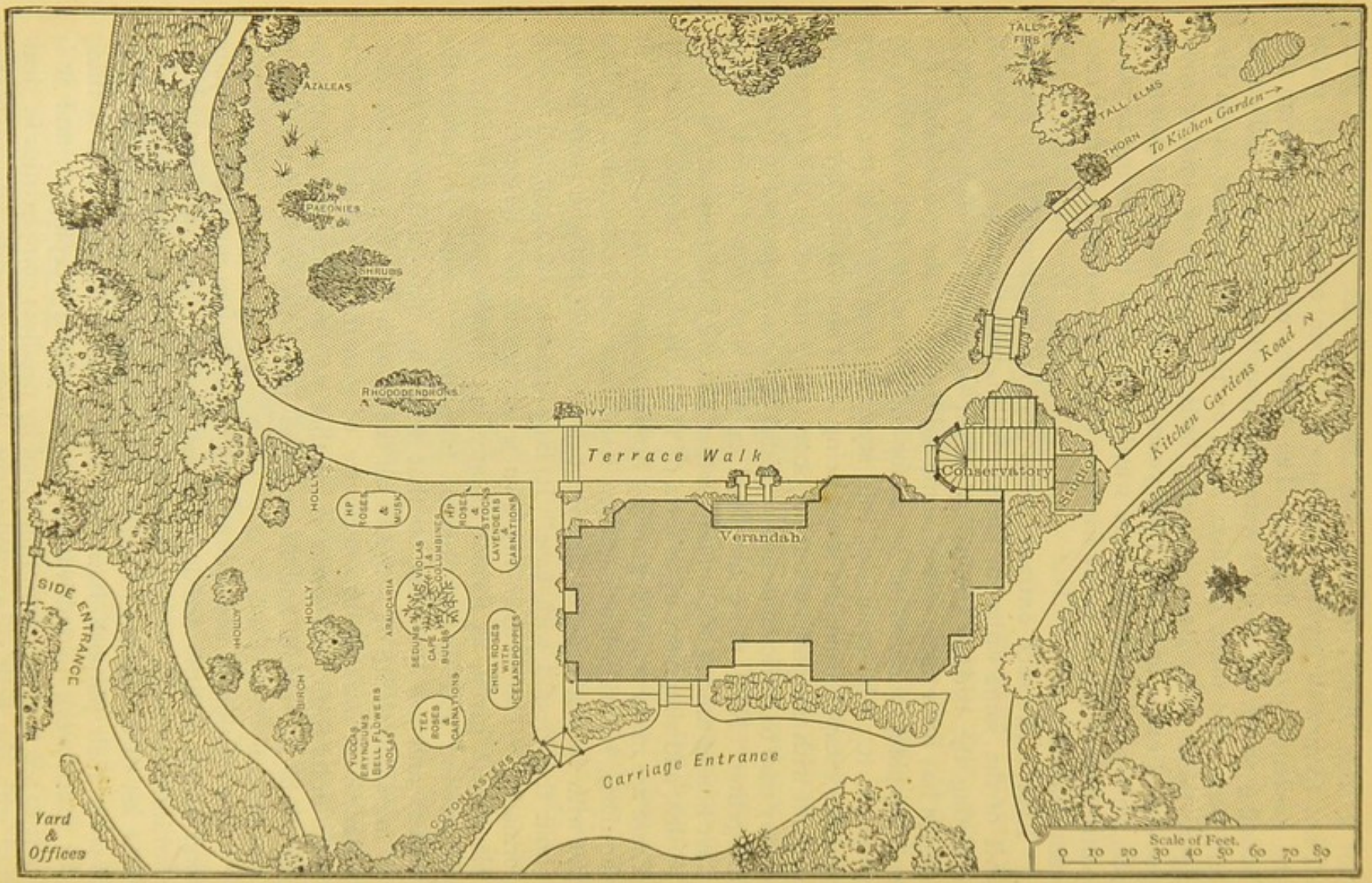
SIMPLER FLOWER GARDEN PLANS AND THE RELATION OF THE FLOWER GARDEN TO THE HOUSE.

A GREAT waste is owing to frivolous and thoughtless "design" as to plan and shapes of the beds in the flower-garden. What a vision opens out to any one who considers the design of the flower garden when he thinks of the curiosities and vexations in the forms of beds in almost every land where a flower garden exists! The gardener is the heir—to his great misfortune—of much useless complexity and frivolous design, born of applying conventional designs to the ground. These designs come to us from a remote epoch, and the designing of gardens being from very early times in the hands of the decorative "artist," the garden was subjected to their will, and in our own days we even see gardens laid without the slightest relation to garden use, difficult to plant, and costly to form and to keep in order. At South Kensington the elaborate tracery of sand and gravel was attractive to some when first set out,

but it soon turned to dust and ashes. It was, indeed, to a great extent formed of broken brickdust, in a vain attempt to get rid of the gardener and his flowers. The colours were supplied from the building sheds, where boys were seen pounding up bricks and slates, and beds were made of silver sand, so that no gardener could disfigure them. The Box edgings of beds a foot wide or smaller soon got out of order, and after a few years the whole thing was painful to see, while good gardeners were wasting precious time trying to plant paltry beds in almost every frivolous device known to the art of conventional design.

Even where such extravagances were never attempted we see the evil of the same order of ideas, and in many gardens the idea of adapting the beds to the ground never occurs to the designer, but a design has been taken out of some old book. If the ground does not suit the plan, so much the worse for the ground and all who have to work on it. The results of this style of forming beds the cottage gardens escaped from, the space being small and the cottage gardener content with the paths about his door. To some people this objection on my part to intricate design is mistaken for an objection to formality altogether. Now there are bold spirits who do not mind setting their houses among rocks and heather, but we must cultivate a flower garden, and simplicity as to form of the beds should be the rule in it. There are many ways of growing flowers and all sorts of situations fit for them, but the flower garden itself near the house must be laid out with formal beds, or else we cannot cultivate the flowers or get about the ground with ease. It is a question of right and wrong formality. The beds in my own work are, as will be seen by the plans here given, as formal as any, but simpler, and are made on the ground and to the ground. Our object should be to see the flowers and not the beds, so that while we have all the advantage of mass and depth of soil, and all the good a bed can give for convenience of working or excellence of growth, we should take little pride in its form, and plant it so that we may see the picturesque effects of the plants and flowers, and forget the form of the bed in the picture.

The relation of the beds to each other is often much too complex, and there is little freedom. Designs that were well enough for furniture or walls or panels when applied to the garden gave us a new set of difficulties. Carried out in wood or in the carpet they answer their purpose, if we like them; but a flower bed is a thing for much work in cultivating, arranging and keeping it, and it is best to see that we are not hindered by needless complexities in dealing with the beds. In good plans there is no difficulty of access, no small points to be cut in Grass or other material, no vexatious



Garden at Golder's Hill, showing fine view over distant country. Flowers to left of house and on margins of lawn.

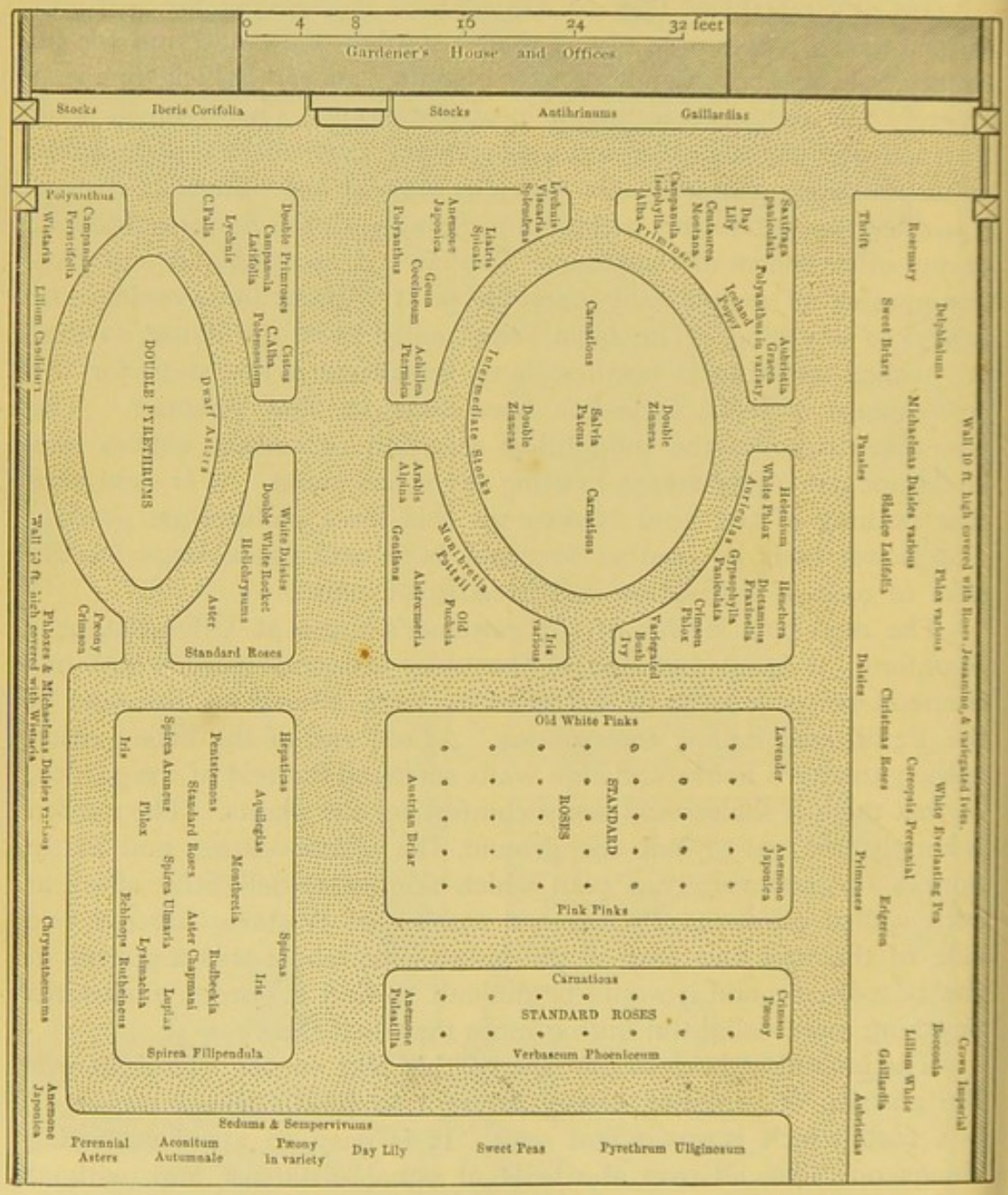
obstruction to work, but beds as airy and simple as possible and giving us much more room for flowers than beds of the ordinary type. The plans given are those of wholly different kinds of gardens.

GOLDER'S HILL.—This at Hampstead, is, perhaps, the best and most interesting example of a London garden one could find for its beauty, airiness, repose, and fine distant view, in which one can scarcely see a house, although near London. This plan is also instructive in various other ways, as showing that where it is desirable to keep a lawn open and quiet for view, play, or any other like reason, it is often easy to do this without interfering with the flower-gardening or any other charm of the place. The lawn is so open and airy, that any number of people may assemble on it without inconvenience or injury to anything. The lawn falls gently from the house, so that any walled terracing is needless, and, excepting a few steps for the convenience of level, little has been done in that direction. The plan also disproves the thoughtless assertion of certain writers that landscape gardening means twisting the walks about. It is seen here that nothing of the kind is done in this most picturesque garden. The flower beds are rather few and bold, and made large for the sake of ease of cultivation and breadth of effect.

The next plan is that of the gardener's house at Uffington, near Stamford; it is an example of the older-fashioned garden not uncommon before nearly all old gardens were altered for the sake of the Perilla and its few companions. At one end of the little garden is the gardener's house, and high walls surround the rest of the garden, so that there is shelter and every comfort for the plants. The garden is simply laid out to suit the ground, the plants—Roses and hardy flowers in great variety, a plan which admits of delightful effect in such walled gardens. Picturesque masses of Wistaria covered one side of the wall and part of the house—the whole was a picture in the best sense; and it would be difficult to find in garden enclosures anything more delightful during more than half the year.

The main drawback in gardens of this sort in the old days was the absence of grouping or any attempt to hold "things together"—a fault which is easily got over. It is easy to avoid scattering things one likes all over the beds at equal distances, and, without "squaring" them in any stupid way, to keep them rather more together in natural groups, in which they are more effective, and in winter it is much easier to remember where they are. In this way, too, it is easy to give a somewhat distinct look to each part of the garden. Box edgings may be used in such a garden, and where they thrive and are well kept they are very pretty in effect, but always distinctly inferior to a stone edging because

more troublesome, and also because dwarf plants cannot grow over them here and there as they can over a rough edging of natural stone, the best of all edgings.



Sheltered little garden in front of gardener's house at Uffington, Stamford, with simple beds of Roses and hardy flowers. The space enclosed in walls.

FLOWER GARDEN OF TUDOR HOUSE.—This shows two flower gardens close to a Tudor house, with a garden door from the house into each. One being small (that on the south), it was thought better to devote it all to flowers and the necessary walks, all being

done with a view to simplicity of culture and good effect of the plants. In the other garden, there being more space, the lawn is left open in the centre, while all round and convenient to the walk are simple, bold beds easy to deal with, and also spaced in a free and open way for people to get among them or about the lawn. The little south garden being much frequented in all weathers, and the paths among the beds rather small, it was thought best to pave them with old flagstones, and that has proved very satisfactory, because rolling and much weeding are thereby avoided and the walks are pleasant to walk or work on at all seasons.

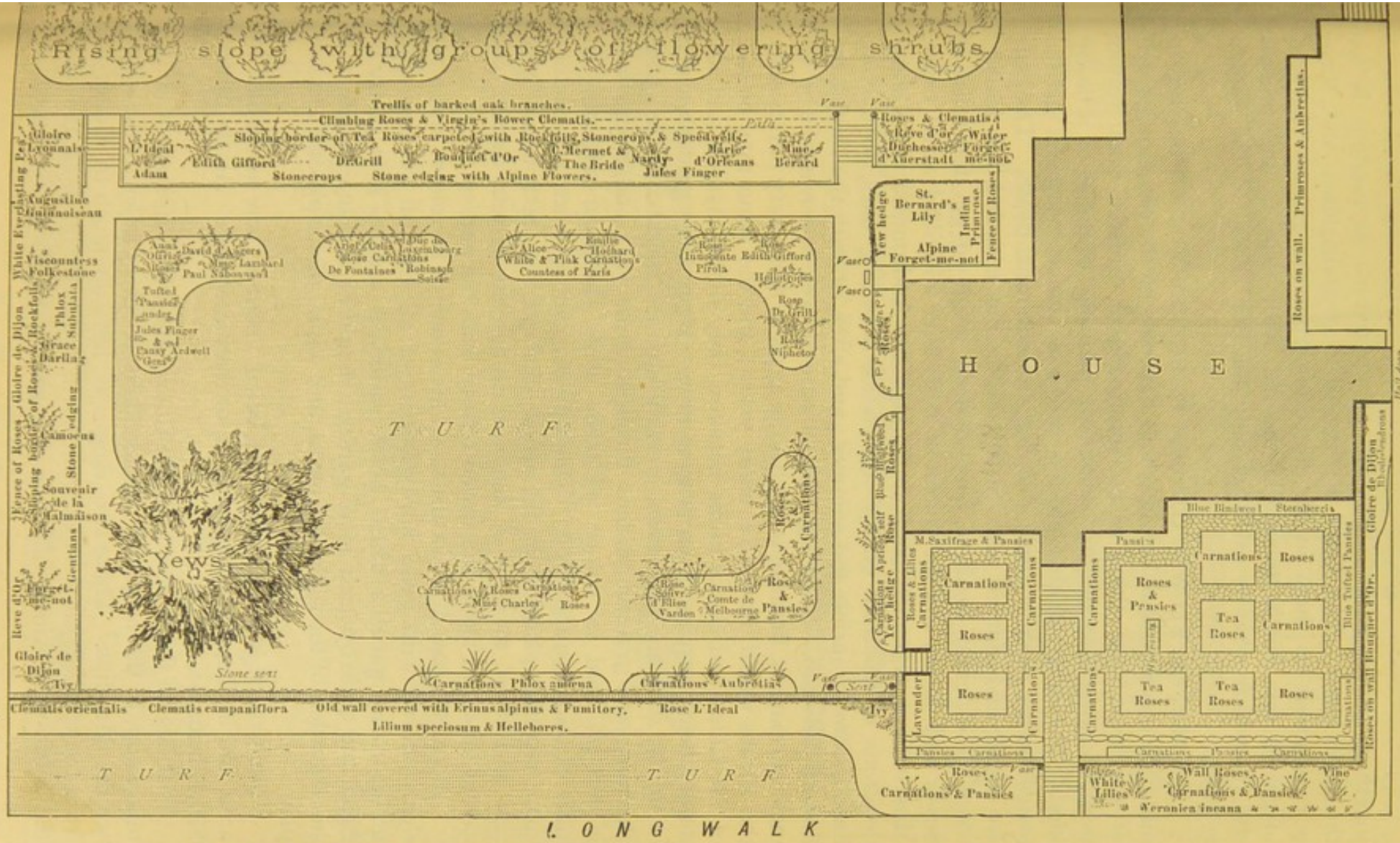
South of the house and of these gardens there is an open, airy meadow lawn, the Grass of which is studded with many bulbs that flower in the spring. The vigorous kinds of spring bulbs are grown in great quantities in this field, and only the choicer and rarer early bulbs are put among the Roses and other flowers in the flower garden proper, which is mainly devoted to the finest hardy flowers of summer and to Tea Roses.

HAWLEY.—This garden shows two essential things in the art of garden-design: First, the general idea of this book that it is by well studying the ground itself, rather than bringing in any conventional plans, we arrive at the best results. Gardening is so pleasant in many ways that almost any plan may pass for pretty and yet be far from being the most artistic result that could be got among a given set of conditions, or difficulties it may be of ground. If in such a case we adopt such plans as are sent out from offices both in France and England, it is possible that (with considerable cost) we may adapt them to the situation, but assuredly that way cannot give us the most artistic result.

The second point is, that where the vegetation of a place has distinct characters of its own, these should be made the most of. If this were the case generally we should see much less of the stereotyped in garden-design. This garden is in the charming Pine district of Hampshire—the Pine, beautiful in groups and in distant effects, and this was taken advantage of, and the Pine look of the place preserved in all ways, and even heightened where it could be done with good effect. These Pine groups and masses were naturally more of the framework of the garden—the woods and trees surrounding it. The next thing done was to take advantage of the natural vegetation of the ground apart from the trees, *e.g.*, the heathy vegetation of the country, and instead of destroying it for turf or any of the usual features of a garden, preserving all its prettiest effects, its groups of Heath, wild Fern, and some Birch and Broom. Enough mown grass being left to walk upon outside the garden, it was thought the prettiest thing instead of a shaven lawn would be to leave the wild Heaths and

bushes and grass of the country, here and there scattering a few bulbs on the grass, but generally leaving things as nature had left them. The walks, instead of following the French sections of eggs pattern or the conventional serpentine walks, some landscape work were made in the line of easiest grade and where they were most wanted—and are not more in number or area than were necessary. There was no attempt made to make the walks conform to any preconceived idea. The grass walk under the Oaks was suggested by the Oaks themselves, and it is very pretty in effect. Originally several terraces had been run up at all sorts of awkward angles, and the ground was consequently more difficult to deal with than can well be imagined; these were thrown into one simple terrace round the house planned in due relation to its needs and the taste of the owner. The flower garden was laid out in simple beds as shown on the plan, and below these the necessary grass walks lead out towards the open country. Once free of the flower garden and the walk leading to it the ground took its natural disposition again. The kitchen garden had been in its present place originally; its position could not be changed, and was therefore accepted and walled round with Oak. The whole garden is quite distinct from any other, which in itself is a great point. This garden was, as I think all gardens ought to be, marked out on the ground itself without the intervention of any plan. A plan is always a feeble substitute for the ground, and even if made with the greatest care and cost has still to be adapted to the ground. The plan shown in the engraving was made after my work was done.

SHRUBLAND PARK.—The plan here given is that of the new flower garden at Shrubland Park, which is situated exactly in front of the house, and tells its own story. It shows the simple form of beds adopted, planned to suit their places, in lieu of the complex pattern beds for carpet bedding, sand, coloured brick, and also the change from such gardening to true flower-gardening. The names of the plants used are printed in position, but the actual way of grouping cannot well be shown in such a plan—the plants are not in little dots, but in easy, bold groups here and there running together. The flower gardening adopted is permanent, *i.e.*, there is no moving of things in the usual wholesale way in spring and autumn. The beds are planted to stay, and that excludes spring gardening of the ordinary kind. But many early spring flowers are used in the garden, the mainstay of which is summer and autumn flowers, the period chosen for beauty being that when the house is occupied and all beautiful hardy flowers from Roses to Pansies that flower from May to November are those preferred. There is no formality or repetition in the flower planting but picturesque, here and there running



Garden of Tudor house designed to secure easy cultivation and good effect, and planted with choicest hardy flowers, as one alternative to "bedding out."

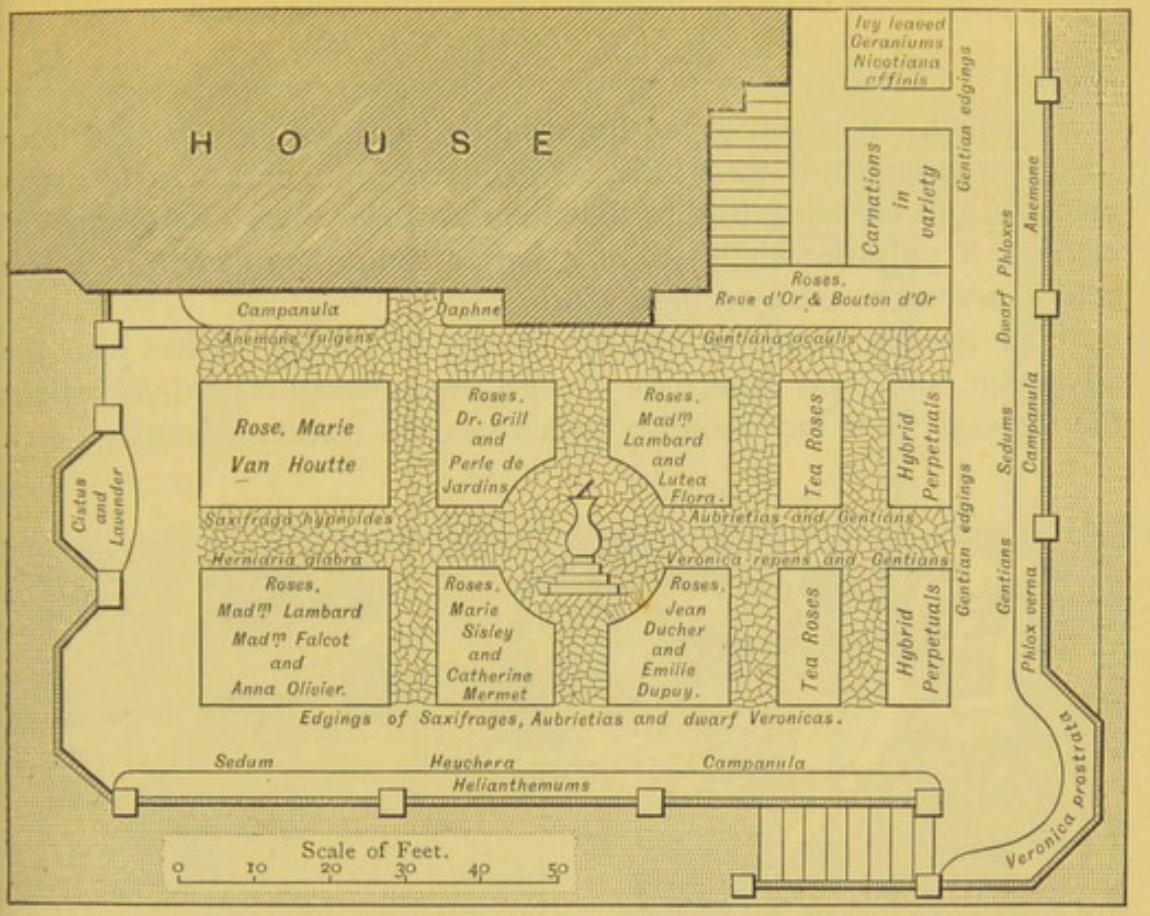
together, and sometimes softened by dwarf plants running below the taller ones. The beds are set in a pleasant lawn, and there is easy access to them in all directions from the grass. The area of gravel was much greater in the old plan than in the present one, in which what is essential only for free access to the garden is given.

EVERGREEN FLOWER GARDEN IN SURREY VILLA.—Bearing in mind the conventional bareness and hardness of the common garden of our own day, there is no improvement greater than results from breaking into this by permanent planting of things of a bushy kind. The plan of this garden shows a choice evergreen garden instead of the usual summer planting and autumnal death. The beds are simple and planted with choice shrubs, not crowded, but leaving room for different kinds of hardy flowers so as to get the relief of flower and shrub, and the charm of beds alive and filled at all times. Most of the evergreens (like Kalmia, Japanese Andromeda, and Rhododendrons of beautiful colour) are choice flowering ones, so that we have bloom in spring and summer; and after, or with the shrubs, the flowers between. Such a garden in pure air well begun might be almost permanent, because in such soils as these light peaty Surrey soils, the shrubs would thrive for many years; and the same may be said of the Lilies and choice bulbs between, only slight changes and additions being required from time to time. Many large gardens, which in similar soils are bare even in early summer, might thus be made charming and graceful gardens throughout the year, and, if this way is not so loud in colour as other ways of flower-gardening, it suits certain positions well. This way of planting need not exclude some summer planting of the usual character, in fact would give zest and relief to it: it is the one evanescent system carried out everywhere that steals the varied beauty from the garden.

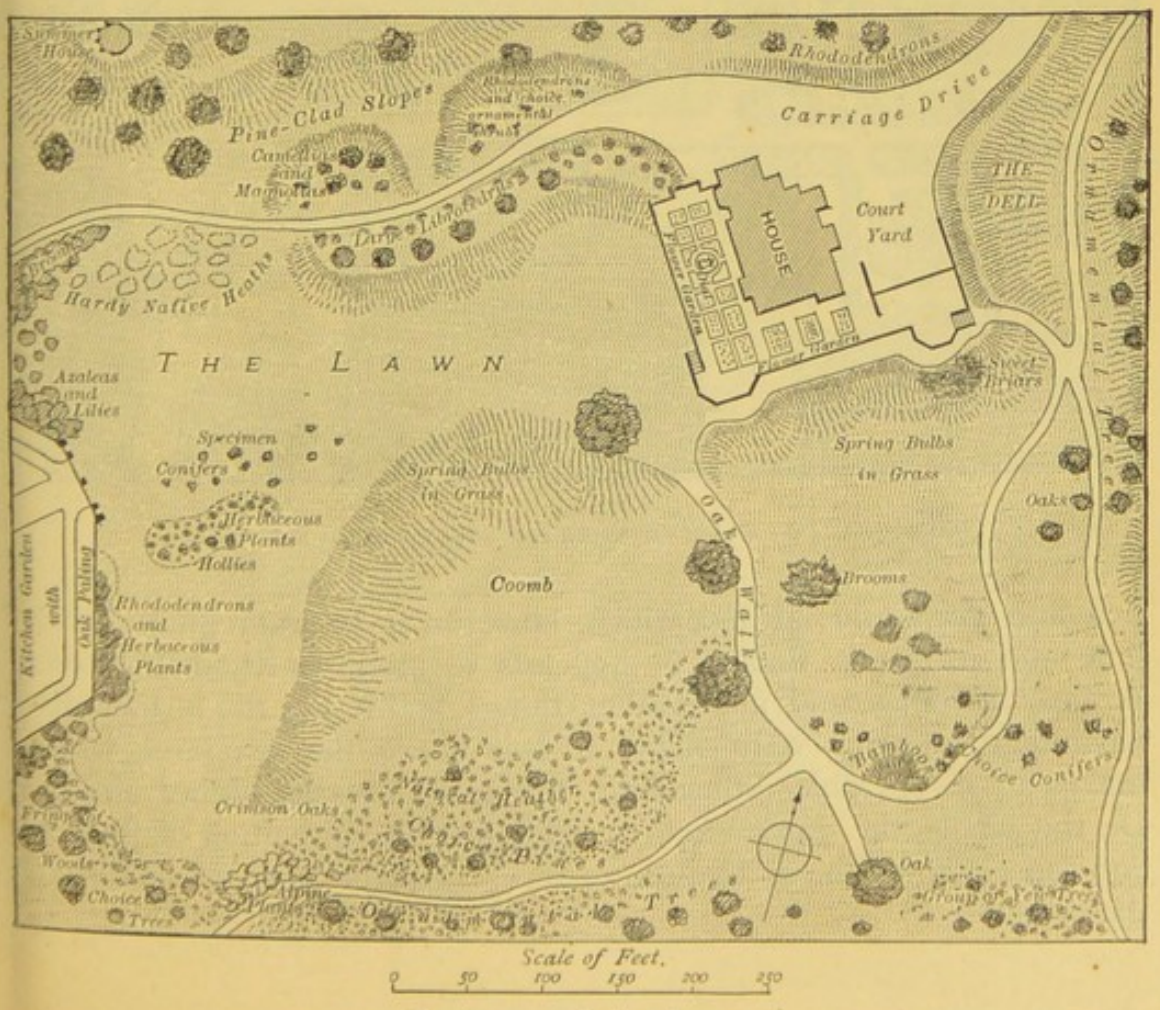
BITTON VICARAGE GARDEN.—This is one of the oldest and most richly stored with good hardy flowers of all English gardens, and, unlike many gardens where much variety is sought, it is pretty in effect and quite by itself as all gardens should be, and an example of a small garden of the highest interest, and withal of simple and sensible plan.

The garden is not a large one, being about an acre and a half in area, and in shape a parallelogram, or double square. As its owner, Mr. Ellacombe, tells us:

"It lies on the west side of the Cotswolds, which rise, about half a mile away, to the height of 750 feet, and about 15 miles to the south are the Mendips. These two ranges of hills do much to shelter us from the winds, both from the cold north and easterly winds, and from the south-west winds, which in this part of England are sometimes



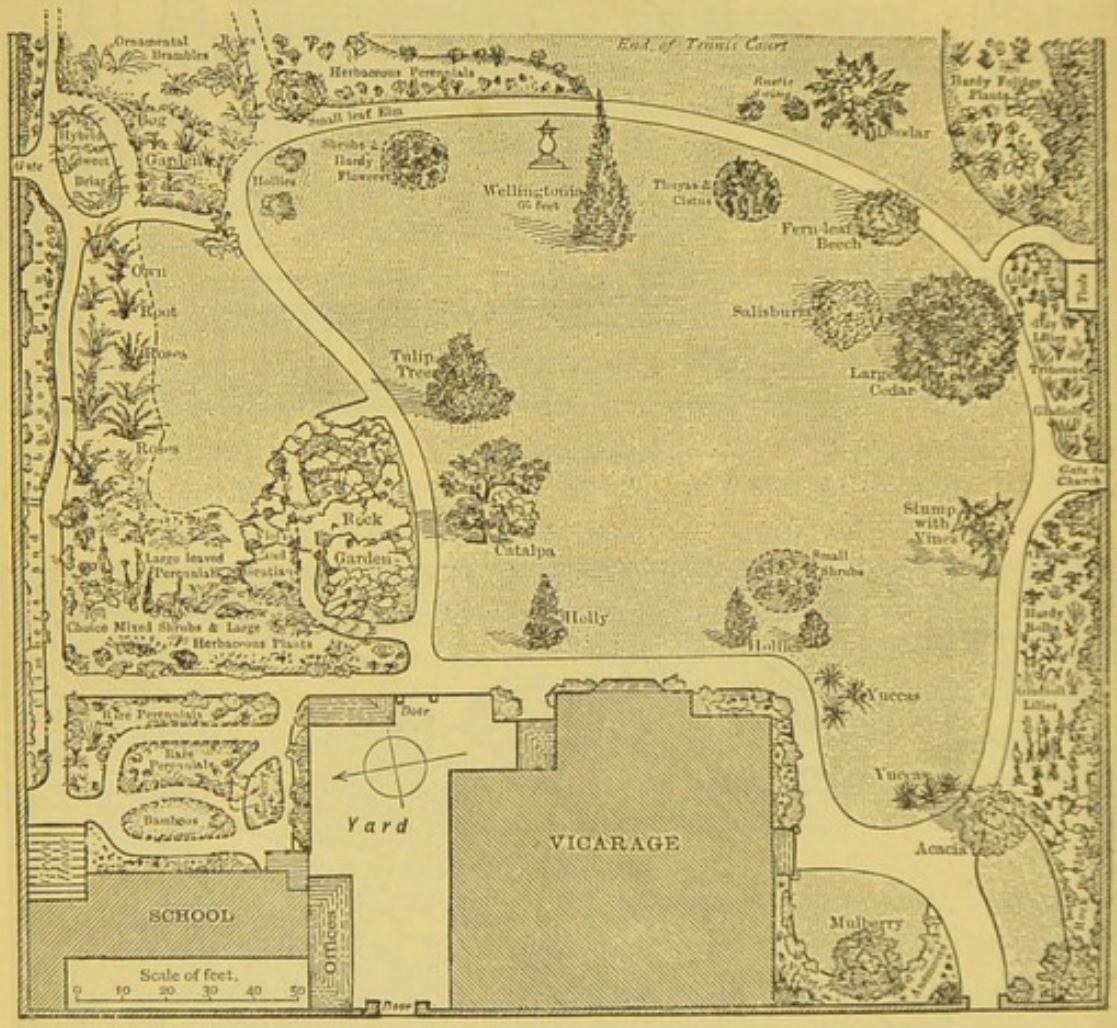
Hawley flower garden.



Hawley : grounds about house.

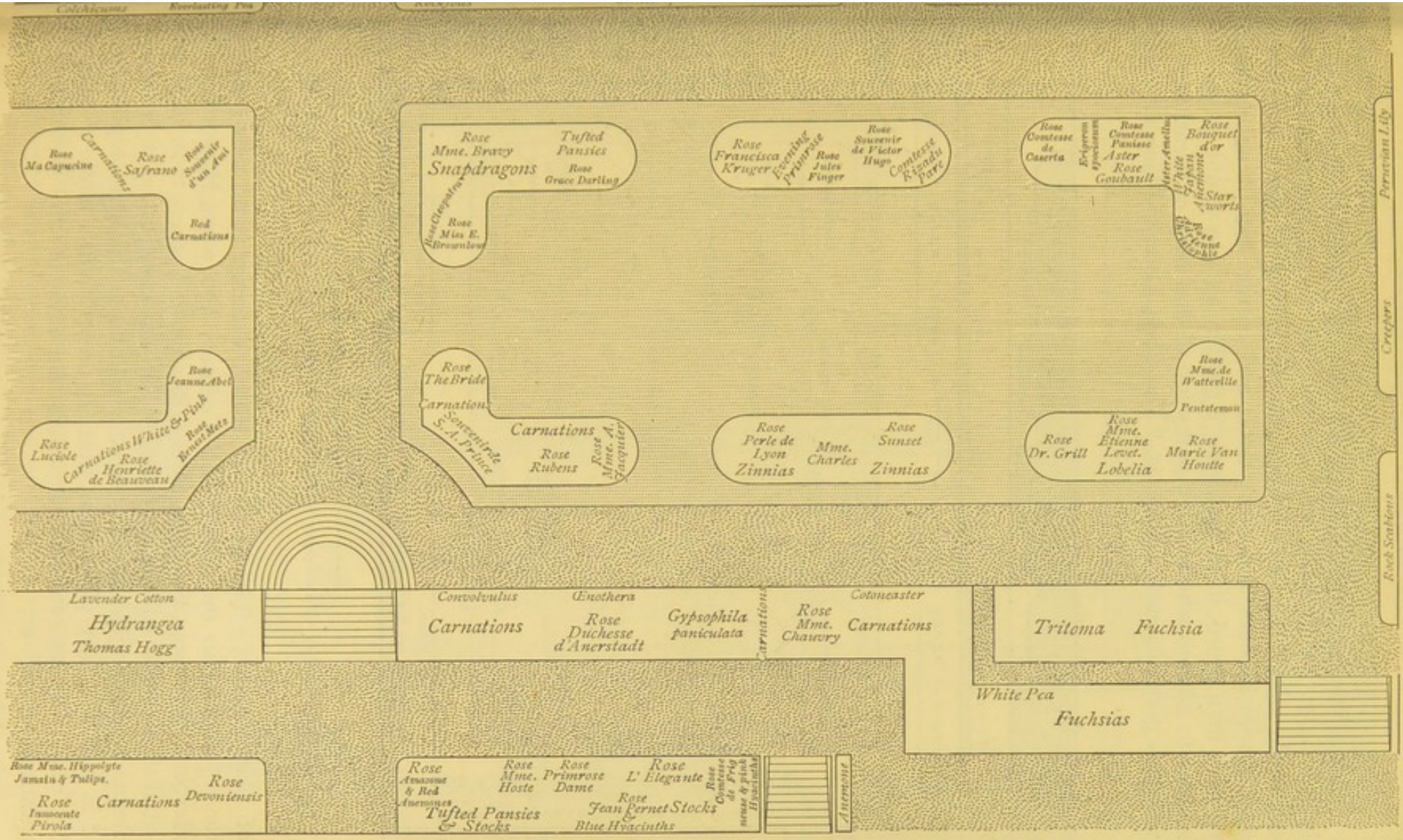
very violent. I attach great importance to this kindly shelter from the great strength of the winds, for plants are like ourselves in many respects, and certainly in this, that they can bear a very great amount of frost, if only the air is still, far better than they can bear a less cold if accompanied by a high wind."

The garden then has the advantage of shelter; it has also the advantage of a good aspect, for though the undulations are very slight the general slope faces south; and it has the further advantage of a



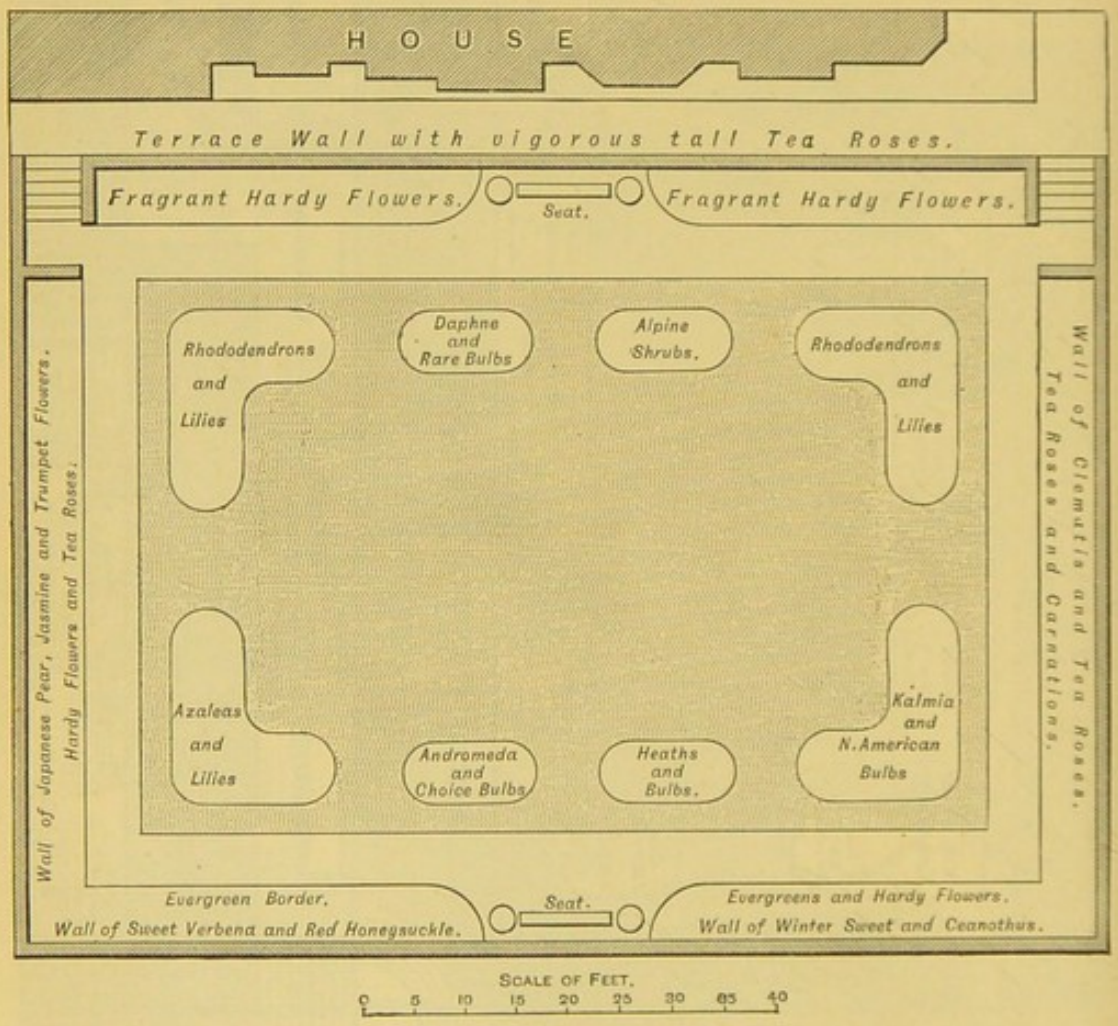
Bitton: part of the plan of the garden near house for flowers and shrubs.

rich and deep alluvial soil, which, however, is so impregnated with lime and magnesia that it is hopeless to attempt Rhododendrons, Azaleas, Kalmias, and many other things, and it has the further disadvantage of being only about 70 feet above the sea level, which makes an insuperable difficulty in the growth of the higher alpines. On the whole, the garden is favourable for the cultivation of flowers, and especially for the cultivation of shrubs, except those which dislike the lime.



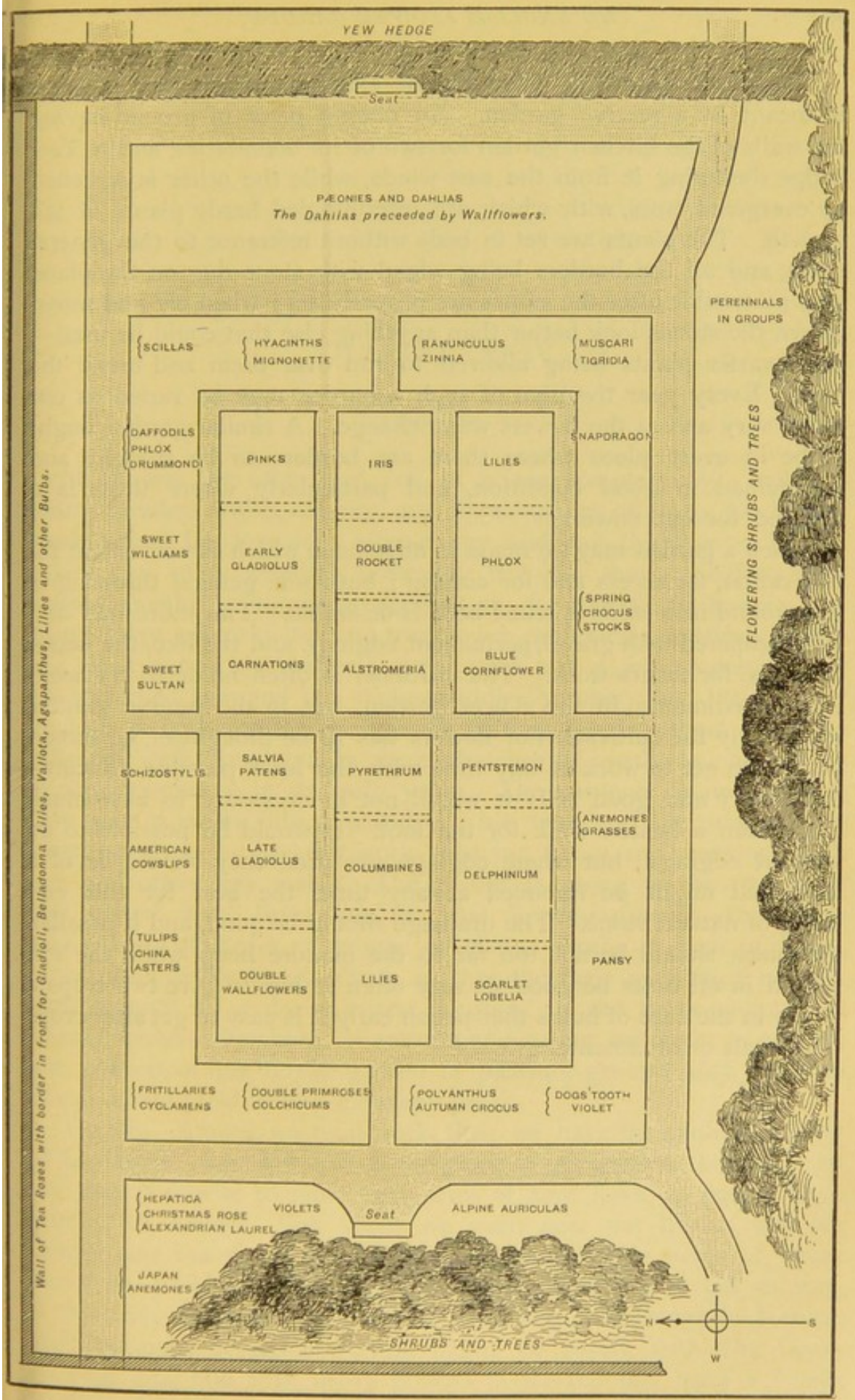
The new flower garden in front of house at Shrubland Park, showing simple forms of beds filled with the most beautiful hardy flowers in groups and colonies, and many Tea Roses and Carnations. Plan and planting by author (replacing Sir C. Barry's)

The garden is in many ways an ideal one, lying deep down in a happy valley and forming with the fine old church the centre of an old world village. It is a quiet, peaceful garden of grass and trees and simple borders, and every nook and corner has its appropriate flower; in a word, it is just such a garden as one would expect a scholar to possess who has sympathy for all that lives or breathes and who has given us such a book as "The Plant Lore and Garden Craft



Flower garden of Surrey villa on peaty soil for choice evergreen shrubs with hardy flowers between.

of Shakespeare." The garden at Bitton Vicarage is no new garden, for it was famous more than half a century ago, when Haworth and Herbert, Anderson, Falconer, Sweet, Baxter and others took such an interest in bulbs and hardy flowers. By the same token it is by no means a new-fangled garden; there is all due and proper keeping, but it is patent to any plant-lover that its owner thinks more of seeing his plants happy and healthy than he does of any unnecessary trimness.—F. W. B.



Reserve garden for the choicer families of hardy plants, grown in beds without reference to general effect, and serving also as a garden for cut flowers and a nursery.

RESERVE GARDEN.—We have an example in this plan of what is meant by a reserve garden. An oblong piece of ground having the walls of the kitchen garden for two of its boundaries, and a Yew hedge sheltering it from the east winds, while the other is screened by evergreen trees, with which are intermingled hardy plants of tall growth. The plants are set in beds without reference to the general effect, and all the borders being edged with stone dug on the place, give no trouble after the stones are properly set; when old and moss-grown the stones look better than anything else that could be used—the dwarfer plants being allowed to run over them and break the lines. Every year the plan of such a garden may be varied as our tastes vary and as the flowers want change. A similar garden ought to be in every place where there are borders to be stocked and maintained in good condition, and particularly where there is a demand for cut flowers.

Such a garden may be made in any shape which is convenient for cultivation, for access and for cutting; but some general throwing of the ground into easily worked beds is desirable. The more free and less hampered with gravel, permanent edgings, and the like, the better it will be for future work. The gardener is often hindered by needless impedimenta in the flower garden, but in the reserve garden, where only the cultivation of flowers has to be thought of, he should be able to get to work at any time with the least possible difficulty, and in dry and good soils it would not be necessary to have much more than a beaten walk for the foot. It would be possible to do without edgings; but where edgings are used they should be of a kind that might be removed at any time, the best for this end being of natural stone. The drainage should be good, and if possible the place should be not too far to the manure heap, while the soil should in all cases be good, as very often it has to give two crops a year; in the case of bulbs that perish early it is easy to get after crops of annuals or ornamental grasses.

CHAPTER XXIV.

WASTE.

OUR gardens are often laid out in a too complex way: with so many needless walks, edgings, and impedimenta of many kinds that work cannot be done in a simple way, and half the time is lost in taking care of or avoiding useless or frivolous things. Efforts thus wasted should be turned to account in the growth of flowers. In many large places there is no true flower-gardening; wretched plants are stuck out in the parterre every year, and a few stunted things are scratched in round the choke-muddle shrubbery, but little labour or love is bestowed on the growth of flowers. In others there are miles of walks bordered by bare stretches of earth, as cheerful as Woking Cemetery in its early years. The gardener is impotent to turn such a waste into a paradise; his time and his thoughts are often eaten up by barber's work—shaving Grass and weeding needless and often ugly walks. The gardeners, owing to the trouble of this system, have little time for true flower-gardening—to form a real garden of Roses, or groups of choice shrubs, or beds of Lilies, or of other noble hardy plants, so that the beds may fairly nourish their tenants for a dozen years. Instead of the never-ending and wearisome hen-scratchings of autumn and spring, we ought to prepare one portion of the flower garden or pleasure ground each year, so that it would yield beauty for many years.

GRASS.—Among wasteful work, then, we have the endless shaving of big lawns. The soft turf is the glory of our gardens, but who can say that it is wise to mow forty acres of kept lawn, as people have boasted of doing? Soft lawns we want near our houses, and we cannot take too much care of them; but the wide acres of Grass mown in many large country seats would be better if cut as hay. A flowering meadow is one of the most beautiful things in Nature, and our park or garden lawns might be lovely with the Grass growing long and with many flowers in it—the turf itself a lovely garden. We should see in it, as we often see in an alpine meadow,

fair flowers which grow in English as well as in alpine turf. By allowing the Grass to grow in spring and till maturity, this phase of the wild garden will be enjoyed; plants will come up year after year to reward us. Lawns for play, and smooth turf among the flower-beds we must have, but in most gardens something may be gained if the Grass to be frequently mown be kept to what is essential.

NEEDLESS WALKS.—Our own landscape gardeners are a little more sparing with these hideous things than are the French; but we very often have four times too many walks, which torment the poor gardener by needless and stupid labour. He is always hoeing, and weeding, and salting. The planning of these walks in various elaborate ways has been supposed to have some relation to landscape gardening; but one needless walk often bars all good effect in its vicinity. Walks are essential, but they should be designed simply to go wherever it is necessary they should go. Flower-beds are often best set in Grass, and those who care to see them will approach them quite as readily on Grass as on hard walks. For the three or four months of our winter season there is little need of frequent resort to flower-beds, but for much of the rest of the year the turf is better than any walk. I do not mean that there should be no walk to the flower-garden, but that every walk not necessary for use should be turfed over. Few have any idea how much they would gain, not merely in labour, but in the beauty and repose of their gardens, by doing away with needless walks.

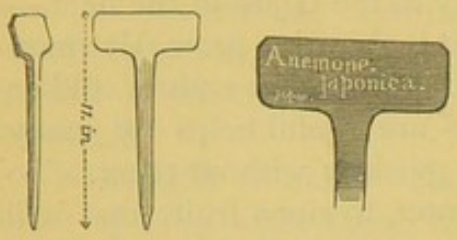
TAR WALKS.—Among the curious mixture of good and bad, ugliness and beauty, one sees in country seats are tar walks, and they are a main "factor" in making many a garden ugly. They have almost every fault that a walk could have: hideous in colour, hot in summer and sticky, hard and unpleasant to the feet, getting into ugly holes and an uneven and unpleasant surface. The only excuse that could ever be advanced for them was that they offered an escape from the old practice of continual hoeing, which was a great labour, but is now needless, owing to the weed-killers. Better still is the reduction of useless walk-surface. If walks are simply made, and not one yard more is made than is required for use, the labour of cleaning is immensely reduced, and one dressing a year of an effective weed killer often keeps them right. If there were no other objection than the colour of the tar walk, it should be sufficient to lead to their disuse, and gravel in the home counties and about London is so good in colour, that one is surprised that anybody can tolerate a tar walk. In small, close courtyard gardens, where gravel is objected to, we may have a well-made concrete walk, which should be good in colour. This concrete is better in walks of half worn stone.

GLASS FOR THE FLOWER GARDEN.—Among the evils of the "bedding" and "carpet system" is the need of many glass-houses in which to keep the plants all the winter, not one in ten of these plants being as pretty as flowers that are as hardy as the Grass in the field,—like Roses, Carnations, and Delphiniums. It is absurd to grow Alternantheras in heat, and not to give a place to flowers that endure cold as well as Lilies-of-the-Valley. Glass-houses are useful helps for many purposes, but we may have noble flower gardens without them. To bloom the Rose and Carnation in mid-winter, to ripen fruits that will not mature in our climate, to enable us to see many fair flowers of the tropics—for these purposes glass-houses are a precious gain; but for a beautiful flower garden they are almost needless. Therefore expense may be saved, and the numerous glass-houses in our gardens may be turned to better use. It would not be true to say that good hardy flower-gardening is cheaper than growing the weedy tender plants that often disgrace our gardens, as the splendid variety of beautiful hardy plants tempts one to buy, and it is therefore all the more necessary not to waste money in stupid ways.

WATERING.—In warmer countries much watering or irrigation is essential, but in England, nine seasons out of ten, this heavy labour is not needed, particularly if we grow hardy flowers, and plant in autumn, winter, and early spring, so that the plants may be rooted before the hot days. When watering is necessary, sufficient should be given to moisten the soil to the full depth it is dug or trenched, but if the borders and beds have three feet of soil, there will be much less need of artificial watering. If borders and beds be well done at first, and mulching used, little watering will be required. A light carpet of alpine flowers under Roses tends to keep the beds moist. Deep good soil does away with the need of any unpleasant mulch. The tufted Pansies, Rockfoils, gray and green Stonecrops which I use among the Roses and Carnations are a living and beautiful "mulch." At the same time what is needed in this way is often a question of soil. In Surrey sands plants may be almost dead for want of water, when a few miles away in the weald the same kinds will be proud with food and moisture.

FANCY LABELS are a frequent source of waste, especially if stamped so as to suit only one plant. It would in many cases be well to do without labels, except where we grow many kinds of things that differ by slight shades, as Carnations and Roses. The contents of a garden are usually in a state of change; we are continually adding to and taking from them; new plants are introduced; a severe winter kills a number of shrubs, which we determine not to replant. Fashion changes the garden vegetation too, and then the permanent labels, cast and burnt into hardware and cemented in cast

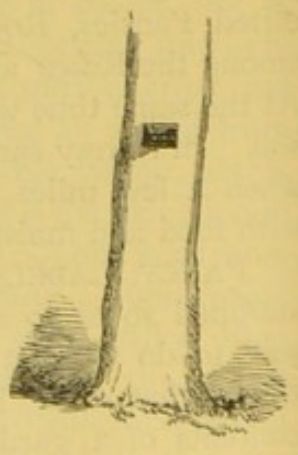
iron, are thrown aside. I prefer a label which can be used again, such as a cast-iron label of "T shape" or, in other words, a slip of cast iron with an oblong head slightly thrown back. These are cast very cheaply in the iron districts. We have to paint them and write the names of the trees on them when they come to hand; but that can be readily done by a handy painter in winter. In a large garden, where much naming is required, the best way is to train a youth who is likely to remain in the place, by placing a copy of the desired kind of letters before him. It is an advantage to give the label a coat of copal varnish when the letters are dry, and generally use white letters on a black or dark ground, and give three coats of black over one of red lead. These are the best labels for the shrubs and choice young trees of a pleasure-ground or flower garden. The painting will last for twenty years, and if we cease to cultivate the plants to which they belong, the labels may be repainted.



Cast-iron labels; the simplest, neatest, and best form for shrubs, bold herbaceous plants, and for all cases where the label has to be fixed in the ground.

With big trees it is always a mistake to use a ground label. The best labels for large trees are made of pieces of tin about $4\frac{1}{2}$ inches by $3\frac{1}{2}$ inches. About half an inch of the upper edge should be bent at a right angle so as to form a little coping for the label, two holes should be made just beneath the little angle, through which a strong copper wire should be put and firmly nailed to the tree. Place it so as to be easily read, and about $5\frac{1}{2}$ feet from the ground. Paint it dark brown or black with white letters and it will last for many years. All labels inserted in the grass in pleasure-grounds are liable to be pulled up by mowers or others, and in this way to get lost, while the labels on the stems are safe from such mishaps.

The simplest and best label for trees.



Position for tree label.

For low trees and bushes to which copper wire may be fixed with ease, the simplest and most enduring labels are those of cast metal galvanised, such as are made at Stratford-on-Avon; but as they are so enduring so they are best fitted for hardy trees and shrubs. The words on them should be few as may be, and all needless words omitted. Thus in fruit-tree labels it is needless to use the word Pear or Apple,

but simply the variety, as "Ribstone." This plan makes these labels more legible than when they are crowded with letters. For all half-hardy plants ordinary wooden labels are the most convenient. And if they are required to last, dip the ends in tar or pitch. In most gardens it is the practice to write the name at the part that goes in the ground, and to go on from thence to the top—a bad way, for the label always begins to decay at the base, and thus the beginning of the name is lost, while the end of it may be quite legible. After a little practice it becomes as easy to write from the top as from the other end, and in writing the names always begin as near the top as possible.

FANCY EDGINGS of cast stone or tile ware are costly, ugly, needless, and a heavy source of waste. The most common of living edgings is Box, though it is far less used now than formerly. A neglected Box edging mars the appearance of a garden, and those who cannot afford to keep Box in good condition should dispense with it. A beautiful evergreen edging is formed by Irish Ivy, where carefully grown as in the public gardens of Paris. A broad, well-kept edging of Ivy has a fine effect in various situations, but neglect soon mars any Ivy edging. The Irish Ivy is only one of many forms of our native Ivy, and by no means the best, and other good and distinct forms should be used for this purpose. Some hardy plants make good edgings, such as double Daisies, Thrift, Arabis, Auriculas, Primroses, Violets, and Gentianella. Enough is hardly made of these easily increased plants as edgings. Burnt tiles with a bead on the top are often used, because they are easy to procure and cheap; but the frost breaks them up in a couple of years unless they are very well burnt. They are always hard and ugly, and should never be used. A thin tile, made of fire-clay and glazed, is also used, but all burnt clay edgings are bad. Terra-cotta tiles stand fairly well, but they are expensive. Stout blue slate, with sawn edges, is enduring; it is expensive at first, but its great lasting properties are a compensation; it can be had in long lengths and is easily laid, but it is ugly.

Where hard stone is abundant it is excellent for edgings, and in quarries there is often a quantity of stone refuse which might be used for edgings. If they are nearly the same thickness, pieces of various shapes and sizes may be used. The charm of rough stone edgings is due to their colour when clothed with small Mosses, and they require no hard rigid setting, as they look much better set simply and roughly in the earth. Unlike the cast tiles they are none the worse if they fall out of line, and are easily removed and easily reset, and give by far the best effect of any permanent edging.

Edgings are best made of the natural stone which abounds in various counties.

An edging in a garden may be beautiful by reason of dwarf rock plants being associated with it. If we have an ugly stiff tile edging, we would hardly think of putting an alpine flower near it; but on the other hand, any good natural stone edging forms a good place for rock plants. If the stones are irregular in size, sink them partly in the ground, as in the case of a flint edging, and then we may have a number of pretty plants running in and out among these stones, and spreading into gravel walk or soil. There is no difficulty in growing numbers of alpine flowers in this way, and in all borders of hardy and alpine plants edged with natural stone, a good plan is to let tufts of vigorous rock plants grow a little into the walk.

STUCCO AND STONE WASTE.—It is a costly folly to make a flower garden like a cemetery, with terraced work—where terraces are not necessary, and where the natural form of the earth is far fitter than any other form for a beautiful flower garden. Vases, fountain basins, sculpture of the sort we see in gardens, and, lastly, pounded stones and gravel, set out instead of flowers,—these are wasteful and ugly. The cost of all this stone or cement rubbish should be laid out in good plants and good ways of growing them. The money spent on it in a single county (now and then, indeed, in a single place) would form many lovely gardens. If we ruin ourselves through extravagance in gardening, let it be for living and beautiful things.

REFUSE BRICK UGLINESS.—Whoever started the idea of the use of the refuse of the brickyard to form the rock garden was no friend of the garden. It is not much exaggeration to say that, to expect alpine flowers to grow on these masses of vitrified bricks, would be as reasonable as to plant them in the desert. And these brick rubbish banks are put up with overhanging walls so that a drop of moisture cannot get to the unfortunate plants, and a dry wind can sweep over them as easily as through a grill. If this were confined to gardens of small cottagers near brickfields it would not much astonish us; but in Dulwich Park several thousand tons of it have been put about under the pretence of making rock-gardens. The same thing is used at Waterlow Park, Highgate, which was once a pretty and varied piece of ground. If the County Council waste money in this way, we cannot perhaps wonder so much at the owners of villas doing it, but in any case it is ugly and disgraceful in a garden. No other ignoble materials should be seen in any rock garden, in which even stumps of trees are out of place. With some people any broken-nosed statue or other stony or vitrified rubbish is used in what should be the most beautiful and natural of all gardens—the alpine garden.

If we have not natural rock in its natural position, or cannot secure some natural rock to use even on a small scale, it is far better to grow the rock plants in simple ways, on the gently raised earth on which many of them thrive.

PATENTED ARTICLES.—In this age of mechanism, there are inventors who try to worry us out of our pleasantest little tasks by inventing things that nobody wants, and among the ugliest things in gardens are the remains of various too clever contrivances, rusty, useless, forgotten. Some one has invented a teapot which saves us the trouble of pouring out a cup of tea, and many garden inventions are as much called for as this, though it would not be fair to condemn those that really save labour. It is the invention of things which, instead of helping, really add to our confusion that we should guard against. No contrivance should be admitted unless we know it is essential to our work, nor should it be ugly or showy in use.

A PLAGUE OF RABBITS.—The rabbit is a cruel enemy to the Carnation and many other flower-garden plants, and no good flower-gardening is possible where rabbits are not carefully and constantly excluded. The injury rabbits do to young trees is incalculable ; and where they abound in woods there is no chance of getting up cover except at an enormous cost. Rabbits eat down the evergreen cover which is so necessary to the well-being of pheasants and shelter in winter ; and to nothing are rabbits more destructive than to Holly. Few, even among those who suffer most by their ravages, seem to know how much rabbits injure woodland, pasture, and arable land, as well as gardens. I know of one small estate in which, in the course of ten years, a thousand pounds has been spent attempting to keep rabbits out of the gardens and young plantations, and all this in ugly iron and wirework and the cost of carriage, labour, and repairs. This outlay, be it noted, did not protect the woods or underwoods, and did not by any means make the gardens and young woods quite secure.

All who really care for the beauty of woodland or garden should spare no effort to get rid of this pest. Those who suffer most are people in and near small estates, where "preserving" is badly done and rabbits alone remain. Winged game of all kinds is helpful to the landowner and farmer, by reason of the insects and grubs they destroy, so that all who care for the true game should encourage them, and keep down the rabbit at all seasons.

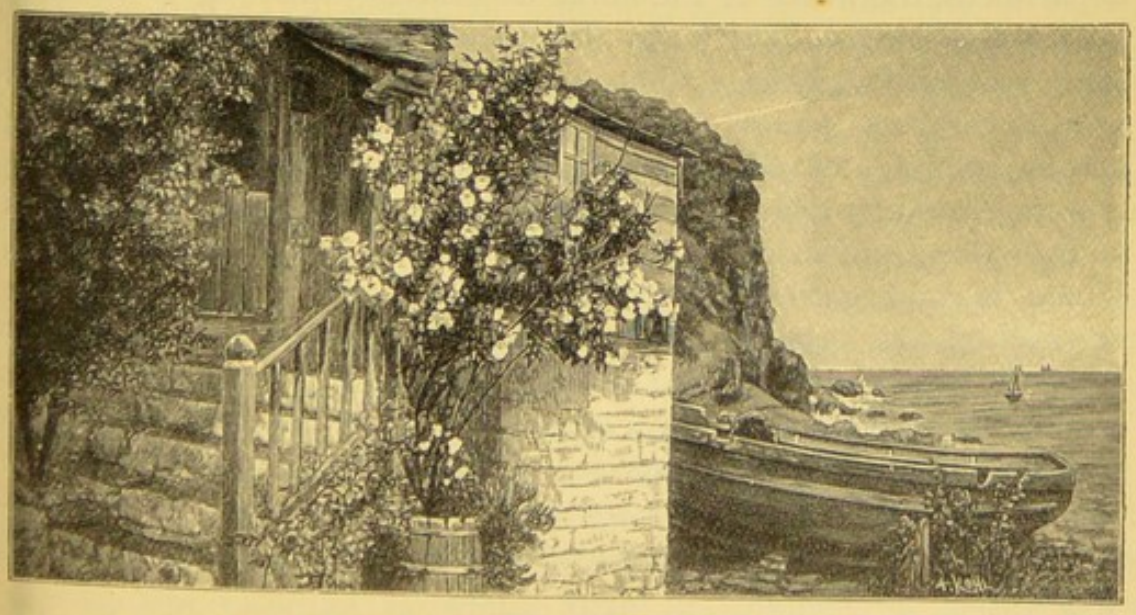
The one good point in the ugly and costly iron fencing of these mechanical days is that it helps us to keep rabbits out. In small gardens, which are very much under the owner's eye, netting will do all that is necessary ; but in larger gardens it is much better to put a permanent and strong rabbit fence round the whole garden and

pleasure ground in such a way that the iron fencing and wire will not be visible, and it is easy to do this, save at one or two points or gateways. It is best to put the wire on the iron fence, because in snow storms and through accident the ordinary wire netting is often trodden down. To exclude young rabbits we should use a 1 in. mesh, and wire to the top of the bar-iron fence, 3 ft. 6 in. high, the wire to be 6 in. below the ground. Ponds, sunk fences, buildings, and other things are aids to be used in planning a fence of this kind, as often they lessen the amount of wiring, and are an efficient protection. Water by itself is not to be trusted, because in frosty weather, which is the very time one wants to be safe, rabbits and hares will cross, and will eat up every green thing in the shape of Carnations, Pinks, and young trees. With a wiring plan of this kind, carefully carried out, one may be safe from rabbits for years.

It is often easy in country places, where iron fencing has been used far too much round fields, to pick out some of the fencing where, perhaps, it mars the foreground of a beautiful landscape, and use it to make our rabbit fence with. The line of this fencing, which can be concealed among shrubs, should be settled in part by the lie of evergreen or other cover. No peace can be had in some gardens without such protection, and even then rabbits will often gain access through gates and in other ways, so that it is well to take a dog through now and then and beat them out.

THE WASTE OF MONOTONY.—A grievous source of wasted effort in gardens is monotony arising from everybody growing what his neighbour grows. Thus it comes that the poor nurseryman who attempts to grow new or rare trees or shrubs very often finds them left on his hands, so that many country nurseries only grow a few stereotyped things, which give monotony to gardens. For instance, we see public gardens and squares in London given over to the common Privet, the common Lilac let to run as a weed, and the common Elder, as in Lincoln's Inn Fields. The temptation is strong on the part of trade growers to keep only things that grow freely, and to plant things, like Privet, which are without beauty, and offensive in odour when in flower. The presence of such things is one of the causes of the miserable aspect of the shrubberies in many gardens, which might be very beautiful and interesting with a varied life. Many shrubs of little or no beauty in themselves very often destroy by their vigour the rare and beautiful garden vegetation, so that we have not only the ugliness of a brake of Laurel, or Privet, or Pontic Rhododendron to survey, but often the fact that these shrubs have overrun and killed far more precious things. And this nursery rubbish having killed every good thing begins to eat up itself, and hence we see so many shrubberies worn out.

Every lover of the garden could do something to check this fatal monotony by taking up some plant or family of plants for himself which perhaps he is unable to find in the nursery gardens near at hand. It is not only many beautiful species of plants which are excluded from the ordinary nurseries, but even special nurseries, as for Roses, will often exclude good things from their collections. It is not only the introduction of new plants or species we have to think of, but the raising of new forms (hybrids or varieties), the fine cultivation of neglected groups, as the beautiful forms of our native Primrose by Miss Jekyll; the making more artistic use of old and well-known plants; the skilful adaptation of plants and trees to the soil so as to get the highest beauty of which it is capable without excessive care or cost, and without the mourning and death that is visible in many places after hard winters. Those who seek to vary the monotony of gardens must be prepared to face some trouble, and they must not take the least notice of what is thought right in the neighbourhood, or of what can be obtained from the nearest nursery garden, or even some of the larger nursery gardens. The further afield they look, probably the better in the end it will be for them if they would escape from the trammels of monotony. At the same time, if local men have good things they ought to be encouraged, and it is a misfortune for gardens that there are not more good local nurseries.



A Fisherman's Garden in Cornwall.

CHAPTER XXV.

FLOWER GARDENS IN LONDON PARKS.

THE influence of public gardens in London and our great cities is very great for good or evil, and deserves consideration here. They have grown much in extent of recent years ; enormous sums of public money are spent on them and they are matter for fair criticism, which cannot be said of private gardens. As many people look to them for perfection in gardening, so it is well to consider waste and ugliness when they occur in them, as unfortunately they often do together. Nothing can be more harmful than an ugly garden like the Garden of Plants in Paris. It is not very long since there was very little to be learned at Kew in flower gardening of the best sort, all the hardy plants being then confined to what was called the herbaceous department, the whole of the floral decoration consisting of bedding plants of few sorts. The hardy flowers for many years starved in the same spot without change ; but now all this is changed, and lilies and beautiful things mingle gracefully with fine evergreen flowering shrubs, helping and relieving each other, and many other hardy plants are used in pretty relation with other things. Alpine plants that used to be under a sun shade on a dry bank are now in a good rock garden. There is wild gardening, too, and many bulbs and other things naturalised and seen in sheets and colonies in the grass in spring. The two botanic gardens of Dublin and Edinburgh are helpful in like ways. Even in the dark days of the flower garden, when there was often less than half a dozen species of plants in what was called a first-class garden, these botanic gardens of Edinburgh and Dublin kept up a fine variety of things and great numbers of beautiful hardy plants.

HYDE PARK.—One thing is certainly not wanting in London parks, in the flower gardens at least, and that is extravagance. Beds are piled against beds, to the destruction of all repose and of the essential quality that is called breadth, and there are no dividing masses, so that one sees immense lines of colour often devoid of all

harmony. It is unfortunate, too, the way colours are used by nearly all the gardening race, and we see the loudest contrasts where all should be harmonious, and little thought is as yet given to general effect.

Seldom is any attempt made to put flowers that would harmonise together in any soft and gentle way, but many harsh contrasts are seen. Plants which depend on fine summers for their perfection, like Solanums, Cannas, and indeed all the tender plants, get too much space and care. In a country like ours it is much safer to trust to things that do well in spite of wet weather or such heat as we have. Here, however, while much attention is paid to Cannas and various tropical and tender plants, we find little attention given to things that are at home in our climate. There is too much attention given to Palms and tropical things, especially in face of the fact that some of the finest effects from foliage come from plants such as Gunnera, Bamboo, and Yucca.

There is, however, much improvement here as regards the individual beds, better far than many of the old flat carpet beds—many of them are very pretty; but the general effect is poor even at the best season, and in winter it is very bad.

A walk by the flower beds in Hyde Park on Christmas Day, 1895, was not a very enlivening thing. One by the bent-bound dunes of the foam-dashed northern shore, on the same wild day, might be more instructive—for here is a large garden carried out with the very extravagance of opulence, and not one leaf, or shoot, or plant, or bush in it from end to end; giants' graves and earth puddings—these and iron rails and the line of planes behind. The bare beds follow each other with irritating monotony—only five feet of grass between those in line. The southern division of this garden is nearly 500 paces long, and so even that those not in the habit of seeing this costly garden may imagine its ill-effect in winter. Nearly 500 yards of a garden sacrificed for its kaleidoscopic effects in summer, and barer and uglier in winter than words can tell of. A more inartistic arrangement would be impossible, and there is no chance of variety, breadth, or repose even in summer.

Some of the evil arises from the common error that plants are not worth seeing in winter. The old poet's wail about the dismal winter is a false one to those who have eyes for beauty. Woods are no less beautiful in winter than in summer—to some, more beautiful from the lovely colour, tree form and the fine contrast of evergreen and summer-leafing trees. In any real garden in winter there is much beauty of form and colour. There are many garden things which are beautiful in the depth of winter, like the Red and Yellow Willow and Dogwoods, and even the stems of hardy flowers

(Polygonum); the foliage of many alpine flowers (Epimedium) are not only good in colour, but some of these plants have their freshest hues in winter, as the Rockfoils of many kinds. In the country garden, where there are evergreens as well as shrubs and hardy plants, how much beauty we see in winter, from the foliage of the Christmas Roses (Helleborus) to the evergreen Barberries! The flower gardener should be the first to take advantage of this beautiful life, and show that his work, as well as the wild wood, might be interesting at that season.

How are we to break up such a space as this in the park? One of the best ways would be to group families of the best summer flowering shrubs, which would grow in the situation and be worth having for their own sakes, and at the same time would give relief to the wintry waste of desolation. At present any relief is only to be obtained by carrying out, in early summer Palms and Bamboos from the hot-house, which is a very expensive and poor way in a country like ours. In forming groups of the more beautiful flowering shrubs, we do not mean anything like the present brutal treatment of shrubs in the London squares, where the surface is dug, and the shrubs are trimmed like besoms, ending in frightful ugliness; but each group of plants grown well by itself and let almost alone when once established. They would give relief in the summer; they often flower beautifully; and here and there they might form dividing masses, so as to throw the unwieldy space into parts, which would help to secure variety and contrast.

The result of planting and placing rightly well chosen hardy shrubs would be a good background here and there; a smaller area to plant with summer things; less dependence on such feeble examples of tropical plants as one can grow here; light and shade, and a variety of surface as well as more variety of plants and bushes; in short, all the life of the garden instead of a dead waste. And not only would the winter effect be improved, but the summer also. The objection that some shrubs do not flower long enough is not serious, as we have their beauty of form and leaf, and delicate green and other fine colour of foliage. Moreover, the tropical plants put out to relieve the flowering plants do not, many of them, flower at all, and do not give such good relief as hardy shrubs and choice trees.

This is not a question of town or public gardens only, as it arises in many private places, and especially in large gardens where much of the surface is given to half-hardy summer flowers.

As to the common plan for getting rid of the winter bareness of such beds by evergreens and conifers in pots, it is impossible on such a scale. Some permanent way of breaking up the flatness is the only way, and this way would enable us to limit the enormous area of

ground to be planted with tender things—the real root of the evil—and its monstrous cost.

REGENT'S PARK.—In the flower gardens here we nearly always see evidence of what a changeful and delightful thing a flower garden may be at most seasons. I remember coming from the mountains of Greece, jewelled with blue and many-coloured Anemones, to find these gardens delightful to see in April, and for quite eight months of the year there are many beautiful things to be seen here. In other parks we see bandages of some white or variegated edging plants round almost every shrubbery, but, happily, here the Holly, or whatever shrub it may be, is allowed to feather down to the turf, so that we can enjoy it without the wholly needless and often hard and staring lines of variegated plants we so often see in other parks and too often in private places. The absence here of the tall ugly iron railing is also a gain, to what a degree will be best felt by those who have seen some of the parks in South London. There is a low bar along the walks which is harmless and of some use, but the rule does not exist, as in the southern parks, that dogs are not allowed inside the park except when led. Many of the beds here have had to be fortified by little lines of wire in order to keep the dogs off, while some less important parks enforce the rule that dogs are not allowed in the park in this wild way. Here we see the good of grouping and "holding things together": as the Bamboos are grouped in a graceful way, and also the Palms.

There are in autumn fine effects of hardy flowers in bold groups, which may well suggest the beautiful effects which any one may secure who rightly uses the many noble hardy plants that flower in September and October. Here we might go much further in allowing hardy plants in masses to grow under the low trees and evergreens instead of trying to grow shrubs under low trees. A more artistic way is to clear away these sickly shrubs from under the handsomer and larger of the low trees, and so get light and shade; and having got this, let some beautiful flowers run through. The roads and railing so often visible round this garden might easily be hidden with a screen of various forms of Ivy, Vines and garlands of other climbers.

A very instructive thing here is the growth of alpine flowers without any visible rocks or stones. That the use of spoilt bricks, which is so often resorted to in our public gardens and parks, is unnecessary for the growth of rock plants is well shown here.

There is a quality of repose here which we rarely get in the other parks, as the beds are not so crowded, and a further advance taken in this direction would be a gain. A better use might be made of the glass-houses these parks possess by growing

handsomer plants for the summer than the mass of sickly variegated leaves and other common bedding plants that are grown in the beds. An unpleasant effect is caused by a number of sickly variegations. It is not easy to say why this should be so, because nothing so ugly as their colour could be found in Nature. The great hardy flower border here is effective, but not choice in its selection. Most of the things in it are more fitted to form large colonies under trees. A mixed border in so good a flower garden as this should be of the best plants only: it would be better to bring it somewhat nearer the eye, so that the people might see the charm of a fine mixed border of the handsomest plants. Taking it all in all this is the best flower garden of any public park in London.

ST. JAMES'S PARK.—There is pretty flower gardening here, not overdone, and there is a good deal of hardy flower work too, but this is mostly in front of shrubs, and there is a mixture of tender and hardy plants in borders, which is not the best one. It would be much better to restrict the borders to hardy flowers, and group these in a bolder and simpler way, exercising a better choice of kinds, and letting well-chosen things run back here and there among the bushes and into each other, not selecting kinds which will flower for a week and be ugly ever afterwards, but which will look well throughout the season, such as Starworts, Iris, and hardy Ferns.

A good point here is the fine-leaved plants and bushes which adorn the waterside. It would be better to hold these together a little more; for example, instead of dotting them about in many places, it would be better to put a group of the kinds together, and let them tell their own tale better. There is a bad example of a rock garden in the island here, which would be better without it, as it is not a situation in which rocks would occur. There should be some thought of the fitness of such things, and, moreover, rock plants do not thrive under trees and shrubs.

There is in this park, too, a mistaken kind of groundwork which mars the beauty of its surface. In front of the barracks there is a pudding-like mound of earth with large trees deeply embedded in it, and a collar of bricks round the base of each tree. Many of the finest trees in St. James's Park come out of the ground in these stone collars. Now one of the most beautiful things in tree life is the way that old trees rise out of the ground; the union of strength and beauty of form which one may see in the old Oaks, Lombardy Poplars, and many other trees is completely hidden in St. James's Park. However well meant, this kind of work is inartistic and degrading to landscape gardening. The parks of London are its most precious possession, and no such thoughtless work should be done in them. St. James's Park for a town garden has many advantages and some excellent views; the line of the

earth's own surface here, as in so many other places, is better far than that of the crudest efforts of the earth-mover.

The planter should show his skill by planting on the natural surface and true gradations of the earth in order to get the beauty he wants. A few feet more or less of often distorted bank cannot help him, and mars the work to all artistic eyes. Any one can see what beautiful stately things can be grown on perfectly level ground in London, as in Lincoln's Inn Fields, and the most delightful diversity of surface could be obtained by planting alone. There are doubtless places, and it may be many of them, where the formation of banks by shutting out ugly and objectionable things is a distinct gain; but in wide open parks, where the surface is natural and right, this consideration does not occur; and where banks and mounds are made there should be strong reason for it, and they should be naturally and well made in obedience to the gradation of the earth. The gradation of a valley like that of the Thames is very gentle and unlike what occurs in a tossed-up county.

BATTERSEA PARK.—The recent demand for £2,000 for the building of a glass house for Palms here throws light on the costly system of flower gardening in this and other public gardens. It may be noted that this modest demand is only a small part of the cost of keeping the tender and half-hardy plants in a glass nursery. It was not a demand of money for a Palm-house which the public might enjoy; but was to be part of the expenditure on some glass-sheds which they never see, and which were merely to grow the plants to be put out for a few months in summer.

The effect of the idea that our gardens can be only made beautiful by tropical things in a small state is well shown by this demand. In our flower gardens Palms can only be seen in a small state; nor can they, as shown in pots and tubs in Battersea, give one any idea of the true beauty of the Palm on the banks of the Nile or the Ganges. But, worse than this, the system leads to the neglect of the many shrubs and trees of the northern world, which are quite as beautiful as any Palm. The sum mentioned as the cost of the house for young Palms would go far to plant Battersea Park with the finest and rarest hardy shrubs and trees. The number of these public gardens that are being opened in all directions makes it all the more important that the false ideal they so often set out should be made clear. We do not say we should have none but hardy plants in the public gardens, but the concentration of all attention, and of the greater part of the cost, on such feeble examples of tropical plants as can be grown in this country set out for a few months in the summer is a wasteful one. The lesson all connected with gardening in any way want most to learn is that the things which may be grown to perfection in the open

air in any country are always the most beautiful, and should always have the first place in their thoughts.

While this expense is being incurred for what is after all not very important in its effects, the out-door things are neglected, the shrubberies are monotonous, and there is no attempt at grouping the finer families. The bare ground so often seen in London squares is here seen in large areas beneath shrubs for half the year, and is only in summer now and then filled with rubbish. Very often the tall shrubs do not feather down to the ground as they ought in order to show their form and character. Winter digging is done everywhere regardless of the roots of shrubs and hardy plants, and gangs of diggers are at work in the most heedless way among the shrub-roots. The pruning and digging which are made necessary by this system give the shrubs one look and that the ugly one so often seen in London squares. Even the islands are dug for the winter when they they should be let alone after being planted well with beautiful Willows, Red Dogwood and like shrubs. A system which involves the digging of an island in order to carry out the practice of the London squares is wrong. The water margins are hard and uninteresting as the curb-stones of a street pathway. The pruning of small trees like Hawthorns of moderate growth, which are in no need of it, is also carried on to their injury.

What we get for all this sacrifice is an enclosed garden, mostly filled with tropical plants, good beds and handsome things here and there without much repose, and tender things far in excess. It would be much better in all ways to place a like artistic value on everything that stands in the open air in a garden, and regard all parts of the garden as of equal importance without wholly doing away with tropical plants, at least those that can be grown with advantage in our country. That every park like this should have a large establishment for growing tender plants is needless; one such place would grow the plants for the whole of the London County Council's London gardens, and the gardeners then would be free to turn their attention to making the best use of the hundreds of beautiful things which may be grown in the open air throughout the year.

DULWICH PARK.—It is a great step to have such open, airy and verdant spaces as this is in suburban London, and having such parks, we should make good use of them, and they should be laid out so that good gardening in them is possible everywhere. Here one hideous error was committed at first in purchasing and carting in some thousands of loads of spoilt bricks to form, forsooth, rock gardens! Hideous piles of these spoilt bricks face several of the gates, blocking the road in, and then, as if so rich a treat in the picturesque could not be overdone, again and again through the park one meets with ugly

banks of it. It would be well to know the cost of such a disfigurement as this; the mere price of cartage would have made a rock garden of real stone, assuming that a rock garden was desirable in a Thames valley garden. When these villainous banks of brick-yard refuse were first erected, anything more awful in a public garden was not visible on earth, but by piling on in the most incoherent way common trees, evergreens, Tobacco, Stonecrops, China Asters, Begonias, Chrysanthemums, Beetroot, Heath, Elder, and higgledy-piggledy verdure of this nature, a sort of brick-rubbish salad is the result, and effect of the brick is less seen. It is not only the ugliness of this in itself that is bad; it is such an injustice to the gardener who has to adorn at all seasons such a large park to expect him to get any good results from the kind of thing a Brentford cobbler who happens to live near a brickyard makes a little rockwork of in his garden. Only the cobbler, who does not even pretend to be a gardener, has a few feet of it and here we have several thousand tons.

There is some water which might easily be made pretty, but the edging of it is as hard and bare as a London kerb-stone. It is all visible, too, not a plant being allowed to grow in the water, although it would be easy enough by the use of many beautiful water plants and Reeds, and other vigorous plants all round the edge like Irises, Meadow-sweets, which growing on the bank would give a beautiful margin to the water.

There is fine growth in the shrubberies, in which, like all shrubberies, are the same mixture everywhere; if we see things in one place we are sure to meet with them everywhere else, as there is no idea of separating shrubs into groups in which they usually do and look best. In such a park as this it would be easy to plant so that every few steps would bring one to fresh types of tree or shrub. The trees are, as usual, too crowded to show their forms. What ought to be done here and in many other places would be to grow large groups of hardy flowers, Ferns, and creepers under the trees, keeping these more open below so as to get light and shade and relief. Under Thorns or Almonds and many other trees one might have sheets of stout Ferns or Solomon's Seal and many other wood plants, which would be in perfect health, and we should get the variety of life and form we never get where trees and shrubs are jammed together.

There is a vast number of flowers in Dulwich Park, and if the different types were "held together," such as Cactus Dahlias and the German Dahlia, some relief might be given, and so with many other flowers. The dotting system need not be entirely abolished, but much is lost by not grouping and massing in simple and picturesque ways. The greatest number of Roses and the best in a London park are here. No doubt the air is better than in the West-end parks;

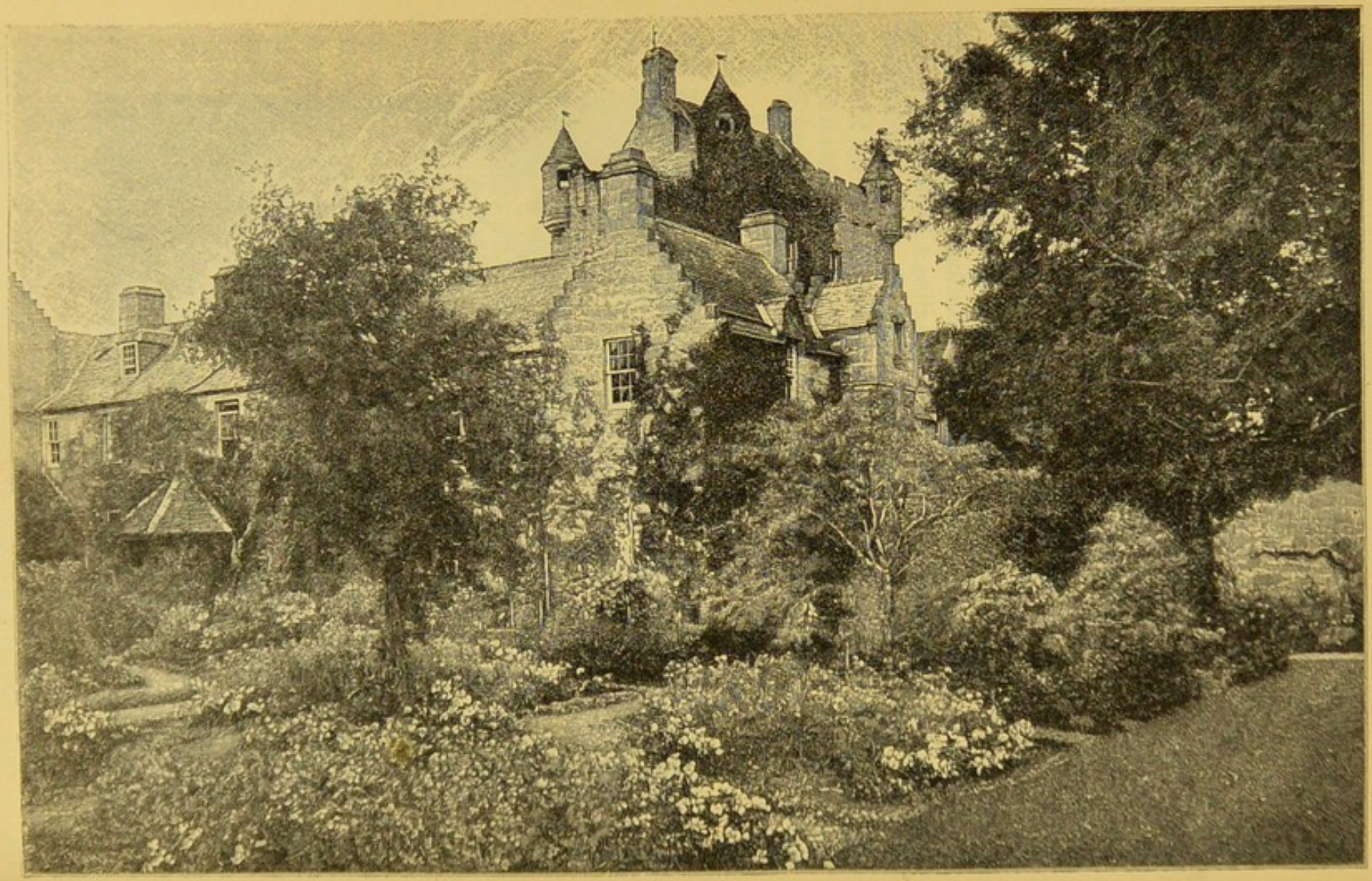
in any case the Roses were charming to see, although not held together in artistic ways, but rather made to rival the bedding plants in lines interminable.

WATERLOW PARK.—This naturally pretty park has been promptly spoiled by the use of many tons of common spoilt bricks, in the belief, no doubt, that they form a very fitting rock garden for a public park! This rubbish is used by cottagers near brick-fields, but even the gardens of these are made hideous by it. These spoiled bricks have a little dusty soil thrown on them here and there, where sickly alpine flowers starve, sometimes in the shade and sometimes in the sun. A more deplorable use of a base material could not be seen. There are five or six gates to the place, which is not much bigger than a large London square; and it is not only the cost of the lodges and keepers so extravagantly used, but every gate not absolutely necessary spoils the possibility of good gardening in its vicinity. One of the prettiest lawns in the park is thrown into terraces in a harsh way to form tennis grounds. An open space near at hand, like Hampstead Heath, would be the best place for playgrounds, and a place like this would be better kept as a beautiful garden. How is the County Council to meet the wants of London as to playgrounds and public gardens if simplicity and economy are thrown to the winds? To get a pretty piece of ground and cut it all to pieces for any frivolous pretext can only end in an ugly "tea garden." Such a naturally beautiful place as this should be an example of good gardening and graceful repose; it can never be so, cut up without reason as it is.

KENNINGTON PARK.—There is much change for the better in this park; and the dreadful carpet beds, over which men used to be suspended on planks cutting the little flowers down to the inch allowed them, have gone in favour of flowers grown in more natural ways. The flower gardening is fairly good here; but, as is so often the case, there is want of repose and a way of dotting little things on the grass which is quite unmeaning—plants like tent-pegs, much in the way of the mower. There are simple beds of fine-leaved plants with flowers beneath, which give a good effect; but the nobler hardy flowers which finish up the year so well, like Torch Lilies, Starworts, and Sunflowers, have not the place they deserve. The garden is full of little bays and glades, in which many fine hardy plants could be beautifully grown in simple bold beds, and the pity is that these, which do not require the hothouse, do not get as much attention as plants that have to be nurtured all the winter under glass. The ugly iron railings, too, run everywhere and bar everything out. It must be good for the iron trade, but no artistic effect is possible with it; and the gymnasium, we think, would be much better away. It would not be difficult to place things of this sort in places set apart for them—playgrounds and the

like, of which there are some good ones round London Board schools. In any case, there would be no difficulty in separating the playgrounds from the garden or the park. The hardy plants in this park are planted on the dotting principle, one thing neutralising another; no holding them in natural easy groups running into each other, and so really varying the border.

Among the hardy plants which should be grown in a park like this, with its many sheltered spots, grown for their own sakes and grouped or massed by themselves or with a plant which would harmonise with them, are Acanthus, Agapanthus, Alstrœmeria, Aster, Tritoma (among which there are many noble kinds), tall Phlox, Sunflower, Sea Holly, and Globe Thistle, Hollyhock, Meadow-sweet, including some of the finer shrubby kinds, Delphinium, Everlasting Pea, Bocconia, Iris, European and the hardier Lilies, Cardinal Flowers, Carnation, bunched Primrose and Polyanthus, Narcissus, naturalised and in glades, Day Lily, Eremurus, Evening Primrose, hardy Fuchsia, Plantain Lily, Pampas and the finer hardy Grasses, Gunnera, Helleborus, Hydrangea, tall Moon Daisies, Pæony, the nobler hardy Ferns, and Yucca, all easy to grow, even near great cities.



A Garden at Cawdor, showing effect of Garden with natural Forms.

THE

ENGLISH FLOWER GARDEN

PART II

CONTAINING THE FLOWERS, FLOWERING SHRUBS AND TREES, EVERGREENS, AND HARDY FERNS FOR THE OPEN-AIR FLOWER GARDEN IN THE BRITISH ISLES, WITH THEIR CULTIVATION AND THE POSITIONS MOST SUITABLE FOR THEM IN GARDENS

"A garden is a beautiful book, writ by the finger or God: every flower and every leaf is a letter. You have only to learn them—and he is a poor dunce that cannot, if he will, do that—to learn them and join them, and then to go on reading and reading. And you will find yourself carried away from the earth by the beautiful story you are going through. . . . And then there are some flowers that seem to me like overdutiful children: tend them but ever so little, and they come up and flourish, and show, as I may say, their bright and happy faces to you."—DOUGLAS JERROLD.

Abelia.—Beautiful shrubs, little grown in our country, only in warm districts. The best known is the Rock Abelia (A. rupestris), a Chinese shrub, delicate pale pink in autumn. It is always best to plant it in a raised bank in light soils, as it is then less liable to injury during winter. A. uniflora is of like habit, and also comes from China. The Three-flowered Abelia (A. triflora), comes from N. India, and is less hardy than the Chinese kinds, but will clothe a wall in a few years. It bears fragrant pink flowers in clusters at the end of summer. A. floribunda is rather too tender for the open air, except in the mildest parts of the country; it is evergreen, with clusters of rose-purple flowers. Where it can be grown, it makes a good wall shrub. In mild districts in the southern parts of England and Ireland Abelias sometimes do well on the open lawn.

Abobra viridiflora, a fragile South American twiner, of little garden value, easily raised from seed. It is graceful, but does not seem to succeed in our climate generally.

Abronia (*Sand Verbena*).—Small Californian annuals or perennials of a trailing habit, with showy blossoms in dense Verbena-like clusters. Four kinds are known in gardens, viz. A. arenaria (A. latifolia), a honey-scented perennial having trailing stems and dense clusters of lemon-yellow flowers; A. umbellata, also an annual with succulent trailing stems and clusters of rosy-purple, slightly fragrant flowers; A. fragrans, forming large branching tufts from 1½ to 2 ft., and white flowers which expand late in the afternoon, and then emit a delicate vanilla-like perfume; and A. Crux Maltæ, a pretty species with white scented flowers. A. arenaria and A. umbellata should be planted in rather poor, light, and dry soil, on an open, well-drained border or rockwork. A. fragrans is best in friable soil, and is larger than the others. Propagation can only be done by seed, which in favourable seasons may be obtained from A. arenaria and A. umbellata, but A. fragrans does not ripen seed in this country. The seeds often remain dormant some time before vegetating; those of A. umbellata germinate more readily. Abronias flower in summer and autumn, and are pretty and effective when well planted.

Abutilon.—Plants mostly requiring greenhouse temperature in winter, but growing freely out-of-doors in summer, and a graceful aid in the flower garden, at least in the southern counties. A. Darwini and its forms, as well as the varieties related to A. striatum, under favourable conditions, grow from 4 ft. to 8 ft. in height. They can be made bushy by stopping, and they flower better than

Abutilon, Boule de Neige.

they do in pots. They are useful among the taller and more graceful plants for the flower garden, and are easily raised from seed and cuttings. A. vitifolia is a very handsome wall-plant in mild districts. A. Sellowianum marmoratum is a fine variety. Among the best in cultivation are the following, and new varieties are often raised: Admiration, Anna Crozy, Buisson d'Or, Darwini majus, Elegantissima, Grandiflorum, Lemoinei, Lady of the Lake, Leo, Orange Perfection, Boule de Neige, Delicata, Pactole, Darwini tesselatum, Thompsoni variegatum, vexil-

larium variegatum, Brilliant, King of Roses, Canarybird, and Scarlet Gem.

Acacia, False (*Robinia Rose*).

Acacia (*Albizzia*).

A. Julibrissin (*Silk Rose*)—with large and elegant leaves. By confining it to a single stem and using young plants, or those cut down every year, one gets an erect stem covered with leaves as graceful as a Fern, and pretty amidst low-growing flowers. The leaves are slightly sensitive : on fine sunny days they spread out fully and afford a pleasant shade ; on dull ones the leaflets fall down. Seed of A. Julibrissin—or the Silk Rose, as it is called by the Persians, from its silky stamens—is easily obtained. It is much better raised from seed, as we get vigorous young plants which are to the flower garden what an elegant Fern is to the greenhouse.

A. lophantha.—This Australian plant, though not hardy, grows freely in the open air in summer. The beauty of its leaves and its quick growth in the open air give some graceful verdure among flowers. It may easily be raised from seed sown early in the year to give plants fit for putting out in early summer. Plants a year old or so, strong and well hardened off for planting out at the end of May, are best. It would be well to raise seed annually, as it is useful for rooms.

Acæna.—Though not pretty in their flowers, if we except the crimson spines that give a charm to the little New Zealand A. microphylla, these plants have a neat habit of growth that fits them for very dwarf carpets in the rock garden, and now and then, to cover dry parts of borders and tufts on the margins of borders, they are very useful.

A. argentea, with glaucous leaves, is well worth a place among rock-plants.

A. microphylla (*Rosy-spined Acæna*).

Acæna microphylla.

—This spreads into dense tufts no taller than Moss, and in summer and autumn becomes thickly strewn with showy and singular globes of spines. It is easily increased, is hardy, and thrives much in soil of a fine sandy and somewhat moist character. Its home is on bare level parts of the rock garden, and it is also good as a dwarf border plant or even as an edging plant. Occasionally it may be used with good effect to form a carpet beneath larger plants not thickly placed. *Syn.*—A. Novæ-Zealandiæ.

A. millefolia.—It has finely divided pale-green foliage, and is graceful for hanging down a bank. Its defect is its unsightly fruiting spikes, the points of which will adhere to anything they touch.

A. pulchella, though never showy, is worth a place, and any soil will suit it. The best position I have seen it in was growing from interstices of stone by the steep side of a rocky path. Its branches, rooting as they went, were covered throughout their entire length with pretty bronzy leaves, and suspended in graceful festoons over the face of the stone, even to the rocky path beneath, often measuring as much as 7 ft. or 8 ft. in length, the result of little more than one year's growth. There are other kinds in cultivation, such as A. ovalifolia and A. sarmentosa, but those mentioned are distinct enough and sufficiently represent the genus.

Acantholimon (*Prickly Thrift*).—Eastern plants extending from the east of Greece to Western Thibet, and having their headquarters in Persia. The flowers resemble those of the Statice and Armeria, but the habit of the Acantholimon at once distinguishes it from either of these. Acantholimons form branching, cushion-like tufts, somewhat after the style of Thrift ; but the leaves, instead of being soft and Grass-like, are rigid and spiny.

They are dwarf evergreen rock-garden and choice border plants. We have had the following species for years, but have not been very successful in propagating any except A. glumaceum, which is the freest in growth, the others being very slow. Cuttings taken off in late summer and kept in a cold frame during winter make good plants in two years, but by layering one gets larger plants sooner. All are hardy, and prefer warm, sunny situations in sandy loam. There are only a few kinds in cultivation, such as A glumaceum, venustum, and androsaceum. A. Kotschyi is handsome, with long spikes

rising well above the leaves and white flowers ; A. melananthum has short, dense spikes, the limb of the calyx being bordered with dark violet or black.

Acanthus (*Bear's-breech*).—A long-neglected group of stately-growing hardy plants, with fine foliage. The various kinds mostly come from the countries round the Mediterranean, and are hardy, though the foliage may suffer now and then. The plants are not so showy for the mixed border as other perennials, but when they flower possess distinct grace, and they are worth growing for their

Acanthus.

foliage alone, being valuable for planting on the turf, either singly or in groups, but best in graceful groups, dotted about irregularly, and not too close together. On rocky banks, about ruins, or on terrace gardens of the less formal kind, they look well, but will live in shade, yet to flower well should have full sun. The fine form of the leathery leaves has made the Acanthus much admired as a house-plant, as it is easily grown in a window, in which position we have seen it flower. Acanthuses succeed best on warm, deep soil—a free sandy loam, or any deep and open soil, falling on heavy clay. They are not difficult to increase by careful division of the roots in autumn or winter, and may be raised from seed in a gentle hot-bed, or out-of-doors with other perennials.

There are several hardy kinds, as A. hispanicus, A. longifolius, A. mollis, A. m. latifolius (A. lusitanicus), A. niger, and A. spinosissimus, the finest being A. mollis latifolius, which varies in height from 1½ ft. to 4 ft. according to the soil.

Aceranthus diphyllus.—Synonymous with Epimedium diphyllum, a Japanese species.

Aceras (*Man Orchis*).—A small terrestrial Orchid of slight garden value.

Achillea (*Milfoil, Yarrow*).—A large family of hardy plants spread through Northern Asia, S. Europe, Asia Minor, Turkey, but more in Southern than in Central or Northern Europe. The plants vary in height from 2 in. to 4 ft., their flowers being pale lemon, yellow, and white, but rarely pink or rose. Perhaps twenty kinds of this family are useful as border plants.

Achilleas grow freely, and, with the exception of the dwarfer mountain species, increase even too freely in any soil. Some of the large kinds are fine plants for groups, as A. Eupatorium. The alpine types, such as A. tomentosa are well suited for the rock-garden, while the coarser, very free-growing white kinds, though unfit for the flower garden, are effective in flower when naturalised in rough shrubberies and such places.

A. ægyptiaca may be, as the name indicates, an Egyptian plant, but is probably a native of Crete. It has beautifully cut, white silvery leaves, and is of compact growth ; the flowers are bright yellow, raised on stems about 15 in. high. It is a desirable plant, if only for its foliage, hardy, and best on a warm border.

A. ageratoides.—Originally introduced into the country under the name of Anthemis Aizoon. It is a dwarf, compact-growing, silvery plant from Greece, the narrow leaves arranged in dense rosettes, with crimped margins. The flowers, on stalks about 6 in. or 8 in. high, are pure white, and large. In many respects the gem of the family.

A. aurea, a native of the Levant, is somewhat tender and frequently confused with the foregoing kind, but is distinct, its habit of growth being tufted, not creeping. Its leaves are larger, and its flower-stems at least 15 in. high. The flowers are golden yellow, and produced in the autumn as well as the early summer.

A. Clavennæ.—A fine old plant with hoary jagged leaves, the growth dwarf and tufted. The flowers are white. It is a native of Carinthia and the Austrian Alps. Under cultivation it loves dry sandy soil, rarely surviving a winter without protection in strong loam. A rock-garden or edging plant, and also suited for beds.

A. Eupatorium (sometimes called *A. Filipendula*) is tall and vigorous. Its bright yellow flowers are in flat clusters, on stout stems 3 ft. to 4 ft. high; they retain their beauty and freshness for at least two months. This is well adapted for a shrubbery border, where its brilliant yellow flowers and its erect habit are handsome amongst the evergreen foliage. It is a native of the shores of the Caspian sea, increased by division, and one of the finest of perennials. It would go well with groups of the nobler hardy foliage or flowering plants.

A. Millefolium roseum (*Rosy Yarrow*) is a ovely plant with rose-coloured, almost crimson flowers. It is a strong grower, 2 ft. high, blooms freely, and should have a place in every border.

A. Ptarmica (*Sneezewort*) is fairly distributed through Britain as an upland woodland plant, somewhat meagre and scattered in its native habitat, but when introduced into garden culture is showy and vigorous, some 2 ft. in height, with pure white flowers in corymbs. The double variety (A. Ptarmica fl.-pl.) is one of the loveliest white flowers we possess, very hardy, and useful for cutting.

A. rupestris (*Rock Yarrow*).—Among the dwarfer species this is one of the best, forming low tufts covered with pretty pure white flowers. It grows well in poor sandy soil.

A. tomentosa scarcely exceeds a height of 9 in., bearing a wealth of bright yellow in June. Its foliage is much divided, and forms a dense carpet of bright green. Rock-garden and borders; not in wet places.

A. umbellata from Greece is of tufty habit, scarcely exceeding 8 in. in height, the whole surface of leaf and stem being densely covered by short hairs of silvery whiteness; and this peculiarity has given it a place in the flower garden. The flowers are white, but, owing to the silvery character of the plant, inconspicuous.

More than one kind resembles this, as A. mongolica, which bears a profusion of large pure white flowers in early summer, and that double white Achillea, named The Pearl. A. serrata is a distinct kind, 15 in. high, with pure white flowers. There is a double form, not so good, however, as the double Sneezewort.

Achlys (*Oregon May Apple*).—Only one species, A. triphylla, is in cultivation. It is a North American plant, belonging to the Barberry family, and of doubtful value.

Achyrachæna mollis.—An annual Composite from California; of little value for the garden.

Achyrocline.—The only species, A. Saundersoni, is a small shrubby plant of the Composite family, having small leaves covered with a cottony material; of doubtful hardiness and merit.

Acis.—Small bulbous plants from South Europe now grouped with Leucojum, but we have retained the familiar name or Acis. The prettiest is A. autumnalis, a slender-leaved little bulb, 3 in. or 4 in. high, bearing two flowers that may be described as delicate pink Snowdrops. They are of a deep red colour round the seed-vessel, and appear in autumn before the leaves. It is a gem for the rock-garden, in a warm soil, sunny position, and sheltered with a few stones, on which it would look very well springing from a carpet of delicate feeble-rooting Sedum or other dwarf plant. The other kinds are A. trichophylla, and hyemalis, all of which will thrive in a fine sandy soil. In the nurseries at Edinburgh, Acis autumnalis used to thrive in the open air in fine sandy soil.

Aciphylla.—A small and not important group of New Zealand plants, suitable for the rock-garden in sandy soil. They may be raised from seeds or by division. A. Colensoi is quite a bush with bayonet-like spines, the better-known A. Squarrosa being called the Bayonet plant for this reason.

Aconite (*Aconitum*).

Aconite, Winter (*Eranthis hyemalis*).

Aconitum (*Monkshood*).—Handsome plants, though dangerous from their poisonous roots. There are too many names—not so many species,—and, judiciously placed, the best are of much value for our gardens.

CULTURE AND POSITION.—Position is important, and few would risk their being planted where the roots could be by any chance dug up by mistake for edible roots, as they are so poisonous. Nevertheless, some of the kinds are so handsome and stately when in bloom, that they are worthy of a place beside the finest hardy plants; as, for example, the blue and white A. versicolor, which is a beautiful object in the good soil and

partial shade of many a cottage garden. Almost all the kinds may be easily natur-

Aconitum Napellus (Monk's-hood).

alised in copses or shrubberies away from the garden proper, or beside streamlets or in openings in rich bottoms.

The best kinds are A. Napellus and its forms, versicolor and others ; A. chinense, A. autumnale, A. japonicum, and A. tauricum ; A. Lycoctonum is a yellow-flowered and vigorous species. All are tall plants, from 3 ft. to 5 ft. high ; flowering from July to September. A. Fortunei, the old chinense of gardens, is the best for late blooming.

Acorus (*Sweet Flag*).—Waterside or marsh plants, occasionally cultivated, and of wide distribution. Acorus Calamus (Sweet Flag) is a marsh or waterside plant, now naturalised in most parts of Europe. A variety has gold-striped leaves, and has been called A. japonicus folis aureo-striatis. A. gramineus (Grass-leaved Acorus) is a species with a slender creeping rhizome covered with numerous Grass-like leaves, from 4 in. to 6 in. in length, a native of China and Japan. There is a variety with white-streaked leaves. This plant is often seen in the little bronze trays of water-plants in Japanese gardens and houses.

Acroclinium.—A. roseum the only species, is a pretty half-hardy annual from Western Australia, growing over 1 foot high and bears pretty rosy-pink flowers, which, owing to their chaffiness, are used as "everlasting" flowers. Seeds should be sown in frames in March, and the seedlings planted at the end of April or early in May in a warm border ; or the seeds may be sown in the open ground in fine rich soil at the end of April. If the flowers are to be dried as everlastings, it will be well to gather them when fresh and young,—some when scarcely out of the bud state. It does best in a warm sunny border, in good open and well-enriched soil. This annual might be made graceful use of in mixed beds. There is a white variety, and the two look well when mixed.

Actæa (*Baneberry*, Syn. *Helipterum*).—Vigorous plants 3 ft. to 6 ft., thriving in free soil ; flower spikes, white and long, with showy berries. The white Baneberry has white berries with red footstalks. The var. rubra of A. spicata has showy fruit ; the plants are best suited for rich bottoms in the wild garden, as the foliage and habit are good, the flowers being short-lived in the ordinary border, and they are somewhat coarse in habit. A. spicata (common Baneberry), A. racemosa (Black Snakeroot), A. alba (white Baneberry), having white berries with red stalks, and one or two American forms of the common Baneberry are the kinds in cultivation.

Actinella.—North American plants of which there are three kinds in gardens, dwarf-growing plants with yellow flowers. The finest is A. grandiflora, a native of Colorado, an alpine plant with flower-heads 3 in. in diameter, and grows from 6 in. to 9 in. high. The other species, A. Brandiger and A. scaposa, are somewhat similar. They are all perennial, and thrive in an open light soil.

Actinidia.—Climbing summer-leafing shrubs from Japan and China, thriving in warm rich soil. Three species are grown now, A. Kolomikta, polygama, and volubilis. They all have climbing or twining stems and bear waxy white flowers. A Kolomikta should be grown against a wall or against a buttress or tree trunk placed against the wall, on which the stems support themselves. The leaves are brightly tinted in autumn, and the flowers of A. polygama are fragrant. A volubilis is free-growing and has small white flowers.

Actinomeris.—Coarse-growing North American plants allied to the sunflowers. A. squarrosa and A. helianthoides are the kinds known in gardens.

Adam's Needle (*Yucca*).

Adder's Tongue (*Ophioglossum*).

Adder's Tongue, Yellow (*Erythronium americanum*).

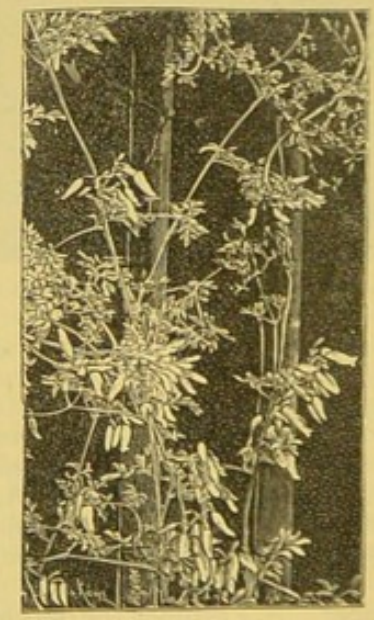
Adenophora (*Gland Bellflower*).—Elegant summer flowering plant of the Bellflower family, not many of which are grown. Mostly from Siberia and Dahuria, and the flowers generally blue in colour. Some of the most distinct species are A. coronopifolia, A. Lamarcki, A. stylosa, and A. pereskiæfolia (A. latifolia). In these occur slight variations in colour and size of flower. The thick fleshy roots of the Adenophora revel in a strong rich loam, and like a moderately damp subsoil; they are impatient of removal, and should not be increased by division. Unlike the Platycodons, they produce their seeds freely, and the seedlings reproduce as a rule the characteristics of the parent. They vary in height from 18 in. to over 3 ft., and are well suited for the mixed border.

Adenostyles.—Small-growing plants of little garden interest.

Adiantum (*Maiden-hair Fern*).—Some of the kinds in this lovely family are quite hardy, and grow best in a rough fibry peat, rather liberally mixed with sand and lumps of broken stone or brick. A pedatum, the fine American kind, would form a carpet for other shade-loving plants or in the wild garden with the more beautiful wood-flowers, such as Trillium, Hepatica, blue Anemone, and the like, where it is not likely to be disturbed. Like all Adiantums, it is fond of moisture while growing, but provide ample drainage, as stagnant moisture around its roots is fatal. A. Capillus-veneris, the British Maiden-hair Fern, is best in a sheltered, warm position, as a little nook at the foot of a shady wall, associated with some hardy plants equally moisture-loving. It would be easy to protect it with some portable covering during severe winters. Its native habitat is among the sheltered rocks of Cornwall, Devon, and Wales, and in various parts of Ireland; therefore some idea may be formed of the sort of climate in which it luxuriates. It speedily covers damp, warm walls with verdure.

There are several varieties or forms of this Maiden-hair, among which Adiantum Capillus-veneris incisum is a distinct kind, found in Ireland, the pinnules much more divided than those of the type. A. Capillus-veneris rotundatum, found in the Isle of Man, is also a beautiful though variable variety, with narrower and rounder fronds than those of the type. A. Capillus-veneris Footi, a large form, which sometimes grows to 1 foot in height, has fronds beautifully cut and divided. The Cornwall variety (cornubiense) is very distinct from the others, but is as yet somewhat rare. A. C.-v. Luddemannianum is a crested variety, and A. C.-v. magnificum fine form with an A. farleyense-like habit of growth. It is important to remember in the formation of ferneries and also the more interesting gardens in which shade-loving flowers and plants may be used, that some of the beautiful Maiden-hair Ferns are hardy and give most distinct and graceful effects, and not always in our moist climate do they compel us to put them in the shade provided the soil is moist.

Adlumia (*Climbing Fumitory*).—One species only (A. cirrhosa) is known, a rapid grower, quickly covering the object against which it is placed. Its Maiden-hair Fern-like leaves are borne in profusion on the slender twining stems, and the blossoms, which are white and about



Adlumia cirrhosa.

½ in. long, are also abundant. There is a variety with purple flowers (A. cirrhosa purpurea), which if grown with the type forms a pleasing contrast. It is strictly a biennial, but bears seed so profusely—the seed coming up year after year without being sown—that it may be considered perennial. It is a native of North America, and was formerly known under the name of Corydalis fungosa. It requires a warm and good soil, and its place is trailing over a shrub or twiggy branch, placed either against a wall or in the open.

Adonis.—Plants belonging to the Ranunculus. They are chiefly natives

of cornfields in Southern Europe and Western Asia, are dwarf in stature, with finely divided leaves, and red, yellow, or straw-coloured flowers. There are about

Adonis pyrenaica.

fifteen or sixteen species, most of which are annuals, and not very striking or ornamental in appearance; consequently, with the exception of two or three fine kinds, they are seldom seen in gardens.

A. autumnalis (*Pheasant's-eye*).—A British annual which grows 1 ft. or more in height and blooms at the end of summer or early in autumn. The flowers are of bright scarlet. By themselves the plants are not very effective, as they are rather straggling, but when grown in masses in borders or flower-beds with other autumn-flowering annuals, they are pretty, though the plant is not popular in gardens. May be sown in the open ground in autumn or spring.

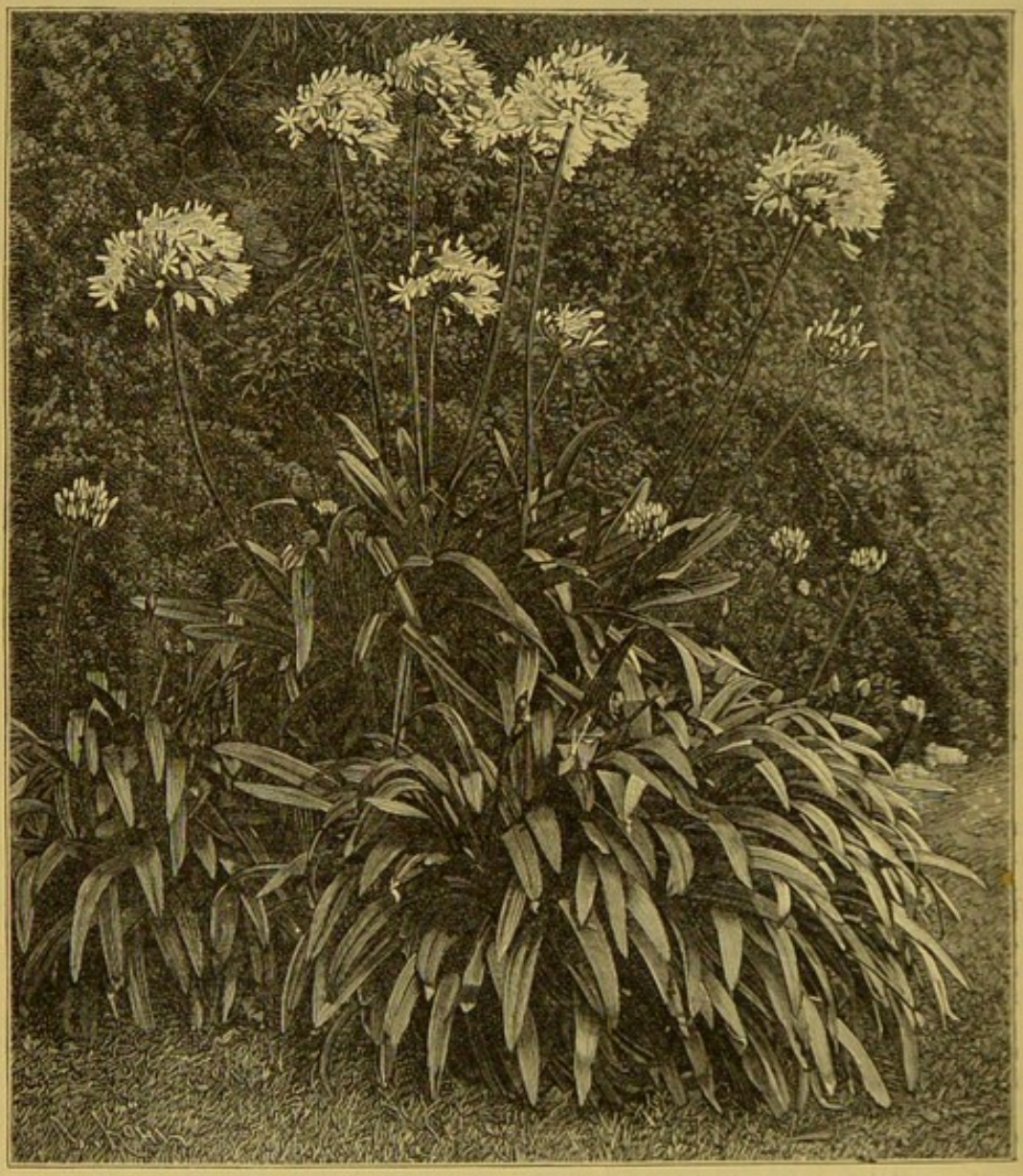
A. vernalis forms dense tufts 8 in. to 15 in. high of finely divided leaves in whorls along the stems. It flowers in spring, when the tufts are covered with numerous large, brilliant yellow, Anemone-like flowers 3 in. in diameter, a single flower being at the end of each stem. Of A. vernalis there are several varieties, the chief being A. v. sibirica, which differs from the type only in having larger flowers. A. apennina is a later-blooming form. A. pyrenaica is a fine and closely allied kind from the Eastern Pyrenees, with large deep yellow flowers resembling those of A. vernalis, but with broader petals. It flowers in April and May, and may be grown on the rock-garden and choice borders in sandy moist loam, if not often disturbed, robbed, or shaded by coarser plants. The rock-garden or a choice border of rock-plants suits the handsome perennial kinds well, and if the soil is poor it may be enriched with leaf-mould or any other decayed manure. Increased by careful division, or by seed sown as soon as gathered.

Ægilops.—A small genus of Grasses allied to Triticum (the Wheat Grasses); of little garden value.

Ægopodium Podograria (*Gout Weed*).—A troublesome, indigenous weed, difficult to destroy, and the best way is by constantly digging out the roots. There is a variegated-leaved variety which should be rooted out.

Æsculus (*Horse Chestnut, Buckeye*).—The Horse Chestnuts are mostly medium-sized trees, hardy, thriving in nearly every soil, and excellent for park and garden. The common Horse Chestnut is an exception as to size, and one of the most beautiful of flowering trees. There is at least one handsome variety of it with very long spikes. The red Buckeye (A. pavia) is a handsome small tree, with dense and large foliage, together with bright red flowers in large loose clusters in early summer. Sometimes it rises from 15 to 20 ft. high, but often not above shrub height, some of its varieties being only low-spreading or trailing shrubs. A. humilis, pendula, arguta, and laciniata are forms of A. pavia, and the plants being of low growth are useful for grouping with taller trees. A. flava (the yellow Buckeye) is common, and sometimes 40 ft. high. It has something of the habit of the red Horse Chestnut (A. rubicunda), but smoother leaves. It makes a dense, round-headed tree, and in good soil is of rapid growth. The loose, erect clusters of dull yellow flowers in early summer are not very attractive. A variety called purpurascens (sometimes A. discolor) has much showier flowers, larger, and of a reddish tint. The Æsculi, named in gardens and nurseries as A. neglecta, hybrida, pubescens, Lyoni, rosea, and pallida, may be included in one of the foregoing species, and some differ but slightly from them. They are all low

trees or large shrubs, coming into leaf early and losing their foliage in early autumn, especially in light or dry soils. A distinct species is the Californian Buck-eye (A. californica), which in this country does not usually rise above shrub height. It has slender-stalked leaves, broad leaflets, and in early summer dense erect clusters of white or pinkish fragrant flowers; a valuable hardy tree. Quite different from the rest is the North America A. parvifolia (dwarf Horse Chestnut), a handsome shrub, 6 ft. to 10 ft. high, and one of the few that flower in late summer. Its foliage is much like that of other Æsculi, and its small white fragrant flowers are in long, erect, plume-flowers. This tree is not particular as regards soil. Æ. macrostachya is an August-blooming North American shrub of great beauty. The growth is spreading and bushy, the creamy white flowers in dense plumy spikes. A specimen standing out boldly on the outskirts of the lawn is effective. We have grouped the Pavias with the Æsculus.



White Agapanthus (African Lily).

Æthionema.—A beautiful group found on the sunny mountains near the Mediterranean. The little plants grow freely in borders of well-drained sandy loam, but their true home is the rock-garden. The tall Æ. grandiflorum forms a spread-

ing bush about 1 ft. high, from which spring numerous racemes of pink and lilac flowers. It grows well too in borders in ordinary soil, and, when in flower in summer, is among the loveliest of alpine half-shrubby plants. As the stems are prostrate, a good effect will come from planting them where the roots may descend into deep earth, and the shoots fall over the face of rocks at about the level of the eye. Easily raised from seed, and thrive in sandy loam. There are many species, but few are in gardens. All the cultivated kinds are dwarf, and may be grouped with alpine plants. The best known are A. coridifolium, pulchellum, and grandiflorum.

Agapanthus (*African Lily*).—Beautiful plants from the Cape, with blue or white flowers in umbels on stems 18 in. to 4 ft. high. A. umbellatus, the old kind, is hardy in some mild seashore districts, and a fine plant in rich warm soil, but the better for protection of leaves or cocoa fibre round the root in winter. It is worth growing for the flower garden and vases in summer, but should be protected in winter by storing under stages, in sheds or cellars. The fleshy roots may be so stored without potting. Enjoys plenty of water during out-of-door growth, and is easily increased by division. Various new kinds have been introduced, but their out-of-door value has not been so well tested as the favourite old African Lily. Of the best-known kind, A. umbellatus, there are several varieties; major and maximus are both larger than the type, and of maximus there is a white-flowered variety. There is also another with white flowers, but smaller, and one with double flowers (flore-pleno). The variegated-leaved kinds, fol. albo vittatus and fol. aureo vittatus, are likewise desirable for the sake of variety. These are variegated forms of A. umbellatus pallidus. Saundersonianus is a distinct variety with deeper-coloured flowers than the type.

The largest of all is A. umbellatus giganteus, the flower-spikes of which attain a height of from 3 ft. to 4 ft., with the umbels of flowers very large, bearing from 150 to 200 flowers. The colour is a gentian blue, while the buds are of a deeper hue. A. u. pallidus is a pale porcelain blue, a short-leaved variety. A. u. minor is a dwarf variety. Of A. umbellatus there is a double-flowered variety, a distinct plant. There is, moreover, A. u. atrocœruleus, a dark violet variety. A. u. maximus is a form with flower-stalks 4 ft. long, and full heads of flowers, one set opening while a second is rising to fill up the truss as the first crop fades. A. u. Mooreanus is a deciduous and hardy form; it grows from 12 in. to 18 in. high, has narrow leaves, and comes true from seed. A. u. albiflorus, a pure white kind, also is deciduous, the leaves turning yellow in autumn and dying off. It forms a stout root-crown.

Agave in Cornwall.

Agathæa cœlestis (*Blue Daisy*).—A tender Daisy-like plant, with blue flowers, useful for the margins of beds. There is also a pretty golden variegated form. It is among the prettiest of the half-hardy bedding plants, but is not effective on moist soils, or in moist districts. Cuttings or seed.

Agave americana.—This and its

variegated varieties are useful for placing out-of-doors in summer in vases, or pots plunged in the ground, and also for the conservatory in winter. When the plant flowers, which it does only once, and after several years' growth, it sends up a flowering stem, from 26 ft. to nearly 40 ft. high. The flowers are a yellowish-green, and are very numerous on the ends of the chandelier-like branches. It will grow in winter in any moderately dry greenhouse or conservatory, or even in a large hall ; it may be placed out-of-doors at the end of May, and should be brought in in October. Large plants in tubs have a fine effect out-of-doors in summer. This old plant was thus used long before sub-tropical gardening was known in the land. All the varieties are easily increased from suckers.

A. Deserti, utahensis, cœrulescens, and Shawi have lately come into cultivation, and are supposed to be hardy, in which case they will be interesting for the rock-garden. North America.

Ageratum. Tender plants, much used for the flower garden, varying in height from 6 in. to 24 in., with pale-blue, lavender, or white blossoms. The dwarf Ageratums are among the best summer flower-garden plants, but the tall old kinds are as well deserving of culture as the dwarfs raised from them.

They are among the most lasting of summer bedding plants, a point in their favour being that they will withstand a few degrees of frost, and may be planted out earlier than most of the bedding plants. The flowers of all the varieties are not readily injured by rain, and do not fade in colour, but continue the same throughout the long flowering season. There are numerous varieties of varying merit, both as to flowering properties and habit, some in good soil attaining a height of 2 ft., and others not more than 6 in. The mean between the two heights will be found the best for bedding out, and the variety named Cupid has not yet been excelled. Its average height is 9 in. ; it has bluish flowers of great size, well set off with bright green foliage, and flowers till severe frost clears off all bedding plants. Countess of Stair is nearly equally good, but of taller habit, and paler blue colour. Queen is also excellent, distinct in colour—a gray-blue ; it grows about 1 ft. in height, and is fine for massing, or for boundary lines to scarlet Pelargoniums Swanley Blue is a dwarf kind, about 8 in. high ; the flowers are a dark lavender-blue, and very pleasing when arranged as a belt to variegated Pelargoniums. Other good kinds are Tapis Blanc, Johannis Pfitzer, and The Zoo. The very dwarf kinds are disappointing ; they flower so freely, and the growth of the plants is so sparse, that they always appear stunted. For back lines in borders, or for grouping in mixed flower borders, there is no variety equal to the oldest kind, mexicanum. All the kinds are easily increased from cuttings at any season. They strike best when placed on a gentle bottom-heat, and will winter in any position where there is plenty of light, and the temperature does not go below 40°.—W. W.

Agrostemma coronaria (*Rose Campion*).—A beautiful old flower, hardy and free, most at home in chalky and dry soils. It is a woolly plant, 2 ft. to 3 ft. high, with many rosy-crimson flowers, flowering in summer and autumn, and easily raised from seed. Excellent for borders, beds, and naturalisation on dry banks. It is biennial or often perishes on some soils. There is a white variety and a double red one ; the last is a good plant. The name is sometimes given to the annual Viscarias. A. Githago is a large annual, occasionally grown in botanic gardens.

Agrostemma cœli rosea (*Queen of Heaven*).

Agrostis (*Cloud Grass*).—A large family of Grasses, few of which are important in the garden. The best are the annual kinds so useful when dried and for preservation with "everlasting" flowers. There are some half-a-dozen annual kinds grown, the best A. nebulosa, which forms delicate tufts about 15 in. high. Valuable for bouquets, vases, baskets, and for rooms. If cut shortly before the seed ripens, and dried in the shade, it will keep for a long time. The seed may be sown either in September or in April or May, and lightly covered. A. Steveni, multiflora, and plumosa require the same treatment. A. Spicaventi is very graceful, especially if it is grown as it is in the corn-fields, *i.e.* from self-sown seeds. A. pulchella is also useful for the same purpose and very popular, being dwarfer and stiffer than A. nebulosa.

Ailantus (*Tree of Heaven*).—A well-known Chinese hardy tree, young plants of which cut down every year give a good effect. The Ailantus should be kept when young with a single stem clothed with its fine leaves. This can be done by cutting down annually, taking care to prevent it from breaking into an irregular head. Vigorous young plants and suckers in good soil will produce handsome arching leaves, 5 ft. or more long, not surpassed

by those of any stove plant. Cuttings of the roots.

Young Ailantus tree with Cannas.

Aira.—One of the prettiest Grasses is A. pulchella, with many hair-like stems, growing in light tufts 6 in. high. It is useful for forming graceful edgings, amongst plants in borders, or for pots for rooms. Its delicate panicles give a charm to the finest bouquets. Seed may be sown either in September or in April. This comes from South Europe, but the British A. cæspitosa is handsome. A. cæspitosa vivipara, with its innumerable panicles of graceful viviparous awns, resembles a miniature Pampas Grass.

Ajuga (*Bugle*).—A small family of dwarf plants, flowering in spring and early summer, and having blue flowers. They grow on mountain or lowland pastures, are easily cultivated, and increased by division. A. genevensis (A. alpina and A. rugosa) is distinguished from the Common native Bugle (A. reptans) by the absence of creeping shoots. The flower-stems are erect, from 6 in. to 9 in. high ; the flowers being deep blue, and in a close spike. It is suitable for the front of mixed borders or for the margin of shrubberies, and also for naturalising. There is a white variety of A. reptans, also a form with variegated leaves, and another with purplish ones, this being finer than the type.

Akebia.—Of this family A. quinata is best. It is a twining evergreen shrub from China, often grown in greenhouses, but hardy. It is a good plant for a trellis, pergola, wall, or any such place in cold districts, growing 12 ft. or more high. In southern localities it does not need this, but rambles like a Clematis. It is best to let it run over an Evergreen, because then better protected against cold winds, which may injure its flowers. It has long slender shoots, and fragrant claret purple flowers of two kinds—large and small, which are produced in drooping spikes.

Alecost = Costmary (*Balsamita vulgaris*).

Aletris (*Star Grass*).—The only hardy kind, A. farinosa, is an interesting dwarf perennial, forming numerous tufts, from the centre of which spring the flower-stems, 15 in. to 18 in. high. On them are densely arranged pure white, bell-shaped flowers about half an inch in length. A cool and

Ajuga genevensis.

deep peaty soil, with partial shade, suits it.

Alexandrian Laurel (*Ruscus racemosus*).

Alfredia.—A. cernua is the best-known kind. It is a Thistle-like perennial herb 4 ft. to 7 ft. high, but only suitable for planting among groups of rampant perennials of a Thistle-like and giant character or otherwise in the picturesque garden. In large places a bed or group of such plants fittingly placed in a quiet nook would have a certain charm for those who admire bold form in plants. Division or seeds. Siberia. = Carduus.

Alisma (*Water Plantain*). — Water plants, of which two are fitted for growing with hardy aquatic plants. A. Plantago, a common waterside plant, is rather stately in habit, having tall panicles of pretty pink flowers. When once planted it sows itself freely. As the leaves are poisonous to animals, it should not be recklessly planted. The other kind is A. ranunculoides, a few inches high, in summer bearing many rosy blossoms. Both are adapted for wet ditches, margins of pools, and lakes. A. natans is a small floating pretty British plant. There are one or two Chinese kinds, single and double.

Allium.—Not an important garden family, and often with an unpleasant odour when crushed; but to growers of collections there are some interesting kinds, of which a few like Neapolitanum, Ciliatum, Pedemontanum, Pulchellum, and the American rose-coloured kinds, are rather pleasing. One or two of these are worth growing for their white starry flowers. They are easily grown in ordinary soil, the bulbs increasing rapidly. Some kinds give off little bulblets, which in certain situations make them too numerous! The following are among the kinds worthy of culture: A. neapolitanum, Paradoxum, Ciliatum, Subhirsutum, Clusianum pulchellum, Triquetrum (all with white flowers), Azureum and Cœruleum (both blue), Pedemontanum (mauve), Moly and Flavum (yellow), Fragrans (sweet scented), Oreophyllum (crimson), Descendens (deep crimson), Narcissiflorum (purplish), Murrayanum, Acuminatum, and Macnabianum (deep rose). These mostly grow from 1 ft. to 18 in. high, some 2 ft. or 3 ft.

Allosorus crispus (*Parsley Fern*).—A beautiful little British Fern found in mountainous districts; the fronds grow in dense masses, and from their resemblance to Parsley have obtained for it the name of Parsley Fern. It requires abundance of air and light, but should be shaded from the hot sun. In the rock-garden it does well between large stones, with broken stones about its roots, and its fronds just peeping out of the crevice.

Allspice (*Calycanthus*).

Aloe.—Not of much value in English gardens out-of-doors, but very pretty and effective in temperate countries, where, in addition to their singular and often fine forms, they have the charm of most graceful and pretty blossoms.

Alonsoa (*Mask-flower*).—Mostly annual plants. The best species are A. Warscewiczi, over 1 ft. high, and has small bright orange-red flowers; A. linifolia, 1 ft. to 1½ ft. in height, and A. acutifolia—a slender-growing herb, 1 ft. to 2 ft. in height; A. incisifolia, also a pretty kind; similar to this is A. myrtifolia, 2 ft. to 2½ ft. high, and of vigorous growth, with individual flowers far larger than any other kind, and of a more intense scarlet than those of A. linifolia; A. albiflora has pure white flowers, yellow in the centre. All the species are easily grown, both in pots and the open ground. The seeds should be sown in March, and the plants will flower early in July. They may also be propagated by cuttings in the spring. A. Warscewiczi is more perennial and shrubby in growth, but resembles the others in flowers and foliage. As a pot plant it will flower freely from early spring until late autumn if the roots are kept well nourished. It is rather dwarf, and can be propagated at any time from February to September. The treatment given to bedding plants in general during the winter season will suit this plant. The Alonsoas may be used as "ground plants" among taller things.

Alopecurus pratensis fol. var. is a graceful variegated Grass, somewhat pretty as an edging, but not so much so as other variegated forms of native Grasses.

Aloysia (*Sweet Verbena*). — Every garden should have a bush of the fragrant old Lemon plant (A. citriodora). Its pale green foliage goes well with any flower. It is as hardy as most plants from Chili, and may be grown against a sunny wall, where, if protected by a heap of ashes over its roots and a warm straw mat over its branches, it will pass through the winter safely. If uncovered too soon in spring, the young growths get nipped by late frosts. It is increased from cuttings. It is a hardy wall plant in mild seashore districts, but not so common, owing to the cold, in inland districts. = *Lippia.*

Alsophila excelsa.—A tree Fern with

a crest of fine fronds, a native of Norfolk Island, where it attains a height of 40 ft. It stands well in the open air in this country in shady, moist, and thoroughly sheltered places, and should be put out at the end of May, being removed to a warm greenhouse at the end of September. The same remarks apply to A. australis; and probably others of the family will be found to do in the open air, for which, however, we do not recommend them, as our flower gardens should for the most part be adorned with plants that brave our climate.

Alströmeria (Peruvian Lily).

Alströmeria (*Peruvian Lily*).—A distinct and fine family, which has not found a home in our gardens to the extent that might be expected. Probably this arose from trying kinds not really hardy.

Alströmerias must have a thoroughly well-drained soil, to prevent the tuberous roots from suffering from an excess of moisture. The best place is a south border, or along the front of a wall having a warm aspect, where, if the soil is not light and dry, it should be made so. Dig out the ground to the depth of 3 ft., and spread 6 in. or so of brick rubbish over the bottom of the border. Shake over the drainage a coating of half-rotten leaves or short littery manure, to prevent the soil from running through the interstices of the bricks, and stopping up the drainage. If the natural soil be stiff, a portion should be exchanged for an equal quantity of leaf soil, or other light vegetable mould; and a barrow-load of sand should be well mixed. The plants should be procured in pots, as they rarely succeed from divisions, and, once planted, should never be interfered with. Place them in rows about 18 in. apart, and with 1 ft. from plant to plant. If planted during the winter, they should be placed from 6 in. to 9 in. deep, so as to keep them from frost; and a few inches of half-rotten leaves shaken over the soil. Should there be any difficulty in obtaining established plants in pots to start with, seed may be had; and this sow in

pots or in beds where the plants are to remain. The seeds, being as large as Peas, may be sown 2 or 3 in. deep; with three or four seeds in a patch. If well treated, they will begin to bloom at a year old, and if not disturbed will increase in strength and beauty every season. When grown in masses in this way they are very beautiful, as every stem furnishes a large number of flowers, varying much in their colour markings. While growing and blooming they should have occasional watering, otherwise they get too dry, and ripen off prematurely. A good mulching of old Mushroom dung or of leaf soil is a great assistance while in bloom. When going out of flower carefully remove the seed-heads, otherwise the plants are apt to become exhausted, as almost every flower sets. In removing the pods, do not shorten the stems or reduce the leaves in any way, as all are needed to ripen the tubers and form fresh crowns for the following year. The stems should therefore not be cut down, but die away naturally. Any one having deep light sandy soil resting on a dry bottom may grow these beautiful flowering plants without preparation; all that is necessary being to pick out a well-sheltered spot, and to give the surface a slight mulching on the approach of severe weather. No trouble is involved in staking and tying, for the stems are strong enough to support themselves, unless in very exposed situations. They are quite worth cultivating for cut flowers, as they last long when cut.

The species in cultivation are

A. aurantiaca (*A. aurea*), a vigorous-growing Chilian kind, 2 ft. to 4 ft. high, flowering in summer and autumn. The flowers are large, orange yellow, streaked with red, and umbels of from 10 to 15 blooms terminating the stems.

A. chilensis.—This is a quite hardy kind from Chili, with many varieties that give a wide range of colours from almost white to deep orange and red.

A. Pelegrina.—Not so tall or robust as the last; but the flowers are larger, whitish, and beautifully streaked and veined with purple. There are several varieties, including a white one, which requires protection. When well grown it is a fine pot plant, compact, and crowned with almost pure white flowers. It is called the Lily of the Incas. A. peregrina is synonymous.

A. psittacina (*A. braziliensis*).—Grows about 1½ ft. high, each stem being terminated by an umbel of from seven to nine flowers smaller than either of the preceding, and green and deep red in colour.

Other good kinds are the hardy variable-coloured A. versicolor (A. peruviana) and St. Martin's flower (A. pulchra), this, however, requiring protection.

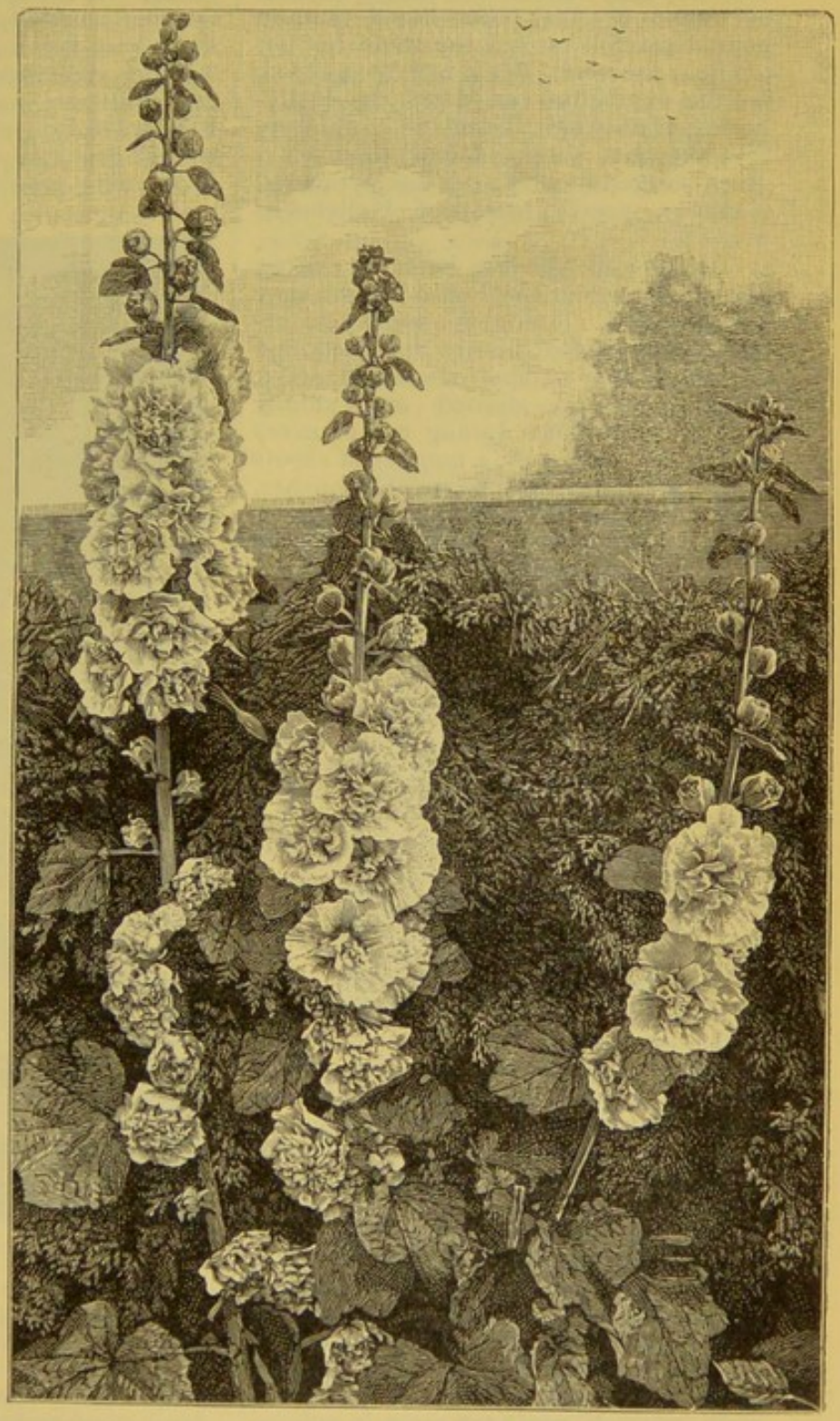
Alternanthera.—These plants are natives of Brazil, tender, and can be used only in the more favoured parts of the country. The varieties range in colour of foliage from deep purple to bright yellow, and all are effective when used in masses, surrounded with plants of contrasting colours and similar habit of growth. The best varieties are A. paronychioides, of deep brown tipped with scarlet; p. major of the same colour, but more robust and with broader foliage; major aurea, with the same habit of plant as the last, but of deep yellow and red foliage, and very fine; A. amabilis has broad foliage, of deep orange and scarlet. A. versicolor has dark purple and rose-coloured foliage. A. amœna and amœna spectabilis are the brightest-coloured of all, but most tender, and therefore suited for only quite southern districts. In two days the smallest particle will strike root in a bottom-heat of 75°. The quickest way to get up a large stock is to make up a hotbed of leaves and stable litter; and on this place frames, inserting the cuttings firmly in about 4 in. of soil. Well water them in, and keep the frame shaded and close for the first week, afterwards giving air as for other soft-wooded bedding plants. This plan is only intended for the spring season, as the plants should in due time be transferred from their cutting beds direct to their summer quarters. For stock plants to stand the winter, the cuttings are best inserted in 6-in. pots, plunged in bottom-heat, and, as soon as well rooted, placed on shelves in warm houses, there to remain till March, when they may be planted out on hotbeds, and will quickly produce abundance of cuttings.

Althæa (*Hollyhock*).—Plants of the Mallow family consisting chiefly of coarse-growing plants, some, such as A. rosea, from which the Hollyhock has sprung, showy garden flowers. The other wild species are generally characterised by great vigour, and hence are not very suitable for the choice flower garden. They thrive in almost any situation or soil. Among them A. armenaica, officinalis, narbonnensis, cannabina, ficifolia, Hildebrandti hirsuta, caribæa, Frolowriana syriacus, Lavateriæfolia are the best—mostly they are

natives of S. Europe and the East, flowering in summer and autumn.

A. rosea (*Hollyhock*).—One of the noblest of hardy plants, and there are many positions in almost all gardens where it would add finely to the general effect. For breaking up ugly lines of shrubs or walls, and for forming backgrounds, its tall column-like growth is well fitted. So, too, it is valuable for bold and stately effects among or near flower beds. Cottage bee-keepers would do well to grow a few Hollyhocks, for bees are fond of their flowers.

CULTURE. — Deep cultivation, much manure, frequent waterings in dry weather, with occasional soakings of liquid manure, will secure fine spikes and flowers. Hollyhocks require good garden soil, trenched to the depth of 2 ft. A wet soil is good in summer, but injurious in winter, and to prevent surface wet from injuring old plants left in the open ground remove the mould round their necks, filling up with about 6 in. of white sand. This will preserve the crowns of the plants. It is best, however, if fine flowers are desired, to plant young plants every year, as one would Dahlias, putting them 3 ft. apart in rows at least 4 ft. apart ; or if grouped in beds, not less than 3 ft apart. In May or June, when the spikes have grown 1 ft. high, thin them out according to the strength of the plant, if well established and strong, leaving four spikes, and if weak two or three. When for exhibition, leave only one spike, and to get fine blooms cut off the side shoots, thin the flower buds if crowded together, and remove the top of the spike, according to the height desired, taking into consideration the usual height and habit of the plant. By topping you increase the size of the flower, but at the same time shorten its duration, and perhaps disfigure its appearance. Stake



Althæa rosea (Double-flowered Hollyhock).

them before they get too high, tying them securely, so as to induce them to grow erect. The most robust will not require a stake higher than 4 ft. If the weather is dry, they may be watered with a solution of guano or any other liquid manure poured carefully round the roots, but not too near the stem. But it is in the garden, not the exhibition, one wants the Hollyhock. If shown, it should be in the form of spikes, not single blooms stuck on a green-painted box. To get fine pyramidal plants a good grower of Hollyhocks writes :—

"I have been in the habit of cutting out the top while the lower blooms were in perfection. Once the tops were removed before the flowers appeared, and the result was to spoil the main spike, which grew up stunted and closely packed ; but there sprang out of every axil on the main stalk a number of shoots forming elegant and graceful branches, to the number of more than twenty on some of the plants. These were covered with perfect flowers. As these shoots grow uniformly round the stem, the general outline was that of a pyramidal tree with about 100 flowers expanded at once, and one may conceive the fine effect of the various beautiful shades of colour. I would recommend leaving on the stool only one stalk, which can be staked and secured more easily than a great number, and will form a more elegant object than a number crowded together as usual. One of my plants is 7 ft. high,—4 ft. across at the lower part and tapering to the top. The side shoots do not exceed ½ in. in diameter.—W."

PROPAGATION.—Effected from eyes, cuttings, seeds, or careful division. Hollyhocks may be propagated by single eyes, put in in July and August, and also by cuttings put in in spring, on a slight hot-bed. Plants raised in summer are best preserved by putting them in October into 4-in. or 5-in. pots in light, rich, sandy earth, and then placing them in a cold frame or greenhouse, giving them plenty of air on all favourable occasions. Thus treated they will grow a little in winter. In March or April turn them out into the open ground, and they will bloom as finely and as early as if planted in autumn. Plants put out even in May will flower the same year. If seeds are sown in autumn in a box or pan in heat, as soon as they are ripe, potted off and grown on in a pot through the winter, and planted out the following April, they will flower in the same summer and autumn. If allowed to remain in the beds or borders where they have flowered, choice Hollyhocks often perish from damp, or from snow settling round their collars, or penetrating the cavity left by the too close removal of the flower-stems. At the approach of winter, say in October, carefully lift all it is desired to save, and lay them close together in a slanting direction, at an angle of about 45°, in a warm mellow soil at the foot of a wall or hedge, where, in hard weather, shelter can easily be given. But in wet, heavy soils, snow and damp are most destructive. The ground that is to receive them can then be thoroughly worked in winter, and if a little rotten turf is worked in with them when replanted in March or April, good spikes and large flowers may be expected. Choice and scarce varieties may be either potted up or planted out in a frame. Potting them is the better way, because they can be placed in a greenhouse or vinery, on shelves near the glass. Some of the stools will have numerous

Single Hollyhock in cottage garden.

growths starting from them, and unless the plants have a little heat early in the year, many of the cuttings cannot be propagated soon enough to flower the same season. Growers in the south of England have an advantage with these spring-struck cuttings over the northern florists. There is quite three weeks' difference between the time of flowering in the south and in the northern districts of England and in Scotland. Root-grafting gives the propagator a little advantage, and early in the year the plants are propagated more readily in a light frame fixed in a heated propagating house. A hotbed is uncertain, as there is sometimes too much heat, and then not enough. Although the young side shoots of old stocks will root in a gentle bottom-heat in spring, they may also be increased in July, just before the plants come into flower. The side shoots from the flower-spikes, or the smaller flower-spikes, if they can be spared, should be cut up into single joints, and dibbled in thickly in a prepared bed in a frame or pit, where they can be kept close and cared for by shading from bright sunshine, and sprinkling occasionally with water that has been warmed by standing in the sun. Nearly every cutting will then develop a bud from the axil of the leaf, rapidly strike root, and make a good strong plant by the following spring; as a rule, young plants propagated at this season give the best spikes. When cutting down the flowering stems of Hollyhocks after blooming, they should be left a good length, as they are impatient of damp about their crowns; in spring the old stems may be removed altogether.

INSECT PESTS AND DISEASES.—Red spider and thrips are both very troublesome, but the first does most injury. It appears on the under sides of the leaves as soon as the hot weather sets in, and is difficult to dislodge. If there is any trace of red spider before planting out, the whole plant, except the roots, should be dipped in a pail of soft soapy water, to which a pint or so of tobacco liquid has been added. It will be well to syringe the under sides of the leaves with the mixture if the plants have been planted out before the pest is perceived. Thrips may be destroyed in the same way, and it is well to syringe the plants every day in hot weather.

THE HOLLYHOCK FUNGUS (Puccinia malvacearum) is very destructive to the Hollyhock. When once it seizes a collection, probably the best way is to destroy all the plants affected. Those that do not appear to be attacked should be washed with soapy water in which flowers of sulphur has been dissolved. The sulphur will settle at the bottom of the vessel, and must be frequently stirred up when the mixture is being used. Sulphur seems to destroy almost any fungus; and may destroy this in its very earliest stages, but will not when established.

Alum Root (*Heuchera*).

Alyssum (*Madwort*).—Rock and alpine plants, numerous in rocky and alpine districts, but the species much resemble each other. Alyssum saxatile (the Rock Madwort) is one of the most valuable of yellow spring flowers, hardy in all parts of these islands. The colour of its masses of bloom and its vigour have made it one of the best-known plants. It is often grown in half-shady places; but like most rock-plants it should be fully exposed. It is well fitted for the spring garden, and the

Alyssum montanum.

mixed border, and for association with evergreen Candytufts and Aubrietias. In winter it perishes in heavy rich clays when on the level ground. A native of Southern Russia, it flowers with us in April or May. There is a dwarfer variety, distinguished by the name of A. saxatile compactum, but it differs very little from the old plant. Alyssum montanum is a dwarf plant, spreading into compact tufts, 3 in. high. A. spinosum is a silvery little bush with white flowers. Small plants quickly become Liliputian bushes, 3 in. to 6 in. high; and when fully exposed, are almost as compact as Moss.

Among other kinds sometimes grown are A. Wiersbecki and A. olympicum, neither of which equals in habit, bloom, or endurance A. saxatile, which from its showy

bloom in spring has been called Golden Tuft. The alpine and rock kinds are of easy culture in light or dry soil, as indeed are all the species. A. maritimum is the Sweet Alyssum, a small annual with white flowers, useful as a carpet plant. It grows on the tops of walls in the west country, and in sandy places. In these situations it is perennial, but in gardens is grown as an annual, sowing itself freely. There is a variegated form.

Amarantus (*Prince's Feather, Love-lies-bleeding*).—The old Love-lies-bleeding (A. caudatus), with its dark red pendent

Amarantus (Prince's Feather).

racemes, is a fine plant when well grown, but A. speciosus and some other varieties are finer. The more vigorous species grow from 2 to 5 ft. high. It is best to give them room to spread, otherwise much of their picturesque effect will be lost; and to use them in positions where their peculiar habit may be seen to advantage, as, for example, in large vases and edges of bold beds. Easily raised as any annual, they deserve to be well thinned out and put in rich ground, so that they may attain full size. The foliage of some varieties is very rich in its hues, and planted with Canna, Wigandia, Ricinus, Solanum, their effect is good. The varieties of A. tricolor require a light soil and a warmer place. They do well in gardens by the seaside, and sow the seed in April in a hot-bed, pricking out the seedlings in a hot-bed, and plant out about the end of May. The cultivated kinds embrace bicolor, tricolor, atro-purpureus. A. melancholicus ruber, a useful bedding plant with bright crimson leaves, A. Henderi, A. salicifolius, and A. s. Princess of Wales may be used in the summer garden with good effect.

Amaryllis.—None of the species are quite hardy, but the beautiful Belladonna Lily (A. Belladona) may be grown well in the open air. It is a noble bulbous plant from the Cape of Good Hope, from 1½ ft. to 3 ft. high, blooming late in summer, the flowers, as large as the white Lily, and of delicate silvery rose in clusters on stout leafless stems, arising from the large pear-shaped bulbs. Choose a place on the south side of a house or wall, take out the whole of the soil to the depth of 3 ft. or so, and place about 6 in. of broken brick in the bottom. Over this put some half-rotten manure to keep the drainage open, and feed the plant. If the natural soil is not good, add some sandy mellow loam, or if stiff, a few barrow-loads of decomposed leaf soil, and one or two of sharp sand should be mixed with it. Having trod this firm, plant the bulbs singly, or, better still, in small groups. Each clump should be about 1 foot apart, and if the border is of such a width as to take a double row, the plants in the second should be alternate with those in the first. In planting, place a handful or so of sharp sand round the bulbs to keep them from rotting. If planted in autumn, or at any time during the winter, it will be well to protect them from severe weather by half-rotten leaves, cocoa-nut fibre, or fern. The plants begin to push forth their new leaves early in spring, and upon the freedom with which they send forth these during summer the bloom in the autumn depends. During dry weather give an occasional soaking of water, and with liquid manure once or twice. As soon as the foliage ripens off remove it, and clean the border before the blooms begin to come through the soil. A. B. blanda is a variety with larger bulbs, bearing noble umbels of white flowers, turning to pale rose in summer. There are other varieties worthy of cultivation.

Amberboa (*Centaurea*).

Amblyolepis setigera.—A dwarf half-hardy annual from Texas with small heads of orange-yellow sweetly scented flowers.

Amelanchier (*Snowy Mespilus, June Berry*).—There are two kinds of June Berry, the American (A. canadensis) and European (A. vulgaris), while the varieties one sees in gardens may be classed under either. They are small trees, associating well with the Almond, Laburnum, the Cherry, Plum, and other low-growing trees. The American kinds —later in flowering—do not bear so much bloom. Of A. canadensis there are

A group of the Belladonna Lily (Amaryllis belladonna).

several varieties,—Botryapium, florida, ovalis, alnifolia, and sanguinea. They grow freely in almost any soil, and rather sheltered places, as they bloom very early.

Amellus annuus (*Kaulfussia amelloides*).

American Cowslip (*Dodecatheon*).

Amianthium muscætoxicum (*Fly Poison*).—A North American Liliaceous plant, 1 to 2 ft. high, with a dense raceme of unattractive white flowers, which turn green with age, thriving in a moist sandy soil.

Amicia zygomeris.—A quaint greenhouse plant occasionally used in the sheltered flower garden. Mr. E. H. Woodall says of it: "I put it on a par (in England) with Melianthus major—good for those who like a bold and distinct plant in a warm situation in summer, and have means to protect or take it up and pot it in winter. With me it has stood the cold, rain, and gales far better than the variegated Maize and big Solanums. The flower, though bright, is not large enough to be effective."

Ammobium (*Winged Everlasting*).—A. alatum is a handsome Everlasting from New Holland 1½ to 3 ft. high, with white chaffy flowers with yellow discs from May till September. In Sandy soil it is perennial, but on heavy and damp soils must be grown as annual or biennial; and among such plants is worth a place. Seed. The var. grandiflorum is an improvement on the type, and has much larger flowers.

Amorphophallus.—Arum-like plants, of which one or two are used in summer in the open air and require a warm house in winter. Our country is not warm enough for them.

Ampelopsis (*See Vitis*).

Amsonia. — Perennials from N. America, 2 to 3 ft. high, with small pale blue or purple flowers in clusters in summer. Of little garden value, save for botanic gardens and curious collections.

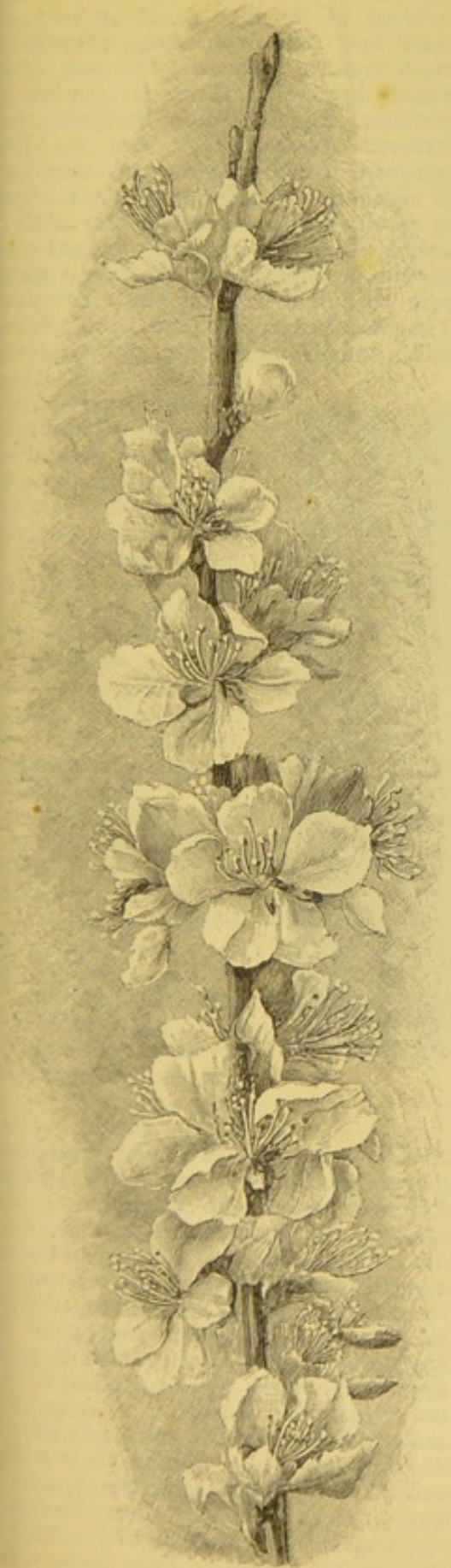
Amelanchier canadensis.

Amygdalus (*Almond*). — The most welcome of early trees. The common sort has abundant pale pink and rather small flowers. This is the Bitter Almond (A. communis amara), and those of the Sweet Almond (var. dulcis) are similar. The double variety (fl.-pl.) lasts longer in bloom than the single sorts, but the finest is the large-fruited Almond (A. macrocarpa), which has flowers larger than the common kind, and is also more erect in growth. The flowers are white, tinged with pink. It should always be planted in company with the others, and should have the preference, if space allows only one Almond, as it sometimes flowers before the end of February. Amygdalus nana (*syn.*, A. Besseriana), with rose-coloured flowers, grows from 2 to 3 ft. high. The dwarf Almond makes a twiggy bush, which freely sends up suckers by which it may be propagated; but grafted trees quickly perish.

A. Davidiana is a Chinese early-flowering shrub, blooming even before winter is past, in mild seasons. The wood is more slender and the flowers smaller than those of the common Almond. It is a very precious and charming flowering tree, at least for light soils in the south, and it may prove so in many other districts.

Anagallis (*Pimpernel*). —Those in cultivation are chiefly half-hardy annuals; and the best-known is the Italian Pimpernel (A. Monelli), with large blossoms, deep blue, shaded with rose. There are several varieties —rubra grandiflora, Wilmoreana, bright blue purple, yellow eye; lilacina Phillipsi, deep blue, rose-coloured centre; Breweri, intense blue; Impératrice Eugénie, bright blue edged with white; linifolia, fine blue, very dwarf; Napoleon III., maroon; and sanguinea, bright ruby. These flower from July to September and a packet of mixed seed gives good variety. The Indian Pimpernel (A. indica) is similar to A. Monelli, but has smaller bright blue flowers. It is a hardy annual, but the Italian Pimpernel should be grown as a half-hardy annual. The seed may be sown any time from March till July, the later sowings to be made in pots and put into a greenhouse or window in autumn. Pimpernels grow well in ordinary garden soil, and are used with good effect in broad masses in borders, or edgings to beds, and make good pot-plants. The pretty little bog Pimpernel (A. tenella) is a native creeping plant, with slender stems and myriads of tiny pink flowers. It is pretty in suspended pots or pans, and may be grown in the bog or a moist corner in the rock-garden.

Anchusa (*Alkanet*). — Borageworts.



Amygdalus Davidiana.

some worth growing, amongst the best being A. italica, which is vigorous, 3 to 4 ft. or more high, with beautiful blue blossoms. A. hybrida is similar, about 2 ft. high with flowers of rich violet. It is biennial, and, like A. italica, a native of S. Europe. A. capensis is a pretty plant with large bright blue flowers, rather tender ; it should be planted in a sheltered well-drained border. A. incarnata (A. officinalis) is 2 ft. high. On the whole, the species are not important as garden plants. A. sempervirens is a British plant, 1½ to 2 ft. high, with blue flowers, worth a place in the wild garden. Seeds or division.

Andromeda. — Handsome shrubs, the dwarfest of which are associated with rock-plants and hardy Heaths. Andromeda tetragona is one of the prettiest of tiny alpine shrubs, and seldom grows more than 8 in. high. It is a native of Northern Europe and America, quite hardy, and requires a moist peat or very fine sandy soil. It is a fitting ornament for the margins of beds of choice dwarf shrubs planted in sandy peat ; it loves abundance of moisture in summer, and is easily increased by division. If on the rock-garden, it ought to be in a deep bed of soil. A. fastigiata is one of the most rare and beautiful plants we have from the Himalayas. It should have sandy moist peat soil. It is most likely to thrive in moist and elevated districts ; but safely planted on rock-work in deep, moist, but well-drained soil, and carefully guarded against drought during the warm season, it may be grown. A. hypnoides is a minute Moss-like shrub, 1 in. to 4 in. high, one of the most beautiful of alpine plants, but one of the most difficult to grow, being very rarely seen in a healthy state. Drought is fatal to it. It is a native both of Europe and America, either far north in the coldest regions, or on the summits of high mountains. Carefully peg down the slender main branches, and place a few stones round the "neck" of the plant, so as to prevent evaporation. A. polifolia is easily grown in various soils, and is a good plant for the bog-garden. The dwarf Andromedas are among the plants of which the propagation is best left to nurserymen. The larger kinds, floribunda and japonica, are more easily grown and indispensable. They thrive well in the Matlock and the Edinburgh nurseries. Ericaceæ.

Andropogon.—Tall Grasses, suitable for planting singly on lawns or where their fine habit may be seen. A.

halepensis forms large tufts 6 ft. in height. A. strictus, about 4 ft. high, has graceful silky panicles of bloom. A. furcatus and A. scoparius are not so desirable as the others. All the kinds named thrive, provided the situation be not too exposed, or the soil too heavy and damp. They require a deep soil, well enriched and not wet. Our climate is not quite warm enough for them. A few degrees farther south they are among the best ornamental Grasses for gardens, and in the Paris gardens effective use is occasionally made of them, particularly of A. squarrosus.

Flowers of Andromeda.

Androsace.—The most alpine of alpine plants. Other families, like Primroses and Hairbells, do send down representatives to the hill-pastures, the sea-rocks, or the sunny heaths, but these do not. They are more alpine than even the Gentians, which are as handsome in a hill-meadow as on the highest slopes ; and as Androsaces are, among flowering plants, the most confined to the snowy region, so they are the dwarfest of this class. They belong to the Primrose family and resemble it in their flowers, but even dwarf alpine Primroses are giants to these. Growing at elevations where the snow falls very early in autumn, they flower as soon as it melts. Sometimes, like some other alpine flowers, they frequent high cliffs with a vertical face, or with portions of the face receding here and there into shallow recesses. Here they must endure intense cold—cold which would destroy all shrub or tree life exposed to it. And here in spring they flower. As yet they are far from common in our gardens, but every lover of alpine flowers desires to possess them in good health. This is not difficult where there is a properly formed rock-garden in a pure air. They are almost sure to perish in a smoky atmosphere. Their small evergreen leaves, often downy, retain much more dust and soot than smoother and larger-leaved evergreen alpine plants do. The Androsaces enjoy in cultivation small fissures between rocks or stones, firmly packed with pure sandy peat, or very sandy or gritty loam, not less than 15 in. deep. They should be so placed that no wet can gather or lie about them, and they should be so planted in between stones that, once well rooted into the deep earth—all the better if mingled with pieces of broken sand-stone—they could never suffer from drought. It is easy to arrange rocks and soils so that, once the mass below is thoroughly moistened, an ordinary drought can have little effect in drying it.

A. carnea (*Rose-coloured A.*)—One of the prettiest alpine flowers from the summits of the Alps and Pyrenees ; opening in our gardens in early spring. Known by small-pointed leaves, not in tiny rosettes, but clothing a stem like a small twig of Juniper ; flowers pink, or rose, with yellow eye. It is not difficult to grow in sandy loam and peat—the spot to be exposed, and the soil deep and firm. Like most of the species, it may be raised from seed, sown in pans of sandy soil as soon as gathered ; also by division. A. carnea var. examia is a large variety, likely to supersede the type, being more robust. A. brigantica resembles the variety of A. carnea, except that its flowers are white. The same sunny position and soil suits it ; that is to say,

sandy peat free from lime, well drained, but moist.

A. Chamæjasme (*Rock Jasmine*).—This does not nestle into close Moss-like cushions, like the Helvetian Androsace, but the foliage forms large rosettes of fringed leaves. The blooms are borne on stout little stems frequently not more than 1 in. high, but varying from that to 5 in. When in good health, it flowers abundantly. It is one of the best alpine plants, and easiest to grow on an open spot, in deep, well-drained light loam, nearly covered with small pieces of broken rock, to prevent evaporation and to protect the plant from injury. It should get abundance of water in summer, be fully exposed, and not be overrun by weeds or eaten down by slugs. Alps of Europe. A. ciliata (Fringed A.) is a variety. A. cylindrica is another form, bearing white flowers in spring.

A. foliosa is the handsomest species, and, though considered a variety of sarmentosa in the Indian Flora, is as distinct from that species as A. lanuginosa. The flowers are borne in large bunches; rosy-red, and larger than the others. Leaves broad, ovate, and pointed. Easily struck from cuttings. A charming hardy rock-plant. Flowers May and June. Himalayas.

A. helvetica (*Swiss A.*) forms dense cushions, about ½ in. high, of small leaves, tightly packed in little rosettes. Each rosette rests on the summit of a little column of old and dead but hidden and half-dried leaves. A white flower with a yellowish eye rises from every tiny rosette, each flower being almost twice as large as the rosette. Requires care, exposure to sun, and a position well drained, but not dry.

A. imbricata (*Silvery A.*) differs from the Pyrenean and Swiss Androsaces in having rosettes of silvery white. The pretty white flowers rest so thickly on the rosettes as often to overlap each other. It grows freely in rich loamy soil in narrow well-drained fissures of rock. Pyrenees and Alps, flowering in summer. Seeds and division (A. argentea).

A. Laggeri.—This little gem is one of the most distinct of the family, and is easily recognised by its tiny rosettes of sharp-pointed leaves. Pyrenees Alps, flowering as soon as the snow is melted. A lively pink, with the centre lighter.

A. lanuginosa (*Himalayan A.*), with spreading and long-trailing shoots, and umbels of flowers of a delicate rose, the leaves covered with silky hairs. When grown well it is a lovely plant. Some parts of the country are too cold for it, and warm places near the sea are where it is happiest. The best place for it is on the rock-garden, in sandy loam. Where the soil is free, and not wet in winter, it

Flowers of Androsace lanuginosa (Himalayan Androsace).

thrives as a border plant. It forms beautiful tufts on sandy borders in the College Gardens at Dublin. Cuttings. Flowers from June to October. Himalayas.

A. obtusifolia (*Blunt-leaved A.*).—Allied to A. Chamæjasme, but has larger rosettes of leaves, and from two to five white or rose-coloured flowers with yellow eyes. It is more vigorous than A. Chamæjasme. European Alps. Culture the same as A. Chamæjasme.

A. pubescens (*Downy A.*).—Allied to the Swiss and Pyrenean Androsaces in its rather large solitary white flowers, with pale yellow eyes, just rising above the densely packed, slightly hoary leaves, covered with star-like hairs. The buds look like pearls set in a tiny cup, and are held on stems barely rising above the dwarf cushion formed by the plant; flowering in July and August in its native state, and in our gardens in spring or early summer. Grows in sunny fissures in deep sandy peat. Alps.

A. pyrenaica (*Pyrenean A.*).—Like the Swiss Androsace, but the white flowers with yellowish eyes are not quite so well formed, and the flower, instead of being seated in the rosettes of leaves, rises on a stem a quarter to half an inch high. In fissures between rocks, with deep firm rifts of sandy peat and loam in them.

A. sarmentosa.—From the Himalayas, and at elevations of over 11,000 ft. The flowers are borne in trusses of ten to twenty, and at first sight resemble rosy white-eyed Verbena. Like many other woolly-leaved alpines, this is difficult to keep alive through our damp winters. A piece of glass in a slanting position, about 6 in. above the plant, preserves it. Care should also be taken to pŭt sandstone broken fine immediately under the rosettes of leaves and over the surface of the soil to keep every part of the plant, except the roots, from contact with the soil. A dry calcareous loam is best.

A. villosa (*Shaggy A.*).—A dwarf kind on many parts of the Alps, with leaves covered with soft white down. It should be planted in loam and a mixture of peat, in a fissure between stones, or on level spots with abundant moisture. In our gardens, flowers in May. Seeds.

A. Vitaliana (*Yellow Androsace*).—Rarely above 1 in. high, and bears, scarcely above the leaves, rich yellow flowers, very large for so small a plant. It is lovely for association with dwarf Gentians, Primulas, in the rock-garden, and may even be grown on a border in a district not too dry where the soil is open. Abundant on the Alps, and increased by division, or by seeds.

Andryala.—Small plants of the Dandelion order; some with woolly leaves. The shrubby A. mogadorensis, forms snowy masses on a little islet on the Morocco coast, and has not been found elsewhere. It bears flowers as large as a half-crown, of a bright yellow, the disc being bright orange. Little is known of its culture and hardiness. A. lanata has woolly silvery leaves, and grows well in any soil not too damp.

Anemone (*Windflower*).—A noble family, to which is due much of the beauty of spring and early summer in northern and temperate countries. In early spring, or what is winter to us in Northern Europe, when the valleys of Southern Europe and sunny sheltered spots all round the great rocky basin of the Mediterranean are beginning to glow with colour, we see the earliest Windflowers in all their loveliness. Those arid mountains that look so barren have on their sunny sides carpets of Anemones in countless variety. These belong to old favourites in our gardens—the common Windflower (A. coronaria) and the Peacock Anemone. Later on the Star Anemone (A. stellata) begins, and troops in thousands over the terraces, meadows, and fields of the same regions. Climbing the mountains in April, the Anemone hepatica nestles in nooks all over the bushy parts of the hills, and later on springs from the snow in the Swiss Alps to welcome the early traveller. Farther east, while the common Anemones are aflame along the Riviera valleys and terraces, the blue Greek Anemone (A. blanda) is open on the hills of Greece; a little later the Apennine Anemone (A. apennina) blossoms in Italy. Meanwhile our Wood Anemone

The Blue Apennine Windflower.

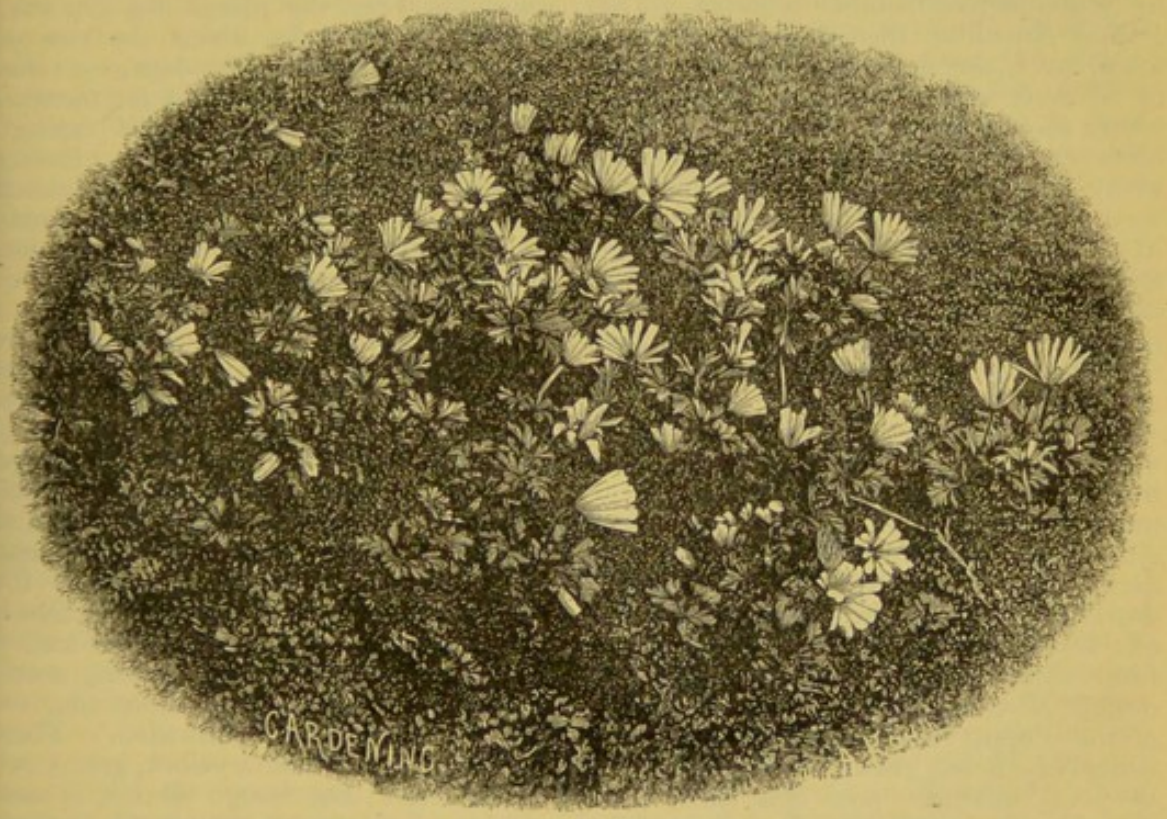
adorns the woods and copses throughout the northern world, and often, too, open ground, ascending to high treeless places on the mountains; and at the same time the open begins to show here and there through the brown Grass the purple of the Pasque-flower (A. Pulsatilla). The Grass has grown tall before the graceful Alpine Windflower (A. alpina) flowers in all the natural meadows of the Alps; as soon as its large flowers are succeeded by long silky heads of fruit, the snow is melting from off the high alpine Windflowers, which soon flower and fruit, and are ready to sleep for nine months in the snow. These are but few examples of what is done for the northern and temperate world by these Windflowers.

Anemone alpina (*Alpine Windflower*).—On nearly every great mountain range in northern climes this is one of the

handsomest plants, 18 in. to 2 ft. high. It grows more slowly in gardens than most of the other kinds, and should have deep soil. In its native countries the delicate flowers show as the snow disappears, and in our gardens at the end of April or beginning of May. Plants established may be taken up and divided or raised from seed. A. sulphurea is a form of A. alpina. It is so distinct that it is worth some trouble to get well-established plants. Many fail with it through transplanting in autumn and winter. Seed is the best way to increase it. Sow this in November in a rather moist peaty bed out-of-doors and allow the seedlings to remain for two years. When growth commences in spring transplant to where they are to flower. Full exposure, good drainage, and moisture in summer are essential.

A. angulosa (*Great Hepatica*).—Larger than the common Hepatica, with sky-blue flowers as large as a crown-piece, and known by its five-lobed leaves. It is a native of Transylvania, enjoying partial shade. In rock-gardens, or near them, it will succeed in spaces between choice dwarf shrubs in beds, or may be used as an edging to beds of spring flowers, and for open, bare, and unmown spots along the margins of wood walks. The best way to increase it is by seed and division.

A. apennina (*Apennine Windflower*).—Although figured in most works on British plants, and naturalised in various places, it is not a true native, but our hardiest native plants take not more kindly to our clime. It is one of the sweetest of spring flowers from Italy, and among the many lovely plants that gem the mountain pastures there is not one more worthy of being naturalised. It is welcome in the garden, but it is when scattered among the native Anemones in our woods, or making pictures with Daffodils, or running free among dwarf plants in groves, that this Italian plant adds a new charm to our spring. It is readily increased by division, and grows about 4 in. to 6 in. in height.



Anemone blanda (Blue Greek Windflower).

A. blanda (*Blue Winter Windflower*).—A lovely plant from Greece, worth a place in every garden. It is of a deep sky-blue, like A. apennina, has larger and more finely rayed flowers, dwarfer, harder, and smoother leaves, and blooms in early spring, during mild open winters, and in warm parts coming early. It should be grown in every rock-garden, planted on banks that catch the early sun; and should also adorn the spring-garden, whilst it may be naturalised in Grassy places.

It is distinguished from A. apennina by carpels topped with a black-pointed style, and by round and bulb-like roots ; increased by division and seed.

A. coronaria (*Poppy Anemone*).—One of the most admired flowers of our gardens from earliest times. There are many varieties, single and double. The single sorts may be readily grown from seed sown in the open air in April, and, being varied in fine colour, they deserve to be cultivated, even more than many of the doubles. The planting of these double varieties may be made in autumn or in spring, or at intervals all through the winter, to secure a continuity of flowers ; but the best bloom is secured by September or October planting. The Poppy Anemone thrives in rich deep loam, but is not fastidious, and the roots of the more select kinds may be taken up when the leaves die down. They are, however, seldom worth this trouble, as many fine varieties may be grown from seed sown in June. Prick out the plants in autumn : they will flower well in the following spring, so that the plant is as easily raised as an annual. Apart from the old florists' or double Anemones and the single ones, there are certain races of French origin of much value—the Anemones de Caen, for example. These are raised from the same species, but are more vigorous and have larger flowers than the older Dutch kinds. Of the Caen Anemones there are both single and double kinds, and the Chrysanthemum-flowered is another fine double race, whilst one may also note the deep scarlet double form—Chapeau de Cardinal, and the double Nice Anemones. The fine variety of the Poppy Anemones leads to mixed collections being grown. While it is well to plant mixtures now and then, it is better to select and keep true some of the finer forms in any desired colour. A fine scarlet, purple, or violet should be grown by itself and for itself, as in that way the Poppy Anemone will be a greater aid to the garden artist. All kinds thrive in garden soils of fair quality, and, like most plants, repay manuring.

The following method will enable any one to raise these in a moist loam. To save time, I sow as soon as the seed is ripe, selecting it from the brightest flowers only. Separate the seed thoroughly. Spread a newspaper on the table, pour over it a quart of sand, dry ashes, or fine earth, and sprinkle the seed over this, rubbing it together till its separation is complete. The seed bed need not be larger than 3 ft. by 9 ft., and choose the sunniest part of the garden. Make the surface fine, tread it down, and give it a good watering. Wait until it is dry enough to scratch with a fine rake ; then sow broadcast, covering the seed with a very thin coat of fine earth, about the thickness of a shilling ; beat flat with a spade, and give a light sprinkling of water. Never let a ray of sunshine reach the bed ; cover it with newspapers, spreading a few Pea sticks or something to retain the covering in its place. Keep the surface of the bed moist. In about twenty days the young plants will begin to appear, and when all seem up, remove the covering ; they will need no further care except watering. If the bed once gets thoroughly dry, the plants are apt, after forming small bulbs about the size of Peas, to stop growing, the foliage to die, and the bulbs to lie dormant for months. If kept, however, well watered through the summer, they will go on growing through the winter, and begin to blossom the following spring. The seedlings may be left to blossom where they are sown, or be transplanted in September or October.—J.

Although all the beauty of the Poppy Anemone in its brilliant variety of colour may be enjoyed by simple culture, especially in good or warm soils, it is desirable to describe what is considered the best way of growing the finer and named varieties. Messrs. Vilmorin and Andrieux, writing to me from Paris (Sept. 1881), say that the growth "of the Anemone as a florists' flower in France is of ancient date. The finest were known to come from Caen and Bayeux, nearly 100 years ago, and it is there that the best in France are now cultivated." There is no better soil than a yellow, gritty, and friable loam ; but though there is in most gardens little or no choice, the choicest Anemones may be well grown in ordinary garden soil of fair quality, enriched with decayed leaf-mould or cow manure. In the more loamy soils old hot-bed manure will do, but in some very heavy clayey soils the cultivation of the plant is not successful.

The florists of past years had two seasons for this—the middle of October, and the end of January. "The early vegetation of such roots as are left in the ground shows that early autumn is the most natural season. October-planted tubers make stronger plants, throw up more flower-buds, and bloom earlier than those planted in spring. The drawback is that the blossoms expand before the frosts have ceased, and hence some

protection is necessary." It was generally held that a bed planted the first week in October would be in bloom about the second week in May ; and as this is often a time of severe frosts, the flowers are injured if not protected. It is important to remember that the best bloom is always from autumn-planted roots ; and the double ones should be planted in September in a sunny situation if possible, even early in the month. It may be best for large growers to plant at several different times, particularly in the case of the single and semi-double kinds, but the glory of the plant is as a brave spring bloomer, and we do not gain by forcing from its natural season.

Right planting of the choice kinds is important. A bed of prepared earth should be made ; it matters not where the position is, so long as the subsoil is well drained. A stagnant soil is hurtful to the Anemone, which roots deeply, and the soil should be some 18 in. deep. During planting, the bed should be raked level, and marked in cross rows. Mr. Carey Tyso recommends a bed 3 ft. 4 in. in width, with five roots in a row, so that each may be 6 in. or 7 in. apart. "As the tubers are varied in form and size, the hand or a trowel should be used in making the holes 2 in. deep, and large enough to allow the root to rest evenly on the soil, avoiding much pressure, as the limbs of the tubers are easily broken off." Tubers vary much in size and shape, according to the variety, and are "formed of irregular fleshy bunches, having a number of small protuberances called crowns. These crowns are obtuse points, often a shade darker in colour than the surrounding skin. They are in clusters near the centre, and sometimes singly at the extremities of the projecting limbs. As amateurs have been known to plant the crowns downwards, some attention is needful. The direction to plant the right side upwards seems trite, but is not superfluous."

In the days when the Anemone was more of a "florist's" flower than it is now, it was usual to spread over the bed 2 in. of half-decayed leaves for a protection against frost, as the florist dreaded the effects of frost on his Anemones, Ranunculus, and Tulips.

Thinning the flowers was done with advantage when the Anemone was an exhibition plant ; some flowers became blind, or were without the complement of centre petals that give symmetry to the double forms, and such were pinched off to strengthen the rest. Weeding and watering are important. On the rich soil weeds grow with vigour and must be plucked out, keeping the bed stirred and tidy. Water should be given freely in dry weather, a good soaking at a time. When the plants show signs of ripening at the end of July, or in August, dig up the roots with some soil attached to them, and put into boxes in a cool dry place for planting out another season. They should be looked over occasionally during the winter.

The old double and single scarlet Anemones are vivid in colour, and there are also the double and single blue. Those who do not care for named varieties can have mixtures—the double and the single forms being kept distinct. The Dutch growers evidently think the double more important than the single varieties, as in their lists the double varieties are much more numerous than the single forms, and each raiser has his own list of named flowers. Lists of these will be found in bulb catalogues.

What are termed French Anemones are thought an improvement on the Dutch, with large flowers of brilliant and varied colour; the plants vigorous.

Poppy Anemones, double and single, are useful for edgings and for borders either singly or in tufts. They are cultivated alone in beds or in clumps in borders, and answer well for planting under standard Rose Trees or other light and thinly planted shrubs. Cut the flowers when just open.

A. fulgens (*The Scarlet Windflower*).—A native of the south of France, over a limited area, for the most part in vineyards. Although nearly related to Anemone stellata, there appears some ground for naming it a distinct species, as Gay did when he described it as A. fulgens. The localities of A. fulgens and A. stellata are far apart, and the seedlings of A. fulgens, athough often varying, never revert to A. stellata. On the other hand, it seems certain that A. Pavonina is only the double-flowered form of A. fulgens. Its roots and leaves are identical with those of A. fulgens, and it often comes up among seedlings of fulgens. As A. Pavonina yields no seed, and is increased by roots, it is obvious why it never under cultivation reverts to A. fulgens. The Scarlet Windflower withstands severe frosts in the open border, but stagnant moisture injures it. In good well-drained soils it will thrive, but is best in a rich manured loam in a northern aspect and in a shaded situation. Division is the surest way of increasing it, as it is liable

to sport if raised from seeds. Roots may be transplanted almost all the year round, though the resting time extends only from June to August, and to insure early and good flowers plant the roots as early as possible in the autumn. A large bed of well-grown plants in bloom is a brilliant sight. The flowers last indoors for a week or more if cut when just coming into bloom and kept in water in a moderately warm room.—H. V.

In the experiments made by M. Henri Vilmorin it was found that many of the seedling plants were not of the brilliant colour so striking in the true plant, but of a red with a shade of brick. We have seen many of these plants which were carefully separated from the pure stock. They are singularly alike in hue, and manifest no tendency towards A. stellata. On the other hand, plants of the true colour are raised from seed also, and sometimes fine ones, but seed is not to be depended on for reproducing the plant in its finest form. The Greek form of A. fulgens is larger, and very intense in colour. A fine strain was raised by the late Rev. J. G. Nelson, and called by him A. fulgens major.

A. hepatica (*Common Hepatica*).—A beautiful early hardy flower. In sheltered spots on porous soil the foliage will remain through the winter. The Hepatica is a deep rooter—hence it thrives so well upon made banks, and it will do as well as Primroses or Violets in any good garden soil. Where let alone, and not often pulled to pieces, it makes strong tufts. Clumps of the rich-coloured blues and reds when a mass of bloom in March are very beautiful. As few plants are more impatient of frequent removal, the best way is to put young plants in good soil, and let them remain until they become strong clumps—which would give perhaps twenty or more single crowns. The Hepatica is a native of many hilly parts of Europe and N. America. Usually found in copses and half-shady positions, which will suit it best in a cultivated state also. The best-known kinds are the double red and single blue, both amongst the hardiest of the section. Then there are the single white ; single red ; double blue, rich in colour ; Barlowi, a rich-coloured sport from the single blue ; splendens, a single red known ; lilacina, a pretty mauve kind ; and some others—every variety being worthy of culture. Where plants and space are to spare, there is little trouble in naturalising this in sandy or barish places, or in a thin shrubbery—anywhere, in fact, where the plant would not be overrun by larger things. Mr. Frank Miles, who was very successful in raising seedlings, thus describes his practice.

Sow the seed as soon as it is ready to fall, in light sandy loam. If it once gets dry before sowing, it does not grow readily. Put slates or bricks flat on the soil, slates for roofing being the best ; the bed will not then require watering or weeding. In October or November the seed will begin to germinate. Remove the slates and put the boxes under glass without any heat. By spring-time every seed will have germinated. During the summer keep the seedlings in a shady place. Some will then make their first leaf and probably bloom the following spring, but it will take three years from the time of sowing for the plants to blossom well.

A. japonica (*Japan Anemone*).—A tall autumn-blooming kind, 2 ft. to 4 ft. high, with fine foliage and large rose-coloured flowers. The variety named Honorine Jobert, with pure white flowers, is a beautiful plant ; and all good forms of the plant should be cultivated where cut flowers are required in autumn. By having some on a north border, and some on a warm one, the bloom may be prolonged. Various hybrids raised between the Japan Anemone and A. vitifolia appear to have been lost. None that we have seen was so good as the type, or the best of all, the white and pink. Every bit of the root grows when divided.

"Anemone Honorine Jobert" is not a garden hybrid between A. vitifolia and A. japonica, but originated at Verdun-sur-Meuse in the garden of M. Jobert. From a large tuft of A. japonica a stem arose with pure white flowers.

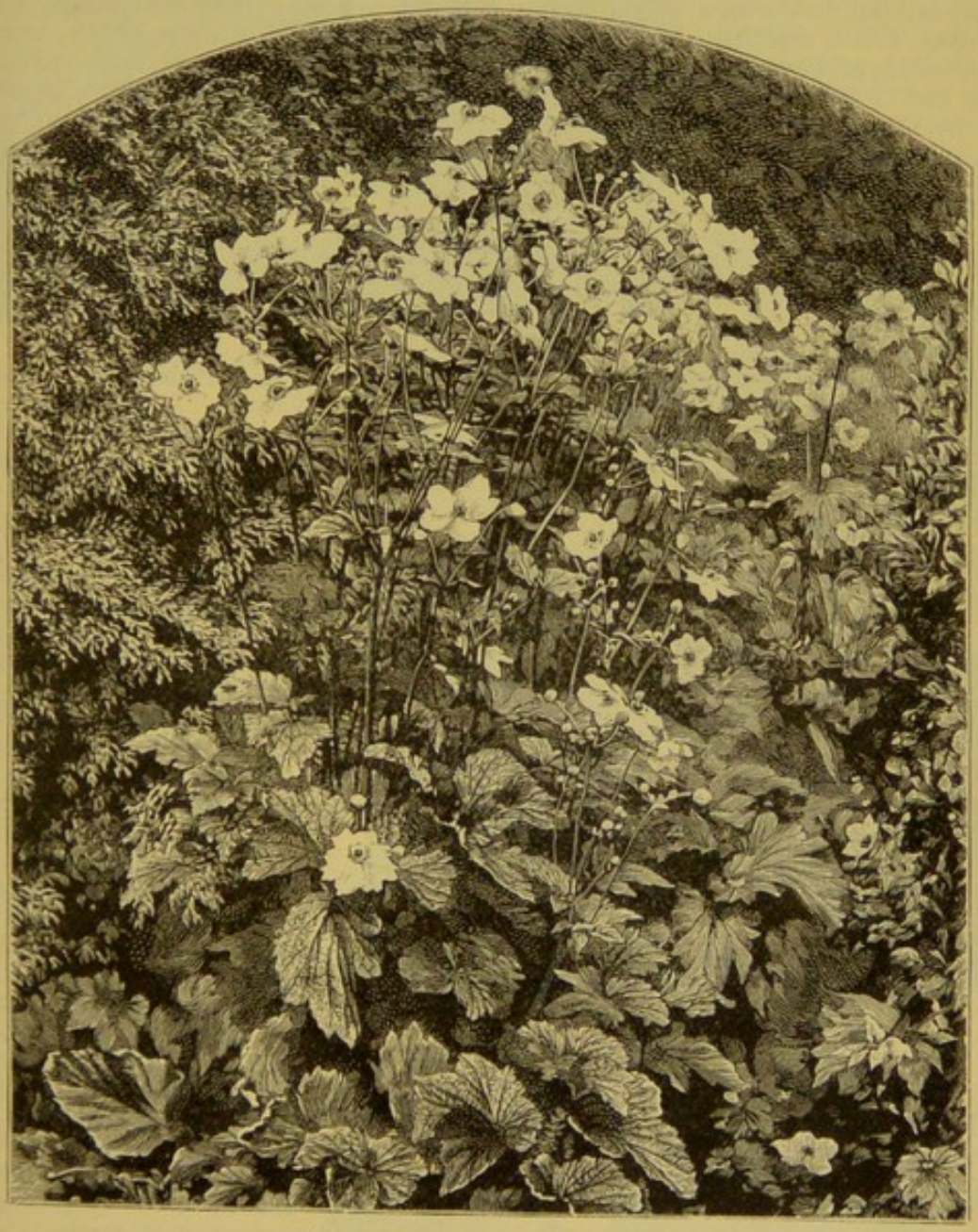
The various forms of the Japan Anemone are useful for borders, groups, fringes of shrubbery in rich soil, and here and there in half-shady places by wood walks. One of the best plants for cut flowers.

A. nemorosa (*Wood Anemone*).—In spring this native plant adorns our woods, and also those of nearly all Europe and Asia, but it is so abundant in the British Isles that there is little need to plead for its culture. There are double varieties, and the colour of the flower is occasionally lilac, or reddish, or purplish.

A sky-blue variety of the Wood Anemone, A. Robinsoniana, has of recent years been much grown. It is of easy culture and of peculiar beauty, especially if seen when the noon-day sun is on the flowers. It is fitted to grace a ledge of

the rock-garden as a colony or a wide-spreading tuft; or for the margins of borders, or as a ground plant beneath taller subjects, or for a carpet for beds of choice shrubs, with ample space between, or for small beds beneath standard Roses, or for the wild garden or for dotting through the Grass in the pleasure-ground in spots not mown early. In this case it requires some taste to get the groups or colonies into easy natural outline. After a time the plant will take care of itself.

The late Rev. H. Harpur Crewe wrote as follows concerning A. Robinsoniana: "Of a numerous and very beautiful family, this is, to my mind, the undoubted queen. There is a splendour about A. fulgens and Pavonina, and a dazzling beauty in A. stellata and coronaria; there is much delicate grace about A. bracteata, trifoliata, apennina, blanda, sulphurea, alpina, nemorosa, and narcissiflora; we all admire the purple and silk in which A. Pulsatilla and vernalis love to clothe themselves, and the golden sheen of A. palmata and ranunculoides; A. japonica and vitifolia, and their varieties and hybrids, have much pleasant autumnal brightness,—but, to my mind, all fade before the simple and innocent loveliness of A. Robinsoniana. Most botanists



White Japan Anemone in shrubbery.

seem to agree that, though in many respects very distinct, it is a variety of the Wood Anemone, A. nemorosa. It is a dwarfer plant, blooms later, and both leaves and flowers possess more strength; but its distinguishing characteristic is the pure, pale, cærulean blue of the inner surface of its petals. I know of nothing more lovely than a fully expanded patch of this beautiful flower on a bright spring forenoon. It is a rare British wild plant: I know of its occurrence in Norfolk and Essex, and I believe it has also been found in Kent, Sussex, and Oxford. It was unknown till a few years ago, when

Anemone Robinsoniana.

Mr. Robinson found it growing wild, and, struck with its marvellous beauty, so frequently spoke of its charms that it became a general favourite, and, in compliment to its champion, took the name of A. Robinsoniana."

As the origin of this plant is of some interest, I may state that I first saw it at the foot of a wall in the Botanic Gardens at Oxford. From roots given me by the Curator, Mr. Baxter, all the stock of the true plant now in gardens has come. I believe Mr. Baxter told me that it was sent him by a lady from Ireland. It should be noted that the very pretty blue form of our Wood Anemone that I have seen in some abundance wild in Wales is not the same as this.—W. R.

A. palmata (*Cyclamen-leaved Anemone*).—A distinct kind, with leathery leaves and large handsome flowers in May and June, glossy, yellow, only opening to the sun. A native of N. Africa and other places on the shores of the Mediterranean, this charming flower should be planted in deep turfy peat, or light fibrous loam with leaf-mould, but not placed on the face of rocks suited for Saxifrages and other plants content with mere crevices, rather on level spots, where it can root deeply and grow into strong tufts. There is a double variety, A. palmata fl.-pl., and a white one, A. palmata alba. This Anemone may be increased by either division or seeds.

A. Pulsatilla (*Pasque-flower*).—Though not common in Britain, when it occurs on a bleak chalk down, it is generally freely dotted over the turf. There are few sights more pleasant to the lover of spring flowers than its purple blooms just showing through the dry Grass of a bleak down on an early spring day. It is smaller in a wild than in a cultivated state, forming in the garden strong healthy tufts, but it is one of the plants more beautiful in a wild state than in a garden. In Normandy with Mr. Burbidge we came upon many plants of it on the grassy hill about Château Gaillard and also in the woods and by the roads near, and we thought we had never seen so fair a wild flower. There are several varieties, including red, lilac, and white kinds, but they are not common, and there is also a double variety. It prefers well-drained and light but deep soil, and is increased by division or seeds.

A. ranunculoides (*Yellow Wood Anemone*).—Not unlike the Apennine and the common Wood Anemone in habit, this is very distinct in its yellow flowers in March and April. It is S. European, and usually less free on soils than the Apennine A., but is happy on warm or chalky soil. I have not found it do well on clay. It is charming for association with tufts of the Apennine or the Wood Anemone, the

Pasque-flower, any of the varieties of A. Hepatica, the Aubrietias, and such plants. It is a naturalised plant, and

Pasque-flower (Anemone pulsatilla).

grows in Herts, Notts, and several other counties, whilst it is increased by division.

A. stellata (*Star Windflower*).—A native of Germany, France, Italy, and Greece, if not as showy as the common Anemone, is as beautiful. The star-like flowers, ruby, rosy purple, rosy, or whitish, vary in a charming way, and usually have a large white eye at the base, contrasting with the delicate colouring of the rest of the petals, and the brown violet of the stamens and styles of the flower. It is not so vigorous as the Poppy A., and requires a sheltered warm position, a light, sandy, well-drained soil. It is suitable for grouping with the alpine kinds of Anemone on the rockwork, the mixed border, and the spring garden. As in the case of the finely coloured Poppy Anemones, the best way will be to select and increase certain fine forms. Where the soil and district suits the plant, it is well to encourage it. Mr. Ellacombe, of Bitton, speaks highly of the white variety: "At first it is rather stained with purple, but when fully out it is a pure white star, with pale purple under petals. This with the black eye and the pretty foliage make it a striking flower, and a very good addition to spring flowers." It is increased by division and seeds, and is the same as A. hortensis.

A. sylvestris (*Snowdrop Windflower*).—A handsome plant, growing on almost any soil, with white flowers in spring as large as a crown-piece and beautiful buds. A native of Siberia and Central Europe, it is at home in this country, and should be grown wherever good border flowers are desired. It will associate well with the Alpine Windflower, and plants of like size, about the lower parts of the rock-garden, along wood walks, and in shrubberies. The aspect of the drooping unopened buds suggested its English name—the Snowdrop Anemone. This is from 1 ft. to 15 in. high, and is increased by division of the root.

Anemone sulphurea.

A. thalictroides (*Thalictrum anemonoides*).

A. vitifolia (*Vine-leaved Anemone*).—Like the Japanese Anemone, but more downy, and flowering a fortnight earlier.

It is a native of the moist shady valleys of Nepaul. The name A. vitifolia occurs in many catalogues, but we have not often seen under the name any plant that differs from what is known as A. japonica or one of its forms. A. vitifolia is earlier in bloom, and the flowers are not quite so large, the white having a slight tinge of pale purple outside. It is not so fine as the white Japan Anemone.

The previously named Anemones are the most beautiful of the family, which, however, contains many other interesting

Anemone narcissiflora.

and useful plants. These, fro their rarity, slowness of growth, or from various other causes, are only named here : A. acutipetala, A. alba, A. baldensis, A. collina, A. dichotoma, A. Halleri, A. Hudsoniana, A. montana, A. multifida, A. narcissiflora, A. Nuttalliana, A. obtusiloba, A. ochotensis, A. patens, A. pennsylvanica, A. Popeana, A. polyanthes, A. pratensis, A. rivularis, A. scaposa, A. sibirica, A. thalictroides, A. trifoliata, A. virginiana, and A. vernalis. There are also tender species not included here ; most of the above are of easy culture, with the exception of the alpine species, like A. vernalis, which are slow and require to be carefully grown in fully exposed spots in moist, gritty soil.

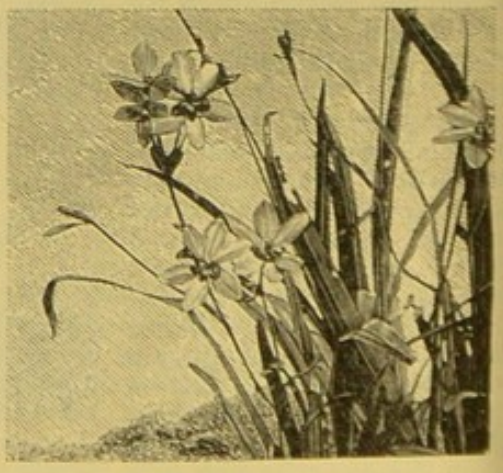
Anemonopsis.—A. macrophylla is a beautiful Japanese plant somewhat like the Japanese Windflower, but smaller. The thick shining leaves rise to a height of 12 in. ; the slender flower-stems, about 18 in. in height, bearing drooping blossoms, about 1½ in. across, and pale purple. They differ from those of the Anemone in having two rows of petals, one outside and spreading, the other forming a cone in the centre. It thrives in a rich soil in a shaded border well drained.

Angelica.—Plants of the Celery Order, which would be of some use for their form had we not so many fine hardy plants in the same family. A. archangelica is a well-known plant in most kitchen gardens. Used for conserves : as a vegetable in the north, the roots in medicine, and the seeds in making liqueurs.

Anigosanthus coccineus.—An Australian plant with numerous crimson flowers with green tips, hardy in sheltered spots, but of little value out-of-doors in our climate.

Anisodus luridus.—A hardy perennial of the Solanum family from Nepaul. It has greenish-yellow bell-shaped flowers and ample bright green foliage, but is of no garden value. *Syn.*, Scopolia lurida.

Anomatheca cruenta.—A pretty little South African bulb, from 6 to 12 in. high, flowers ½ in. across, carmine crimson, three of the lower segments marked with



Anomatheca cruenta.

a dark spot ; in loose clusters on slender stems and Grass-like leaves. Hardy on many soils, but in others it should be planted on warm slopes, in very sandy

dry soil or on warm borders ; the bulbs planted rather deep. In many soils it increases rapidly.

Antennaria (*Cat's-ear*).—Mostly hardy alpine or border flowers. A. margaritacea, the Pearly Everlasting, is a North American plant, 2 ft. high, with flowers in clusters, white and chaffy, hence are kept in a dry state, and dyed in various colours. The Mountain Cat's-ears, A. dioica and A. alpina, and such forms as A. minima, are neat little plants with whitish foliage, used as carpeting. All are of simple culture in ordinary soil in exposed positions. These are good rock-garden plants and the pretty little rosy heads of one form of the Mountain Everlasting may often be seen in the cottage gardens of Warwickshire. A. tomentosa has been much used as a dwarf silvery plant in the flower garden. It is hardy and of easy increase and culture in bare spots.

Anthemis (*Camomile*).—Of the kinds in cultivation A. Aizoon is a dwarf silvery rock-plant, 2 to 4 in. high, with Daisy-like flowers. It should be grown in the rock-garden in exposed places. A. Kitaibeli is pretty in the mixed border,

Anthemis Macedonica.

with large, pale, lemon-coloured, Marguerite-like flowers. A. tinctoria is similar, and both are excellent for cutting. The double-flowered form of the Corn Camomile (A. arvensis) is sometimes cultivated among annual plants.

Anthericum (*St. Bruno's Lily*). —Graceful plants of the Lily family, containing few species hardy in this country. These are the European kinds, among the most beautiful of hardy flowers. A. Hookeri (Chrysobactron Hookeri) is a distinct New Zealand plant, 15 to 20 in. high, with bright yellow flowers, each ½ in. across, appearing in long spikes in early summer. It grows best in moist deep soils, such as an artificial bog. A. Liliago (the St. Bernard's Lily) is about 2 ft. high, with white flowers in early summer. It is known also as Phalangium Liliago. A. ramosum has flower-stems about 2 ft. high, much branched, and small white flowers ; it has Grass-like leaves, and soon grows into large tufts. It is sometimes called in gardens and nurseries A. graminifolium. A. Liliastrum (St. Bruno's Lily) is a graceful alpine meadow plant in deep free sandy soil, in early summer throwing up spikes of snowy-white Lily-like blossoms. In

Anthemis tinctoria.

dry soils a covering with rotten manure helps it, and in early spring protects the plants from slugs and caterpillars. It is increased by division of the roots in autumn, which is the best time to plant, or it may be raised from seed. It usually grows about 15 in. high, and is excellent for borders, better still, however, in a colony or group in spaces between dwarf shrubs. Where plentiful, it would be an interesting subject to naturalise in a

Grassy place. This species is also known under the names of Paradisea and Czackia.

The major variety of the St. Bruno's Lily has much larger flowers (2 in. across) coming up from the root. These open before the flowers on the spike, and are larger. It grows 3 ft. high in good soil, and is a fine border plant.

Antholyza.—Plants of the Iris family, natives of the Cape of Good Hope, with Iris-like leaves and tall flower-spikes that bear numerous bright red flowers. They are hardy in a warm sheltered well-drained border in rich sandy loam. Lift the plants every autumn, so as to separate the small bulbs, replanting in October and November, or in February. A handful of litter over them during winter would be the best way to insure their safety. Watsonia Meriana and others are known in some gardens as species of Antholyza, but they correctly belong to Watsonia. Offsets and seeds.

Anthyllis (*Kidney Vetch*).—Plants of the Pea family, of which few are worth growing. A. montana, the Mountain Kidney Vetch, is an alpine hardy rock-plant 6 in. high, the leaves nearly white with down, and the pinkish flowers in dense heads, rising little above the leaves, forming with the hoary leaves pretty little tufts. This plant thrives on cold and bad soils, resisting cold and moisture. A. erinacea is a singular spiny, almost leafless shrub, about 1 ft. high, with purplish flowers. A. Vulneraria (Woundwort), a common native plant, is pretty on dry banks. There is a white and a red variety.

Anticlea (*Zygadenus*).

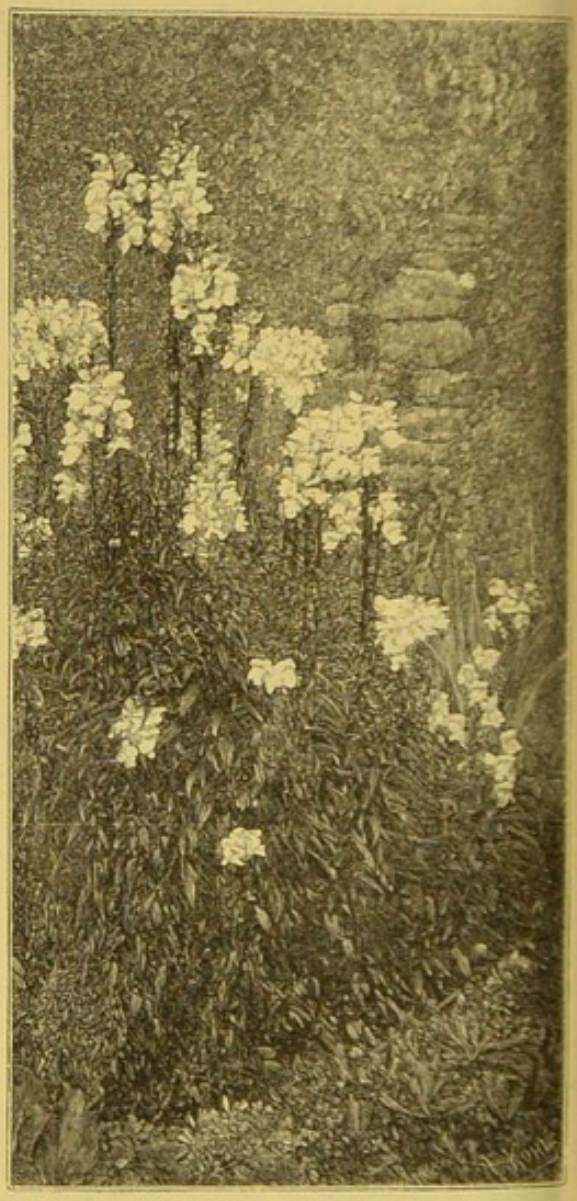
Antirrhinum (*Snapdragon*).—A numerous family of plants mostly hardy and many of them from mountainous regions, but none so popular in gardens as the handsome Snapdragon (A. majus) which like the wallflowers often grows on walls and stony places. Among the many species, some few are seen in cultivation from time to time, but they do not take a large place in gardens. Among the best are A. Asarina and A. rupestre.

Of the common Snapdragon, the garden varieties are now numerous, and often showy in effect, the best being the pure colours (*i.e.*, not striped). They fall into several "races," according to their height.

The varieties are divided into three sections based upon the length of the stems:—

1. Tall varieties.
2. Medium varieties.
3. Dwarf varieties.

The large-flowered Snapdragon, even when wild, varies greatly, the result of situation, and when under cultivation through the efforts of gardeners to produce new varieties, so that it gives us from seed the greatest variety of form. These differences are, however, in the good kinds confined to the colour of the flowers and the tints of the foliage. Thus in a single mixed sowing of the Snap-



Antirrhinum.

dragon it is often possible to find from twenty to twenty-five different forms as regards the flowers, although closely resembling each other in habit, height, and foliage. So also with the medium-sized kinds. By saving the seed from such plants and re-sowing MM. Vilmorin of Paris obtained a number true to their form, and in the course of several years'

sowings, by getting rid of all but the selected types, obtained the first of the fixed varieties. A more difficult matter was to get rid of certain exceptional colours which sometimes showed themselves in mixed seedlings. The desire to obtain striking varieties is easy to understand; baskets of varicoloured flowers, although pleasing when near, are when seen at a distance not so good in effect. On the other hand, by arranging the different varieties in groups of simple colours alternately we get striking effects and a certain fulness, and it may be repose, but in any case effect is gained.

The Snapdragons fall into the three races according to height.

TALL VARIETIES.—These plants attain a height of 1 ft. 8 in. to 2 ft. (sometimes more) when closely planted, and in large beds in French gardens may be planted in groups of 6 ft. or 8 ft., encircled sometimes by corresponding varieties among the dwarf kinds.

THE MEDIUM VARIETIES.—These, which grow 1 ft. 4 in. to 1 ft. 8 in. high, may be used in the same way, and they lend themselves especially to the filling of beds for which the habit of the large kind is too pronounced, and to the adornment of banks and of dry walls. It is in this that we find the greatest variety of colour. Though the flower-spike is not so long as in the preceding, there is no decrease in the size of the flowers.

DWARF VARIETIES.—In the old race of dwarf Snapdragon, or Tom Thumb, the plants for the most part had spikes of considerable length, and which were sometimes slender. Repeated selection from these has resulted in the production of plants of a peculiar habit and distinct race. The flower-bearing branches attain a height of 6 in. to 7½ in., and a breadth of some 10 in. They are composed for a great number of short, thick branches, the foliage being abundant and of a black-green colour. The flower-spikes are thickly set, especially in the case of the white-flowered and yellow-flowered varieties. Where many branches bloom at the same time the plant presents a mass of closely set flowers, to which the foliage of the outer branches is as a frame. Other varieties are rather less dwarf, and their spikes have the form of enlarged cones, as with the feathery-flowered variety. The foliage of the race is throughout of a dark colour.

TALL VARIETIES.—Among these the best are:—

Pure White.—A superb plant, with pure white flowers, the buds a very pale greenish-white, the swellings of the lower lip of a very clear yellow tint. The stems and foliage are of a handsome clear green.

White, with Rosy Streaks.—Thin cherry-rose streaks or lines are traced upon the flower on a white-lilac-like ground. Both are very clear varieties, and, like the pure yellow described lower down, very precious for bouquets.

Brilliant.—A pretty purple and yellow flower.

Crescia.—A superb plant, flowers of a very decided red colour. The tube of the corolla reddish violet.

Dalila.—The tube and extremity of the lips of this are white.

Elegant.—Of a decided red or carmine, a very brilliant colour coming between the clear and the pronounced tints.

Pure Yellow.—Flower large and self, a very pure lemon tone.

Kermesina Splendens.—Flowers very large and spikes long, of a striking deep red colour, the leaves reddish violet.

Nigricans.—The most pronounced colour of all, being a red-brown (almost black) and velvety.

Panaché.—A mixture of colours, yellow or black ground and variegated, streaked or dotted with cherry-red or violet-red streaks or dots.

MEDIUM VARIETIES.—

Pure White.—This is like the large-branching variety, but smaller.

Rosy White.—A pretty, very pale, slightly lilac shade.

Constantin Tretiakoff.—Purple-red, lip yellow, tube white.

Firefly.—Handsome and large carmine flower with white tube, and on the swelling of the lower lip a yellow stain.

Nigricans.—Corresponds to the same variety among the large-branching kinds.

Variegated.—Corresponds to the same variety among the large-branching kinds.

Purple.—The entire flower red, but the red on the tube duller.

DWARF VARIETIES.—

White.—The spike of this is very short and the blooms very large, whilst the swelling of the lower lip is slightly tinged with pale lemon-yellow.

Yellow.—Similar to the larger-growing form, the flowers of a very pure sulphur-yellow shade.

Copper Colour.—Rather larger than the two preceding varieties. Flowers copper-red on a yellow ground.

Variegated.—A variety differing slightly from the race, the spikes being perceptibly longer. The flowers are streaked and dotted on a yellow or white ground.

CULTIVATION.—Snapdragons are easy of cultivation, light sandy and free soils suiting them. They are sown: (1) In August in the place where they are to grow, or preferably in seed-beds, in which latter case plant close to a south wall, sheltering from continued frosts with dry leaves or straw, planting out in spring 16 in. to 24 in. apart. (2) In June or July in seed-beds in a well-exposed position, planting out the seedlings in the spring. (3) In seed-beds (March to April) at the foot of a south wall. Transplant when the plants are sufficiently developed, and they may also be transplanted to seed-beds and planted out when the flowers commence to show themselves. By means of successive sowings it is possible to obtain an almost uninterrupted bloom from June until frost comes. Snapdragons are also propagated by cuttings made in the spring or summer, and even during the whole of flowering time. With Snapdragons, as with a great number of other plants, the colour of the stems and leaves of the young plants may to a certain point indicate to us what the colour of the flowers will be. Thus, kinds with green or light-coloured stems and leaves will have in nearly all cases white, or mainly white flowers, or of which the colour is undecided; whilst of the plants which produce flowers of a decided colour the stems and the leaves are of a pronounced green tint, more or less purple or ruddy also.

Apera arundinacea.—A dainty slender-growing Grass, almost rush-like in growth, bearing long weeping plumes of a glossy purplish-brown colour, and useful where graceful spray is wanted. The plumes dry well, and endure for a long time.—B.

Aphanostephus ramosissimus.—A pretty half-hardy annual from Texas, scarcely more than 4 in. in height, much branched, every shoot producing a flower-head about 1 in. across, with a yellow disc, and violet-blue ray florets. It has a close carpet-like growth, and blooms freely throughout the summer. The same treatment as other half-hardy annuals.

Aphyllanthes monspeliensis.—A pretty Rush-like plant from Southern France, forming dense tufts 1 ft. or more high. Its flowers are deep blue and ¾ in. across. It is not important, though a tuft on the rougher slopes of the rock-garden will not be out of place.

Apios tuberosa (*Ground Nut*).—A hardy climbing Pea-flower, with a tuberous root, from N. America. The flowers are a dull brownish-purple, violet scented, coming in summer. It is useful for arbours or for rambling over shrubs. Division of tubers.

Aplectrum hyemale (*Adam and Eve*).—An interesting hardy Orchid, from the Eastern United States, 6 to 12 in. high. The thick bulb sends up a large oval leaf in late summer, which lasts until the next summer, when the flower-stalk appears with a raceme of large flowers, greenish-brown and speckled with purple. Sandy moist spots in rich leaf-mould. Of little value for the garden.

Aplopappus.—North American Composites. A. ciliatus is a robust annual, 3 to 4 ft. high, with bright yellow flower-heads 2 in. across. It blooms in summer and autumn. It may be treated as a biennial, the seed sown about August, or as a half-hardy annual, the seeds being sown under glass in spring. A. Fremonti is from 6 to 12 in. high, with erect stems and flower-heads, of a bright yellow, 1 in. across. Colorado, in high ground.

Apocynum (*Dogbane*).—North American plants, of which there are four species in cultivation, but of little garden value. A. androsæmifolium (Flytrap or Spreading Dogbane) is a curious plant from 2 to 3 ft. high, with small rose-coloured blossoms. A. cannabinum, the Indian Hemp, is similar, and so are A. hypericifolium and A. pubescens, probably only varieties of A. cannabinum.

Aponogeton (*Cape Pond-flower*).—A beautiful and fragrant water-plant from the Cape of Good Hope, which, fortunately, is hardy in many parts of these islands. No one has been more successful with it than

Aponogeton (Cape Pond flower.)

the late Jas. McNab, of the Botanic Gardens at Edinburgh, who wrote: "It has been growing in the pond of the Botanic Gardens for the last 40 years, and now

forms many large patches in various parts of it. The pond was at one time a marsh; when it was made, the bottom was causewayed with stones, placed ½ in. apart, in order to allow the numerous springs, peculiar to that portion of land, freedom to rise between them. The pond varies from 2 to 5 ft. in depth, and the bottom is thickly coated with mud, arising from the tree-leaves which are annually blown into it. In this the Aponogeton thrives, and its seeds grow freely in the muddy bottom, and in consequence of the number of springs, portions of the pond are never coated with ice, even during the most severe winters.

About London during the late severe winters there has been no more interesting sight than the profuse bloom of the fragrant Cape Aponogeton, whilst in the midland and cold districts it is necessary, for the perfect culture of this plant in the open air, to grow it in spring or other water that does not freeze; but in mild districts and in the south of England this is not needed. It may be flowered in an inverted bell-glass in a room. In Devonshire it is grown to greater perfection than in the home counties or near London. Failures often result from putting it in too shallow water. A. spathaceum is a smaller-growing plant, with flowers tinged with rose. It is a poor form of the Cape Pond-flower.

Aquilegia (*Columbine*). — Charming plants, often beautiful in habit, colour, and in form of flower, widely distributed over the northern and mountain regions of Europe, Asia, and America, and their flowering period extends throughout May and June. Among them may be found great variety in colour—white, rose, buff, blue, and purple, and also stripes and intermediate shades even in the same flower, the American kinds having yellow, scarlet, and most delicate shades of blue flowers. The Columbines are frequently taller than most of the plants strictly termed alpine, but are nevertheless true alpine plants, and among the most singularly beautiful of the class. The blue, and blue and white alpine kinds, living in the high bushy places in the Alps and Pyrenees, and, indeed, of all European and North Asian mountain chains, are among the fairest of all flowers. Climbing the sunny hills of the sierras in California, one meets with a large scarlet Columbine (Aquilegia eximia or A. formosa) that has the vigour of a Lily and the grace of a Fuchsia; and in the mountains above Salt Lake City, in Utah, and on many others in the Rocky Mountain region, there is the Rocky Mountain Columbine (A. cœrulea), with its long and slender spurs and lovely cool tints in its erect flowers. Indeed, there is no family that has a wider share in adorning the mountains. The finer Columbines are to the smaller alpine flowers what the Birches are to the hill shrubs. Some of the alpine species however, are much smaller than those commonly grown—for example, the Pyrenean Columbine (A. pyrenaica). Although our cottage gardens are alive with Columbines in much beauty of colour in early summer, there is some difficulty experienced in cultivating the rarer alpine varieties. Hence such highly valued kinds as the Altaian Columbine (A. glandulosa) and the Alpine Columbine (A. alpina) are rarely seen flowering well in gardens, and frequently perish. They require to be carefully planted in sandy or gritty though moist ground, and in well-drained ledges in the rock-garden, in half-shady positions or northern exposures. Most rare Columbines, however, fail to form enduring tufts in our gardens, and they must be raised from seed as frequently as good seed can be got. It is the alpine character of the home of many of the Columbines which makes the culture of some of the lovely kinds so uncertain, and which causes them to thrive so well in the north of Scotland while they fail in our ordinary dry garden borders. No plants are more capricious; take, for instance, the charming A. glandulosa, grown like a weed at Forres, in Scotland, and so short-lived in most gardens. Nor is this an exception; it is characteristic of all the mountain kinds, the best soil for them being deep, well-drained, rich alluvial loam. Mr. J. C. Niven suggests that all the Columbines, except the common one, should be looked upon as biennials rather than good persistent perennials. The seeds should be sown early in spring, and the young plants pricked out into pans or into an old garden frame as soon as they are fit to handle, removing them early in August to the borders; select a cloudy day for the work, and give them a little shading for a few days Carry out the same process year after year, the old plants being discarded after flowering. Few who have never grown these and other similar hardy plants in pots can realise how fresh and beautiful they are in spring in a cool house. They may be raised from seed; the seedlings may vary a little in colour and habit, but that scarcely detracts from their value. Sow thinly in light sandy soil, place the seed

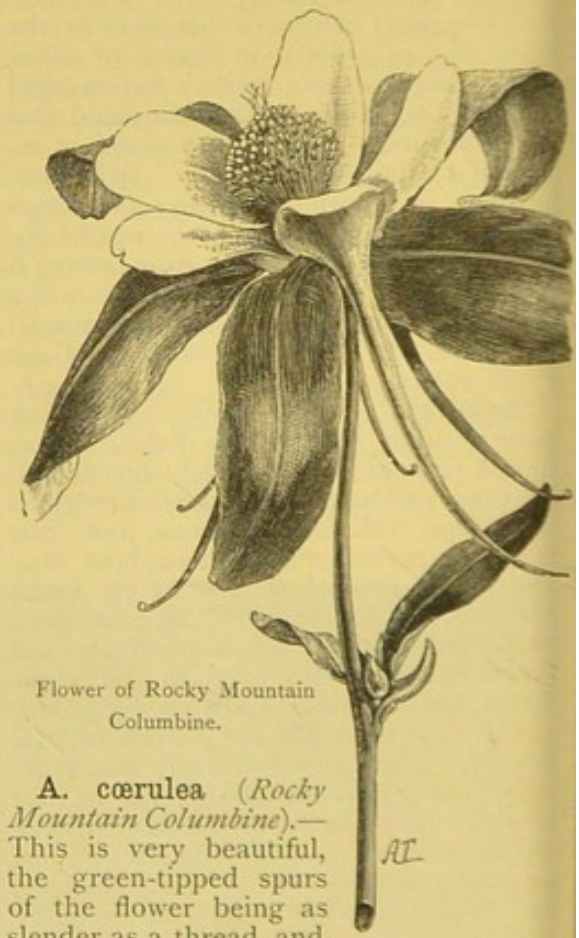
pots or pans in a close frame, prick off when large enough and, finally, pot into single pots and shift on during the summer into 6-in. pots, standing the pots on a coal-ash bed—or, better still, plunging them in the ashes to save watering. At the approach of cold weather, move them into a cold frame, and if the frost is very severe lay some litter over the glass to prevent the pots getting broken.

A. alpina (*Alpine Columbine*).—This plant, widely distributed over the higher parts of the Alps of Europe, is from 1 ft. to 2 ft. high, and has showy blue flowers. There is a lovely variety with a white centre to the flower, and many will say they have not got the "true" plant if they possess only the variety with blue flowers. It should be planted in the rock-garden in a rather moist and sheltered, but not shady, spot in deep sandy loam or peat. Increased by seed or division. In moist districts, and in free soil, it is a good border plant.

A. californica (*Californian Columbine*).—One of the finest of the American species. The tendency of the plant is to produce one bold woody stem, 3 ft. high. The spurs are long and a bright orange; and to appreciate the full beauty of the flower it must be turned up from its naturally pendent position, as then the beautiful shell-like arrangement of the petals becomes visible, the bright yellow marginal line gradually shading off into deep orange. The seeds should be carefully looked after, as having once blossomed the old plant may perish. This plant thrives best on a deep sandy loam and moist. *Syn.*, A. eximia, A. truncata, and A. formosa.

A. canadensis (*Canadian Columbine*).—This was once our only New World Columbine. It was introduced from Virginia, and may be taken as the type of the scarlet-orange and yellow group. The flowers are smaller than the Western American kinds; but this is compensated for by the brilliancy of the scarlet colour of the sepals and of the erect spurs, and by the bright yellow of the petals. The true A. canadensis is a slender grower, 1 ft. in height. The flower seen in cultivation is often a cross, with vigour of growth and brilliancy of colour, and easily raised from seed. There is a yellow form. It is a plant for borders, for placing here and there among dwarf shrubs and plants in the rougher parts of the rock-garden, but is not among the best species. Writing of it from Long Island, Mr. Falconer says: "You should see this among the rocks. The Canada Columbine grows in abundance in North American woods, and always in rocky places; there it springs from the narrowest chink, a little bush of leaves and flowers; or may be in an earthy mat upon a rock you find a colony of Columbines, Virginian Saxifrages, and pale Corydalis; they usually grow together."

A. chrysantha (*Golden Columbine*).—This tall and beautiful species is as lasting as a perennial on many soils where the other kinds perish. Like A. cœrulea it has a long slender spur, often over 2 in. in length. It is quite hardy, and thrives even on the stiff clay soils north of London, though it is no less free in more happy situations. It comes true from seed, which is most safely raised under glass, and the plant grows 4 ft. in height in good soil.



Flower of Rocky Mountain Columbine.

A. cœrulea (*Rocky Mountain Columbine*).—This is very beautiful, the green-tipped spurs of the flower being as slender as a thread, and have a tendency to twist round each other. But it is in the blue and white erect flower that the beauty lies, the effect being even better than in the blue and white form of the alpine Columbine. It is hardy, flowering early in summer, and from 12 in. to 15 in. high, being worthy of the best position on the rock-garden, and in choice mixed borders, where the soil is free and deep. Unlike the Golden Columbine, it is not perennial

on many soils, though longer-lived in cool hill-gardens. To get healthy plants that will flower freely, seeds should be sown annually, as the plant rarely does well after the second year, in many cases dying before that time. This should have a little bed to itself, from which its lovely flowers could be gathered for cutting and plants obtained when wanted. A coating of 2 in. of half-rotten leaves in summer would assist the bloom. As soon as the seed is ripe, it should be sown in cool frames near the glass, or in rough boxes in cool frames. With abundance of fresh seed and beds of fine soil there will be no difficulty in raising it in the open air, if it is protected from birds and slugs.

"M.," writing from Utah, says: "Some plants of this species seen in Utah seem to belong to a distinct variety; their colour is not blue, or blue and white, but white or yellowish-white. They were flowering in great numbers 10,000 ft. above the sea wherever any tiny stream trickled down the mountain slopes; and the flowers at a little distance reminded one more of those of Eucharis amazonica than anything else. The plant grows in handsome tufts 2 to 3 ft. high, the flowers large, and the spurs very long, with a rounded knob at the top."

A. glandulosa (*Altaian Columbine*).—A beautiful plant of tufted habit. Flowers in early summer—a fine blue, with tips of petals creamy-white, the spur curved backwards towards the stalk, the sepals dark blue, large, and nearly oval, with a long footstalk. It is a native of the Altai Mountains, and one of the most precious flowers for the rock-garden or the select border, in deep sandy soil. Increased by seed and careful division of the fleshy roots, when the plant is in full leaf. If divided when at rest, the roots are almost certain to perish, at least on cold soils. A. g. jucunda is less robust and tall than the type.

A. Skinneri (*Skinner's Columbine*).—A distinct plant, the flowers produced later on slender pedicels, the sepals greenish, the petals small and yellow; the spurs are 2 in. long and bright orange-red. Though from Guatemala, it comes from mountain districts, and is nearly hardy. It should be more often seen in gardens. Crossing with other kinds mars its beauty. While the name is often seen, the true plant is rare.

A. viridiflora.—As a rule green flowers are not much admired, but this Siberian Columbine is charming; the sage-green of the flower and the delicate tint of the leaf offering a singular contrast to other Columbines. In the border it may not be noticed, but if a spray or two are in a glass its beauty of form and colour is soon seen. There is a variety A. atropurpurea. The sepals are green, but the petals are deep chocolate, whilst the plant is vigorous. It is suitable for a quiet corner in a bed

Siberian Columbine.

of shrubs or for any place among quiet-coloured plants, and for nursery beds of hardy flowers. It has a delicate fragrance, and is raised from seed.

A. vulgaris (*Common Columbine*).—One of the commonest of cottage garden plants. There are many forms in various colours, and double kinds, flowering from May till towards the end of summer. Mr. Niven states that at Broughton Woods, in North Lincolnshire, this Columbine raises its stately stems to a height of 3 ft.; and in the month of May, when the Lily-of-the-Valley, which grows there by acres, adds its delicious perfume, a walk is charming, especially after a gentle shower. But, however valuable for the wild garden, the many forms of the common Columbine are most useful for flower gardens, and it is occasionally worth while to raise them from fresh seed of a good strain. It would also be well to select and fix varieties of distinct colours. One may often see a

variety of the common Columbine nearly as handsome as any of the finest alpine species. A. Vervæneana is a form with yellowish mottled leaves, and A. v. alba has pure white flowers. The varieties of our common Columbine and some hybrid forms are so free and hardy that they may well be used in the wilder and more picturesque parts of large pleasure-grounds, by streams, in copses, or among Foxgloves, Geraniums, or long Grasses. The ground should be well dug if the vegetation is dense, and the seed sown on the spot. Where bare places occur, and

White Columbine.

seedlings have a chance of coming up without being strangled by other plants, seed may be scattered as soon as ripe.

A. Witmanniana.—This is quite distinct from A. glandulosa, but often passing for it. It is one of the most vigorous and free-flowering of all the Columbines. The flowers have dark purple sepals and a white corolla, but are far inferior to those of A. glandulosa ; it is, in fact, less pleasing than many seedling varieties of A. vulgaris which I have raised, but which, unfortunately, I can neither divide nor reproduce true from their own seed.—B.

Arabis (*Rock Cress*).—A large family of hill-plants, few of which are grown, though some are worth a place. A. albida (White Rock Cress) is a popular plant in gardens, and in the barrow of every London flower-hawker in spring. It will grow in any soil, in our cities as well as in the open country, where its sheets of snowy bloom may open in early spring. It is as easily increased as a weed, by seed, or cuttings, and is useful for the mixed border, the spring garden, and for naturalising in wild and bare rocky spots. In the rock-garden it is useful for ledges, and may also be used as an edging to beds of shrubs, though it is better to associate it in such positions with groups of plants like the Aubrietias, the rock Alyssum, and other easily grown alpine flowers that bloom early in the year. It is closely allied to the alpine Rock Cress (A. alpina) so widely distributed on the Alps, but is distinct, and by far the best kind. The variegated variety, Arabis albida variegata, is useful for edging. It is the dwarfest and whitest of the variegated Rock Cresses. A. blepharophylla (Rosy Rock Cress) is not unlike the white Arabis, but the flowers are rosy purple. It varies a good deal, but there is no difficulty in selecting a strain of the deepest rose, its healthy tufts being effective in April. In mild districts and on light soils it should be tried out every winter, but does not appear to have answered well after many trials, and its annual and tender character is against it as a rock-plant. N. America. Propagated by seed. A. procurrens—a dwarf spreading kind, with shining leaves and whitish flowers—is not worth growing. There is, however, a fine variegated form (A. variegata). The prettiest of the variegated Rock Cresses is A. lucida variegata, thriving best and is easiest to increase by division in open and sandy yet moist soil ; the best time to divide it is in early autumn, in April, or early in May. The flowers should be removed when they appear. The green form (A. lucida) is a useful edging plant. A. arenosa, from the south of Europe, is a pretty annual in the spring garden or naturalised on old ruins or dry bare banks. A. petræa is a neat sturdy little plant with pure white flowers ; it is a native of some of the higher Scottish mountains, rare but very pretty when well grown on a moist well-exposed spot on the rock-garden. A. stelleri, a Chinese species, is a much freer flowering plant than A. blepharophylla, ripening seed freely and easily grown in the rock-garden.

Aralia.—Plants of diverse aspects, but few of them fitted for open air, except A. canescens and A. spinosa, which thrive in our gardens, and which in size and beauty of leaf are far before many "fine-foliaged

plants" carefully grown in hothouses. These and even the tender kinds may find a place in the flower garden, and the vigorous herbaceous ones in the woodland. By cutting the shrubby species down occasionally they may be kept in the condition of fine-leaved plants, like the Ailantus treated in like manner.

The Aralias described are now placed under Fatsia, but we retain the older name as better known in gardens. A. papyrifera (Chinese Rice-paper plant), though a native of the hot island of Formosa, is useful for the greenhouse in winter and the flower garden in summer. It is handsome in leaf, and, like all the large-leaved plants, must be protected from cutting winds. Dwarf stocky plants are best when planting it in early summer in rich deep soil. Give plenty of water during the hot summer months. In the north it is not so useful in the open air as in the south and about London. "J." writes: "Its stem, being nearly all pith, does not strike readily; but if the roots near it are examined they will be found to be fleshy. When the plant is taken up, cut each root into pieces about 1 in. long; insert them in light soil, cover the whole, and place them on a shelf near the glass in a temperature of 80°. They will throw out shoots, which should be left until 3 in. in length, when they may be potted, leaving them in heat, say, of 70°, until established. They should then be removed to a colder temperature, and thence to a frame to harden off. In the south of England this plant is almost hardy, and may be wintered in a cold frame, but kept dry."

A. Sieboldi.—A shrubby species, with fine green leaves, usually grown as a greenhouse plant, but nearly hardy, and a handsome bush on dry soils. It grows well in rooms; and, in fact, it is one of the few plants of like character that will carry leaves there in winter. It may be used in the flower garden or the pleasure-ground, for isolated specimens on the turf, or for association with fine-leaved plants; but it soon turns yellow and unhappy-looking if exposed to full midday sunshine. It is also hardier in the shade, its foliage browning badly if caught too suddenly by the sun after hard frosty nights. Seeing how distinct and handsome this Aralia is when fresh and happy out-of-doors in mild districts near the sea, one wonders that it is so rarely seen, especially in those shady and sheltered town gardens whose appearance would be benefited by plants of this kind. For contrasting with Japanese Bamboos, Aucubas, cut-leaved Maples, and Ivies of various kinds, there are but few plants that can rival that now illustrated, grown either in the form of single specimens or grouped naturally together in a bold mass with feathery Bamboos for contrast, or such noble-

Aralia Sieboldi.

habited plants as Rodgersia podophylla, Polygonum sachalinense, or the hardy Fan Palm (Chamærops Fortunei). *Syn.*, Fatsia japonica. A. spinosa (Angelica Tree) is useful among sub-tropical plants from the beauty of its foliage. Like many hardy things, it should not be placed where it would be necessary to remove it, or associated with tender plants requiring frequent removal. Its small white flowers appear in autumn. In most cases it has a single erect stem, and should be kept to this, the stem being clad with fierce spines. This fine shrub has often been put in exposed places, but is better where its great leaves will not be torn, and in every size from that down to a plant with a stem not more than 18 in. high may be used in the flower garden. Cuttings of the roots. N. America.

Aralia spinosa. From a photograph sent by Mr. C. L. Mayor, Paignton, Devon.

Arbutus (*Strawberry Tree*).—The beautiful evergreen A. Unedo is chiefly met with in warm and coast districts, where it grows 20 ft. high or more. Inland it is cut down in severe winters. There are varieties of it, one of the best being A. Croomei, which has longer and broader leaves than the common kind. The variety rubra has almost bright scarlet flowers in autumn. One variety has double flowers, while others differ from the original in the size and form of leaves. Thus there are the Oak-leaved (quercifolia), Myrtle-leaved (myrtifolia or microphylla), Willow, or narrow-leaved (salicifolia), and the crimpled-leaved form (crispa), all of which are interesting, but not so beautiful as the common sort, or as Croomei and rubra. S. Europe. Also wild in the south of Ireland. The other species are not so important as flowering trees, though

they are invaluable Evergreens. They are more tree-like than A. Unedo. A. Andrachne, with smooth ruddy-tinged bark, is hardy everywhere in the south and coast districts. About London it reaches a height of over 15 ft. It grows

Flowers of Arbutus Unedo (Strawberry tree).

wild in Greece, and is a very old tree in gardens. A. hybrida, said to be a hybrid between A. Unedo and A. Andrachne, is hardy, and in growth resembles both its parents ; its flower-clusters are larger than those of A. Unedo, and smaller than those of A. Andrachne. A. Milleri is handsome, its flowers pink and its leaves large. A. procera (also called A. Menziesi), from N.-W. America, is not common, and resembles A. Andrachne, but is less hardy. Other kinds named in catalogues—photinæfolia, magnifica, Rollissoni, serratifolia, laurifolia, or andrachnoides—are either identical with the foregoing or varieties of them.

Arctomecon californicum.—A N. American plant of the Poppy family, of which little is known.

Arctostaphylos.—Of this group A. alpina is useful for rocky banks, edging bog-beds, or even in bogs. A. Uva-ursi (Bear-berry) is a dwarf evergreen mountain shrub, 1 ft. high—often less—sometimes grown with rock-plants. It has small rose flowers in early summer and red berries in autumn. Abundant in hilly places in Europe and N. America. Grows in any soil, but prefers a moist border or ledge, and may be increased by division.

Arctotis.—These Cape plants number between forty and fifty species. They are little known. Although many have been cultivated, it would be difficult to find more than half a dozen distinct kinds in collections. They require similar treatment to Calceolarias. The bright colours of many of the species are more intense with the light and exposure of the open air than when the plants are cramped in pots in a greenhouse. Dry sunny banks often devoid of plant life might be beautifully clothed with them. Although true sun-loving plants, they may be used as a groundwork in spots where, unmindful of the shade if not too dense, they flower almost as freely as when fully exposed to the sun.

A. acaulis is apparently a very variable species. The flowers are large, attractive, and of a deep rich orange. A. acaulis does not ripen seed freely, but is easily propagated from side shoots.

A. aspera is a half-shrubby species, with deeply cut and wrinkled leaves and creamy flowers, purplish outside. It may be used in vases and hanging baskets, the exquisite pink buds being pretty. Cuttings strike readily in heat.

A. aureola is known in gardens as A. grandiflora. It is of shrubby habit, 1 to 2 ft. in height, and bears its handsome orange flowers towards the end of the branches. Cuttings taken off towards

Arctotis arborescens.

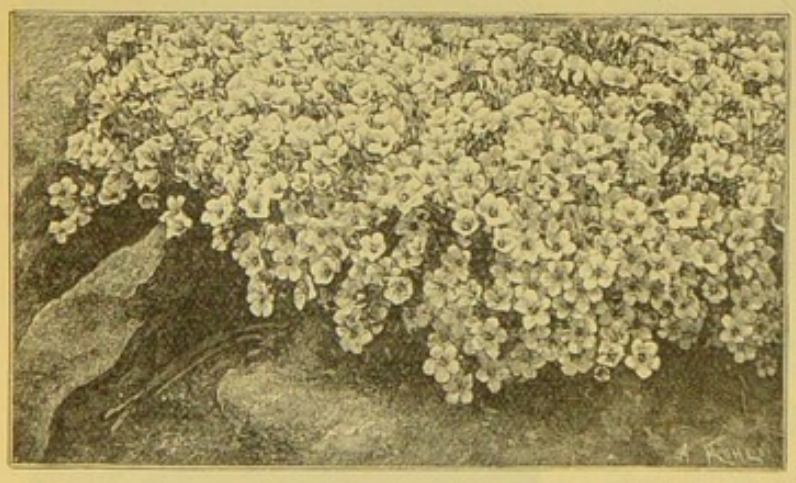
the end of July and August root freely in a cold frame.

Other kinds are A. Leichtliniana, known in gardens as A. speciosa. In habit it is similar to A. aureola, but more straggling, and the golden-yellow flowers are not quite so large. A. leptorhiza is one of the most showy annuals we grow, with abundance of rich orange flowers. The seeds may be sown in the open air, the plant being treated as a hardy annual. A sunny spot should be chosen, and the seedlings well thinned.—K.

Arenaria (*Sandwort*).—A very numerous family, of vast distribution over northern and alpine ranges, and in temperate countries. Few kinds of the great number known are in gardens, and these kinds are dwarf plants, easy to grow, and well suited for the rock-garden.

A. balearica (*Balearic Sandwort*).—A pretty little plant, which coats rocks and stones with verdure, and scatters over the green mantle countless white starry flowers. Plant firmly in any common soil near the stones or rocks it is to cover, and it will soon begin to clothe them. Flowers in spring, is readily increased by division, and is quite easy to grow. On cold soils it perishes in winter, but its home is the rock-garden. I first used it for carpets beneath tea roses at Gravetye, and also for low rough stone walls against banks, over which it spreads in myriads. Corsica.

A. montana (*Mountain Sandwort*).—A pretty rock-plant, having the habit of a



Mountain Sandwort (Arenaria montana).

Cerastium, and fine large white flowers. It is the best of the large Sandworts, and should be in every collection of rock-plants, being hardy and free, and is therefore best to go with the more vigorous rock-plants. France. Seed or division.

A. norwegica is one of the best kinds, forming dense cushions about 6 in. in diameter, and covered with large white flowers throughout the summer. A fine alpine plant. Norway.

A. purpurascens (*Purplish Sandwort*).—An interesting kind with purplish flowers, on a dwarf tufted mass of smooth pointed leaves. It is plentiful over the Pyrenean mountains, hardy, and, like the other kinds, increased by seed or division. It should be associated in the rock-garden with the smallest plants.

Among other Sandworts in cultivation, the best are A. ciliata, a rare British plant ; A. verna, A. triflora, A. laricifolia, A. graminifolia, and A. tetraquetra. These, however, are scarcely worth growing, except in botanical collections.

Arethusa bulbosa.—A beautiful American hardy Orchid, which grows in wet meadows or bog-land, blossoming in May and June. Each plant bears a bright rose-purple flower that shows well on its bed of Sphagnum, Cranberry, and Sedge. The little bulbs grow in a mossy mat formed by the roots and decaying herbage of plants and moss. In cultivation it requires the same soil, and get the leaf as well matured as possible. A shady moist spot with a northern exposure is best, and the soil should be a mixture of well-rotted manure and Sphagnum. During winter, protect the bed with some cover, for it is not so hardy in gardens as in its bog home.

Aretia Vitaliana (*Androsace*).

Argemone (*Prickly Poppy*).—Handsome Poppy-like plants, said to be perennial, but perishing on moist soils after the first year. As they come from the warmer parts of California and Mexico, and even there grow on dry hill-sides and in warm valleys, their perishing here may be understood. Usually about 2 ft. high, having large white flowers 4 in. across with a bunch of yellow stamens in the centre. They should have a warm loam, and go with the choicest annual flowers. The kinds mostly grown are A. mexicana, A. grandiflora, and A. hispida, which are so much alike in habit as not to need separate description. Seed in a warm frame.

Arisæma (*Indian Turnip*).—N. Ameri-

can plants of the Arum Order, and though curious are of little merit for the ordinary garden. In A. triphylla the spathe is curiously marked with purple and white stripes, and is called "Jack in the Pulpit" in America. Some of the Arisæmas are hardy and grow easily on the margins of beds of shrubs.

Aristolochia Sipho (*Dutchman's Pipe*).—This well-known large-leafed plant is generally used as a wall-plant, but is far finer for covering bowers, or any such structure, or for clambering up trees or over stumps. A. tomentosa is smaller, but distinct in its tone of green, and is well worthy to be employed in like manner, both plants coming from N. America. They grow with freedom in ordinary garden soil. The hardy shrubby kinds are not important. The family is a large one, mainly tropical, but some of the forms go into the northern countries. Propagate by cuttings.

Armeria (*Thrift, Sea Pink*).—Pretty plants of the Statice Order, most of which are worth growing. The best known is the common A. vulgaris (Thrift). This native of our shores, and of the tops of the Scottish mountains, is very pretty with its flowers of soft lilac or white, springing from cushions of Grass-like leaves; but it is the deep rosy form, rarely seen wild, that best deserves cultivation. It is like the common Thrift, save that the flowers are of a showy rose. It is useful for the spring garden, for banks or borders in shrubberies, for edgings, and for the rock-garden, and is easily increased by division. As old plants do not bloom so long as young ones, occasional replanting is desirable. In addition to the white variety and the old dark red one, there are Crimson Gem and laucheana, the flowers intense pink. A. cæspitosa, a rose-coloured kind from the south of Europe, 5000 to 8000 ft. above the sea-level. Its flower-heads, each from ¾ in. to 1 in. in diameter, are borne on slender stems 1 to 2 in. high, from June to September. The leaves are in dense tufts, with a branching woody root-stock. A rock-garden plant, thriving in any well-drained, rather poor, sandy loam. In wet weather apt to damp off at the neck in rich soil. It is increased by seeds. A. cephalotes (Great Thrift), one of the best hardy flowers from South Europe and South Africa, and should be in every good border and rock-garden among the taller plants. Hardy on free and well-drained soils, it now and then perishes in hard winters, especially on cold soils. It should therefore have good dry and sandy loam. It is known as Armeria formosa, A. latifolia, A. mauritanica, A. Pseudo-Armeria, Statice lusitanica, and Statice Pseudo-Armeria. It varies a little from seed which is easily raised, but all the forms are worth growing. It is not, however, so readily got from division. This species and its forms have flowers much larger than the common Thrift. A. setacea, an alpine species, its little globose heads of pink flowers being so numerous as almost to conceal the plant. Flower-stems from 1 to 3 in. high. This and A. juncea are found in the S. of France on barren stony mounds and on elevated tablelands. They are hardy, of easy culture, growing freely in stony earth, either in the open border, on rocks, or in pots.

The Tufted Thrift (Armeria cæspitosa.)

Arnebia echioides (*Prophet-flower*).—These Borage-worts are among the handsomest of border flowers. A. echioides is 1 ft. to 18 in. high. The flowers, of a bright primrose-yellow, have five black spots on the corolla, which gradually fade to a lighter shade, and finally disappear. It is hardy, succeeds either on the rock-garden or in a well-drained border, and prefers partial shade. It is a native of the Caucasus and Northern Persia, and though long introduced is still among the rarest of hardy flowers, although it has got commoner lately. Young plants bloom long, which adds to their charms. Seeds are not freely produced, but it may

be increased by cuttings. A. Griffithi is a tender annual, and though pretty not so valuable as A. echioides.

Arnica.—One or two at a time are sometimes cultivated, but are of slight value, considering the great number of good plants of the same family there are in gardens. A. montana, with orange-yellow flowers, is occasionally grown in botanical collections.

Aronicum.—A small and unimportant family. A. glaciale (Glacier A.), 6 to 9 in. high, has large yellow flowers, one to a stem. A. scorpioides (Mountain A.), 1 ft. high, has large orange flowers, also one to a stem, and is the same as Arnica scorpioides. Alps of Europe ; propagated by seed and division.

Arrow-head (*Sagittaria sagittifolia*).

Artemisia (*Wormwood*).—Herbs and low bushes occupying a large part of the surface of northern and arid regions. Though often poor weeds, some have a use in gardens, though rarely for their flowers. A. anethifolia is one of the most graceful herbaceous perennials, 5 ft. in height. A. annua is a graceful plant with tall stems 5 or 6 ft. high, the foliage fine, and the flowers, though inconspicuous, arranged in elegant panicles. The hue is a fresh and pleasing green, and the plant is a graceful centre of a flower-bed or group. A. gracilis is graceful, 3 or 4 ft. high, with leaves cut into hair-like segments, having some resemblance to Fennel. Other kinds, like A. alpina and A. frigida, belong to an alpine group which is at home in the rock-garden, while there are many taller herbaceous and half-woody plants of a silvery hue, such as A. Stelleriana, A. cana, A. maritima, and some with handsome Fern-like foliage like A. tanacetifolia. Other species are for the most part less ornamental than the common Wormwood and Southernwood. There is, however, what is called an Indian form of the common A. vulgaris which grows about 8 ft. Mostly raised from seed, but also from cuttings. The taller and more graceful kinds are effective among groups of plants of fine habit or graceful foliage. In districts too cold for half-hardy plants some of them might be of good service.

Artichoke, Globe (*Cynara Scolymus*).

Arum, Bog (*Calla palustris*).

Arum Lily (*Calla æthiopica*).

Arum (*Cuckoo Pint*).—Plants mostly from warmer countries than ours. Some from South Europe are hardy, and of interest in our gardens ; for example, the Italian Arum (A. italicum), the foliage of which is handsome in winter and spring. The old Dragon's Arum (A. Dracunculus) is curious, and A. crinitum is still more so. They thrive best in warm borders and about the sunny side of garden walls, the Italian Arum thriving more freely. Some nine or ten kinds are found in South Europe, two coming as far north as our own country. Often growing with the Primroses, we find peering through the Moss or Ivy-clad bank the shining green leaves of our native Wild Arum, familiarly known as "Lords and Ladies" and "Cuckoo Pint." Closely related to it is A. Arisarum of the South of Europe and A. azoricum of the Azores.

A. crinitum (*Dragon's Mouth*).—This plant when in flower is very grotesque, from the singular shape of its broad speckled spathe. The leaves are cut into deep segments, and the leaf-stalks, overlapping each other, form a sort of spurious stem 1 ft. or 14 in. high, marbled and spotted with purplish-black. The treatment is similar to that for A. Dracunculus, but is rather more tender. Warm borders, fringes of shrubberies, or beds of the smaller sub-tropical plants suit it best. The appearance of the flower is rather repulsive. In this species the carrion-like smell known in other kinds is strongly developed, and doubtless gave rise to Linnæus's name of A. muscivorum, as it attracts the larger flies in quest of a suitable place for their eggs. Division of tubers.

A. Dracontium (*Green Dragon Arum*) is abundant in the moist and swampy districts of Virginia and New England. The graceful curving of the veins adds a special charm to the plant ; the spathe is greenish. A. triphyllum, A. gramineum, A. spirale, A. corsicum, A. tenuifolium, and other species are in cultivation.

A. Dracunculus (*Dragons, Snake Plant*), from South Europe, generally attains a height, when growing vigorously, of 2 to 3 ft. ; the leaves large ; the stalks and stem of a fleshy colour, deeply mottled with black, reminding one of the skin of a snake, whence its popular name of Snake Plant, and the large spathe is deep chocolate. At certain stages a disagreeable odour is given off by the flower, reminding one of decomposing animal matter. It loves best a corner to itself in sandy loam at the foot of a south wall. Many would not care for a plant having such an odour. Division.

A. italicum (*Italian Arum*) is larger than our native Arum ; the veins blotched with yellow. As they come very early in the season, they are attractive in the flower border. In the autumn, when

they have died away, the clusters of scarlet berries, on foot-stalks 10 in. or 12 in. long, are showy. The true use for it is as a naturalised plant, or in the shrubbery, where its handsome leaves will come up bravely in spring. Although hardy, and thriving anywhere in moist soil and a shady place, it prefers sheltered positions

A. conspicua (*New Zealand Reed*).—A companion for the Pampas Grass, especially in the western counties and on good soils. In some fine deep loams it reaches a height of nearly 12 ft., and is worth a place, even where it does not grow very well. It flowers before the Pampas Grass, and is a fore-

Arum crinitum (Dragon's Mouth).

along the sunny margins of shrubberies, amid low-spreading evergreens, and in cosy spots about ferneries, so as to prevent its handsome foliage from being disfigured by wintry winds. Shade the roots for increase in the end of summer.

Arundinaria (*Bambusa*).

Arundo (*Great Reed*).—An important family of Grasses, some of great value.

runner of that magnificent plant, making a noble specimen for the lawn. It commences blooming in July, lasting until the end of October, but the Pampas rarely comes out in full flower before November. Grown in tubs in a cool greenhouse or winter garden it is very handsome, and its silky plumes last in perfection much longer than in the open air. It likes

strong, fibrous, loamy soil, plenty of water nearly all the year round, and may be increased by seeds or division. It requires careful planting, and generally several years' growth after transplanting before flowering.

A. Donax (*Great Reed*).—This great Reed of the south of Europe is a noble plant on good soils. In the south of England it makes canes 10 ft. high, and has a striking aspect. It will grow even higher in a rich deep soil in a warm garden, but in our country prefers deep sandy soil to heavy ones, and loves shelter. It has suffered much in recent severe winters, perishing in some southern gardens where it developed most strongly. But, fine as it is for effect and distinctness, its variegated variety is of more value for the flower garden proper. A. d. Versicolor is nearly hardy in the southern counties, and north of London may be saved by a little mound of cocoa-fibre, sifted coal-ashes, or like material. It is best suited to warm, free, and good soils, and dislikes clay. As the centre of a circular bed nothing is better in the summer flower garden, while other charming uses may be made of it. Not the least happy of these would be a group on the turf, in a warm spot. It is better to leave it in the ground than to take it up annually, protecting the roots in the winter, whether in the middle of a flower-bed or alone on the Grass. It is increased by placing a shoot or a stem in a tank of water, when little plants with roots will soon start from every joint. These should be cut off, potted, and placed in frames, where they will soon be strong enough for planting out.

A. mauritanica.—This is a fine Grass, a native of the southern shores of the Mediterranean, hardy in the neighbourhood of Paris, where it reaches a height of about 4 ft. It might be grown with a collection of aquatics or Grasses.

A. Phragmites (*Common Reed*).—A native marsh or water-plant, 6 ft. or more high, bearing when in flower a large, handsome, spreading, purplish panicle. Useful for the margins of artificial waters, to which it may be brought from its wild haunts. It should, however, if possible, be kept in one spot and not allowed to spread too much. Where it grows wild there is usually no scarcity of it, and it is an excellent cover for ducks.

Asarum (*Asarabacca*).—Curious little plants resembling Cyclamens in their leaves, but of little value except as curiosities, and occasionally as wood or shrubbery plants. A. canadense is the Canadian Snake-root, which bears in spring curious brownish-purple flowers, the roots being strongly aromatic, like Ginger. A. virginicum is the Heart Snake-root. Leaves thick and leathery, with the upper surface mottled with white. Sometimes used as a spice; hence the common name Wild Ginger. The plants are more or less used in medicine. A. caudatum is from Oregon, and much like the others in habit, but the divisions of the flower have long tail-like appendages. A. europæum is the Asarabacca, the flowers being greenish, about ½ in. long, and produced close to the ground.

Asclepias (*Milk-weed, Silk-weed*).—A large group confined to the New World, and, with but few exceptions, to the northern part of it. Almost all are hardy, though not showy. The following are a few of the most distinct :—

A. Cornuti (*The Common Milk-weed*).—A vigorous plant, 4 ft. in height, bearing nodding umbels of deep purple fragrant flowers, of which bees seem fond. It is quite hardy, easily increased; and blooming a considerable time, it should prove a valuable bee-flower. *Syn.*, A. syriaca.

A. incarnata (*Swamp Milk-weed*).—Three ft. in height, with long leaves and leafy stems, and umbels of rosy purple flowers in pairs. The variety called pulchra has broader foliage than that of the type. A good waterside plant.

A. quadrifolia (*Four-leaved Milk-weed*).—A fragrant flower, and the earliest to blossom—coming into bloom in early summer; 1 to 2 ft. high, with one or two whorls of four leaves about the middle of the stem; but the other leaves—lower and upper—are in pairs, and the terminal heads of lilac-tinged white flowers are sweet and pretty.—W. F.

A. rubra (*Red Milk-weed*).—A distinct kind with long bright green foliage, and stems 3 to 4 ft. in height; umbels large, and from two to five deep purplish-red flowers.

A. tuberosa (*The Butterfly Weed*).—One of the most beautiful of autumnal flowers. It is a hardy perennial, having a thick root, and erect leafy stems about 2 ft. in height, crowned with corymbs of bright orange-red flowers. It loves sandy soil, and, when well established, is very pretty. During hot autumns it bears seeds from which good flowering plants may be obtained in three years; but it is mostly increased by division of tubers. A good border plant, but only on warm soils.

A. variegata (*Variegated Milk-weed*).—Stems spotted and downy, 2 to 3 ft.

high ; the flowers white, with a reddish centre, in large umbels. One of the showiest of the family.

Asimina (*Virginian Papaw*).—A North American shrub, interesting to those who like curious plants. A. triloba, with leaves like the Chimonanthus, forms a small tree, with dull purple flowers, about 2 in.

A climbing Asparagus.

across. It bears fruits eaten by the inhabitants of the Southern States ; hence the name. Sometimes grown against a wall in this country, but hardy as a standard, at least about London.

Asparagus.—Some species are interesting from their elegant leaves or bold habit. The vigorous and tall A. Broussoneti is quite hardy, and so are A. tenuifolius and others. The common Asparagus is as good as any, and a tuft or group of it is graceful in a border of flowers or a bed of fine-leaved plants.

Asperula odorata (*Woodruff*).—This little wood-plant, abundant in many parts of Britain, is worthy of the garden or shrubbery, especially in places where it does not occur wild. Many would like to preserve its stems and leaves for the fragrant hay-like odour they give off when dried ; and in May the small white flowers, profusely dotted over the tufts of whorled leaves, are pretty. It will cover the earth in a shrubbery where the barbarous practice of annually digging up the borders is not resorted to. It is sometimes used as an edging to beds in cottage gardens, but it is, however, as a wood or shrubbery plant—as a companion to the Wood Hyacinth and the Wood Anemone—that it will be at home. It is largely used in Germany for flavouring summer drinks. It mixes charmingly with Ivy where that clothes the ground.

Asperula (Woodruff).

A. azurea setosa (A. orientalis) is a pretty hardy blue annual, flowering in April and May. Sow seed in the previous autumn. A. cynanchica is a rosy-red perennial, and a good bank or rough rock-plant.

Asphodel (*Asphodelus*).—The name is also applied to Narcissus poeticus in some parts of the country.

Asphodelus (*Asphodel*). — Liliaceous plants, not long in bloom, and not of the first order of beauty. There are some half a dozen kinds in cultivation. The best-known is the bold A. ramosus (tall Asphodel), a South European species, familiar in most old herbaceous plant borders, but better fitted for the shrubbery or the wild garden. The stems grow from 3 to 5 ft. high, and bear numerous white flowers, whilst forms of it are albus, cerasiferus, and microcarpus, similar to the type in general aspect. Other kinds are A. fistulosus and tenuifolius, with white flowers, the plant growing from 1½ to 3 ft. high in any border or position. The last-named kind has delicate feathery foliage, and is a contrast to bold foliage plants. A. acaulis (the stemless Asphodel) is only an inch or so high, and bearing its flowers in a dense cluster, surrounded by a tuft of narrow Grass-like foliage. A. luteus is synonymous with Asphodeline lutea.

Asphodeline.—Plants nearly allied to the preceding, but the stems of Asphodelus are leafless, while in Asphodeline the leaves are produced on erect stems. About six kinds are in cultivation, the best-known being A. lutea (tall yellow Asphodel), which grows about 3 ft. high, with yellow flowers in dense clustered spikes. A. taurica has white flowers, on stems 1 to 2 ft. high. A. liburnica (A. cretica) and A. tenuior have yellow flowers in loose racemes. A. damascena has white blossoms in dense racemes, and A. brevicaulis has yellow flowers in loose racemes. These all thrive in any common garden soil, and may be used in bold masses with good effect among other tall plants.

Aspidistra lurida (*Parlour Palm*).—A native of Japan, 18 to 24 in. high, with long graceful evergreen leaves and dull purple flowers on the surface of the soil. One of the most lasting of fine-leaved plants in rooms, for which purpose the variegated form is most used. Both are used with good effect in some gardens, and the plant is hardy in certain districts. The way to increase the plants is by division of the roots, but they are of slow growth.

Aspidium (*Shield or Wood Fern*).—This family now embraces the Polystichum and some species of Lastrea. There are numerous hardy kinds, including some of the finest hardy Ferns, among them the Male Fern (A. Filix-mas) and the Prickly Shield Fern. These thrive even in small town gardens and places similarly confined. All they require is plenty of water in hot dry weather. Either alone or in groups they have a fine effect, particularly as an undergrowth to trees in the pleasure-ground or in the shadier parts of the garden, and are evergreen. Their varieties are endless, no fewer than a hundred named sorts of A. aculeatum and fifty of A. Filix-mas being enumerated in trade lists. The larger varieties have a fine effect in shady spots, but the smaller and more delicate kinds require more care. A. aculeatum succeeds best in rich loam, with sand and leaf-mould, well drained, and so does the Male Fern.

A. dilatatum (*Broad Buckler Fern*) is a pretty Fern, of which there are some handsome varieties, especially the crested sorts. It requires a fibrous peat loam and sand and a moist situation. A. cristatum (Crested Shield Fern) is handsome and easily grown. A. Lonchitis (the Holly Fern) is one of the finest evergreen hardy Ferns. It grows in clefts of rocks, and in gardens should be planted between pieces of grit rock in a mixture of loamy turfy peat and sand. A. munitum is a beautiful North American species, requiring little beyond a peaty soil and a shady situation. Other good ferns are A. rigidum, A. Oreopteris, A. Thelypteris, A. spinulosum, A. cristatum A. acrostichoides, A. montanum, which succeed in a mixture of loam, turfy peat, and sand, in moist and shady corners.

Asplenium (*Spleenwort*).—The fine dark green colour and free-growing character of most of the Spleenworts give the distinct value. The best soil for them is a well-drained mixture of peat, sand, and loam, in which the finer kinds of flowering shrubs, such as Kalmias and Andromedas, thrive. A. Adiantum-nigrum (the black Spleenwort) would be at home amongst hardy Azaleas, as they lose their foliage in winter, and the Spleenwort would then carpet the surface. The shade, too, of Azaleas in the summer, if not planted too thickly, would suit this Spleenwort, which when wild fringes copses or is found on hedge-banks, where it gets a little protection from the summer sun. There are several distinct forms of this Asplenium, the most remarkable perhaps being grandiceps and microdon, both good kinds. A. filix-fœmina is more often known as Athyrium, the lady Fern, and described under that group. A. fontanum is a lovely alpine Fern, which loves to grow beneath overhanging rocks. It does well in pots, in fibrous loam, with a mixture of calcareous chippings about the size of Walnuts. A. marinum is one of the most beautiful evergreen Ferns, but is far from being generally hardy. A. imbricatum is a fine variety, with beautifully fringed and crisped fronds.

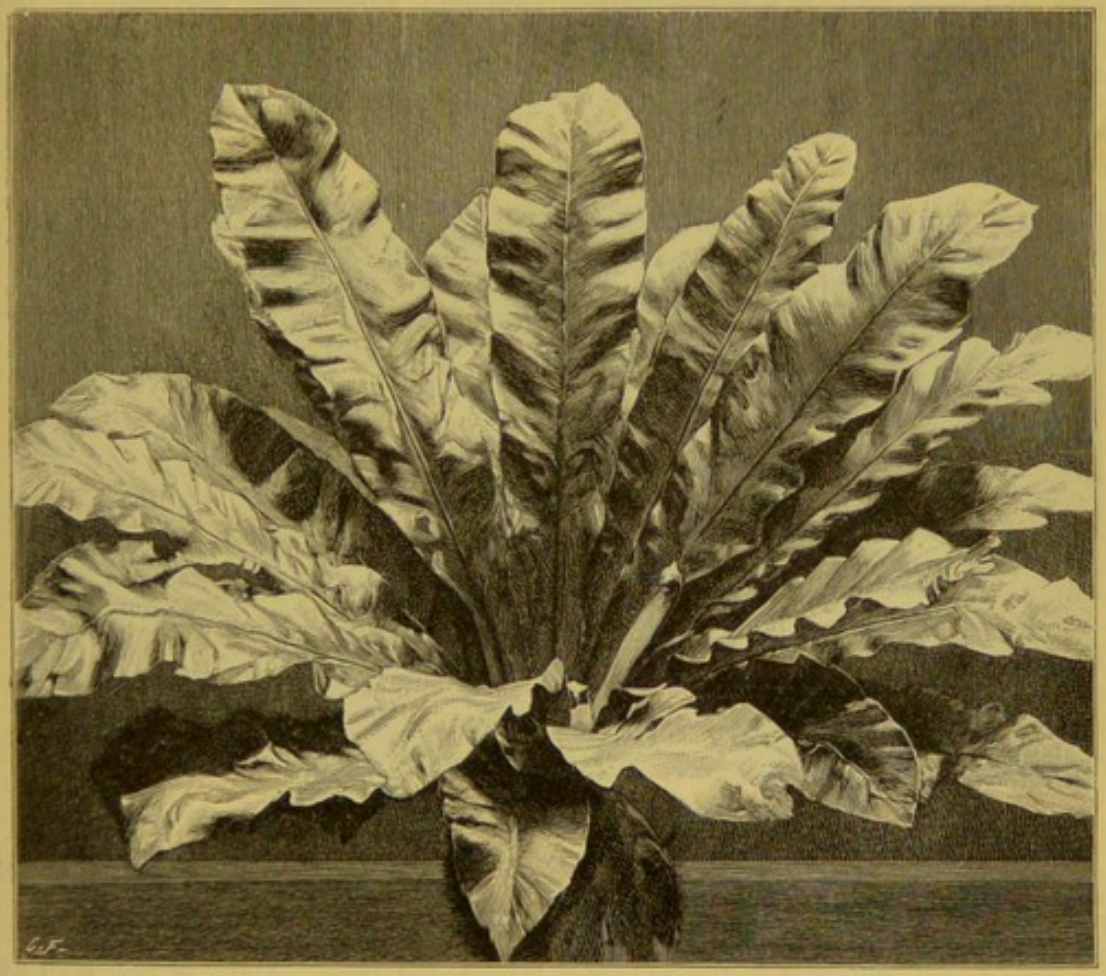
A. germanicum (alternifolium) is a rare kind for a shady spot in the alpine garden. It is hardy, and, although difficult to grow, worth much care. A fine variety is A. g. acutidentatum, with elegant little fronds 2 to 3 in. in length. A. lanceolatum has abundance of dark shining green fronds, frequently 15 in. high. The variety microdon is distinct. A. Ruta-muraria, the Wall Rue, is a pretty little plant for walls, and for the chinks of rocks. Cristatum and crispum are good varieties. A. Trichomanes, the common Maidenhair Spleenwort, is a handsome hardy species, with dark-green fronds. The variety crispum is finely tasselled ; incisum is a handsome variety, with fronds much divided ; and multifidum is distinct, each branchlet ending in a little crest. Like all the Spleenworts, it requires free well-

drained soil. A few pieces of stone placed on the soil round the roots are helpful. The stones might be partly buried in the soil. Our smaller Ferns should be used amongst hardy flowers as carpets to the taller plants in shady parts of the rock-garden.

A. Nidus (A. australasicum) is the Bird's-nest Fern, and where large collections of tropical Ferns are grown is a favourite plant. It may be tried in a warm, shady, and perfectly sheltered position.

Aster.—We are apt to associate the name of Aster with the annuals known as China Asters, and to overlook the rightful owners of the name—those hardy flowers, literally stars of the earth, which shine all the brighter owing to the time when they are in perfection. During the last days of autumn, when our gardens are nearly bare of bright colour, and hardy flowers are mostly at their lowest ebb, Michaelmas Daisies bloom bravely. Nearly all the kinds, of which there are at least two hundred in books, are natives of North America, two beautiful forms (A. Thomsoni and A. diplostephioides) coming from the Himalayas. There is a quiet beauty about the more select Starworts, or Michaelmas Daisies, which is charming in the autumn days. The variety of colour, of form, and of bud and blossom is delightful. For the most part Starworts are regardless of cold or rain. Less showy than the Chrysanthemum, they are more refined in colour and form, and when examined will be found full of exquisite grace. Where not introduced into the flower garden, they should always be grown for cutting, and some kinds would thrive admirably in a copse or hedgerow.

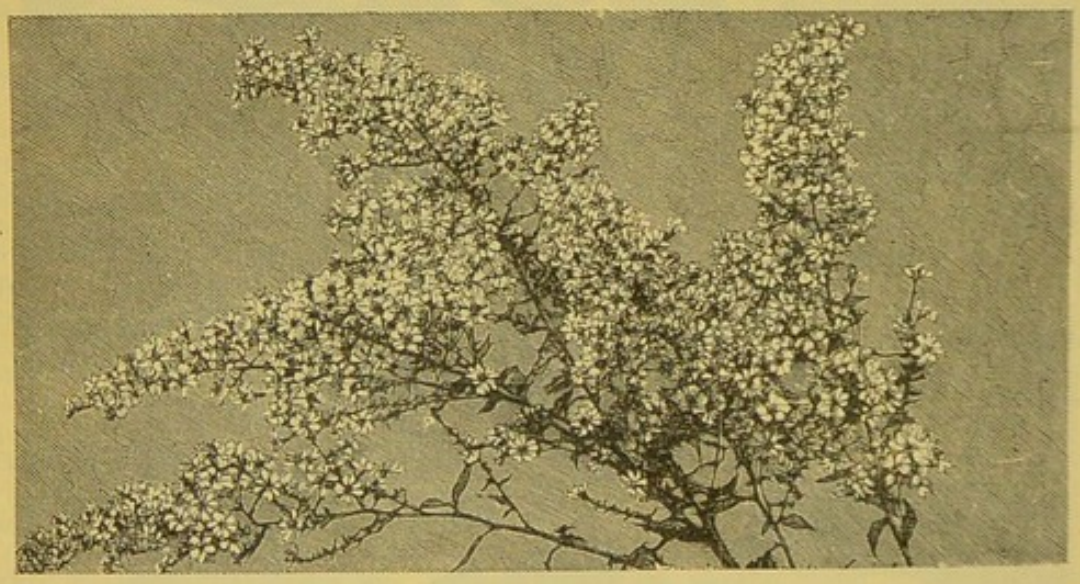
The essential point is to get the distinct kinds, of which the following are among the best that flower in early October: Aster amellus (bessarabicus), acris, cassubicus, turbinellus, Chapmani, versicolor, pulchellus, cordifolius, Reevesi, discolor, discolor majus, purpuratus, laxus, horizontalis, ericoides, Shorti, multiflorus, dumosus, Curtisi, lævis, longifolius coccineus, longifolius var. Madame Soynuce, sericeus, and fragilis. Every year adds to our autumn-blooming hardy plants, and a choice may best be made by autumn visits to gardens containing collections. As yet gardeners seldom look at general effects—



Asplenium australasicum (Australian Bird's-nest Fern).

at the whole of things. The flowers are so dear to them that the garden, as a picture, is left to chance, and hence there is so much ugliness and formality in gardens, to those at least who regard the robe as more than the buttons. Some years ago Starworts were rarely seen except in bundles in botanic gardens. Since the hardy flower revival, they have become more frequent in collections, but as yet they have no important place in gardens generally. As soon as the heavy groundwork near the house allowed the planting of belts and groups of flowering shrubs, I dotted a few of the best Starworts through them, to furnish the bare ground between them, and to flower in due season. The result was charming. Previously the wreaths of Starwort waved in the October winds. The bad effect of staking and bundling was wholly got rid of, the plants were supported and relieved by the bushes, and their flowers were massed above them here and there. Those that were dwarfer than the shrubs were not less valuable, as they helped to give light and shade, and helped to avoid the common way of setting plants to a face as if they were so many bricks. This is not the only way of growing these hardiest of northern flowers, but it is a charming one, and it lights up the garden with a new loveliness of refined colour.

Pleased with the results of these in a few small plantings, I obtained from different sources specimens of probably all the Starworts in the British Isles. I asked for all, and many were kindly sent me by Mr. G. F. Wilson, by Mr. Woolley Dod, by Mr. Grant, and by various other friends from Kew, from Glasnevin, from Cambridge, from the Dublin College Gardens, from Munstead, and from the Hall Farm Nurseries. They came with and without names, tall and short, good and bad. Asters vary much, and they have many names ; so that it was well to find out the best, and to give them good English names. The effect of the greater number of plants was very pretty. We had lovely colours showing well through large masses of shrubs and visible in the distance, while the colours were held well together—*i.e.* naturally massed flowers of one kind. The colour was telling and refined ; absolutely different, it need scarcely be said, from the pattern stuff of the ordinary flower garden. And now for a few words as regards the elements of the picture, for such it was.



Aster elegans (Lilac Starwort).

BLUE STARWORT (*A. acris*).—Soft clouds of lovely blue, charming when seen near at hand, and very effective at long distances. Many people love good blue flowers, always far from common in gardens. This Starwort is the prettiest flower of the colour among the flowery host. It is more precious than a Gentian, even if we could grow Gentian as it grows on the alpine fields. A cloud of soft blue, 18 in. to 2 ft. high, and when well placed a very poem of flowers. It is a variable Aster.

BLUE MOUNTAIN DAISY (*A. alpinus*).—A dwarf plant, the single blue flowers of which, scattered over high alpine meadows, look like blue daisies. In gardens it grows larger, forming vigorous tufts 6 to 10 in. high. The flowers

appear early, and measure nearly 2 in. across. There is a white variety, though not common. One sees this pretty mountain daisy used as a bedding plant on the Continent.

ITALIAN STARWORT (*A. amellus*).—Earlier than most Starworts, this handsome purple European kind deserves a place in many gardens for its own sake, without even the added charm of natural grouping. Being sturdy and dwarf, and

Aster ericoides (Heath-leaved Starwort).

with a pretty grayish leaf, it may be grouped with flowers rather than with shrubs, or with such things as Lavender. It is a very old plant in our gardens, though, like many others, long forgotten, till the recent revival of interest in such things. It is like the rest, as hardy as the rush or dock, forming sturdy tufts, bearing, as Gerard says, "faire blewish purple flowers, yellow in their middle, and shaped like marigolds, and almost of the same bignesse, whence some people have called them blew marigolds." Like many others it is variable, the varieties in gardens being called major, bessarabicus, and amelloides, but there is no more difference between them than might be readily got from a packet of seed.

LILAC STARWORT (*A. cordifolius elegans*).—Dense plumes of delicately tinted little stars, that droop and toss gracefully in the wild autumn days. It comes late, regardless of the most pitiless rains of the fall, and stays long. It is delightful in groups, naturally fringing through American shrubs, which are not jammed close, as such shrubs usually are, but have open spaces here and there for light and shade, and to give a home to flowers like this, which relieve the shrubs, and add a new grace to the beds, and a new charm to autumn's glorious colour. Very beautiful forms of this Aster occur other than elegans, such as Diana, which has the same graceful habit.

SPREADING STARWORT (*A. diffusus horizontalis*).—Red and white blossoms in myriads, and very bushy. This has a peculiar way of branching, all the side shoots coming level from the stem, so that it is always easily recognised. It is a dwarf kind, and pretty almost anywhere. It was in scattered colonies among the evergreen Barberry, and also semi-wild among long Grass and Weeds on the edge of a wood. My first idea was that the best place for it was in the wild garden—in this case in the woods—where it would produce effects like those seen in American woods in autumn. But our shrubberies are often so monotonous or ugly that it is better to begin with them, and, as the Starworts increase, transfer them to the woods for trial.

HIMALAYAN ASTER (*A. diplostephioides*).—This is a giant amongst Asters. The flowers are borne singly on long straggling stems, and each is 4 in. across, rich bright lilac-purple with a golden disc.

PINK STARWORT (*A. longifolius roseus*).—Apart from other Starworts in colour, this is a good autumn flower; but it is dwarf, and rather dumpy in habit of growth, so here the scattering and intergrouping through other things relieves its formal habit, and shows well its distinct colour. We planted it all over a bed of dwarf trees in the orchard, and it was very effective for many weeks.

NEW ENGLAND STARWORT (*A. Novæ-Angliæ*).—Tall and vigorous, this is a very old North American flower of English gardens, but owing to the staking in borders seldom seen to advantage. There are two forms—a purple one and

a soft red one—both pretty in bold groups among shrubs, say, about the height of a man. The shoots of this have a curious and pleasant piny smell. It is charming among Rhododendrons, and in colonies near them. They, like most of the kinds, are so hardy and free that they can be moved at any time without fear of losing them, even when moved in full bloom, as is necessary when one wants to group them in an artistic way.

NEW YORK STARWORT (*A. Novæ Belgæ*).—Quite different from the England Starwort, and of very high value. Tall, sturdy, with myriads of delicate soft blue purple stars, varying into deeper or lighter colours, some white. A superb autumnal flower, that any one can grow, and which, like many others of the family, is admirable for cutting for the house. In rooms, the Starworts last long and are charmingly decorative, as the phrase is. The "florist" has not as yet made them double, and does not attempt to improve them with his "tweezers"! Vistas of its lovely hue appeared along a Holly grove and also in wider masses among the Shrubs. It is easy to increase, and we should enjoy plenty of it everywhere. There are no less than between forty and fifty distinct garden varieties of this Starwort, a few of the finer being Robert Parker, a very tall plant, with large light mauve flowers, one of the best of all—Andromeda, Harpur Crewe, Calliope, densus, Flora, &c.

LILAC HIMALAYAN ASTER (*A. Thomsoni*).—This is one of the most beautiful Asters we have. It is very neat and compact, and rarely more than 2 ft. in height, the large pale lilac flowers making a wealth of cheerful colour. The stems are clothed with broad pale-green leaves. It begins to bloom early in August, and continues until October. It is one of the few Asters that cannot be divided. The best way to increase it is from seeds or cuttings of the young shoots in spring.

DAISY STARWORT (*A. versicolor*).—This is called the Daisy Starwort, from its pretty variation in colour, white and pink flowers being borne at the same time. One form is tall and stately, about 5 ft. high, and charmingly effective as it is tossed by the winds, rain and storm having little power to dim its beauty. There is a dwarfer form of the same plant growing about 1½ ft. high.

These kinds represent well the beauty of the Starworts as at present known. There are many more kinds, such as A. patens, patulus, polyphyllus, turbinellus, paniculatus, ericoides, Lindleyanus, vimineus, lævigatus, and the very dwarf corymbosus and nanus. A. Stracheyi is a very dwarf trailing kind readily increased by stolons.

There are many other forms of Aster, as A. incisus, formerly called Boltonia incisa, Galatella, and smaller families now grouped with the Asters.

Aster Thomsoni.

Aster, China (CALLISTEPHUS CHINENSIS).

Asteriscus mauritanicus.—A dwarf, half-hardy, perennial Composite, allied to Buphthalmum, with, throughout the summer, abundance of deep yellow flower-heads, about 1½ in. in diameter, just the same as A. maritimus.

Astilbe.—A vigorous group of chiefly tall-branching herbaceous perennials. The robust kinds resemble the Spiræas of the Aruncus group, but are bolder, and perhaps better suited for the margin of water. There are eight kinds in cultivation, the best-known of which are A.

japonica and A. rivularis. Moist places in the wild garden are most suitable for A. decandra, A. rivularis, A. rubra, and A. Thunbergi, the last being also known as Spiræa. These plants group well, and the handsome foliage makes healthy undergrowth, over which the tall plumes of white or red flowers tower with good effect. Division of the roots, and some by the runners.

A. chinensis (*A. odontophylla*) is a dwarf species from China like A. japonica, 1½ to 2 ft. in height. The flower stem is branched; the flowers, white tinged with rose or purple, closely packed on shortish spikes, flowering in July.

A. decandra. — Resembles Spiræa Aruncus, but is a stronger plant, 3 to 5 ft. high. The flowers are white in branched spikes. A handsome fine-leaved plant for shady places.

A. japonica is well known under the names of Spiræa and Hoteia japonica. The white flowers appear in early summer, and are effective on dark foliage. It is largely forced, and the plants, instead of being thrown away, should be planted out in groups in the open ground. Failure in the open air is due to dry and poor or cold soils. The variety multiflora has a stiffer habit. The variegated form is pretty, the flowers more closely packed than in the Japan species.

A. rivularis is of airy habit; a useful associate of other bold-foliaged plants. It grows about 3 ft. in height, and the leaves, of a rusty green, last until late autumn. The flowers, tinged red, are on loose arching panicles. A useful plant for the margins, walks, and shady woods. Mountains of India.

A. rubra.—A beautiful plant from the Khasia Mountains, with the habit of a Spiræa, and flowering throughout late summer and autumn; the flower-stems, from 4 to 6 ft. high, are covered with brown hairs. The flowers, rose or deep red, numerous, and in dense panicles. America and Japan.

A. Thunbergi (*Hoteia Thunbergi*) is a handsome Spiræa-like species from Japan, 2 to 3 ft. high, with a bold habit, resembling Spiræa Aruncus. A good plant for the mixed border, and better still in rich shady soil.—D. K.

Astragalus (*Milk Vetch*).—A large family, the best being rock-plants, but they grow freely on the level ground in borders. A. monspessulanus (Montpelier Aster) is valuable for the front of borders. The vigorous shoots are prostrate, so that

Astilbe rivularis (Goat's-beard).

it is seen to greater advantage when its long heads of crimson and rosy flowers droop over rocks. It grows well in any soil. It comes from the South of France, and is raised from seed. There are several varieties. A. onobrychis (Saintfoin Milk Vetch) is a handsome species from South Europe and Siberia (in some varieties spreading, and in others about 18 in. high), with racemes of purplish-crimson flowers in

June. It thrives well on any good loam. There are several varieties enumerated: one, major, grows erect, and three, alpinus, moldavicus, and microphyllus, are prostrate, and probably of use for the rock-garden, particularly the rougher parts, or for positions where a rich effect is sought rather than rare and minute beauty. There are white forms of all the varieties.

Other good kinds are A. vimineus. Our own Purple Milk Vetch (A. hypoglottis), and its white form A. pannosus (Shaggy Milk Vetch), has luxuriant tufts about a span high, which give the plant somewhat the appearance of a silvery Fern. A. dasyglottis is well suited for the rock-garden. Its numerous showy flower-heads, of a clear bright purple, are set off by the fresh green foliage. A. adsurgens is dwarf, with numbers of violet-carmine flowers. A. vaginatus succeeds in an exposed position in any ordinary border. The showy deep violet-purple flowers are borne in dense erect clusters for a long time.

Astrantia.—The Astrantias are classed amongst umbelliferous plants, and their nearest allies in Europe are the Sea Hollies and the Sanicle, though in appearance and habit they come nearer to the Scabious, a more distant relation. They consist of not more than four or five true species, all natives of the mountains of Southern Europe. The two most distinct are A. major and A. helleborifolia. A. major has the widest range, extending from the Pyrenees into Western Asia, and is enumerated amongst the native plants of England, being found apparently wild in a wood near Ludlow, and perhaps in one or two other places. As, however, there is a wide gap between these places and its nearest Continental home, it is probably not indigenous to Britain. I have noticed it in great abundance in the hayfields of the Pyrenees, near Luchon, flowering in June, in company with the blue Columbine, where the ground has just before been white with the Poet's Narcissus. A. helleborifolia is from the Caucasus, with the largest flower of any, the colour clear pink, but the habit of the plant is straggling, and the flowers smell unpleasantly of sour milk. A third species is A. Biebersteini, called by some botanists A. intermedia. In some of its characters it is intermediate between the other two, having more pink in the flower than A. major, and a three-lobed leaf like A. helleborifolia. Its habit is good and compact, and it flowers freely. There are two or three smaller species, the commonest of which is A. minor, often brought from the Alps by collectors. The Astrantias have a quaint beauty of their own; they are not showy, but not particular about soil or aspect. They are easily established in woodland walks where the growth of weeds is not too rank.—C. W. D.

Astrantia major.

Atamasco Lily (*Zephyranthes*).

Athamanta (*Spignel*).—Graceful perennials of the Parsley Order with Fern-like leaves. They are worth a place among fine-leaved plants in borders or groups, in ordinary soil. Division or seed.

Athanasia.—Plants of the Compositæ, but not of much value.

Athyrium (*Lady Fern*).—Beautiful Ferns, which A. Filix-fœmina may be taken to represent. They like a compost of loam, leaf-mould, and peat, mixed in about equal proportions, with the addition of some sharp sand. They require abundance of water during their growing period, but not in winter, because all the varieties are deciduous, the ground at that period being wet enough naturally. Among many fine hardy evergreen herbaceous plants Lady Ferns might be planted with advantage; they will thrive

in a little shade and protection from drying winds, being impatient of drought; therefore plants that afford shelter and like moisture should be chosen to intermix with them. This family shows greater variety of form than any other native Ferns, except Scolopendriums. The principal varieties are A. F.-f. plumosum, one of the most lovely hardy Ferns, its fronds reminding one of a plume of feathers in a lovely shade of green. A. F.-f. clarissimum is not crested, but has unusually long and finely cut pinnæ. A. F.-f. Acrocladon is densely crested, the apex of each frond like a tuft of moss. A fine Fern with bold fronds is A. F.-f. kalothrix. A. F.-f. corymbiferum is a fine crested variety, and A. F.-f. Victoriæ is the finest of all. There is a pretty and hardy Japanese Athyrium called A. Goringianum pictum. There are many more forms than these, some of the smaller kinds being much forked and crested.

Atragene.—The Atragenes resemble Clematises, but differ from them specially in putting forth leaves and one flower from the same bud contemporaneously in the spring. A. alpina (the alpine Atragene) is a beautiful slender hardy climber, 8 to 12 ft. high, found on mountains in various parts of Europe, especially on calcareous soil in Austria, Piedmont, and the Pyrenees. It is pretty when trailing over a low bush or stump, and thrives on the north as well as the warm side of walls. *Syns.*, Clematis cœrulea, C. alpina, and Atragene austriaca.

Atriplex (*Purple Orach*).—A. hortensis atro-sanguinea is a dark form of the common Orach. It is a hardy annual often used for its fine-coloured foliage. Sown in open air in April or May, it does well in almost any soil. It associates well with the Amarantus, annual Wormwood, Persicaria, and the bolder annuals grown for the flower garden.

Aubrietia (*Purple Rock Cress*).—A charming group of alpine plants from the mountains of South Europe. There are many varieties in gardens, but probably all may be reduced to some half-dozen species, whilst all are beautiful. The oldest is called A. purpurea, a pretty flower, but surpassed by newer kinds. Then there is what is called deltoidea, which is like purpurea. We have also grandiflora, similar in colour to purpurea, but twice its size, with a lax habit, which makes it a charming rock-plant. There is a fine variety of it called græca, opening out a full purple, and dying off a lavender colour. Masses of this, with its various shades of colour, are pretty. There is also a fine variegated large-flowered form of it. Then we have A. spathulata, erubescens, and hesperid folia. The rest are Leichtlini, Mooreana, Columnæ, and Campbelli. Mooreana is a little cushion-like plant, smothered with blue flowers in the proper season; Campbelli and Columnæ appear identical, but, like Mooreana, they are among the loveliest of Aubrietias. The last three are well suited for spring gardening, hardy, and flower from March until June. A very pretty kind is A. Leichtlini, which makes a carpet of rosy flowers.

Some find Aubrietias difficult to propagate. A good practice is to pull all the straggling side shoots off the old plants in June or July, securing as much of the stem as possible, and breaking it off close to the main root. Then dig, in a cool shady border, a piece of ground, into which is worked plenty of rough sand and leaf-mould. Plant the shoots in lines, placing a little sandy soil about the portion put into the ground, and tread all firmly down. The cuttings are occasionally sprinkled and kept shaded from the sun, and few failures occur. One great advantage of getting cuttings put in in June or July is that by the end of the summer the plants become strong and well fitted for planting out.

The Aubrietia is excellent as a wall-plant. I have seen a wall almost covered with its long wiry tufts, which were firmly rooted, and the effect in spring is very beautiful. Imagine some of our old Fern-covered walls or sunk fences draped with the lovely blue tufts of the "purple Arabis," as they call it in London! We need only sow the seed in any mossy or earthy chinks in autumn or spring. Rock-gardens, stony places, and sloping banks will suit Aubrietias perfectly. They make neat edgings, and may be used as such with good effect. Growing in common soil in the open border, or on any exposed spot, they thrive as luxuriantly as if on the rock-garden, and form round spreading tufts, whilst on fine days in spring the blue flowers come out in such crowds as to hide the leaves and make hillocks of colour. Aubrietias, as we know them in gardens, are so like each other, that it is hopeless to separate them. They vary much from seed, but agree in carpeting the earth with dense cushions clothed with beautiful flowers in spring, and, in the case of young plants in rich soils, almost throughout the year. There are one or two variegated varieties. Aubrietias are easy to naturalise in rocky places, and may be got from seeds, cuttings, or by division.

Aucuba.—Evergreen berry-bearing shrubs, which brighten gardens in winter. When the pollen-bearing variety of A. japonica was introduced, it was regarded as a great gain, as the old spotted-leaved berry-bearing form would be clothed not only with bright red berries but green ones as well. Its influence is always most seen on the nearest plants, whose fruit is more plentiful than that of distant plants. The effect of the green-leaved kinds is much more striking than that of the variegated, the contrast between the bright fruit and the green foliage being better. Some seedlings have fine leaves, and a few of these may be desirable for the sake of variety, but medium-sized foliage produces a finer effect.

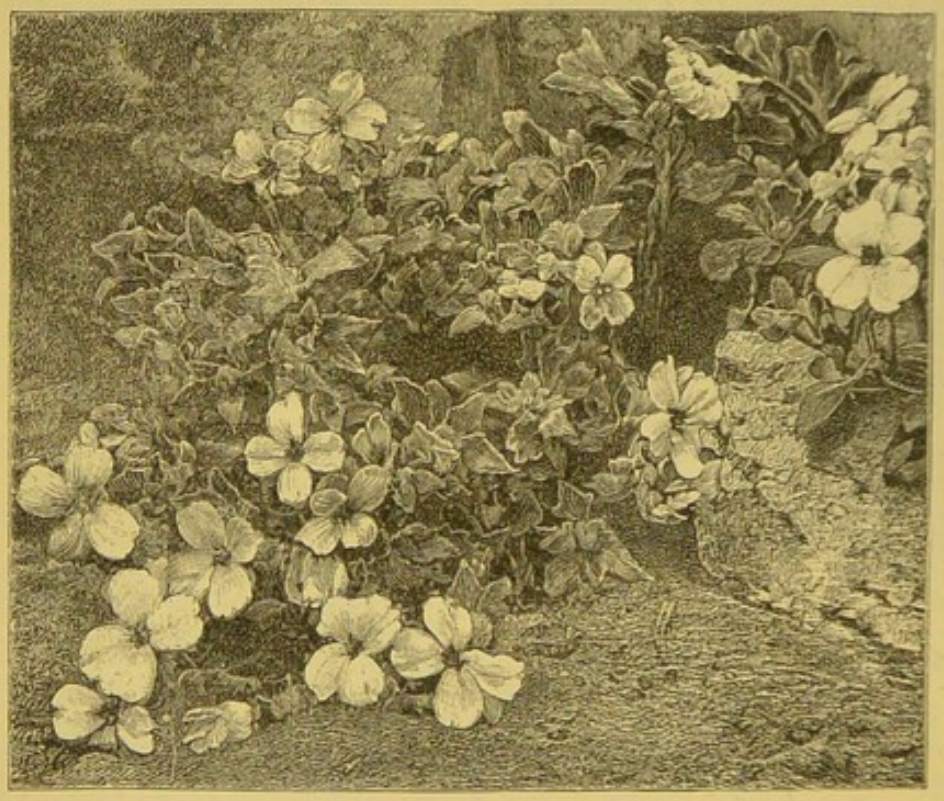
The Aucuba is one of the best shrubs for planting under trees, as its strong fleshy roots enable it to live where other shrubs would starve. It may be safely removed at midsummer or midwinter, but requires shelter and shade. To get a good crop of berries, plant males about 30 ft. apart among the ordinary form. The berries do not begin to colour until those of other berry-bearing shrubs are past; nevertheless, they add a distinct charm to the shrubbery during the spring. Smoke and dust seem to have no effect upon Aucubas, making them valuable for town gardens. The variegated form is more vigorous and rapid in growth than the green or plain-leaved variety. Plants in pots are useful for balconies, or for plunging in vacant beds in winter.

Auricula (*Primula Auricula*).

Avens (*Geum*).

Azalea (*Swamp Honeysuckle*).—These are beautiful upland and bog shrubs from North America, and, if only as a relief from the heaviness of Rhododendrons, the graceful growth of Azaleas is precious. There is nothing in the open garden so charming as old Azalea bushes in flower, with their branches in table-like tiers; but the brilliant tints always seem most effective in the subdued light of a shady wood, and happily few shrubs flower better in partial shade than Azaleas. They like shelter, even from southerly winds, and delight in quiet shaded nooks. A peaty soil suits them best, though they grow well in loam.

The hardy Azaleas, called Ghent Azaleas, have sprung chiefly from the wild Azaleas of North America—A. nudiflora, A. calendulacea, and A. viscosa. These and A. pontica have been so hybridised with the wild Azalea of South Europe that we have a race in which



Purple Rock Cress (Aubrietia).

the colours of the various species are blended and diversified in a great variety of tints, and they all intercross so freely that it is difficult to single out a variety identical with any of the wild species. Fifty years ago, Latin names were given to every fine variety, but they could soon be numbered by the hundred from Belgian gardens alone. Now very few sorts are named. Every variation of tint, from the most fiery scarlets to delicate pinks, whites, and dark and pale yellows, is to be had in Ghent Azaleas, a very beautiful one being the pure white Mrs. Anthony

Flowers of Azalea mollis.

Waterer. Of late years there has sprung up a new race with double Hose-in-hose flowers, collectively called the Narcissiflora group, the chief sorts of which number about a score—Graf von Meran, one of the first, being still among the best yellows. A Californian species named A. occidentalis is distinct from the deciduous Azaleas, as it flowers after the others are past. It has bunches of fragrant white flowers and broad foliage. A. mollis, a dwarf deciduous shrub from Japan and China, has given rise to a variety of kinds, yellow, salmon-red, and orange-scarlet being the prevailing colours. It is hardy, and being dwarf may be grouped as a foreground to a mass of the tall kinds. The Chinese A. amœna, with small magenta flowers, common enough in greenhouses, is quite hardy in mild localities and rich in bold masses. The Chinese A. indica, the ordinary Azalea of greenhouses, is hardy in many places, especially the white variety, which, even in mid-Sussex, thrives in the open air. The Ledum-leaved Azalea (A. ledifolia) is a hardy evergreen shrub, also from China, with white flowers, large and open, like A. indica. It grows from 5 ft. to 6 ft. high, and Loudon states that in Cornwall, on Sir Charles Lemon's estate at Carclew, it was planted in hedges, which flowered magnificently without the slightest protection.

Azara.—Distinct and graceful shrubs, hardy in favourable soils, unless in very hard winters. As wall-plants, particularly if the walls have an east or west aspect, they flower freely ; while in the southern counties, at least, they do well in the open away from walls. Well-drained loam and the partial shade of taller shrubs suit them. Cuttings of the half-ripe wood in sand under a bell-glass. A. Gillesi is probably the most handsome, its toothed leaves resembling in colour and texture those of the Holly, with the branches tinged with red. In its native country it attains a height of 10 ft. Both in the open air and under glass it blooms in the late autumn and the winter, the flowers small, and, from the great number of rich orange-coloured stamens, resemble golden catkins. A. celastrina has rather smaller leaves, and yellow blossoms. A. integrifolia has drooping spikes of fragrant yellow blossoms, which form a dense bush a few feet in height. A good variegated form originated a few years ago at Kew. A. microphylla is a graceful evergreen shrub, with many small flowers, succeeded in autumn by small orange-red berries. The best place for it is a sheltered position, not too low. For planting against a wall or trellis few shrubs are better. Among other kinds are A. dentata, a quick grower ; and A. serrata, with prettily serrated leaves, and umbels of yellow blossoms.

Azolla caroliniana.—A very small and curious water-plant, which floats on water quite free of soil, the tufts of delicate green leaves like tiny emeralds. During summer it will grow out-of-doors, but then becomes bronzed, and perhaps it is prettier when light green, as it is in the greenhouses or window. *Syn.*, A. rubra. A. pinnata is a distinct species.

Babiana.—Charming Iridaceous bulbs from South Africa, allied to Sparaxis and Tritonia, but having broader foliage, often hairy and plaited ; they grow from 6 to 12 in. high, with spikes of sometimes sweetly scented brilliant flowers ranging in colour from blue to crimson-magenta. The bulbs should be planted from September to January, about 4 in. deep and 2 to 4 in. apart, in light loamy soil thoroughly drained, with a due south

aspect. The early plantings make foliage in autumn, and require protection of mats against frost. Those planted in December and January will only require a covering of Fern, which should be removed in spring as the foliage appears. In wet soils surround the bulbs with sand, and raise the beds above the level. Babianas are often grown in mixed varieties, but can be obtained in separate colours. Many varieties are in cultivation, and their names will be found in bulb lists, but in the open air in Britain these plants are too tender, and their growth is only worth attempting in very favoured spots.

Bachelor's Buttons.—A term applied to some double hardy flowers, chiefly to double Ranunculus and double Daisies.

Bæria chrysostoma, a Californian Composite about 1 ft. high, with a dense tufted head, covered in early summer with bright yellow flowers. It should be treated as a half-hardy annual.

Bahia lanata (*Woolly Bahia*).—A grayish herb 6 to 15 in. high, and much branched from the base of the stem, flowering in summer, one yellow flower on each stalk, and is suited for borders or banks, in light, sandy, well-drained loam, on which it is prettier than when on cold clay. Fitted for groups or beds of silvery or variegated plants. It may be raised from seed, but more readily by division. America. Compositæ.

Balm (*Melissa*).

Balm of Gilead (*Cedronella triphylla*).

Balsam (*Impatiens*).

Balsamita (*Costmary*).—A genus of Compositæ, which includes the Costmary, an old herb-garden plant, and B. grandiflora, a showy and free-growing perennial. It is of easy culture, and worth a place among the stouter herbs in borders.

Bambusa (*Bamboo*).—There are some forty or more varieties of these graceful plants which have proved to be hardy in all but the most exposed and coldest parts of our Island. Of these, China and Japan furnish the great majority, for though in some more favoured localities Arundinaria falcata and Thamnocalamus Falconeri grow rampantly in our normal winters, they are cut down even in Cork by such exceptional frosts as occurred on the 5th of January, 1894, and in the bitter winter of 1895. Of hardy Himalayan Bamboos we have only Arundinaria (Thamnocalamus) Spathiflora, A. aristata, and A. racemosa. Arundinaria macrosperma is the one variety which comes to us from the United States of America, and although the Andes and the Himalayas have in all probability many Bamboos which will, when they are introduced, prove perfectly hardy, we have at present in the main to depend upon the Arundinarias and Phyllostachides of China and Japan for the beauty which is to be obtained from these giant Grasses. Nor can we complain. Grace and elegance are the characteristics of the Bamboo, and in no species are these more conspicuous than in the

Spray of Arundinaria japonica (Bambusa Métaké).

lovely group of Phyllostachys, while some of the Arundinarias will, if planted in suitable places, grow into dense thickets of almost tropical aspect. There are few gardens in which some sheltered nook, backed by evergreens, might not be beautified by a feathering group of Phyllostachys Henonis or nigra; while in the wilderness glorious effects may be produced by the grand foliage of Arundinaria Métaké or the stately plumes of Arundinaria Simoni. Background is the great secret of getting the best effect out of plants in which beauty of form is the dominant feature. By the side of a stream, on the banks of a lake, among the rocks cropping out of the hill-side, the Bamboo is thoroughly at home. If such a place can be found with rich soil and under the influence of the sea-air, so much the better. Above all let the Bamboos be sheltered from our biting easterly and north-easterly winds. They are more deadly than frost. The softer and moister westerly winds, blow they never so hard, will do but little damage to plants which come from such storm-vexed regions as the coasts of China and the islands of Japan. It is very important that every autumn the plants should be well mulched with cow manure, and this again should be covered with dead leaves. To prevent the latter from blowing away it is expedient to surround the plant or group with wire netting. This has the additional advantage of keeping out rabbits and hares. The mulching protects the roots from frost in the winter, and prevents evaporation in summer. When the plants are thoroughly established these precautions become unnecessary, and they may be left to shift for themselves.

But above all things I would warn my readers against planting out imported Bamboos in their permanent places before they have recovered from the effects of the journey. I have myself lost many fine specimens in this way. Now that a sad experience has taught me how to treat them I rarely lose one. The plants should only travel during the period when they are at rest. They will be received therefore during the late autumn or winter. If they have come from abroad, the balls of earth round the roots should be thoroughly soaked; they should then be potted and placed in a cool house for the winter; the leaves should be copiously syringed with rain-water twice a day, but the roots should not be kept too wet. In this way many species will keep their leaves as green and fresh as if they had never been disturbed; but even those that lose their leaves will early in February begin to show little fat buds that will soon develop into branchlets. Early in May begin to harden off the plants, as you would Geraniums for bedding out, and, at the end of May, place them in their permanent homes.

When you take the plants out of the pots be careful not to disturb the roots in any way. You must not attempt to comb them out as you would the roots of trees, for they are as brittle as glass: place them in the earth as they are, and they will soon find their way about. If possible the newly planted Bamboos should be well watered during growth. It must be remembered that Bamboos will not show their true characteristics for several years. But by taking the above precautions much time will be saved, and many disappointments avoided. For transplanting Bamboos (from one part of the same garden to another, not for sending them on a journey), May and June are perhaps the best months, though I have moved them without any ill effects during the whole summer up to the end of September. The worst time is from November to March; for the plants need to have made some roots in their new homes before they can resist our cold winters and biting spring winds. As regards propagation, very little need be said here, for I doubt whether the propagation of hardy Bamboos, except perhaps some of the more rampant Arundinarias, is likely to become a successful industry in this country. There are four methods available in the case of the Triglossæ to which our hardy Bamboos belong. (1) By seed. (2) By division. (3) By cuttings of the base of the stem with or without the rhizome attached. (4) By cuttings of rhizomes.

1. PROPAGATION BY SEED.—Owing to the rarity of the occurrence of the fruit—which, indeed, in many species has not yet come under the observation of science—this must always be the least-used method. On one occasion indeed we received some seed of a Bamboo under the name of Bambusa Siamensis, probably from its habitat a tender species, which germinated freely, but which we did not succeed in rearing beyond the first year. With the same seed Kew fared no better. The seed should be sown sparsely in pans filled with garden soil—the more silicate it contains the better—and well drained with broken potsherds or stones. Cover the seed with fine soil

about a quarter of an inch deep or less. If the seed be sown too thickly, the development of the young plant is hindered. Water well with a very fine rose until the whole soil be thoroughly soaked. The pans should be placed in hotbeds and frequently watered, great care being taken to prevent the soil from drying. The frames should be partially shaded from the sun and kept fairly ventilated, more air being admitted as the seedlings gain strength. Assuming the seed to have been sown in the latter end of March or in April, the young plants may bear full exposure to air and sun in June. In the following spring the plants should be pricked out into 3-in. pots, which, after generous watering, again should be placed under glass upon a hotbed to help the plants to root in their new abode. At first the outer air should be excluded or very sparingly admitted. By degrees they will bear longer exposure, until in the latter end of May or early June the pots are plunged into open beds, buried a little below the surface, and covered with a mulching of dead leaves or straw. The beds should be well watered during the summer. In the month of October the pots must be taken up and placed in a cool or temperate house, or under cold frames, which must be covered up during severe frosts. In the month of May following they may be planted out in their permanent places. The very slight variations necessary if the seed should not be sown until the summer or autumn will be patent to every gardener. In the latter case germination may possibly not take place until the following spring, and even then it may be advisable to help it by again having recourse to the hotbed. In all cases be it remembered that moisture is the first essential element of success.

2. PROPAGATION BY DIVISION.—The best moment for this operation is, in our climate, the latter end of April or May. The process is very simple. The plants should be divided into clumps of two or three culms with their rhizome, in order to insure a new growth from the buds on the internodes of the root-stock. If the tufts can be lifted with a ball of earth, so much the better. They should be planted in beds at distances of 2 ft., carefully watered, and protected by a top-dressing of well-rotted cow manure and dead leaves. With the same care they may be planted at once in their permanent homes.

3. PROPAGATION BY CUTTINGS OF THE BASE OF THE CULM WITH OR WITHOUT THE RHIZOME ATTACHED.—Cut off about a foot's length of rhizome bearing a stem; cut down the stem to about the same length. Plant at such a depth as will insure the two or three lowest and branchless knots at the base of the culm being covered with earth. This may be effected either in pots or in the open ground. It is essential that the stem should be cut down, otherwise it begins to wither downwards; a sort of creeping paralysis of the whole plant ensues, ending in death. Reproduction is also possible without the attached rhizome, and this method is specially valuable where, owing to the rarity of the plant or for other reasons, economy is an object. For the rhizome being left in its place continues its work of multiplication undisturbed. The lower knots, occurring at short intervals and barren of all ramification, are each furnished with verticillated roots and a reproductive bud; indeed, the former may often be seen falling downwards to the earth in a little cascade all round the culm, sometimes burying themselves and rooting in the ground, at others remaining in an abortive or embryonic condition. This reproductive power may be turned to account by cutting the stem with a very sharp instrument as close to the rhizome as possible. The stem is then cut back and the lower nodes buried in a pot, allowing only the end of the last branchless internode to protrude. Slight warmth and moisture are all that are required to ensure rooting. The operation should be performed in the spring, and by the end of the year a new plant will have been obtained.

4. PROPAGATION BY CUTTINGS OF RHIZOMES.—This is a very simple process. It takes place in the spring, and consists merely in lifting the rhizomes, cutting them into lengths of from 6 in. to 8 in., which are planted at a depth of from 4 in to 6 in. in good rich loam and copiously watered during the summer. Care should be taken to see that each length, which will have three or four knots, should be the growth only of the preceding year, containing living eyes or buds, for the older rhizomes are sterile, those buds which have not shot up into canes having withered still-born. It is therefore only the young rhizome which is reproductive.

If the end to be attained be commercial, the third and the fourth of these methods are those which will recommend themselves to those who desire to propagate Bamboos in this country; and in that

case potting will be substituted for open ground cultivation ; in other respects the procedure will be the same.

In this account of the Hardy Bamboos, so far as they are at present known, I have marked with an asterisk those species which, from their beauty and hardiness, are best worth cultivating in this country.

Natives of the Himalayas.

Arundinaria falcata. — A beautiful plant which dies down every year in this country as it does under the snows of the Himalayas. In the temperate house it does not lose its leaves or stems, but remains perfectly green. New culms come up from the base in the following summer. Often confounded with Thamnocalamus Falconeri, from which it differs mainly in having greater vigour, larger leaf-blades, and hairy leaf-sheaths. The stems are yellowish-green, very slender and graceful, round, and with short internodes, the nodes being but slightly raised and of a purplish colour. The ramification is close and thick. The leaves are of a fine green colour, paler on the lower surface, and about 5 in. in length and striated. Not to be recommended for general planting.

Arundinaria (Thamnocalamus) Falconeri, even more tender than Arundinaria falcata, is cut down by frost every year in most places. The habit is less vigorous, the leaves smaller, and the stem more slender and of a brighter green. Leaf-sheaths and blades glabrous. Leaves striated.

The confusion between these two species has been very general. The majority of the plants hitherto cultivated in this country as Arundinaria falcata have proved to be Thamnocalamus Falconeri. Mr. Osborne, gardener to Mr. Smith Barry, at Fota Island, County Cork, informs me that the late General Munro identified the specimens grown there under the former name as true Thamnocalamus Falconeri. The so-called Arundinaria falcata flowered in the gardens of the Luxembourg, in the south of France, and at Algiers in 1876. Mr. Smith Barry's plants flowered and seeded at the same time ; it is, therefore, possible that the mistake in nomenclature was universal, and that all these plants were indeed Thamnocalamus Falconeri. As regards the hardiness of the species, Mr. Osborne writes as follows : "The above-named Bamboo (Thamnocalamus Falconeri) throws up numerous canes here from 20 ft. to 25 ft. I have often wondered at the reports in gardening papers in England of its sending up canes from 6 ft. to 8 ft. high, but, unfortunately, I have learned the reason this season. We had an unprecedented sharp frost in January last (1894) which killed the tops of all the Thamnocalamus, with the result that, instead of throwing up a few monster canes to the height mentioned, they have thrown up numerous small canes about 6 ft. or 8 ft. high around the old stools. It must take several years of very mild winters before they reach their usual strength. Many other Bamboos were not in the least injured, as far as I could judge. The frost registered at Fota was 26° Fahrenheit below freezing point." From this it is evident that the species is not thoroughly to be depended upon even in the usually warm climate of the west of Ireland. How it fared in Devonshire and Cornwall, where there are, or were, many fine specimens, I have not heard. Messrs. Watson and Bean consider the Bambusa gracilis of the French cultivators to be identical with Thamnocalamus Falconeri. I can detect no difference between the two.

Arundinaria racemosa.—A low-growing Arundinaria growing as high as 15 feet in its own country. Stem smooth and round. Internodes about 2 in. apart, leaves 2 to 4 in. in length and narrow, cross veins well defined. After the trying winter of 1895, quite green and fresh at Kew Gardens, found at an elevation of 12,000 ft. in the N.E. Himalayas.

Arundinaria aristata. — A pretty Arundinaria of moderate size, with purplish stems and tessellated leaves. This latter quality, taken in conjunction with the great altitude at which it is found in the North Eastern Himalayas—as high as 11,000 feet above the sea-level—indicate it as a hardy Bamboo. First introduced into these islands by Lord Annesley at Castlewellan in Ireland.

Arundinaria (Thamnocalamus) Spathiflora. -- Another hardy Bamboo with tessellated leaves from the Himalayas, where it is found at an altitude of 9,000 feet. Most of the specimens which I have seen grown under this name in English gardens are not the true A. Spathiflora.

Native of North America.

Arundinaria macrosperma. — The solitary species of the United States of

North America. This Bamboo appears to vary in height according to its habitat—in the Southern States from 10 ft. to 35 ft. high, while in the north it does not exceed 10 ft. It is the Arundinaria described by Michaux. The stems are round (sometimes slightly flattened on one side at the point of branching), slender, and much-branched. The sheaths are purplish in colour, very persistent, and fringed at the top with a few rather coarse hairs, the leaves about 7 in. long by 1½ in. broad, the upper surface smooth, the lower downy, having the edges slightly serrated—very partially on one side. Interesting rather from the fact of its being the one representative of the family in the vast area of the United States of North America than from its beauty. Some botanists divide the taller and shorter varieties into two species, but Munro treats them as identical. M. Marliac sends out a Bamboo under the name of Bambusa Neumanni (it is called Hermanni in the botanic gardens at Brest), which appears to be the same plant as Arundinaria macrosperma; indeed, both M. Marliac and M. Blanchard, the director of the Brest gardens, so regard it, although they do not know from what country their Bamboo was originally received. The shrubby form, Arundinaria macrosperma suffruticosa or tecta, is the variety grown at Kew and here. It is a very active runner, and demands plenty of space.

Natives of China and Japan.

***Arundinaria Fortunei.**—Three plants of no relationship to one another are at present the bearers of this name, respectively green, silver variegated, and golden variegated. As there is absolutely no similarity between them, I have renamed two of them, Humilis and Auricoma, leaving the name Fortunei to the silver-striped species which has the prior claim to the title.

***Arundinaria Humilis.** — A green species, about 2 ft. to 3 ft. high, looks as if it might in time grow a few inches higher. The stem is round and green, the nodes not much raised, the internodes 3 in. to 3½ in. in length. Ramification in threes, and long in proportion to the stem and internodes. Habit erect. Bright evergreen leaves smooth on both sides, 4½ in. long, three-quarters of an inch broad, and tapering to a point. Petiole inconspicuous; sheaths reddish, hairy at the end and sides, and terminating in a true leaf; very rampant root-stock. A very pretty plant to form a carpet, or isolated group near rocks. *Syn.*, Bambusa gracilis. Messrs. Veitch of Chelsea. A native of Japan.

***Arundinaria Fortunei fol. var.**—A silver variegated dwarf Bamboo about 3 ft. high. Stem round, green, and erect, but rather more zigzagged than the green variety. Nodes not very prominent, sometimes hardly perceptible; internodes about 2 in., long ramification, mostly in pairs. Leaves about 5 in. long, by half or at most three-quarters of an inch wide; a bright colour beautifully striated with white in a young state, but the variegation is apt to fade in the older leaves, which become rather spotty. Very short petiole; sheaths hairy, terminating in a leaf; loses its leaves in winter, but is nevertheless a beautiful plant in summer, and should be cultivated; a strong runner at the roots.

***Arundinaria Auricoma.** — A golden variegated dwarf Bamboo, taller than the two preceding sorts, rather over than under 3 ft. high; stem round and erect, with a purplish-green colour; nodes inconspicuous; internodes about 2 in. Leaves striped with bright yellow, from 5 in. to 7 in. long, by 1 in. to 1¼ in. broad; very pubescent, like velvet on the under side, slightly pubescent on the upper surface. Short petiole; purplish-green sheaths, very hairy at the sides, ending in a leaf. Not such a strong runner as the two preceding kinds, but a beautiful and conspicuous evergreen plant.

Arundinaria Maximowiczi (Marliac). —A golden variegated dwarf Bamboo, probably a synonym of the last species. I can detect no difference between them. The name is sometimes given wrongly to A. Simoni striata.

Arundinaria chrysantha.—A dwarf variegated Bamboo, probably a variegated form of the Arundinaria Humilis. Differs materially from Arundinaria Auricoma inasmuch as the lower surface of the leaf is markedly ribbed and lacks the velvety down of the latter species; on the other hand, the down on the leaf-sheaths is very conspicuous. For beauty it is not to be compared with A. Auricoma; it is far less brilliant, and the variegation is somewhat muddy and very uncertain, a great portion of the plant being quite green. It is a very free runner, but has little else to recommend it, unless it be for a collection.

***Bambusa pumila** (Arundinaria ?).—A very pretty dwarf Bamboo. At first sight

this would strike the observer as Arundinaria Humilis under another name. It is, however, I think, certainly a distinct species. It is smaller in habit, the leaves are less broad, shorter, and do not taper so gradually to a point. The teeth of the serrated edges are less conspicuous ; the lower sheaths are hardly so hairy, and the nodes are less well defined and far less downy. The stem is more slender.

***Arundinaria Hindsii.**—A distinct and beautiful species sent out by French nursery gardeners under the name of Bambusa erecta. In its first year with me it has grown to a height of 6 ft. 3 in., but will evidently attain a greater stature. It was described by Munro from a fragment of the top of a culm, only 18 in. long. His description is therefore incomplete. The stem is round and very straight ; the internodes are about 6 in. long, but much shorter towards the top (Munro therefore, having only seen the top, makes them 2 in. to 3 in.). The young dark-green stems have a lovely white wax on them like the bloom on a Grape. The branches are quasi-verticillate and erect. The sheaths, which are very persistent, are slightly hairy on the top. The leaves are 6 in. long by about five-eighths of an inch across, slightly serrate and hairy, especially on one edge ; they are thicker than in most Bamboos. The colour is a beautiful dark green, fairer underneath ; the veins are more conspicuously and beautifully tessellated than in any Bamboo that I have observed. The Japanese name is Kan-zan-Chiku.

***Arundinaria Hindsii var. graminea** (the Taimin Chiku of Japanese gardens).—A smaller plant than the above, with leaves 9 in. long by five-eighths of an inch broad, and yellow stems ; considered by the authorities at Kew to be another form of the same species. The tessellation of the veins of the leaves is not quite so strongly marked as in the type. Sent out by French gardeners as Bambusa graminea.

***Arundinaria japonica.**—A fine and valuable plant, generally grown in gardens under the name of Bambusa Métaké. The word Métaké, or, more correctly, Médaké, is Japanese for "female Bamboo," but there is no scientific reason for using the word "female" in connection with this plant any more than there is for our calling the Dendrocalamus strictus of India the "male" Bamboo. Grows to a height of about 11 ft. or 12 ft. The stems are thick, round, and green, very straight until the branches of the second year appear. The hairy sheaths, which completely envelop the stem, are very persistent, but quickly wither, and their dead colour rather detracts from the beauty of the plant. Ramification only takes place when the stem has reached its full height, the upper nodes being the first to show signs of it. The sheaths on being forced away from the parent stem do not fall, but roll themselves round the stems of the branches. The leaves are from 8 in. to 1 ft. in length by about 1½ in., sometimes more, broad. The upper surface is smooth and shining, the lower side paler, rather glaucous and wrinkled ; the edges are finely serrated. The creeping root-stock in well-established plants is very active, so that care must be taken to give the plant plenty of room.

The most effective specimen which I have seen in this country is in Mr. Buxton's garden on the borders of Epping Forest, where, upon a promontory jutting out into a piece of ornamental water, it has quite a tropical appearance. It has been the fashion rather to undervalue the Arundinaria japonica, and certainly in a young state it is somewhat disappointing ; in time, however, it makes a fine bold feature. Arundinaria japonica (Bambusa Métaké) was first introduced into Europe by Siebold in 1850. It flowered and fruited in the Bois de Boulogne in Paris and simultaneously all over France and in Algiers in the year 1867 or 1868. Under the name of Bambusa Ya-daké, the Japanese send out an Arundinaria which they claim to be Phyllostachys bambusoides, which it evidently is not. The name Ya-daké—Arrow Bamboo—is due to the straight, round culms being used for making arrows. It appears to be no more than a form of Arundinaria japonica ; indeed, in its present young state there is no difference to be detected. If anything, it appears to run more freely at the roots. Evidently, however, the Japanese gardeners consider the two to be distinct plants.

***Arundinaria Simoni.**—This, the tallest of our Arundinarias, and, with the exception of Phyllostachys mitis, of our hardy Bamboos, was introduced into France by M. Simon, French Consul in China, and named after him by Carrière, who described the plant. At Kew old-established plants have reached a height of 18 ft. My own specimens in their fourth year have grown to 13 ft. The culms are round and straight—slender in proportion to their height—during growth

entirely encased in the sheaths, which are smooth and striated, with the upper part of the edges finely haired. The sheaths are at first green, shaded off to dark violet, but they soon wither, and as they are persistent they rather spoil the effect of the plant (as is the case in Arundinaria japonica). Here, again, ramification does not take place until the stem has reached its full height. The branches in the second year almost surround the stem which presents the appearance of a round plume. The leaves are from 10 in. to 1 ft. long, slightly hairy, lanceolate, longitudinally ribbed, ending in a long narrow point. On the lower face of the leaf there is a distinct difference in colour on the two sides of the midrib, to which Mr. Bean has called attention ; the one half is green, the other half slightly glaucous—a very curious feature. So far as experience at present goes, this is the greatest runner of all the hardy Bamboos. Its young and straggling shoots will appear at a great distance from the parent plant. It should be planted in a perfectly isolated position in the wild garden, where it may wander at pleasure without injury to any neighbour. So powerful an invader might easily become a nuisance instead of a beauty.

Arundinaria Simoni var. striata.—Careful observation and closer acquaintance lead me to think that any distinction between this and the type cannot be maintained. Both have a certain amount of silver-striped variegation in the leaves of young shoots, and in both it disappears with age. Is sometimes sent out by nursery gardeners under the names of Bambusa plicata and Bambusa Maximowiczi. Flowered, but did not seed, in Mr. Smith Barry's garden in Fota Island, County Cork, in the year 1893. The Japanese name, Narihira-daké (Bambusa Narihira, Marliac), is a synonym of Arundinaria Simoni. It was so named after Narihira, the hero of a romance of the eleventh century called the "Isé Monogatari," one of the classics of Japan, written in prose, with poetry interspersed. The author is not known. Bambusa Narihira is sent out by certain nursery gardeners as a distinct species, but this distinction cannot be maintained.

* **Bambusa palmata** (? Arundinaria).—A strikingly beautiful species, conspicuous from the size of its leaves, which are often used by Japanese peasants to wrap up the bit of salt fish or other condiment which they eat with their rice. With me it is about 5 ft. high, or rather more. The stems are round, but slightly flattened towards the top. The colour is bright green, but the stems are somewhat shrouded by the persistent dead sheaths. Each node, whether on the stem or on the branches, only carries one branch. The branches of the second year often overtop the parent stem. I can detect no hairs on the sheaths. The leaves are the chief beauty of the plant. They are each from 1 ft. to 13 in. long and 3 in. to 3½ in. broad, tapering rather suddenly to a very fine point ; the petiole is rather inconspicuous. They are much ribbed, the midrib being very prominent and glabrous. The colour is an intensely vivid green on the upper surface, glaucous on the lower. Both edges are serrated. The rhizomes are exceedingly active, and travel far. A bold group of this Bamboo, with a background of Hollies and associated with Lady Ferns and such sympathetic compatriots as Ophiopogon japonicum, Funkia Sieboldi, and Anemone japonica, which always seems to grow best under shade, is a most effective and striking object.

* **Arundinaria Veitchi** much resembles Bambusa palmata in its habit, though on a far humbler scale, the plant being only about 2 ft. high and the leaves smaller and more rounded at the point. It has the same round stem, flattened at the top, and the same single-branched nodes. The leaf-sheaths, however, are somewhat capriciously fringed with coarse hairs. The leaves are about 7 in. long by about 2¼ in. broad, green above, glaucous below, glabrous and much ribbed. The edges wither in winter, giving the plant a variegated but shabby appearance ; but the thick new foliage of spring is very beautiful, and the plant runs fiercely, soon making a thick carpet and ousting all weeds. Sometimes sent out as A. tessellata, which is wrong, and often called by the Japanese Kumazasa, on account of its withering edges. (See the remarks on Phyllostachys kumasasa or viminalis.) Some botanists claim this species as belonging to the Bambusæ veræ, or true Bamboos.

Bambusa senanensis.—A plant was received last year from Japan under this name. I cannot at present detect any difference between it and Arundinaria Veitchi. However, Mr. Watson, of Kew, tells me that some botanists regard it as a distinct species. The Japanese name for it is Yakibazasa, the "sword-edged dwarf bamboo." There is another Bamboo, a tall species used for making furniture, &c., which also goes by the name of senanensis, and which the

Japanese call Sudzu-daké, the "Reed Bamboo."

* **Bambusa tessellata.**—Described by Munro as Bambusa tessellata, but evidently, if it be correct to class the two (? or three) preceding species as Arundinarias, this should follow suit. Moreover, Munro says, "I have only seen the dried leaves of this species when sewn together and in the state so largely used by the Chinese in packing their tea." Probably had he had better opportunities he would have referred all three plants to the same genus; as it is, he gives the genus as doubtful. A very beautiful species, noteworthy as having the largest leaves of any of the hardy Bamboos. The stem is about 2½ ft. high, round, slightly flattened at the top, the colour a purplish-green, much hidden by persistent withered sheaths, one branch from each node (in one case only I found two springing from the same node). The edges of the sheaths are hairy at their base; leaves 18 in. and more long, by rather over 4 in. wide, tapering beautifully to a point, bright green above, glaucous beneath; midrib well defined. Munro notes a tomentose line on the side of the midrib, but this is not visible to the naked eye, and a very strong lens reveals very minute hairs upon the lower surface of the living leaf, which he describes from his dried specimen as glabrous.

Both edges are serrated, short petiole. The tessellation which gives its name to the species may be seen by holding up a leaf to the light, but, as it is to be found in so many Bamboos, the name is not well chosen for purposes of identification. A feature of the plant is the pretty way in which the slender new culms spring from the carpet of arching foliage. Also known as Bambusa, or Arundinaria, Ragamowski.

Arundinaria Nitida.—A very lovely species from North Western Szêchuan. The culms are purple-black, very slender and round. The leaves are small, lance-shaped, and tessellated. Quite the hardiest of all our Bamboos, for in the bitter weather of February 1895, it stood at Kew as green as in mid-summer. Originally sent out in error as Arundinaria Khasiana, which is a non-hardy Indian species with striated leaves.

* **Bambusa angustifolia.**—A lovely little Bamboo probably an Arundinaria, about 9 in. to 1 ft. in height. The stems are round, very slender, and when young of a purplish colour. It is much branched; the leaves are about 4½ in. in length by three-eighths of an inch in width; they are serrated on both sides, and somewhat capriciously striped with silver variegation. The leaf-sheaths are slightly hairy. This is the Bambusa Vilmorini of French gardeners. I have named it angustifolia on account of its narrow leaves. I cannot find that it has hitherto been described.

Bambusa Nagashima (Marliac).—Apparently a dwarf Bamboo, with me only 18 in. high in its second year, but may grow taller. The stems are round and purplish-green in colour; the leaves, which are from 6 in. to 7 in. long and three-quarters of an inch in width, are sharply serrated on both edges; the leaf-sheaths are hairy. So far this Bamboo has not developed any characteristics of especial merit, and is, perhaps, hardly worth growing, except in a collection.

* **Bambusa marmorea** (the Bambusa Kan-chiku of Marliac).—I have ventured to rechristen it, as it has not, so far as I know, been hitherto described, and Kan-chiku is given in the Japanese Horticultural Journal as the equivalent of Bambusa Nana of Roxburgh; and, moreover, it is confusing, as there is already a Bamboo called Kanzan-chiku = Arundinaria Hindsii, *q.v.* I have chosen the name "marmorea" on account of the very peculiar appearance of the young stems, which are folded in purple sheaths, delicately marbled with a pinkish silver-gray, through which, near the knots, peep glimmers of the bright emerald-green or dark purple of the stem itself. The stems, which in colour are purple, shading off to a brilliant green, are very slender and round, rising at present with me to a height of 3 ft. 3 in., but promising to grow taller. The branches cluster thickly round the stems in threes, and are much longer than the internodes, which are very short, not more than from 1 in. to at most 2 in., so that the dense foliage has all the appearance of being verticillate, and the fully developed culm assumes the shape of a fox's brush. The leaf-sheaths are very distinct; their colouring is unlike that of any other Bamboo that I have seen: they are downy at the top, and have besides round the base a conspicuous little fringe of hairs, which seems at first sight to spring from the node; the ligule is very tiny. The leaves, which are bright green, are about 4½ in. long by three-eighths to five-eighths of an inch broad; they are serrated on both edges, and have a marked constriction at about half an inch from the very sharp end; indeed the leaves are so pinched in at their point that they seem to terminate, as it were, in a tongue. The rhizome is

very active, new shoots appearing at some distance from the parent plant. This is altogether a unique dwarf Bamboo, as pretty as it is strange.

***Bambusa pygmæa.**—The best and the smallest of the dwarf Bamboos, invaluable for making a carpet of soft brilliant green. Grows with extraordinary rapidity, the root-stock travelling great distances and at a considerable depth. Stem about 6 in. to 16 in., round, much branched, apparently an Arundinaria; internodes very short; leaves about 4 in. long by half an inch to three-quarters of an inch broad, edges serrated, both surfaces downy, the lower surface glaucous, leaf-sheaths hairy at top. This wonderful little plant grows so thick and close that no weed has a chance against it, but its rampant habits make it advisable to give it plenty of room. For this reason I should not recommend its adoption for edgings, as has been sometimes advised. Being a confirmed vagrant, it is impossible to keep it within bounds.

Bambusa Laydekeri.—Apparently a semi-dwarf Bamboo, not, so far as my experience of it goes, particularly attractive, though it should have a place in a collection. The stems in the third summer are about 3 ft. high, but will probably grow higher; round, much branched; apparently, therefore, it is an Arundinaria. The leaves are about 6 in. long, dark green, but rather shabbily mottled on both surfaces, serrated on one edge and slightly so on the other; leaf-sheaths hairy at top. The branches, which are long in proportion to the length of the stems, from which they stand out rather markedly, give the plant a conspicuous habit.

Bambusa quadrangularis.—A curious and rare Bamboo, which owes its name to its square culms, like the stems of one of the Labiatæ, a feature which is conspicuous only when the plant has attained some size. This it has not yet done, so far as I am aware, in outdoor cultivation in this country. Though it is apparently weather-proof, the growth is by no means rapid, and we shall probably have to wait some time before its value as a hardy plant is established. There is a good specimen in the temperate house at Kew. The stem is much branched and the branches almost verticillate. The leaves, which are of a fine deep-green colour, are about 8 in. by 1 in. wide, serrated on both edges; leaf-sheaths hairy at top, internodes short, the nodes very markedly prominent. A very beautiful and peculiar member of the family, which it is much to be hoped will thrive with us. Runs freely at the roots. It was supposed at one time that the square shape of the culms was due to some artificial treatment, but the young stems, even in their present development, have sufficient character to disprove this. Groves of this Bamboo upwards of 30 ft. high are to be seen near Osaka, the Venice of Japan.

***Bambusa heterocycla.**—This very strange freak of Nature is called by the Japanese Kiko-chiku, or the "tortoise-shell Bamboo," from the curious arrangement of the alternately and partially suppressed internodes at the base of the stem, which sheathe it in plate armour like the scales on the tortoise's back. At about 2 ft. or 3 ft. from the ground the nodes are regularly defined, as in other Bamboos. It was thought at one time that this abnormal feature of the stem was due to artifice on the part of the Japanese gardeners, past masters of the art of torturing plants into all sorts of quaint shapes and conceits. But an examination of a section of Bambusa heterocycla, with its very curiously alternated septa corresponding with the outer scales, shows that the grotesque markings are the handiwork of Nature when in a playful mood. The other characteristics of this Bamboo do not differ from those of the Phyllostachides of the mitis and aurea group. The branches are in twos —one longer than the other—the internodes grooved. The leaves are from 3 in. to 4 in. long and about half an inch wide, very minutely serrated on one edge and almost imperceptibly so on the other, bright green on the upper surface, bluer underneath. I believe that the first living plants of this species introduced into England were those received here and at Kew from Japan in 1893, though it was exhibited at the Paris exhibition of 1878, and named heterocycla by Carrière. The imported stems are about 5 in. round, and the plant has the appearance of growing into a large and important Bamboo.

Bambusa Marliacea.—A very handsome species—evidently a Phyllostachys—at first sight bearing a strong likeness to Phyllostachys Quilioi. The only plant I possess (it is a rare Bamboo, not easily obtained) has in its third year grown to a height of 8 ft., but promises to become very tall and vigorous. I should not be surprised to see it rival Quilioi. The stem when freed from the sheaths is very handsome—a dark green shining like enamel; the internodes at the base are very close together, not more than 1½ in. to 2 in. The branches are long and

graceful, leaves a very intense green on the upper surface, glaucous below, about 4½ in. long by 1 in. wide, more conspicuously serrated on one edge. The young leaf-sheaths are purple, and furnished with rather long and coarse purple hairs. The habit of this Bamboo is very graceful, the culms forming the most elegant arches, beautiful both in form and colour. The catalogue of the Yokohama Gardeners' Association gives the native name as Shibo-chiku, the "wrinkled Bamboo." This probably alludes to the knotted appearance of the base of the stem, which makes it useful for canes and umbrella sticks.

Bambusa fastuosa (Marliac).—However difficult it may be to distinguish between some of the species of hardy Bamboos, this very stately and beautiful plant stands out quite conspicuously among its fellows, having marked characteristics which are all its own. The bright-green stems, heavily splashed with purple-brown blotches, are straight, very hollow, the wood being a mere shell, and extremely brittle. The internodes, which are grooved, are short, only from 5 in. to 6 in. long in a stem 15 ft. high; the lower end of the culm for 2 ft. or 3 ft. is bare of branches. At first they occur in twos and threes, but higher up they become more numerous. I have counted as many as seven or eight distinct branches on one node, and these again are much ramified. The branches being four or five times as long as the internodes and rather erect, the top of the culm wears a false air of verticillation, giving the plant the appearance of an Arundinaria, which, however, the groove in the internodes and the non-persistent character of the leaf-sheaths seem to contradict. The leaves are from 5 in. to 7 in. long by three-quarters of an inch to 1 in. in width, tapering to a sharp point, and markedly constricted at about an inch from the end, which has the appearance of a little tongue. Their colour is bright green on the upper surface and very glaucous underneath. Both surfaces are smooth, the lower one distinctly ribbed; both edges are serrated, but, as is frequently the case in Bamboos, the one is more so than the other; the veins are very closely tessellated. The petiole is long and well defined. The leaf-sheaths are rather thick and hairy, being a shining purple in colour until they wither and drop off. The rhizome, which appears to be very active, is more fistulous than that of any Bamboo which I have observed; a section which I measured showed an oval hollow in the internode of the root-stock a quarter of an inch long by one-eighth of an inch broad. My imported stems are from 12 ft. to 15 ft. high, and rather more than 3 in. in circumference. There is every reason to believe that this Bamboo will prove to be one of the most valuable of the group. Tall, spreading, gracefully plumed with foliage which for richness and beauty of colour is without a rival, it cannot fail to make a striking feature in the wild garden. It was first imported from Japan three years ago by M. Latour-Marliac, of Temple-sur-Lot, and has not hitherto been tried in this country or described.

Phyllostachys bambusoides.—The innumerable claimants to this title have been finally sent out of court as impostors now that the real Simon Pure has been received from Hong Kong. The stem, which is said to grow to a height of from 10 ft. to 12 ft., is flat on one side, instead of being grooved like the other members of the Phyllostachys group, with branches in threes, the centre branch being the longest of the three instead of the shortest as in the other species, purplish in colour, and slightly zigzagged; the nodes are thick and smooth, the branches are much knotted, and short. The leaves are bright green above, 5 in. long by 1 in. wide, but very variable in size; they are sharply serrated on both edges. The leaf-sheaths are furnished at the top with conspicuous bristles, which fall off with age. The plant has every appearance of proving a valuable addition to our collection of hardy Bamboos, but the specimens which I have seen are as yet mere babies.

* **Phyllostachys aurea.**—The distinctive name aurea is not very happily chosen, for there is nothing golden about the plant unless it be the yellow stems, and these are not peculiar to the variety named. The stems are very straight and erect in this country, growing close round the base of the plant, which gives it the appearance of having cæspitous roots; whereas it has a true rhizome, which in its native climate runs freely. It is seen at its best when planted in bold masses, as the individual plant by itself has too much of the shape of the birchen rod of an old-fashioned dame's school in the kingdom of Brobdingnag. A distinguishing feature of this species is the shortness of the internodes at the base of the stem. The leaves vary much in size, some being about 4 in. long by half an inch wide, others from 6 in. to 7 in. long by 1 in. or even more broad. The petiole is well defined, the insertion of the young

leaves very hairy. One edge of the leaf is conspicuously serrated, the other very slightly, the teeth on this edge being placed irregularly and at great distances apart. Both surfaces are glabrous. At Shrubland, in Lord de Saumarez's garden, Phyllostachys aurea is 14 ft. 6 in. high, the canes being 2¾ in. round. Last year (1893) a Bamboo was received here and at Kew from Japan under the name of Bambusa sterilis, which the Japanese Gardeners' Association describe as closely allied to Phyllostachys heterocycla. This appeared to me to be undistinguishable from Bambusa aurea, and Messrs. Watson and Bean now share my opinion. Curiously enough, the plants were covered with an undeveloped inflorescence, which proved to be infested with a hitherto undescribed ergot. I may here note the great confusion which has prevailed in the descriptions of several of the Phyllostachys tribe. Aurea, mitis, Quilioi, Henonis, viridi-glaucescens, flexuosa have all been jumbled up in the most hopeless tangle. This has been due partly to the fact of plants being sent out by dealers under any and every name, partly to the eagerness of collectors to describe plants before time had enabled them to develop their characteristics. In a young state P. aurea is hardly to be distinguished from P. mitis, but as they grow older each puts forth its distinctive features and asserts its identity. Messrs. Rivière remark that, like as the two plants are in their early stages, mitis never degenerates into aurea, nor does aurea ever rise to the dignity of mitis.

* **Phyllostachys mitis.**— This is the tallest, and in that respect the noblest, of all the Bamboos capable of being cultivated in this country. At Shrubland the culms of plants imported seven years ago are 19 ft. 5 in. high and 4¼ in. in circumference. In China and Japan it grows to 60 ft. high. The stems, some of which spring out of the ground like spears, are, when fully developed, beautifully arched, and have for that reason a grace which is not to be found in P. aurea. The young shoots when they first appear above ground seem to hang fire for a while before taking their upward growth. When once they start they are very rapid, growing in this country as much as 6 in. in the twenty-four hours. The utmost growth that I have noticed is 4½ in. in the twenty-four hours ; but mine are young plants. Messrs. Rivière have made most interesting experiments on the growth of Bamboos, of which they give tables. The maximum growth of an adult plant of Phyllostachys mitis during twenty-four hours in Algiers was 20 in. They note that P. mitis grows most during the night, whereas the other plants of similar growth, such as viridi-glaucescens, aurea, nigra, &c., make their chief growth during the day. Bambusa Tulda, in Bengal, is said to grow as much as three centimètres (upward of 1⅛ in.) in an hour. As in P. aurea, the leaves, which vary much in size, are serrated on one edge, the teeth being almost if not quite absent on the other. The petiole is shorter than in aurea, and the hairy growth at its insertion less conspicuous. The sheaths differ much in colour, but are generally brownish and spotted with purple. As the branches are developed the withered sheaths drop off, leaving a shining deep-green stem which gradually ripens into a bright yellow. The branching begins at the base, and as soon as it is thoroughly active the growth of the culm ceases. The underground procession of the rhizome is much more marked than in P. aurea, the stems appearing alternately along its course. Although its running powers are in this climate not great, still, whereas in P. aurea there is a cæspitous appearance, in P. mitis the rhizomatous character is well maintained. The young shoots of this Bamboo are eaten in China and Japan. Some gastronomers profess to detect in them the taste of Asparagus ; this, I confess, demands some faith. The consistency is crisp and pleasant, like Celery, but the flavour depends upon the sauce—at least that is my experience. As pickles and sweetmeats they are but poor eating. To its culinary merits, such as they are, the plant owes the synonym edulis, which is at any rate less foolish than mitis.

* **Phyllostachys sulphurea.**—A handsome golden-stemmed Bamboo, which in appearance has great affinity with P. mitis, though Messrs. Rivière see a connection between it and P. flexuosa. It is far stiffer and not so free a runner as flexuosa, while the only difference which I can detect between it and mitis is that it is not so tall and has a more brilliantly coloured stem. The other characteristics are the same ; indeed, it would puzzle an expert to tell them apart. Messrs. Watson and Bean lean to this opinion. It is perfectly hardy and well worth cultivating, but difficult to obtain. At Shrubland it is growing to a height of 13 ft., with a circumference of 2¾ in. round the stem.

* **Phyllostachys Quilioi.**—A very distinct Bamboo, introduced from the north of Japan by the French Admiral Du Quilio in

1866. Some writers see a great likeness between this and P. mitis, P. aurea, and P. viridi-glaucescens. To me it appears to have a character altogether its own. In the first place it has a far looser habit, the branches are longer in proportion to the culm, the leaves are larger, serrated on both edges, and often marked with purple spots on a deeper green ground than is found in the foliage of either of the others; the hairs at the insertion of the leaves are deep purple. The sheaths are most peculiar; they are of a pinkish-brown colour, deeply mottled with purple spots, and, as they fall, reveal a brilliantly polished dark-green stem. The culms are more upright than those of P. viridi-glaucescens, less compact and more arching than those of P. mitis and P. aurea; the root-stock is far more active than in either of the two latter species (in this country), while it does not seem to run so much as that of P. viridi-glaucescens. I may be in a minority, but I see in P. Quilioi a Bamboo to be recognised among a thousand; and the many eminent botanists and gardeners to whom I have shown it have without exception come round to my opinion. I cannot help suspecting that those who have described it hitherto have not had the true plant before them. I know that this is the case in one instance, where P. Quilioi was actually described from a plant of P. mitis. Altogether a notable Bamboo, growing at Shrubland to a height of 18 ft. 6 in., the canes having a circumference of 3¾ in. *Syn.*, Phyllostachys Mazeli.

***Phyllostachys viridi-glaucescens.** — A most elegant and graceful Bamboo, to which many cultivators give the palm of loveliness. It grows to a great height—nearly 18 ft. at Shrubland, 14 ft. at Kew—while the slender, tapering culms are not more than 2 in. round. The root-stock is very active, the plant being a great runner, while many of the culms come almost horizontally out of the ground, giving the plant a very wide spread. The leaves are generally about 3 in. or 4 in. long and about three-quarters of an inch across; one edge is serrated, the other only partially so towards the point of the leaf. The petiole is well defined, and short brown hairs encircle the insertion of the leaf. The leaves are of a bright green, in pretty contrast with violet stems, which turn to a yellowish green. The stem is much zigzagged. Once established, this is a perfectly hardy Bamboo, but it is not safe to plant out specimens which have travelled. I have lost a large percentage in this way. It is better to pot newly arrived plants and let them remain in a cool house until they have recovered from the effects of their journey.

***Phyllostachys flexuosa.** — Sometimes considered to be identical with P. viridi-glaucescens. On the other hand, Messrs. Rivière, who recognise the similarity, say, "We have not remarked in the spathiform sheaths of this Bamboo the toothed membranous expansions which we have met with in many other species of the same group, notably in P. viridi-glaucescens." There is, moreover, the fact that P. flexuosa flowered and fruited all over France and in Algiers in 1876, while P. viridi-glaucescens did not, and this would seem to indicate a different plant. It is certainly not easy to detect any outward and visible sign of difference between the two. P. flexuosa, which must not be confounded with the prickly species described under that name by Munro, was introduced into France from the north of China in 1864.

***Phyllostachys violescens.**—This is sometimes said to be a variety of P. viridi-glaucescens. It is somewhat more tender, the leaves being apt to be cut by frost, which gives the plant an ugly appearance in winter, but with the spring the culms are clothed with new foliage, and after all it is only those shoots which come into existence in the late autumn which suffer. The foliage is rather darker and larger than in the type, and the plant more straggling, the rhizomes running rampantly. But the most distinctive feature is the deep purple colour of the young stems during their first year. This is lost in the two-year-old stems, which change to a greenish yellow or brown. The plants at Shrubland are 15 ft. high, and the culms 2¾ in. in circumference. A beautiful plant in its early growth, but on account of the defects mentioned above hardly to be reckoned one of the best of the hardy Bamboos.

***Phyllostachys Henonis.**— To my taste this is the loveliest of all our Bamboos; indeed, it would need the inspiration of a poet to do justice to its beauty. Nor is that its only merit, for it is perfectly hardy, and bears up bravely against our rudest and coldest weather. Of all the plants that I imported not one has gone amiss, though they were subjected to hardships to which, now that I know better how to manage, I should not dream of exposing them, and which proved fatal to a good many of their travelling companions. The Shrubland plants are now 14 ft. high, the stems 1¾ in. in circumference. The tapering

leaves are about 4 in. long and about half an inch across. They are very smooth on the upper surface and ribbed on the lower, serrated on one edge and very slightly on the other. The colour is a pale green, and less glaucous on the lower surface than most of the leaves of Phyllostachys, the midrib prominent, the petiole well defined. The slender tall stems are green at first, growing yellower with age, slightly zigzagged. The root-stock runs rather freely. But it is to its habit that this Bamboo owes its surpassing loveliness. The two-year-old culms, borne down by the weight of their own foliage, bend almost to the earth in graceful curves, forming a groundwork of the most elegant beauty, from which the stems of the year spring up, arching and waving their feathery fronds, the delicate green leaves seeming to float in the air. I regard P. Henonis as the embodiment of every grace to which plant life is heir. The Japanese synonym is Ha-chiku, the Chinese characters with which it is written signifying the "light or volatile Bamboo."

* **Phyllostachys nigra.**—This is perhaps the best known, and from its black stems the most easily recognised of the hardy Bamboos. On the Riviera and in Algiers it grows to a height of about 30 ft., the stems being nearly 6 in. round. At Shrubland and at Kew it is 10 ft. high and the stems are 2 in. round. At Leonardslee it is 20 ft. high. With me the plant has been a little capricious and difficult to establish, but once it has taken hold of the ground no Bamboo seems hardier. The stems are of an olive-green colour during their first year of growth, changing to shining black the following year. They are slightly zigzagged. The leaves, which are from 3 in. to 4½ in. long by three-quarters of an inch broad, are green on the upper surface and glaucous underneath. The rhizome runs with some freedom. Messrs. Rivière call attention to some peculiarities in the structure of this Bamboo upon which, as they are more interesting to the botanist than to the gardener, it is unnecessary to dwell here. It is enough to say that in Phyllostachys nigra we have a plant of striking beauty and undoubted hardiness. It is said that it is the rhizome of P. nigra which furnishes the Wanghai cane of commerce.

* **Phyllostachys nigro-punctata.**—A variety of Phyllostachys nigra, taller, and a looser and more free grower than the type. The stems, green at first, change in their second year to a dull brown speckled with black. There is no other characteristic to differentiate it from P. nigra.

* **Phyllostachys Boryana.**—Another and still larger variety of Phyllostachys nigra, one of the handsomest and most vigorous of the hardy Bamboos, very graceful in its habit, as indeed are both P. nigra and P. nigro-punctata. As in their case, the stems are green during their first year, but change colour the second year to a dull brown splashed with large deep purple or black blotches. This and the preceding variety have proved more easy to establish than the type. I have not lost a single plant of either, though they have been subjected to great hardships; whereas P. nigra, as I have already said, has been apt to resent rough treatment. One peculiarity of all three varieties is noteworthy. The rhizomes are fond of running very near the surface of the earth, sometimes, indeed, above the surface. When this is detected it is advisable to cover them with a little loose soil, which may be kept down with a light stone. This encourages the verticillate roots to strike downwards. Failing this, I have known the rhizome to be killed back, and the development of the plant to that extent retarded.

* **Phyllostachys Castillonis.**—A most lovely plant, indeed one of the best of the many good gifts which we owe to Japanese gardens. The foliage is larger than it is in most of the Bamboos, some of the leaves being as much as between 8 in. and 9 in. long by nearly 2 in. broad. When they first appear they are striped with bright orange-yellow, which in time fades to a creamy white. Both edges are serrated. The petiole is short, the leaf-sheath dressed with a frill of long brownish purple hairs. The stem, which is much zigzagged, is bright yellow and green, the latter colour remaining in the deep channels left by the pressure of the branches, so that the two colours are alternate all the way up the culm, the hues being intensified with age. As the sheaths of the branchlets are of a very pretty pink, the plant has a tricoloured effect, which is most pleasing; the branches come in twos and threes. My plants in their second year have grown to about 6 ft., and have every appearance of attaining a goodly height and proportionate circumference. Twenty-four degrees of frost last January (1894) did them no harm, but M. Marliac tells me that the foliage is apt to suffer from snow. This, however, can at the worst be only a temporary evil. One of my plants is extremely curious as a varia-

tion from the type. Not only is the variegation absent from the leaves, which are bright green, but in the stems its position is exactly reversed, the channels being yellow and the rest of the culms green. The Japanese name is Kimmeichiku, the "golden brilliant Bamboo."

***Phyllostachys kumasasa** (P. viminalis, Marliac).—A pretty little Bamboo, described by Munro as P. kumasaca, though the Japanese name is bungozasa. The stems are about 18 in. high, purplish green in colour, with brown sheaths, much zigzagged and very slender, distinctly channelled from the pressure of the branches, which spring in twos and threes, sometimes in fours, from the nodes. The leaves are from 2 in. to 4 in. in length, and an inch, more or less, in width; ovate; soft hairs very conspicuous on the lower surface, but none on the upper surface or on the insertion of the leaves, which are serrated on both edges. By giving the name kumasaca to this Bamboo Munro has given rise to some difficulty. Sasa (in composition after a vowel zasa) is a Japanese version of the two Chinese words hsiao chu (small Bamboo), and is the generic name given by the Japanese to the dwarf Bamboos; chiku, another Japanese version of the Chinese word chu (Bamboo), and také, a pure Japanese word, being the names given to the tall-growing or arborescent Bamboos. Kuma signifies an edge or border. The etymology of the word kumazasa (barbarously altered by Munro into kumasaca) would seem to point to the Arundinaria Veitchii, on account of its leaves withering at the edge in winter, and so having an edge or border margin. It is certainly often used in that sense by natives. Japanese botanists, however, apply the name to Arundinaria tessellata or Ragamowski, while our English botanists, following Munro, give it to Phyllostachys viminalis, which the Japanese call bungozasa, probably from the province of that name in the southern island. There is thus a triangular duel between science, etymology, and common use, which is most bewildering, and so long as this lasts it would seem wiser to

Bambusa palmata, from a photograph by Lord Annesley.

leave the Japanese names alone, contenting ourselves with the European nomenclature. But when science does find it necessary to adopt words taken from a foreign tongue with which she is unacquainted, she will do well to avoid altering consonants, as Munro did when he made saca out of sasa, or she may get herself into dire trouble. Try it upon a few English monosyllables! *Syn.*, Phyllostachys viminalis.

Bamboos of Doubtful Origin.

Bambusa Disticha (*B. Nana. Hort.*)—A pretty little dwarf Bamboo, sent out as Bambusa Nana by gardeners. The name nana belonging already to a Bamboo described by Roxburgh, its repetition was confusing. Stem about 2 ft. high, round, very slightly zigzagged; branches and leaves distichous; leaves hairy, especially at the base, and serrated at the edges, about 1½ in. long by three-quarters of an inch broad, tapering to a point; leaf-sheaths hairy; rhizome inclined to run but far less so than in Bambusa pygmæa. A very distinct little plant, most useful for a choice corner in a rock-garden. The origin of this Bamboo is doubtful. Mr. Watson, of Kew, says, "It is more like Chusquea tessellata (Munro, New Granada) of any of the specimens in the herbarium."

Arundinaria Anceps.—A very beautiful Bamboo discovered by Mr. Jordan, superintendent of Regent's Park, in the stock of a dead nursery gardener, whose books being destroyed or lost, it was impossible to trace its origin. It is probably a Chinese species. In general habit very like Arundinaria Nitida, but absolutely distinct; the culms are brown when ripe instead of purple-black; the leaf-sheaths are hairy instead of being absolutely without hairs, and the petiole of the leaf is yellow, whereas in Arundinaria Nitida it is purple.

Arundinaria Nobilis.—A grand arundinaria, probably of Chinese origin, growing to a height of 24 ft. at Menabilly, in Cornwall. Loses its leaves in winter; and in very severe seasons the culms die down, reappearing the following summer. In Cornwall it is quite hardy, only losing its leaves in early summer when the new ones are ready to appear. The tall stems are yellowish in colour with very dark purplish nodes, of which the lower rim is broadly marked with grey; much branched. The lanceolate leaves are thin and bright green, with a purple petiole, the colour of which is continued along the edges, fading away to the point. There are no cross veinlets, the leaves being striate.

A. B. Freeman-Mitford.

Baptisia (*False Indigo*).—A hardy and vigorous Lupine-like group of plants, perennials from North America, forming strong bushy tufts 3 to 5 ft. high, with sea-green leaves; the flowers, mostly of a delicate blue, in long spikes. B. australis, exaltata, and alba are the best-known kinds, and are best placed in the mixed border.

Barbarea.—In the natural state few of these plants are pretty, but two varieties of B. vulgaris, an indigenous species, are worth growing. The finest is the double yellow rocket (B. vulgaris fl.-pl.), which is a beautiful and curious plant. The process of doubling is, according to Mr. Sutherland, "very peculiar in the flowers; I am not aware of any parallel to it in other double flowers. There appears to be no attempt to form either stamens or pistils. But the axis of the flower has the power of extending itself and producing numerous whorls of petals as it grows in length. A lengthened succession of flower is thus kept up. It is about 18 in. high, flowers bright yellow, from June till late summer, and often till autumn." It succeeds in almost any soil, preferring a rich light loam; and is increased by division of the root-stock. There is a variegated form of the single plant called the Blotch-leaved Winter Cress. It is said to come true from seed.

Bartonia aurea.—A showy golden-flowered hardy annual, 1 to 2 ft. high. Should be sown in April in groups or patches where it is to remain in light soil and warm situations, the plants being thinned to about 1 ft. apart. As the seed is very small, care should be taken not to bury it too deep. The Bartonia is seldom used except as a patch in a border, but when well grown it might be used as a bold group, relieved here and there by tall plants. Chili. Loasaceæ = Mentzelia.

Beaucarnea.—Graceful Dracæna-like plants, with swollen stem-bases, growing freely in a cool house, but sometimes placed in the flower garden for a few months in summer.

Begonia.—The Tuberous Begonia is the most familiar to flower gardeners, and of late years has played a large part in summer bedding. Grouped together in beds, a very fine effect is produced, far more pleasing than that which is obtained by the adoption of stiff lines and the combination of plants that are of quite a distinct character from each

other. In respect to colours there is a great diversity, from the darkest scarlets and crimsons to the various shades of rose and pink; also white and blush-coloured kinds.

The cultivation of the Begonia, both tuberous and shrubby, for bedding out, is not difficult. If pots are scarce, none need be used for the tuberous section from the time of pricking off the seedlings from the pans. From that time onwards boxes may well be used instead; in fact, are preferable, for the reason that less water is required where there is a greater amount of soil, even though each plant may not have a greater proportion in this respect than when in a pot. Seedlings raised in March will make good plants for planting early in June. One can just prick them off into pans; from these, when large enough, they are put in shallow boxes, and not disturbed again until planted out, unless getting overcrowded. The beds should be well prepared for them, if the soil is heavy and retentive using plenty of well-decomposed leaf-mould, this appearing to be very suitable, and failing this old Mushroom manure. The soil should be obviously given for seedling plants than for those of one or more years' growth. During the first year those of inferior quality should be discarded when lifted, whilst mark the finest for another year. For the second and after seasons' display start the tubers in a gentle heat in boxes in March, transferring them to a cold frame or pit in May. They should be planted out in this in shallow soil. A north frame is best, the plants make very free growth, and get a good size for planting out the first week in June. The beds require to be surfaced with either a dwarf kind of plant or with Cocoa-nut fibre. Of the former one may use the dwarf hardy Sedums, as S. acre and S. glaucum, also Mesembryanthemum cordifolium variegatum. These all tend to keep the soil cool and moist, therefore more congenial for the Begonias. When, however, they are planted thickly together, use the fibre, which will soon be covered by the foliage. When Begonias, more particularly the tuberous ones, are planted in positions where they are likely to suffer from drought, they will require much water. They should always be kept moist at the root, as they cannot stand drought. Damping the beds overhead as the sun leaves them in the after part of the day when the weather is dry and warm will greatly refresh them. When lifted, the tuberous varieties require careful attention so as to prevent the decaying stems from imparting any ill effects to the tubers. This is easily done if care is not taken. Remove these stems as soon as they can be twisted out without any trouble. Some growers, and large ones too, expose the tubers in a light, dry, and airy house until the stems are quite dried up, which no doubt is a very good plan, but it requires room to do it. Later on the bulbs when quite at rest should be kept in a cool place, neither too dry nor too moist, but where frost cannot reach them, being stored in either Cocoa-nut fibre or silver sand in shallow boxes until again required for starting. It is better to have single than double flowers for bedding out, as the latter are far too heavy. There is no want of colours. The whites are very pure, and one gets some rich orange and buff tints, capable of creating striking yet not garish pictures.

A class getting more popular each year, and not unlikely to take, in some measure, the place of the true tuberous kinds, is that called the shrubby set, these being known as forms of B. semperflorens. They are quite different to the others, being neat and shrubby in growth, with an abundance of rather small leaves, varying in shade from quite a bronzy purple. Conspicuous is Vernon's variety, the leaves deep crimson to light green, set off by pinky blossoms. There are many varieties, named, as a rule, according to the colour of the flowers, and as easily and similarly raised as the tuberous kinds. The plants are, when in beauty, a mass of bloom, the small flowers produced in such profusion as to almost hide the leafage. But many of the kinds are very dull in colour, and get shabby towards the end of summer. There are many uses for them in gardens—as distinct groups, or as a groundwork to beds filled with other things, as the graceful Acacia lophantha. They are delightful, too, for pots, flowering so freely, and being compact and leafy in habit. Another section consists of varieties of B. multiflora, but these are not much known at present. From what one can see, however, they will get popular, especially as margins to beds, filled with other things, as they are very dwarf, the flowers, like little rosettes, appearing above the leaves. They are a mass of bloom through late summer and autumn. One of the best of the bedding Begonias is called Princess Beatrice, and is used as largely as any. The plant is very compact and neat in growth, the flowers of a pretty pink shade, and produced abundantly.

Behria tenuifolia.—This is a new bulbous flower, which Prof. Greene places close to the Brodiæa, but which I think will prove to be much nearer to the Mexican family of Bessera. The bulbs are small, exactly like those of Milla biflora, and the plants bear grassy leaves, each about a foot long. The scarlet flowers are tubular, carried in an umbel, with the stamens much exserted. Its season of growth is from May to September, and it comes from Cape St. Lucas, in Southern California.—C. G. V. T.

Belladonna Lily (*Amaryllis*).

Bellevallia (*Hyacinthus*).

Bellflower.—A name for various large kinds of Campanula.

Bellis perennis (*Daisy*).—Daisies are among the most popular of garden flowers, although not used as much as formerly. They need only simple culture, increase rapidly, and in the spring garden are of great service in large clumps or masses. The common double garden Daisy has sprung from the wild Daisy, just as the double Primrose has come from its wild single Parent. Though we have numerous kinds, popular favour has adhered most closely to the old flat-petalled white and the old quilled red, both of which are grown by millions as market plants. Besides these are the flat-petalled Pink Beauty, a charming pink of the quilled class ; a deep rich red or crimson quilled kind, called Rob Roy ; White Globe, with large white quilled petals ; and many others. The yellow-blotched or Aucuba-leaved kinds have originated by sporting, and one named aucubæfolia is a pretty kind, but rather tender, though it will do well in winter on a free porous soil, and in summer in a cool shady border, if transplanted there. The giant or crown-flowered Daisies almost form a distinct section, and, though vigorous, are much less free of bloom than the better-known kinds. These produce large and usually mottled red flowers upon long stalks, and are best suited for mixed borders. A very old favourite is the Hen-and-Chickens Daisy. It differs in no respect of habit or foliage from the double kinds, except that when the flowers are at their best they send out small ones from the axils of the scales—hence the designation Hen-and-Chickens. It is worth a place as a curiosity ; its flowers being usually rosy pink, and before starting its progeny very pretty.

Propagation is simple, and may be done in spring and autumn. Well-dug soil suits well, and pull the plants to pieces, dibbling them in six inches apart, and if a good mass of bloom is desired they may be put a little closer. Where the soil is good the Daisy increases so rapidly that it may be transplanted twice in the year.

Bellium.—Plants closely allied to the Daisy, of which some three or four forms are in cultivation. Although from the south of Europe, they are hardy on the rock-garden, but, like the beautiful Houstonia cœrulea, are apt to exhaust themselves in flowering. B. bellidioides, B. crassifolium, and B. minutum are much alike ; B. minutum being the best. Its numerous flowers are nearly as large as those of the Daisy, and it is easily grown in light soil. B. rotundifolium cœrulescens (Blue Daisy) is a native of Morocco, on rich soils on the hills about Tangier, and by the watercourses of the Greater Atlas. It is a pretty rock-plant. Division or by seed.

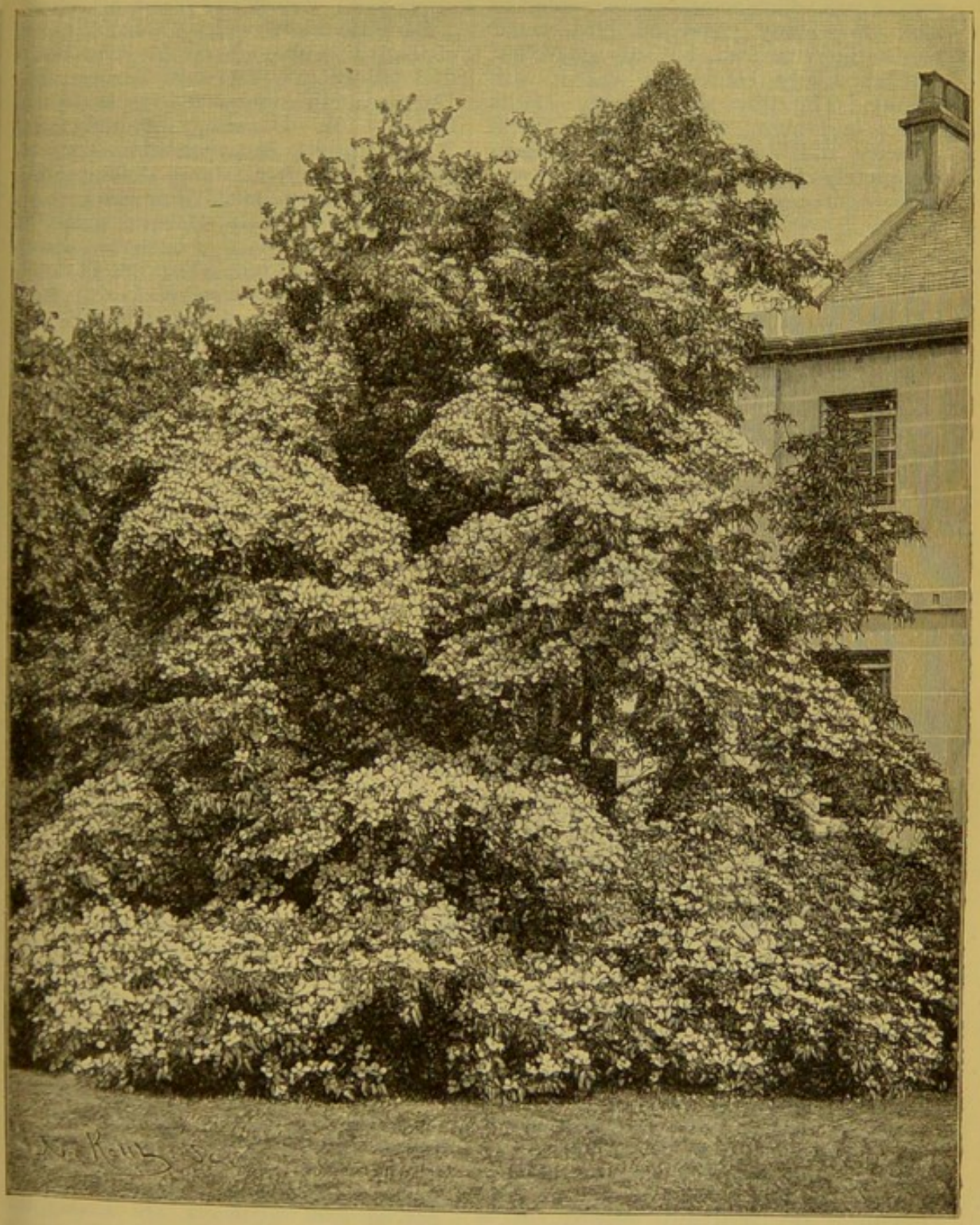
Bellwort (*Uvularia*).

Belvedere (*Chenopodium Scoparium*).

Benthamia fragifera (*Strawberry tree*).—An Indian tree, beautiful and precious in gardens. Though not hardy enough for the country generally, it is quite hardy in mild southern districts of England and Ireland, and in many other places near the sea, such as in the Vale of Festiniog near Cardigan Bay, North Wales. It is also suited for walls and sheltered banks. Where the climate is favourable, on an ordinary garden wall it sometimes assumes a handsome tree-like shape. There is a Japanese kind. Perhaps the following letter to *The Garden*, by Mr. J. B. Cockburn of Guernsey, about the fine tree of it here figured, will be interesting :—

"This tree is now thirty-five years old. As a small seedling of two years it was planted in the centre of a lawn exposed to the sun from early morning till late in the afternoon, but sheltered from the severe gales common in winter. It was quite two years before it took the ground ; after that it shot up rather rapidly to its present height of 24 ft., beyond which it does not appear inclined to go, but the lower branches have spread out on the ground and are still spreading, the circumference at the base at present being 81 ft. It was some eight years old before it commenced to bloom ; since then not a year has passed without its being covered with flowers, which are like those of a single Anemone, of much the same size, and of a greenish-white colour. The flowers open in May, and do not completely disappear till late in August ; the sight of this mass of white

bloom on so graceful a tree is singularly beautiful, and in the moonlight of the summer nights it has a startling effect. In the centre of every flower is the fruit, ish red, the largest specimens being as large as a Mandarin Orange. At the moment of writing (28th October) a few are quite ripe and dropping from the tree,



Fine Strawberry tree at Elm House, Guernsey.

and as the petals drop off this enlarges, and somewhat assumes the appearance of a Strawberry. It enlarges slowly, and towards the end of October turns a pink- but fruit will be on the tree when the flowers open next year, and even now the buds of the future flowers, in the form of a small nodule the size of a Pea, a

miniature fruit, thickly stud all the new shoots ; in fact, the tree has always either fruit or flower, and for a long time shows both.

"The fruit is unpalatable ; it makes a sort of jam which some people pretend to like. For many years no bird would touch the ripe fruit, but now thrushes, and especially blackbirds, eat it with avidity. The tree sheds many of its leaves in January, and looks its worst in January and February, but it is never completely bare. It will stand any amount of rain, but suffers much from strong winds, and should be planted in an open space, well protected from prevailing winds. It cannot be propagated by layers or cuttings, but there is no difficulty in rearing seedlings ; so freely does it propagate in this manner, that seedlings are constantly weeded out of the borders in the neighbourhood."

Evergreen Barberry.

Berberidopsis corallina (*Coral Barberry*).—This is a beautiful evergreen climbing shrub from Chili, hardy enough for open walls in the southern counties. It has large spiny leaves very much like some Barberries, the flowers, bright coral-red, hanging in clusters on slender stalks, and borne for several weeks in summer. It is charming for a wall, preferring partial shade, such as that of a wall facing east or west, and does best in peaty or sandy soil. Raised from seed or layers.

Berberis (*Barberry*).—A valuable group of hardy shrubs, among the most beautiful of which is Darwin's Barberry (B. Darwini). B. stenophylla is a hybrid between B. Darwini and the small B. empetrifolia. B. empetrifolia is an interesting though not showy trailing shrub. Two or three specimens rising out of a mass of B. Darwini make an effective evergreen shrub-group on a lawn. B. dulcis is a pretty Barberry, whose slender shoots are hung with tiny yellow flowers. The common Barberry (B. vulgaris) is very pretty when in fruit in autumn, and it has several varieties, some of which differ considerably in habit of growth and colour of the berries. One has berries of deep crimson, others have violet, yellow, and white fruits. A beautiful shrub-group could be formed of the fruiting Barberries alone, using B. vulgaris, B. aristata (which has berries covered with white powder, like Plums), and the small-growing B. Thunbergi, also remarkable for its scarlet berries, which remain on the bush throughout the autumn. B. Wallichiana has handsome flowers and foliage, and is worthy of cultivation in the best collections.

Evergreen Barberries.—The Mahonias are now merged in the genus Berberis, but in gardens the name Mahonia is often still retained. As flowering shrubs they are of much value, as is shown by the beauty of flower and fruit of the common M. Aquifolium and its numerous varieties. Those named rotundifolia and Herveyi, gracilis and intermedia, are among the best, free in bloom and handsome in foliage. M. fascicularis, though not hardy everywhere, is fine when in bloom, its stems being wreathed with golden clusters for some weeks, while M. hybrida is scarcely less ornamental and certainly hardier. Of not so much value as

flowering shrubs are M. repens, M. glumacea, and M. trifoliata, all beautiful Evergreens. In mild districts there is not a finer flowering shrub in spring than M. nepalensis, with large clusters of yellow bloom and massive foliage. The Japanese M. Japonica, or M. Beali as it is also called, is a good Evergreen in sheltered places, and a fine flowering shrub.

Bergamot (*Monarda fistulosa*).

Berkheya (*Stobæa*).

Beta cicla variegata (*Chilian Beet*).—A showy plant, the leaves often more than 3 ft. long, vivid in colour, their midribs varying from dark waxy orange to vivid crimson. The splendid hue of the lower part of the leaf-stalks flows towards the point, and spreads in smaller streams through the main veins and ramifications of the great soft leaf, which is often 1 ft. and even 15 in. in diameter, if the plant be in rich ground, and the under sides of the leaves are richly coloured. The plant should be sown in a gently heated frame, and afterwards planted out in rich ground. It varies much from seed, and the most striking individuals should be selected before the plants are put out. Used sparingly, its effect is often perhaps more telling than if in quantity.

Betonica (*Betony*).—Plants of the Sage Order; not of great garden value. B. grandiflora is one amongst numerous kinds worth a place in a border, thriving best in rich loam not too damp. It is 12 to 18 in. high. Division.

Bidens (*Bur Marigold*). — North American annuals of the Composite family, few worth cultivating The best are B. ferulæfolia, B. frondosa, and B. tripartita, from 1 to 1½ ft. high, with yellow flowers and deeply cut foliage. Treated as half-hardy annuals. B. humilis is a handsome plant, dwarf and flowering all summer, flowers orange-yellow.

Biebersteinia orphanides.—A rare plant from South-eastern Europe, belonging to the Geranium family, about 1 ft. high, with finely divided leaves and erect spikes of small rose-coloured flowers.

Bignonia (*Trumpet-flower*). — The hardy species of this large family of climbers are graceful, showy in flower, and vigorous.

B. capreolata, a true Bignonia, is a native of the southern parts of North America, and is hardy in all but the coldest parts of England. It is commonly grown as a greenhouse climber, but it succeeds against a warm wall. It has heart-shaped leaves, ending in curly vine-like tendrils; the flowers, of a true trumpet shape, are large, reddish yellow, and come not in clusters, but singly. In a sheltered spot against a sunny wall it is almost an evergreen.

B. grandiflora is a Chinese plant, much more tender than B. radicans, and less common. It is much showier when in bloom, the drooping flowers, of a bright orange-scarlet, coming in large clusters. Its foliage, too, is larger, but the plant rarely grows so vigorously in this country. It is handsome in bloom on a warm sunny wall.

B. radicans is a native of the North American States, and is an old garden favourite. Its long wiry stems send out roots like Ivy, and cling to walls or any support. The foliage is graceful, and in late summer the shoots have showy clusters of scarlet and orange blossoms. There is a variety named major, with larger flowers of a paler tint, and more robust foliage. A strong plant will run up and cover a wall 40 ft. high. It is useful also for covering arbours and pergolas.

Bindweed.—The English name for various kinds of Convolvulus.

Bird Cherry (*Cerasus Padus*).

Bird-foot Violet (*Viola pedata*).

Bird's-nest Fern (*Asplenium*).

Birthwort (*Aristolochia*).

Bitter Almond (*Amygdalus*).

Bitter Root (*Lewisia rediviva*).

Bitter Vetch (*Orobus*).

Black Lily (*Lilium kamtschatkense*).

Black Thorn (*Prunus*).

Bladder Fern (*Cystopteris*).

Blechnum (*Hard Fern*).—Several of these evergreen Ferns are hardy and worthy of culture. The common British kind (B. Spicant) is pretty and has many varieties. Of these, crispum has the lobes of the fronds undulated and curled, and their points finely crested; cristatum is dwarfer, and the crested fronds are more forked and branched; imbricatum has lance-shaped fronds of thick texture, and the top of pinnæ distinctly imbricated; serratum rigidum is erect with crested fronds, distinct and handsome; multifurcatum has the fronds much divided and forked; and trinervium has the lowermost pinnæ so arranged as to give the fronds a tripinnate appearance. The varieties of B. Spicant now number nearly fifty. Among the hardy exotic kinds B. alpinum is most desirable, as it is a rapid grower, and its dense growth soon covers broad spaces on rockwork. The hardy Blechnums may be grown in loam, loam and peat, or a stiff clayey soil, but dislike chalky soils and dry situations. They love shady moist spots and abundance of water in

the growing season. Under these conditions they attain a greater size and vigour than when wild. They are suitable for the hardy fernery and shady spots or rock-garden and in borders.

Bleeding Heart (*Dicentra*).

Blennosperma californicum.—A dwarf annual from California, belonging to the Composite family, not much known in cultivation.

Blessed Thistle (*Carduus benedictus*).

Bletia hyacinthina. — A beautiful Chinese Orchid, having ribbed leaves, and slender flower-stems 1 ft. or more high, bearing about half a dozen showy flowers of a deep rosy pink. It has proved hardy, and thrives well in sheltered and shaded situations in peat borders. In some localities it would be well to cover the roots during severe cold. It is also known as B. japonica, and is very interesting for the bog garden or a bed of hardy Orchids.

Blitum capitatum (*Strawberry-blite*).—A hardy annual of the Spinach family, 1½ to 2 ft. high, the flowers small, followed by high-coloured fruit calyxes resembling small Strawberries. Sow in April in the open air.

Bloodroot (*Sanguinaria canadensis*).

Bloomeria aurea.—An attractive little Californian plant, having umbels of small orange flowers striped with a deeper hue, from 6 to 18 in. high, and quite hardy in light garden soil in sunny positions, but should be protected during severe cold. *Syn.*, Nothoscordum aureum.

Bluebell.—The English name of various plants, principally Campanula rotundifolia and Scilla nutans.

Blue Berry (see Vaccinium).

Blue Cupidone (*Catananche cærulea*).

Blue Daisy.—An English name of various chiefly blue flowers—Bellium and Kaulfussia.

Blue Spider-wort (*Commelina cælestis*).

Bluets (*Houstonia cærulea*).

Blumenbachia coronata.—An interesting annual flower, showy, the foliage elegant, and the growth dwarf, the structure of the flowers singular. The boat-shaped petals and the peculiar small scales between them, together with the brush-like bundles of stamens, make the blossoms very attractive. Its culture is simple, requiring to be treated as a hardy annual, but it is better to sow it in spring than in autumn. It flowers from July to September if grown in warm light soils. The other species in cultivation are B. insignis and B. multifida. The blossoms of B. insignis are pure white, 1 in. across, with compressed keeled petals, furnished with a large serrated tooth on each side. B. multifida is of much stronger growth, more hispid with stings, and with much larger five-parted leaves, longer two-bracted flower-stalks, and broader obtuse petals. Both are natives of the southern parts of South America.

Bobartia aurantiaca.—A pretty Iridaceous bulb from the Cape of Good Hope, about 1 ft. high, and bearing numerous rich yellow blossoms. Being somewhat tender, it should be planted in light warm soil in a border, or in the rock-garden, and protected in winter when necessary. The bulbs should be lifted and separated after flowering, and replanted in autumn.

Bocconia cordata (*Plume Poppy*).—A handsome and distinct plant growing in erect tufts 3 to over 8 ft. high, and admirable if properly placed. The numerous flowers are in very large terminal panicles, the flowers not showy, but the inflorescence, when the plant is well grown, has a fine effect. The plant is best in the shrubbery, and does well in ordinary garden soil. It is excellent in bold groups, the leaves, too, being fine in form. Division. China.

B. frutescens.—A vigorous Mexican shrub, 3½ to nearly 6 ft. high, with few and very brittle branches, large, sea-green, handsome leaves, and greenish flowers. Very effective on Grass plats, in groups or as isolated specimens. It requires a somewhat warmer climate than ours to thrive well, though it is sometimes in fair condition in the London parks out-of-doors in summer. It may be placed out from June to the end of September. It is difficult to propagate by cuttings, and easier to raise from seed.

Bœhmeria nivea.—A stout shrubby perennial of the Nettle family, occasionally grown in botanic gardens, and distinct in habit, and with the under side of the leaves silvery. About London it grows 3 to 4 ft. high. Division. China.

Bœrkhausia (*Crepis*).

B. rubra (*Red Hawkweed*).

Bog Arum (*Calla palustris*).

Bog Asphodel (*Narthecium ossifragum*).

Bog Bean (*Menyanthes trifoliata*).—Known also as Brookbean and Buckbean.

Bog Pimpernel (*Anagallis tenella*).

Bog Rhubarb (*Petasites vulgaris*).

Bog Violet (*Pinguicula vulgaris*).

Boltonia.=Aster.

Bomarea.—Plants allied to Alstrœmeria, requiring greenhouse temperature so far as now known. Mr. Archer Hind,

of Newton Abbot, has B. edulis (*syn.*, oculata) out-of-doors, and it has flowered well after surviving a temperature of 25° below freezing. If any of the other species should prove hardy in the southern counties, their fine bold twining habit and handsome flowers would be a gain.

Bongardia Rauwolfi.—A plant of the Barberry order, though remarkably unlike one, as it has a depressed Cyclamen-like stem, from the apex of which spring

The Plume Poppy (Bocconia cordata).

the leaves, in three to eight pairs of leaflets, each of which is again divided, presenting the appearance of being arranged in whorls. These are wedge-shaped, of a pale glaucous green, and each has a conspicuous reddish-purple blotch at the base. The flower stem is much branched, 6 in. high, and bears roundish golden blossoms from ¾ to 1 in. across, which droop gracefully from slender stalks. Though now rare, this beautiful plant was among our earliest garden plants, and is mentioned by all the early writers. Found from the Greek Archipelago to Afghanistan, and hardy on dry soils. Seed.

Borago orientalis (*The Cretan Borage*).—A vigorous perennial, bearing pale-blue flowers early in spring, and in good soil, having very large leaves through the summer. Easily naturalised in any rough place, but not worth a place in the garden proper, being coarse and taking up much space. The common Borage is very pretty, naturalised in dry places or banks, where it might often be welcome for use as well as beauty. There is a white variety. B. laxiflora is pretty with suspended blue flowers; it grows very freely on sandy soils.

Borkhausia (*Crepis*).

Botryanthus (*Muscari*).

Botrychium (*Moonwort*).—Inconspicuous Ferns, of which few are cultivated. The common native Moonwort (B. lunaria) is widely distributed, and generally found in moist sheltered meadows. B. lunarioides, B. virginicum, B. lanceolatum, B. simplex, and B. ternatum are hardy North American species. All the Botrychiums are deciduous, putting forth their fronds about the end of April, and dying down somewhat early in autumn. The fronds are of a beautiful dark green, and the plants produce small panicles of inflorescence. The best soil is a moist well-drained sandy mixture of loam and peat.

Boussingaultia baselloides.—A luxuriant trailing plant with shoots 16 to 20 ft. long, and sometimes more. Flowering late in autumn, the flowers small, white, fragrant, and becoming black as they fade. They are disposed in clusters 2 to 4 in. long, springing from the axils of the leaves at the ends of the branches. The fine green leaves are smooth, shining, fleshy, and slightly wavy; stems twining, tinged with red, growing with extraordinary rapidity, and bearing many tubercles. Suited only for dry banks and chalk-pits, associated with climbing and trailing plants. Tubercles of the stem; these break with the least shock, but the smallest fragment will vegetate. South America.

Bowiea volubilis.—A Cape bulb,

interesting only from a botanical point of view, being one of the few climbing Liliaceæ. It has no leaves, but has numerous fleshy terete branches, several feet high, and rising from a large Turnip-like green bulb, half raised above the surface. The flowers are small and inconspicuous. It is a hardy perennial when planted in a sheltered situation against a wall, especially one with a southern aspect. It should be allowed to ramble over dead branches placed near it. Seeds.

Box (*Buxus*).

Box Thorn (*Lycium*).

Brachycome iberidifolia (*Swan River Daisy*). — A pretty annual of simple culture, about 8 to 12 in. high. As it is somewhat straggling, it is particularly suited for grouping in masses. The flowers are about 1 in. across, in loose terminal clusters, and are bright blue, with a paler centre, resembling those of the Cineraria. There are other sorts, with flowers of various shades of blue and purple, and one of pure white. Sow in cool house in September as soon as ready, prick off four or five in a 4-in. pot, keep in cold pits during winter, and guard against damp. Pot on again in March singly into 4-in. pots, and finally at end of April plant out into open borders; or sow on slight hotbed in March, prick out into pits for transplanting into open in May; or sow in open in April and May.

Bracken (*or Brake*).—Applied to large Ferns generally, more particularly to Pteris aquilina.

Bramble (*Rubus*).

Brasenia (*Water Shield*).—A North American water-plant, the flowers dull purple, coming to the surface but making little show.

Brassica.—Some forms of the Cabbage, particularly the variegated Kales, are used in the flower garden for winter effect. The secret in cultivating them is poor soil. This brings out their colours and keeps the plants dwarf and compact. Seed should be sown in May, and when fit to handle the plants should be pricked out wide apart into a very sunny spot, and finally bedded out in October, after the summer stuff is cut down by frost; and on clear days a clump, varied in colour and well planted, will have a charming effect on a lawn. In planting, the stems should be sunk in the ground up to the lower leaves, and care should be taken that they are of equal height. The dwarf curled variegated kind has the finest effect in beds. Its colours vary from pure white to deep purple, pass through cream, pink, pale and dark green. Plants of it have variously coloured veins and laced edges. The Ragged Jack stands next; when closely inspected the beautifully cut leaves give an additional charm. The seed must be of a good strain or selection, as the want of the finer laced and fringed light-coloured varieties quite spoils a good bed, the commoner colours being sombre dark greens with purple veins. The Carnation-striped Red Cabbage makes a showy bed, but is not so hardy as the Kales.

B. oleracea crispa is a handsome plant nearly 4 ft. high, with elegantly cut arching leaves, the divisions of which are finely curled. It may be used in the winter garden, the leaves being at their best during autumn and winter. Still more striking is B. o. palmifolia, 6½ ft. high, with leaves near the top of the stem, which have a palm-like appearance in the end of summer and in autumn.

Bravoa geminiflora (*Scarlet Twin-flower*).—A pretty Mexican bulbous plant of the Amaryllis order. From 1 to 2 ft. high, the flower-stems stout and erect, bearing on the upper part numerous pairs of nodding tubular flowers of a rich scarlet outside, but inclined to yellow within. It succeeds well in warm sheltered situations in borders of light and well-drained soil, but requires some protection over the bulbs in winter. It flowers in autumn, and remains a long time in bloom.

Brevoortia coccinea (*Crimson Satin-flower*).—The name now applied to Brodiæa coccinea, one of the prettiest Californian plants. The drooping umbels of flowers grow on stems, 1½ to 2 ft. high, the flowers tubular and of a deep crimson-red, the lips a vivid green. It succeeds best in friable loam. It is not well to delay planting after October, and the roots may remain undisturbed for several years. Offsets are given off, and the plant may also be increased by seed, which vegetates pretty freely after some weeks, the bulbils flowering in three or four years. Not less than three plants should be grouped together, and a dozen will produce a still better effect; an Osier rod in their midst will support the fragile stems. In soils of a sandy character, the foliage may partially wither by the time the flowers are in perfection. This may partly be remedied by sowing a few seeds of some neat dwarf annual to carpet the soil round the stem, and bloom after its removal, or, in the case of the early-flowering annuals, such as Limnanthes and Leptosiphon, simultaneously with the bulbs themselves.

Brexia madagascariensis.—A handsome shrub with a slender erect stem clothed with long leathery leaves. It is one of the tropical stove-plants that may be placed in the open air from June to early in October, requiring ordinary stove-culture during winter and spring. It should only be placed out after making a strong growth, which has been hardened off. Madagascar.

Briar, Green (*Smilax*).

Briar, Sweet (*Rosa*).

Briza (*Quaking Grass*).—A graceful family of Grasses, American and European. B. maxima is one of the handsomest, growing 12 to 18 in. high; may be sown in the open in March, is quite hardy and exceedingly graceful while growing, and most useful for decoration either green or dried. B. media (Common Quaking Grass) is smaller, 9 to 15 in. high. Borders, raised from seed.

Brodiæa.—A charming family of North American liliaceous plants. The late Professor Sereno Watson recognises fifteen species in his *Revision of the North American Liliaceæ*, to which he adds about half a dozen more in subsequent notes, and I think it will be best to follow his nomenclature. The *Genera Plantarum* admits the same genera as proposed by Watson, but it also includes under Brodiæa the Triteleia group, of which Triteleia uniflora is the best-known example. Though, perhaps, not distinct from Brodiæa in a strictly botanical sense, the Triteleia group is perhaps best kept separate from the true Brodiæas, which are all inhabitants of North America, whilst the Triteleias, united with Milla by some authors, are all natives of the southern parts of the American continent. The first of the species described by Professor Sereno Watson in his revision above cited is—

B. grandiflora.—This is an old and widely spread plant, the scape is about 5 in. high, and the deep purplish-blue flowers are produced in a loose umbel in July. At the time of flowering the foliage is generally more or less withered, and to hide the nakedness of the stems it is sometimes best to plant the bulb among some other low-growing plants.

B. minor, admitted by Watson as a species, but probably not more than a variety, of the foregoing, is very pretty; dwarf, and resembles Chionodoxa gigantea. The scape is not more than an inch high, about fifteen flowers in the umbel; the colour purplish blue, with a lighter centre.

B. congesta has the stems long and wiry, the flowers in a dense umbel; purplish blue in colour, and very lasting. B. alba is a pretty white-flowered variety. B. capitata much resembles this kind, and in cultivation it is usually dwarfer and flowers about a week earlier than B. congesta. There is also a white-flowered variety.

B. laxa is a very old garden plant, also called Triteleia laxa. There are several varieties, not only varying in colour of the flowers, which in the type is of a deep purplish-blue, but also in the size of the individual flowers and the umbels.

B. peduncularis is a pretty white-flowered species, with large umbel of porcelain-white blossoms, the flowers resembling those of Triteleia uniflora.

B. gracilis is not very ornamental, the flowers being small, yellow in colour with a brown stripe. B. ixioides is another yellow-flowered species. This was figured by Lindley in the *Botanical Register* as Calliprora lutea; the scape is about a foot high, carrying a good-sized umbel of yellow flowers, slightly striped with brown. B. lactea has a small umbel of whitish flowers of no particular beauty.

The following are newer species described by Watson and other authors with which I have been able to get acquainted. Of these I would place

B. Howelli in the first rank. This pretty species has flowers in a fine umbel, bell-shaped and milky white. A beautiful variety of it (Lilacina) has delicate bluish flowers, retaining its fine deep-green foliage at the time of flowering, and throwing up sturdy stems about 2 ft. high, crowned by large flat umbels of well-shaped flowers of a delicate milky-white and light lilac-blue. They are very lasting, and when cut and placed in water they will remain good for at least a fortnight. It first flowered at Gravetye, and the plate in *The Garden* was from a drawing made there by Mr. Moon. It flowers about the end of May, and a clump of it remains in good condition for at least three weeks. Other newly introduced species are B. Hendersoni, with large umbels of yellow flowers; B. filifolia, very narrow-leaved, with small umbels of lavender-coloured flowers; B. Lemmonæ, B. Palmeri, B. Orcutti, B. terrestris, and a few others of which I have not as yet any intimate knowledge.

Turning from the true Brodiæas, we have the closely related groups Stropholirion, Brevoortia, and Bloomeria, all of which no doubt belong to the former family, though they are kept separate by several authors. Of the first-named of these—the Stropholirion—there is only one species—viz. S. californicum, better known as Brodiæa volubilis. The flower-

stems of this singular plant are twining, and if they get a support will grow 4 to 5 ft. high, with a total stem length of often double that. The flowers are delicate rosy pink. The Brevoortia is also a mono-typic genus, and the B. coccinea or Brodiæa coccinea is now a well-known plant, with fine umbels of pendulous flowers, individually about 2 in. long and rich crimson red, with pea-green rim. The flowers last in good form for a very long time. I have seen cut specimens kept dry and out of water retain their freshness and bright colour for over a week. There is also a rare lilac-coloured variety. The Bloomerias, of which the B. aurea and B. Clevelandi are the best known, are much like Brodiæa ixioides, having umbels of rich yellow flowers.

The cultivation of all the above bulbs is simplicity itself. They may be planted from October until December, and in mild localities will pass the winter in the open unprotected. Here, in Holland, where our winters are often very severe, they are covered with reeds or straw at the approach of the cold season. This covering will not only keep the cold off, but it also serves to keep the soil open and to ward off the exciting effects of an often treacherous winter sun.—C. G. V. T.

Bromelia sphacelata (*Hardy B.*)—A rough curious Chilian plant, forming tufts of harsh, rigid, spiny leaves, 1 to 2 ft. high. Flowers in summer; purple, sessile, crowded and overlapping each other, in axillary spikes. Leaves numerous, erect, sword-shaped, long-pointed, fringed with stiff spines pointing upwards. It is suitable for the rock-garden and warm borders in light perfectly drained soil.

Bromus.—At least one of this large genus of Grasses is very graceful and worthy of culture—that is B. brizæformis, a hardy biennial about 2 ft. high, with large graceful and drooping heads. It is more valuable for cutting and drying than any of the Quaking Grasses (Briza). We have grown it as an annual sown out-of-doors in spring and in pots, but probably autumnal-sown plants would give the best results. It is worth a place for the sake of cutting for preservation alone.

Broom (*Cytisus*).

Broom Rape (*Orobanche*).

Broom, Spanish (*Spartium junceum*).

Browallia. — An interesting family, chiefly Peruvian. B. elata has usually been regarded only as a beautiful pot-plant in summer and autumn, but it does well in the open air, either in a bed by itself or in large patches with other things. It supplies a shade of colour difficult to obtain, and is useful to cut from, the flowers being light and elegant. Sow the seed in March, prick off the young plants when large enough to handle, grow them on till they are strong, and plant out in May. There is a white variety equally useful. B. grandiflora, a fine form of the old B. elata, is useful for conservatory and indoor decoration, and comes true from seed, the flowers being of a beautiful shade of blue. It also succeeds out-of-doors. B. Roezli is a dense compact bush, 16 to 20 in. high, with shining green leaves. The flowers are of a delicate azure blue, or are white with a yellow tube, and are unusually large for the genus. They come in uninterrupted succession from spring till autumn. Rocky Mountains.

Brugmansia (*Trumpet-flower*).—Plants of fine form and large and beautiful flowers, more useful in warmer countries, but good for summer use in warm and sheltered gardens in the southern and milder districts. They are of easy cultivation, and soon make large plants. The best way of growing is as standards, so that their long drooping flowers may be better seen. In the flower garden a sheltered but sunny position should be chosen. The plants may be safely put out about the end of May in good warm soil. It would be best to pot them into large pots or tubs, and turn them out of these, as thus treated they would not die back so far in the winter, and when planting time again came round the growth would be stronger. When in a house either in tubs or in the border, an annual pruning should be given early in the spring, and they should be kept within bounds. Under glass the chief enemy is green-fly, but fumigation soon disposes of this. For the open border of a large house a few standards with stems 8 ft. or so in height make a grand show. Their propagation is simple, the young shoots being merely taken off in spring and struck in a gentle heat, one cutting in a small pot. Grow them on as fast as possible, keeping them to the one stem until of good height. They will yield a few flowers the first autumn when planted out, but as they get older they flower more profusely, the growth being less luxuriant. When planted out in the open ground, Brugmansias are best as centre plants to fairly large beds, with a carpet of dwarf things under them. They should not be smothered up, the example of Knighti in the illustration being an

instance of good effect when not overcrowded. This is one of the best varieties, with many large handsome double flowers. It is more robust and compact in growth than other kinds, its leaves too of a darker green. B. suaveolens, another good white variety, is a profuse bloomer, its flowers being perhaps larger than those of B. Knighti, but single. B. sanguinea has flowers of a deep orange-yellow tinged with green towards the base; it does not flower quite so freely as the white kinds, but should be grown for its distinct character. There is also a double yellow variety of B. chlorantha, which is free-flowering and well worth growing, being pleasing in pots. The Brugmansias are usually placed with the Daturas.

Some years ago, at Nuneham Park, Oxford, B. suaveolens was used with good effect in the flower garden during summer and autumn. Mr. Stewart, the gardener, used to raise plants annually by striking cuttings in autumn in bottom heat. They were potted as soon as rooted, and kept growing gently in a warm greenhouse all through the winter. About the end of February they were placed in an atmosphere of about 55°, when they were encouraged to grow freely. As soon as the roots appeared above the surface, liquid manure and sometimes a top-dressing of old cow manure were given. They were

Brugmansia Knighti in the flower garden.

kept growing on in this way until the middle of May, when they were 2½ ft. high, after which they were gradually hardened off, and during a dull time taken out-of-doors, placed in a sheltered corner, and screened from the sun before being planted out. Out-of-doors the plants flowered freely, and gave off a sweet perfume during the evenings in July and August.

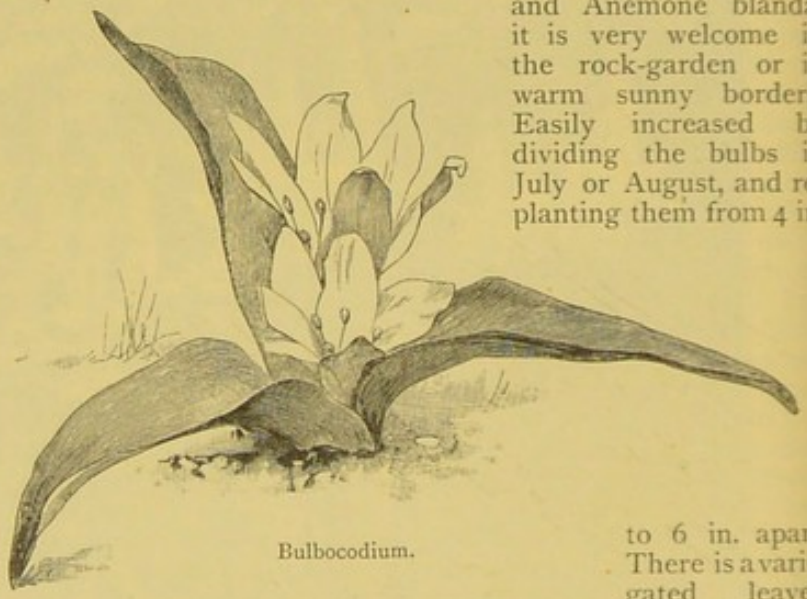
Bryanthus erectus (*Hybrid B.*)—A dwarf evergreen bush, from 8 in. to 1 ft. high, bearing pretty pinkish flowers. It is said to be a hybrid, and is in appearance intermediate between Rhododendron Chamæcistus and Kalmia glauca. In very fine sandy soil or in that usually prepared for American plants, it grows well, and is suitable for the rock-garden or in collections of very dwarf alpine shrubs, whether planted in the rock-garden or in neat beds.

Bryonia dioica (*Bryony*).–The modest merit of this wild British climber is seen in German gardens, where it is chosen for its enduring verdure as well as graceful foliage. It forms many wreaths in the gardens of Vienna, and is trained up the angles of stone pedestals in the garden of Count Schwarzenberg. So trained, it relieves the mass of stone, but so common a hedge plant will not often find a place in our gardens.

Buddleia globosa (*Orange Ball Tree*).—A favourite shrub from Chili, often seen in the southern coast gardens, where it is hardier, and in Ireland, the flowers, balls of bright yellow, are showy in early summer. It is of rapid growth, and if badly cut down during a severe winter generally grows again in the following summer. B. Colvillei is a tender Himalyan kind with bunches of pale rose-coloured flowers. It is a shrub for mild districts only. Mr. Gumbleton writing from Queenstown, Ireland, says: "It will doubtless prove hardy in either Devon or Cornwall, as it has done with me. Save in planting it against a brick wall facing south, I have never given it any protection. It strikes easily from cuttings, but requires to attain considerable age and size before it begins to bloom." Other species less satisfactory for open-air culture are B. crispa, Himalayas; and B. Lindleyana, China.

Bulbine.—Plants of the Lily Order, of which only one species, B. annua, from South Africa, is grown in the open air—an annual, about 1 ft. high, with narrow leaves and spikes of small yellow flowers, not very showy.

Bulbocodium vernum (*Spring Meadow Saffron*).—A pretty bulb from 4 to 6 in. high, and one of the best and earliest of spring bulbs, sending up large rosy purple flower-buds, distinct in colour. Earlier than Crocus susianus. The tubular flowers are nearly 4 in. long, and are usually prettiest in the bud state, the colour being a violet-purple, the large buds appearing before the leaves, and the leaves growing large after the flowers are past. Associated with very early flowering plants like the Snowflake, Snowdrop, and Anemone blanda, it is very welcome in the rock-garden or in warm sunny borders. Easily increased by dividing the bulbs in July or August, and replanting them from 4 in. to 6 in. apart. There is a variegated leaved variety. One other species, B. trigynum, is sometimes met with in cultivation. Alps of Europe.



Bulbocodium.

Bullrush (*Scirpus lacustris*).—Erroneously applied to Typha latifolia, the Reed Mace.

Buphthalmum (*Telekia*).

Burning Bush (*Dictamnus fraxinella*).

Butomus umbellatus (*Flowering Rush*).—A handsome native water-plant, often very fine in a rich muddy soil. It should always find a place among water-plants, being hardy and free to flower, easily increased by division.

Butter-and-Eggs.—An English name for a double form of Narcissus incomparabilis; also applied to the common Toadflax.

Buttercup.—The English name for various native yellow Ranunculi, some of which in their double form are cultivated in gardens.

Butterfly Orchis (*Habenaria bifolia*).

Butterwort (*Pinguicula*).

Buxus (*Box*).—This beautiful bush or low tree grows wild on some of our southern chalk hills, and is much cultivated in gardens as an edging and also in shrubberies. The beauty of its habit is seldom seen in gardens, owing to its being grown under other trees or to its being too much crowded, but seen wild and fully exposed on the chalk hills its habit is most graceful, and it might be well to secure the same beauty of habit by planting in groups upon fully exposed knolls with the common Box, not too thickly set. Almost all the species and varieties have variegated forms, which, though pretty, are not so good as the natural forms. Easily increased from seed sown in the open ground, or from cuttings in the autumn. The following are the kinds :—

The Common Box (Buxus sempervirens).—From its close bushy habit it is one of the most useful Evergreens for garden hedges. It may be pruned or clipped into any shape ; and when topiary gardening was in fashion, it shared with the Yew in the formation of designs and figures of men and animals. While there are few soils in which it will not thrive, it prefers such as are light, with a warm gravelly subsoil. Of what is regarded as the typical species there are in cultivation many varieties, differing more or less in stature, habits, and foliage. Of these arborescens is a handsome form, with a more robust growth, longer branches, and larger leaves than the common species. Handsworthi has broad deep-green leaves, and is one of the finest varieties. Angustifolia, with narrow leaves and dwarf, is a compact shrub. Japonica, by some writers regarded as a species, is probably a form of the common Box. It is quite hardy, and is a handsome shrub. Pendula has a weeping habit, and when left to itself has a rambling and not very elegant form. Trained, however, to a single stem, or grafted as a standard upon the upright varieties, it forms a specimen for a lawn. Rosmarinifolia is a curious dwarf variety, with narrow leaves, giving it the look of a miniature Rosemary. Nana is the common dwarf Box, used for edgings to garden walks. Myrtifolia is a distinct plant with narrow leaves ; Thymifolia is a neat dwarf variety, with short tiny branches and very small leaves. The Minorca Box (B. balearica) is a native of Balearic and other islands in the Mediterranean, as well as Italy and Turkey, where it forms a fine tree of from 60 to 80 ft. in height. The leaves are larger than those of the common Box, and when exposed to the sun are of a lighter green. In our gardens it is often seen as a shrub ; and, though classed among hardy Evergreens, it only succeeds well in warm well-sheltered situations with a dry soil and a warm subsoil. The Chinese Box (B. sinensis) is of a dwarf habit, not exceeding in its native habitats 3 ft. in height. The leaves are smaller than those of the common Box, and it is rather tender, but succeeds in sheltered situations, forming a compact bush, useful for small garden shrub beds.

Box Edgings.—Where Box edgings are cared for, they must be clipped every year, and it is on this operation, and on the time of year it is done, that the look of the edging for the rest of the year depends. After trials of clipping at different seasons, we think the end of May or the first week in June is the best time for it, for although the Box is hardy its young growths often suffer from spring frosts during May, and, by clipping at the time named, all irregularities of surface are removed ; the young growth very soon commences, and takes off that hard look that follows the use of the garden-shears. The young growth looks fresh and becomes matured to stand the ensuing winter, which is not the case when clipping is done at the end of summer. Injury is done through salting the walks to destroy weeds, when a heavy fall of rain floats the salt to the edging, and destroys it. The next worst enemy to Box edgings is the foliage of garden crops or flowers overhanging them, and drawing them up weakly, so that they cannot withstand severe weather. Where proper attention is paid to Box edgings they are very charming to many, though they are not nearly so good or pretty as the rough stone or flint edgings spoken of elsewhere in this book.

Cacalia = Senecio.

Caccinia glauca.—A dwarf hardy perennial belonging to the Borage Order, from the highlands of Persia, about 9 in. high, with short racemes of flowers, each about ½ in. in diameter, like a Borage in form, pinkish at first, changing to blue. It is a neat border plant, interesting, but hardly a showy plant.—W. T.

Cactus.—Various plants belonging to the Cactus Order of plants have proved hardy in England. Opuntia, Echinocereus, Mammillaria, and Echinopsis are among the hardiest. Pretty effects are shown by some Cacti in the open air in Southern England, the plants blooming

freely when fully exposed in the sun on a warm rock-garden ; but the want of the sunshine of their native plains is against their being very happy in Britain.

When the foliage of a plant, or what answers to it, is perennial, as in Cacti, it is most important to place it so that it may be safe from injuries, apart from climate, and the best places are, as a rule, on well-drained ledges in the rock-garden. Plants of this family should be planted in the rock-garden in open airy situations, free from dripping water, and where the drainage is perfect. Probably hardy alpine species will be found farther south, and we may yet see, in warmer counties, a good collection of bright-flowered Cactaceous plants on warm rocky borders or banks.

Caladium esculentum.—For outdoor decoration this species is the best of a large genus with very fine foliage. It is only in the midland and southern counties that it can be grown, but its fine form, outlines, and aspects make it worthy of a place associated with fine-leaved plants wherever the garden is warm enough. It requires above all other plants a light rich warm soil. May is the best time for planting it out in the open air, and, if groups are formed, the plants should be 2 or 2½ ft. apart. The foliage generally attains full size in August and September. At the approach of frosty weather, all the leaves, or all but the central one, should be cut down to within 1 or 2 in. of the crown, and a few days afterwards the tubers should be taken up and left on the ground for a few hours to dry ; they should then be stored on the shelves of a warm greenhouse, or in a cellar or some other place where they will be safe from frost and wet. By placing the tubers in a hotbed in March, plants with well-grown leaves may be obtained for planting out in the open air about the end of May or the beginning of June. It has been used with good effect in London gardens, but owing to cold seasons its culture is to a great extent given up. New Zealand.

C. odorum (*Colocasia odora*).—A handsome plant, with stout stems from 3 to 8 ft. high, the heart-shaped leaves erect, broad, marked with strong nerves, often more than 3 ft. long, the flowers fragrant. It is a fine plant for placing on grass, but it is too tender to thrive except in sunny sheltered dells in the south, and should not be planted out until June. E. Indies.

Calamintha.—Glabella is a charming minute plant, growing in neat little tufts 3 in. high, flowering in summer and bearing lilac-purple scented blossoms, numerous and large for its size. Should be grown on the rock-garden in sandy loam and among the dwarfest plants. Division.

Calampelis (*Eccremocarpus*).

Calandrinia.—This genus is large, and many species have been introduced, but few are very effective for gardens, but if well grown and placed they are pretty, and sometimes brilliant border or rock plants.

C. discolor.—A beautiful S. American plant, from 1 to 1½ ft. high, with fleshy leaves, pale green above and purple beneath, and bright-rose flowers in a long raceme, 1½ in. across, their colour forming a pretty contrast to the tuft of golden stamens in the centre. The flowers open only in sunshine in July and August, blooming several weeks in succession. They thrive in a dry soil and on a warm exposure, and may either be sown in the open border or in pots in April, but care must be taken in transplanting them from pots.

C. grandiflora.—A handsome annual resembling C. discolor, but larger, with more showy blossoms and leaves of a different shape. It thrives in a warm and good loam, and flowers a little earlier than C. discolor, and blooms throughout the autumn.

C. nitida.—Closely allied to C. discolor, but dwarfer, forming a tuft 4 to 6 in. across, and bearing on stems 6 to 9 in. high large rose flowers in leafy racemes. The flowers are fully 2 in. across, and open best in bright sunshine, like all the kinds. It is best treated as a half-hardy annual, as it then blooms much earlier, but may be sown in the open air in May. Chili.

C. oppositifolia is a distinct plant, and is well marked by its larger, very thick, succulent leaves and delicate white flowers. The root is a thick fleshy tuber, and likes a warm dry spot, where it proves hardy. In habit it is somewhat straggling, but where it can be planted so as to overhang a small ledge it will be found beautiful. It first flowered at Kew, and it ripens seed freely, and it is a native of Oregon and California, on high mountains.—K.

C. speciosa.—A plant with slender stems, much branched and prostrate ; the flowers from ½ to 1 in. across, purple-crimson ; on sunny mornings they open fully, closing early in the afternoon. It flowers and thrives from June to September on dry soil, sows itself often, and is suited for the rock-garden on account of its dwarf habit. California.

C. umbellata, a distinct and pretty plant, has reddish much-branched little stems, half-shrubby at the base, 3 or 4 in. high, the flower dazzling magenta-crimson. In the evenings and in cloudy weather it closes, and nothing is to be seen but the tips of the flowers. It does very well in any fine sandy peat or in other open earth, and is perennial on dry soils and in chinks in a well-drained rock-garden, readily raised from seed sown in pots or in the open air in fine sandy soil. As it does not transplant well, the best way to grow it for bright beds in the flower garden is to sow a few grains of seed in each small pot in autumn, keep the pots in dry sunny pits or frames in winter, and then without much disturbance of the roots turn the plants out into the beds in the end of April or beginning of May. Young plants flower longer than old ones. It may also be treated as an annual sown in frames very early in spring.

There are other kinds, such as C. Lindleyana, C. Burridgi, C. procumbens, C. compressa, and C. micrantha, but their flowers are not so pretty as those of the kinds just mentioned.

Calceolaria. — Pretty plants, not so popular in gardens as they have been. In the London district they are employed very much less than they were some years ago, as many of the varieties die from disease, or are short-lived as regards bloom. We used to see masses of the fine old Sultan (crimson) and Kentish Hero (rich brown) in almost every garden, but we now seldom see the crimsons and maroons and crimsons with gold caps. The golden yellows, however, still hold their own, and the old variety Gaines's yellow has still perhaps the best constitution of any. C. aureo-floribunda is everywhere known, and the handsome C. amplexicaulis, with its bold habit and pure lemon flowers, is always a favourite. We think the main cause of deterioration has been neglect in cultivation and want of generous treatment. Both before and immediately after transplanting they should be kept in a vigorous

Calandrinia oppositifolia.

state in good rich soil through the winter, and near the glass, but as far from fire-heat as possible—in cool pits where air is given at all possible times, by entirely uncovering or tilting the lights when the weather will allow ; for the object is to keep the foliage free from curl and insects, to which when fire-heat is applied it is very subject.

PROPAGATION.—The shrubby varieties bloom mostly in summer, and there is then scarcely a shoot that does not contain an embryo flower-spike. Such shoots make bad cuttings, and are too soft to strike well. The best time for propagating such varieties is the end of September and October, in a cold wooden or turf frame on a dry basis ; fill it to within 6 in. of the top with sandy loam, and over that spread some clean silver sand. Then select stubby firm side shoots, pick out any flower-spikes that are visible, remove one or two of the base leaves, cut horizontally below a joint with a sharp knife, and dibble them thickly, regularly, and firmly into the frames, giving a sprinkling of water through a fine rose to settle the soil and to prevent their flagging. Keep the frames close and shaded for a day or two, but afterwards remove the shading, and only use it during the succeeding month to counteract the effects of bright sunshine. Such cuttings take a long time to root, but if the atmosphere of the frame is kept dry, and the plants are kept free from damp by dredgings of wood ashes, dry dust, and old lime rubbish, they will root satisfactorily during winter, and in spring will yield tops for additional cuttings ; whether these are wanted for cuttings or not, they are best pinched off.

WINTERING.—These frames require no further care beyond protection from frost, by covering the sashes, and banking up the sides, if of wood, with soil. Wooden boxes, seed-pans, or pots might also be used for striking Calceolarias in ; and in them the plants might be wintered in any pit, greenhouse, or conservatory. Whether propagated in frames or boxes, they should be transplanted farther apart than previously, into other frames filled with rich open soil, where they will become fit for planting out by the middle of May, if the shoots have been attentively pinched when necessary. In autumn, too, it is a good plan to draw some earth round the necks of the old plants, so as to induce the emission of roots from that portion of their stems ; and at lifting time, in November, to separate every rooted branch, and plant them as independent plants in frames. They will yield abundance of cuttings in spring, and it is from a few old plants, lifted and saved in frames for the purpose, that we get our chief supply of such young-rooted plants.

SPRING PROPAGATION is often uncertain, but I once saw a very fine lot which had been struck in February. The cuttings were selected from old plants wintered in frames, fully exposed every fine day by having the sashes drawn completely off them, and consequently they were pretty hard and well seasoned. They had been inserted in cold frames, precisely as advised for autumn cuttings, and a failure could scarcely be found even in four lights of them, and by bedding-out time they had formed very serviceable, well-rooted stocky plants. Spring cuttings, however, are mostly rooted in hotbeds, in boxes, or in pans, and often as many damp off as survive to become plants ; nevertheless, where the stock is deficient, this mode must be resorted to. It is best to strike them after the middle of March in pure sand in a hotbed or propagating pit where there is no stagnant moisture, and, when well rooted, to pot them, or put them in boxes in light sandy soil, still keeping them in warm quarters for a few days. After that, gradually shift them into places in which there is less heat. Powdered charcoal or wood ashes strewed on the soil among the cuttings prevents damp, and the watering-pot should be used judiciously.

Species of Calceolaria.—Apart from the varieties, a number of species are of some merit for the flower garden, and some are neglected and unknown. The genus presents a wealth of variety in form and colour, and comprises upwards of 100 distinct species, including annual and perennial herbs and dwarf shrubs. In geographical area it almost exactly coincides with the Fuchsia, ranging from Mexico to the southernmost point of S. America, and reappearing in New Zealand ; but, unlike the Fuchsia, it is represented only in the extreme south of the eastern side of S. America. The greater number of the species inhabit mountain valleys, and ascend to an elevation of from 13,000 to 14,000 ft. within the tropics, where they enjoy a temperate climate. Some few occur in the arid districts of Chili ; they find their greatest concentration in Chili, Peru, and Ecuador. Only about four species are known to grow in Central America and Mexico, and two have been discovered in New Zealand. A full

account of the family is published by Mr. Hemsley in *The Garden* for 29th March, 1879, with a plate of C. fuchsiæfolia.

C. amplexicaulis.—A find bold kind with soft green leaves clasping the stem and many lemon-yellow flowers, and one of the handsomest plants we have ; it is very free in habit, and, where the soil suits it, sends up a number of shoots which keep up a constant succession of flowers till late in the autumn, and I have never seen it diseased, a failing to which other kinds are subject, and which makes them so uncertain. Owing to its tall habit it groups well with bold plants, and it is usually handsomer in autumn than any of the other kinds. In Hertfordshire it used to be in great esteem for bedding, for which it is one of the most continuous blooming kinds. In gardens in that county it is planted in small beds on the Grass, where it is tied and trained to sticks brought together at the top, thus forming pyramids.—S. D.

C. hyssopifolia is one of the best of the small-growing kinds, bearing loose clusters of lemon-yellow blossoms from early summer till autumn, the foliage resembling that of Hyssop.

C. Kellyana.—A curious hardy hybrid, with short downy stems, 6 to 9 in. high, flowers about an inch across, of a deep yellow with numerous small brown dots, and two or three grow together on the top of the stems. The leaves are in a rosette, and are more or less covered on both sides with soft white hairs. It was raised about 1840 by a Mr. Kelly, in the nurseries of Messrs. Dicksons and Son, of Edinburgh. Its foliage resembles that of one of the Mimulus, creeping along the ground, and it is a very interesting dwarf rock-garden plant.

C. Pavonia is a noble species, the largest in cultivation. It is from 2 to 4 ft. high, has large light-green, much-wrinkled foliage, from June to September bearing large, pale-yellow, slipper-shaped blossoms. It is a fine object against a warm south wall, but at the approach of winter it should either be lifted or protected with a thick covering.

C. violacea is a pretty species, with small helmet-shaped flowers, which are rich purple and spotted ; succeeds well on warm borders or the rock-garden, and, if slightly protected, withstands mild winters in the south.

Calendula officinalis (*Pot Marigold*).—An interesting old hardy biennial ; one of the best for autumn and winter flowering in almost every garden ; the petals were formerly used to flavour dishes in old English cookery, hence its name. A variety of kinds is now offered by the seed houses. The plants are among the best biennials for autumn and even winter flowering. For late blooming, seed should be sown in July. The plants usually sow themselves freely, and may be sown in the open ground either in spring or autumn.

Calla = Richardia.

Calla palustris (*Bog Arum*).—A small hardy trailing Arum, which has pretty little spathes of the same colour as the Ethiopian Lily. Though often grown in water, in a bog or muddy place it will grow larger ; and a bog carpeted with its dark-green leaves gives a very pleasing effect, as its white flowers crop up here and there along each rhizome, just raised above the leaves. For moist spongy spots near the rock-garden, or by the side of a rill, it is one of the best plants, but like many other bog plants it is often starved in cultivation. Its beauty is seen only when it is allowed to ramble over rich muddy soil. Abundant in cold bogs in North America and North Europe. Flowering in summer, and increasing rapidly by its running stems.

Callichroa platyglossa.—A showy Californian half-hardy annual ; the seeds may be sown in March in slightly heated frames, or in the later part of April in the open border, in ordinary light soil. The seedlings should be well thinned, or if transplanted should not be less than 6 in. apart, so that each plant may fully develop. Treated thus, C. platyglossa flowers from July to September. It may be also sown in autumn on light warm soil to remain during winter, and flower in spring, but the plants need protection during severe weather. Compositæ.

Calliopsis (see Coreopsis).

Calliprora lutea (*Brodiæa*).

Callirhoe.—A small and handsome genus of North American plants, of which some half-dozen kinds are known in our gardens. They are hardy herbaceous perennials, and succeed well in the open border in rich light soil.

C. digitata.—A distinct-looking glaucous perennial herb, 2 or 3 ft. high, with reddish-purple flowers in summer ; it is not so showy as the other kinds.

C. involucrata is a charming dwarf prostrate perennial, with large violet-crimson flowers 2 in. in diameter. It is excellent for the rock-garden, as it bears a continuous crop of showy blossoms from early in summer till late in autumn. It has the best effect when allowed to fall over the ledge of a rock. California.

C. macrorhiza alba is a pure white

form of a kind with purplish-carmine flowers, and erect stems, from 1½ to 2½ ft. high, with a corymbose raceme of flowers. It occurs in several shades of colour, from rosy-purple to pale rose and white, and sown early it will bloom the first year. South-western States of N. America.

C. pedata is one of the prettiest species. A perennial, with trailing stems bearing lobed foliage, variously incised; and on long foot-stalks, from the upper axils, very handsome crimson flowers, fully 2 in. in diameter. When sown early the plants bloom the first season, and continue in flower until late in autumn. In dry soils the roots survive our average winters and increase in strength each season. Transplant the seedlings into the open ground by the middle of May, as they have a tap-root and do not succeed in pots. It succeeds best in dry soils. The varieties nana and compacta are pretty dwarfer varieties.

Callisace dahurica.—A large umbelliferous plant, 8 to 10 ft. high, bearing white flowers late in summer, in umbels frequently 2 ft. across, the lower leaves about 6 ft. long and 4 ft. wide. It is imposing when isolated on turf or in groups in deep rich loam. Division or seed. Dahuria.

Callistephus chinensis (*China Aster*).—Among the many annuals now in cultivation Asters are among the best, and when well grown and cared for they do, at a small cost, as much to render a garden gay during summer and autumn as any plant. To see them in their beauty, however, they must be grown in masses, and well cultivated—not at any stage left to haphazard or poor culture. The China Aster was introduced towards the end of the last century, and was raised in the Jardin des Plantes of Paris from seeds sent from China. Numerous varieties have resulted. In the wild state the flowers of the type are single—that is to say, only the outer florets are strap-shaped, and usually of a rosy-lilac tint, with yellowish disc florets; but under cultivation all the florets have become ligulate or quilled, and there has developed a richness and variety of colouring scarcely surpassed in any species, and ranging from pure white to deep carmine, violet, and blue, though the yellow of the disc in the single form has not been reproduced in the double. For the great perfection to which the different races have been brought we are mainly indebted to the French horticulturists, notably Truffaut, Fontaine, and Vilmorin, and in this country to Mr. Betteridge, whose method of cultivation is described below. The different varieties are so far fixed that they will come true from carefully selected and well-ripened seed.

VARIETIES.—Asters may be classed according to height, habit, character of flower, suitability for exhibition, for pot culture, or for bedding. Tall Asters comprise the fine Pæony-flowered, the tall Chrysanthemum, the Emperor, the tall Victoria, the Quilled, and a few others. Kinds of medium height are the dwarfer forms of the Victoria, the fine Cocardeau, the Rose, and the Porcupine. The dwarf forms comprise the short Chrysanthemum, the dwarf pyramidal, and specially the dwarf bouquet, which is one of the most beautiful for pot culture. The best bedding kinds are the medium-growing Victoria, the Rose, and the dwarf Chrysanthemum, as these vary from 9 to 12 in. in height, and form good bunches of bloom on each plant, and fine masses of colour collectively. The dwarf bouquet kinds, whilst specially good for pot culture, are valuable as edgings to beds of taller kinds. For pot culture for exhibition the best are the medium-growing Victorias, as these, if of a good strain, possess quality, and handsome even heads of bloom.

As to culture, Mr. J. Betteridge writes: "SOWING THE SEED.—For several years after I commenced the culture of quilled Asters I always sowed the seed in bottom-heat; but during the last decade I have sowed it, between 26th March and 26th April, in a cold frame, under glass, in drills 6 in. apart, and not too thick in the drills. A few days suffice to bring the plants above the soil, when a liberal supply of air must be given, or they will be weak. When large enough, prick them out into another cold frame, slightly shaded, where they will soon be established, and after they are strong enough to handle plant them out in well-manured soil, and be careful not to break the tender fibres of the roots. Let the rows be 1 ft. apart, and plant the strongest plants 1 ft. from each other, in showery weather, and they will soon get established. If the weather be hot and drying, give them a little watering till rooted: afterwards keep them clear of weeds by hoeing among them. About the first week in August top-dress with rotten manure from an old hotbed, giving a good soaking all over if the weather continues dry. After this, if the blooms are required for exhibition, tie the plants out to small stakes. As soon as it can be determined which buds will produce the best blooms, thin out or disbud, leaving about five or six blooms on each plant. Exhibition

blooms should be large, with full high centre, and deep distinct colour, with solid petals. To secure these qualifications in England, shading of some kind is necessary. For this purpose I have tried many kinds; one of the most useful of these during a stormy season is a 'tin shade,' about 12 in. in diameter, with a spring socket to slide up a square stake.

"SOIL.—Asters like a deep rich soil, and, should dry weather set in, it is only in such soil that really fine flowers can be obtained and the plants induced to hold out. Planted in the ordinary way, they are weeds in comparison with those that are well fed and can get their roots down deep in search of moisture; and when they can do this, the hotter the weather the better. Confined to the top shallow crust of earth, they soon dry up and starve; and this is why we frequently see poor puny plants in borders, where, instead of being able to grow and develop, they can only struggle on for existence. The best way to manage them is to dig and cast off the top spit to one side, handy to be returned to its place again, and then to trench and break up the soil below, working in with it plenty of short manure, thoroughly decomposed, which will attract the roots and afford them ample assistance just as they most require it, when expanding and perfecting the bloom. Trenching, as usually done, brings the crude earth to the surface, and buries that which has been exposed to the ameliorating influences of the atmosphere—a fact that should be borne in mind, as it takes years to get it into the condition in which plants will lay hold of it and start freely. In very light soils a few barrow-loads of clay, chopped fine and mixed well in, will do more than any other to help to produce fine Asters. The thing to aim at is to keep the bottom cool and moist; then, if the weather be favourable, the plants will take care of themselves. When grown in groups of three in a border, similar preparations must be made, or neighbouring plants already in possession are sure to rob them and cut short their beauty long before the autumn sets in.

"SAVING SEED.—If the autumn be fairly genial, there is no difficulty in saving Aster seed. Allow a plant to carry only three or four of the finest blooms. If heavy rain render a covering needful, it should permit a free circulation of air among the flower-heads. Gather when ripe, and clean through a wire sieve. Carefully selected seed usually produces as good blooms as those from which it was saved. The best kinds, and especially all the new forms and colours, are grown in beds, over which temporary lights are fixed, by means of which we are enabled to cut blooms of the purest shade or colour.

"POT CULTURE.—Many have written about the kinds best suited for pots; but my practice is to sow in the open in May, keeping the varieties separate, and then to lift them about the middle of September (when the buds have partially expanded). I put three plants into an 8-in. pot, pressing the soil firmly (shading for a few days), and then place them in a cold greenhouse, where they will bloom late on through the autumn. They have a splendid effect among the small kinds of foliage plants in a conservatory, the only plants equal to them in point of colour being Chrysanthemums. If for exhibition purposes, the incurved and reflexed varieties are most effective; but among the other sections there are few better than, or equal to, the best quilled Asters."

Calluna (*Erica vulgaris*).

Calochortus (*Mariposa Lily*).—A lovely family of bulbous plants from Western North America, and belonging to the Lily Order. There are about thirty-six species known at the present time, including the section Cyclobothra. As a whole they form one of the most charming groups of hardy bulbous plants, the colours being so varied and delicately blended, and could the fallacy regarding their cultivation be removed they would be more popular. Excepting the Mexican species, which are, fortunately, few, Calochorti are hardy. A warm border facing south will suit them. The soil should be light and rich, and at a good angle, so as to drain off superfluous moisture. The bulbs should be planted early in autumn after having been dried, and if possible lifted annually as soon as ripe, keeping them out of the ground for a few weeks and again replanting.

C. albus.—A charming species of the Cyclobothra section, and more easily grown than most species. It resembles C. pulchellus but the flowers of C. albus are larger, the petals both longer and broader, the nodding flowers of a whitish colour, with a purplish base, and marked towards the centre with a shallow pit, covered with hairs. This may be planted in the open border without much fear of failure, unless the soil be very stiff. It is a native of California, and increases fairly rapidly by offsets and seeds, which ripen freely and produce good flowering bulbs in three years. These require careful handling and light, rich soil during the

first two years, after which they may be planted in the general collection.

C. Benthami.—A somewhat rare but pretty dwarf species from California. It is the Cyclobothra elegans var. lutea of Bentham. It grows from 4 in. to 8 in. high, the leaves long and narrow ; the flowers, of a rich citron-yellow, often deep brown at the base, and densely covered with yellow hairs, are erect, from three to six in an umbel, and produced in June and July.

C. cœruleus.—A dwarf species, rarely exceeding 6 in. in height, producing in

Calochortus flavus.

July umbels of three to five large flowers of a bright lilac, dotted and lined with dark blue, the gland at the base being covered with a pretty fringed scale. The leaves are very narrow, rarely more than one to each bulb. Native of California. This is believed to be the C. glaucus of Regel.

C. elegans.—A fine dwarf species which seems to be extremely variable. In the valleys, David Douglas, the collector, tells us, it ranged in height from 4 in. to 8 in. while on the mountains, near the verge of perpetual snow, it did not exceed 1 in., or 2 in. Its stem bears in June three to five drooping flowers, white or greenish-white with a purplish base, bearded, but not ciliate. The gland is covered by a fringed scale. The narrow leaf is longer than the flower-stem, smooth, and nerved.

C. flavus.—It represents a form of the genus Calochortus, in which the flowers are upright, and the petals have an outward curve instead of an inward curve. It is in consequence of this more nearly allied to Fritillaria than most of the other members of the family. It is, perhaps, not quite so hardy as most of the Calochorti, but it will be found to do well at the base of a south wall. It is also known as C. pallidus and C. luteus.

C. Greeni.—A fine bold species growing a foot or more in height, and blooming in early June, three to five large, clear, lilac flowers, barred below with yellow and purple, and often loosely covered with long hairs. The leaves are broad, glaucous green, and pointed. California.

C. Gunnisoni somewhat resembles C. Nuttalli, but has larger flowers of a bright lilac, yellowish-green below the middle, where they are banded and lined with purple. This kind is one of the most effective in small groups, the flower-stems being sturdy. A native of the Rocky Mountains from Wyoming to New Mexico, flowering with us in July.

C. Kennedyi.—This is the most brilliant of the Mariposa Lilies known to us, and the flowers are dazzling scarlet in colour. It has proved perfectly hardy, and grows about 18 in. high. It was found in Kern County, California. Although increasing slowly by offsets, it is likely to produce seed freely.

C. lilacinus.—This is of very distinct habit, and has curious, hairy flowers, which are borne from four to ten on a stem, from 6 in. to 8 in. high, and they are pale lilac in colour. It is a native of the hillsides about San Francisco, and northward of the Geysers.

C. luteus.—A handsome and variable species, growing from 1 ft. to 2 ft. in height ; but, unfortunately, the flower-stems are so weak that a support is necessary, even in the most sheltered gardens. The narrow-pointed leaves are rich glaucous green in colour, and the flowers vary from one to six to a stem, the colour varying from yellow to deep, rich orange, and lined with brownish-yellow below the middle. It may possibly be a form of C. venustus. In the variety citrinus the whole flower is rich lemon-yellow, with a central circular brown or purple blotch ; and in the variety oculatus it varies from white and lilac to yellow, with a dark-brown spot.

C. macrocarpus.—A tall large-flowered species, found on the undulating barren grounds around the great falls of the Columbia River. It grows from 1½ ft. to 2 ft. in height, rarely bearing more than one flower to each stem. The flowers, each 3 in. to 4 in. in diameter, are purplish-lilac, somewhat paler at the base and with greenish mid-vein. A showy plant well deserving a place. It is quite as hardy as C. albus, which is considered to be one of the most easily managed of the family.

C. madrensis.—A pretty little species with bright orange-yellow flowers in August and September, and a tuft of deep-orange hairs at the base of each segment. It rarely exceeds a span in height, the stems bearing several flowers in a loose head. A native of the Pine plains of Mexico.

C. Maweanus.—This is the C. elegans of the *Botanical Magazine*, but this name appears to have been previously adopted by Pursh for a different plant. It is a low, usually much-branched plant, varying from 5 in. to 9 in. in height, and bearing from four to six bell-shaped flowers in July, each 1½ in. to 2 in. in diameter. The petals are white, tinged with bright purple at the base, and densely clothed with purple hairs; the gland is covered by a semicircular scale. California, from San Francisco to Humboldt County.

C. pulchellus.—A perfectly hardy bulbous plant, requiring no particular care; the bulbs, left in the open border, flower with regularity and in the greatest profusion. It grows about a foot high, much-branched, each branch terminating in an umbel of three to four fragrant, bright orange-yellow pendulous flowers. The petals are bearded with glandular-tipped hairs, the gland being also covered with stiff-reflexed hairs. It is a native of California.

C. splendens.—A pretty species like C. macrocarpus, but rather less branched and with shorter leaves. The flowers, not quite so large, are of a paler lilac, and have a dark blotch at the base of each of the petals. It flowers in June, and is a native of California.

C. venustus.—One of the prettiest and most variable of the Mariposa Lilies, thriving at the base of a warm wall where the ground is never disturbed. It grows from 1 ft. to 2 ft. high, the flowers very large, white or pale lilac, with a prominent red blotch at the top of each petal, the centre brownish-yellow, the base brown. It is most nearly allied to C. luteus, and flowers in July. The variety purpurascens has the flowers deep purplish or lilac, with markings similar to those of the type. California from Alameda County southwards.

C. Weedi.—A handsome and remarkable species in having the bulbs fibrous-coated. The stem grows about a foot in height, one to three flowered, large, deep yellow, dotted and frequently margined with purple. It is the C. citrinus of *Botanical Magazine*. California.

In addition to the above, some of which are in cultivation, may be noted C. obispoensis, Catalinæ, Ghiesbreghti, spatulatus, fuscus, Bonplandianus, Hartwegi, longibarbatus, Nuttalli, Palmeri, flexuosus, aureus, clavatus, nitidus, uniflorus, nudus, Leichtlini, which is a form of Nuttalli, &c.

One of the most experienced growers of the Calochorti, Dr. Wallace, of Colchester, writes of the family thus: "A large raised bed was formed in November for the Calochorti, and, sloping to the south, was composed of leaf-mould and road grit in equal parts, with a smaller portion of sharp sand. The bulbs were planted 3 in. deep, and the whole bed was covered with reeds to throw off the heavy rains and keep the soil open. Many young growths appeared early in January, and by the end of February nearly all were showing above ground. The Reeds were then removed.

"C. Benthami and C. cœruleus were the first to flower early in May. They were quickly followed by the Cyclobothras. C. amœnus, a splendid addition, with rosy-pink flowers, and C. Howelli, new, flowered for the first time. Other dwarf forms among the Star Tulips lasted well up to the end of June, when the beautiful Mariposa Lilies continued the display with their tall spikes, some 2 ft. to 3 ft. high, carrying from ten to fifteen flowers, opening in succession. The venustus forms were particularly large and finely marked. C. luteus var. concolor will be a grand addition with its strong habit and large clear yellow flowers. C. Kennedyi, when well grown, will, I think, astonish most people. The last to bloom (the end of July) was C. Plummeræ, a very strong grower, with large flowers of a soft lilac, studded with long golden hairs. Thus from the commencement of May to the end of July this beautiful family, treated in the way I have described above, will, I think, afford the greatest possible interest to all lovers of bulbous plants. The bulbs were lifted mostly in August, some earlier, and in nearly every case larger than when planted, some like small Tulips, and many

of them had formed small bulbs at the base of the flower-stems.

"In my opinion a good many failures to grow Calochorti may be attributed to late planting. The main points in the culture of Calochorti are early planting, a light porous soil, sunny position, protection from heavy winter rains (but no coddling), plenty of water whilst in full growth, and thorough ripening of the bulbs in August, either by taking them up or placing lights over them."

Calopogon pulchellus.—A beautiful hardy Orchid suitable for boggy ground, the flowers pink, 1 in. in diameter, in clusters of two to six upon a stem, beautifully bearded with white, yellow, and purple hairs. Plant in the rock-garden, bog, or in an open spot in the hardy fernery in moist peaty soil, as it is a native of wet spots at the edges of Pine woods and in the Moss in Cranberry swamps, but is also found in wet Grassy marshes, and occasionally seen on solid ground, in low, wet, woody situations in N. America.

Caltha (*Marsh Marigold*).—The Marsh Marigold (C. palustris), that in early spring "shines like fire in swamps and hollows gray," and is one of our good hardy plants, though it is so frequent in a wild state that there is little need to give it a place, except on the margin of water. Its double varieties, however, are worth a place in a moist rich border, or, like the single form, by the water-side. There is a double variety of the smaller creeping C. radicans, about half the size of the common plant. In addition to the common species, C. palustris, and the rarer variety, C. radicans, there are double-flowered forms, C. monstrosa, bearing beautiful golden rosettes, and C. minor fl.-pl., a small kind, a free flowerer, and highly desirable. There are also C. leptosepala, a Californian kind, and C. purpurascens, distinct and handsome, about 1 ft. high, with purplish stems, and bright-orange flowers, the outside of the petals flushed with a purplish tinge.

The various forms of the Marsh Marigold are handsome in their golden blossoms, and in groups or bold masses are effective; and they are easily grown, and increase freely.

Calycanthus (*Allspice Tree*).—North American shrubs with handsome flowers of pleasant fragrance. C. occidentalis is from 6 to 8 ft. high, with large maroon-crimson flowers of fine fragrance, and is worthy of cultivation. C. floridus is smaller and not so dense, with purplish-red flowers, strongly scented. The names in catalogues, such as C. glaucus, lævigatus, oblongifolius, macrophyllus, represent forms or varieties of either the eastern or the western species. The two described are hardy, the Carolina species having been grown since 1757, while the Californian has been cultivated over fifty years. Their place is near a moist and shady walk, not in the open shrubbery, as they flourish best when somewhat shaded by other trees and where the ground is damp. They grow wild near streams and wet places. The Winter-Sweet, Chimonanthus, is sometimes included among these shrubs in Continental lists.

Calypso borealis.—A pretty little hardy Orchid, with rosy-purple sepals and petals, and a white lip, heavily blotched with cinnamon brown, from the cold regions of N. America. It succeeds in half-shady spots on the margin of the rock-garden or bog, or in a select spot among choice shrubs in light, moist vegetable soil, covered with Cocoa fibre or like material to keep the surface open.

Calystegia (see Convolvulus).

Camassia (*Quamash*).—North American plants of the Lily Order, hardy and valuable for cutting. There are three species in cultivation, but with regard to two, C. Fraseri and C. Leichtlini, some botanists place the former with Scillas and the latter with the Chlorogalum.

C. esculenta (*Quamash*) is a native of meadows and marshes from Middle California to Washington Territory and northward, where it grows from 1 to 3 ft. high. Its stalks bear a loose raceme of from ten to twenty flowers about 2 in. across, the colour from deep to pale blue, the deepest-coloured being Browni and atrocœrulea. C. esculenta thrives best in a moist situation, in a deep light soil. A bold group in flower has a fine effect in July, and it is excellent in the cut state, as the buds of the spike open in the house, and it is a valuable summer flower for borders or beds. The bulbs are used by the Indians as food.

C. Fraseri (*Eastern Quamash*).—A native of the States east of the Mississippi, its flowers are rather smaller than those of the western species; about 1½ ft. high, the scape bearing a raceme of ten to thirty pale-blue flowers, each about 1 in. across. Smaller than those of C. esculenta. It is, however, later in flowering than other Camassias, thriving in a light rich soil. All Camassias may be propagated by dividing the bulbs or by seeds.

C. Leichtlini (*White Camassia*).—This often grows on sandy ridge-tops, and is found in dry spots in ravines; its bulbs

are generally deep in some stiff soil. The flower-spike is large, being 9 in. long by 4 in diameter, while in rich deep soils it is sometimes compound, and contains several hundred florets, creamy white and about 1 in. in diameter. The stem often 3 or 4 ft. high. Vigorous, but not so handsome as the Quamash. British Columbia.

Camellia.—Those who live in inland and northern districts may well be surprised to see this shrub healthy out-of-doors, even if it does not flower well; but in the Isle of Wight and the southern coasts of England and Ireland it is often as beautiful, and laden with as many flowers, as it is in Madeira. Most people who have Camellias in the open air find that they flower well five out of every six years, and that the plants are hardy—indeed, hardier than many shrubs that make their new growth early in the year. Rhododendrons, Laurels, and other shrubs often have their young shoots cut back by late spring frosts, but this does not happen to Camellias, because their young growth is made later. Their greatest enemy is fierce winds, which beat them about. Any one planting them out for the first time will do well to plant first some of the commoner kinds, and in sheltered spots; then, when these thrive, to continue with more valuable ones. The best aspect for Camellias is a south or south-west one, sheltered by a bank or wall, but in some districts they do best on a north wall. Planting from pots may take place at any period, but about July is the best time, as the wood is then well ripened. Duke of Devonshire, Halfida, Chandleri, Florida, imbricata, elegans, Alberti, Double White, Donkelaari, Countess of Orkney, Mathotiana, and Lady Hume's Blush are good varieties for outdoor culture. The late Robert Marnock, the landscape gardener, who was a keen observer of all garden things, wrote as follows to *The Garden* about Camellias out-of-doors: "Permit me to remind those who, like myself, have an affection for the great beauty of the Camellia, when in vigorous health in the open air, that although it is true that the plant will bear a greater degree of cold than the Common Laurel, and other evergreen shrubs which by common consent have long been regarded as hardy, yet the main stems and stouter branches of the Camellia are, nevertheless, liable to injury from severe frost. Now, all that is necessary to protect the plant at this weak point is to closely wrap the stem with straw or hay bands; and if a little Fern or other loose material be laid over the roots, so much the better. The portions of the stems near the ground are the most liable to suffer, while the leaves and branches, if not exposed to fierce gales, will bear much frost, provided the stems are protected. On the question of culture there is very little to be said. Give the Camellia the shade of a north wall protected from the wind, with a well-drained border, and almost any common garden earth will suit it—let the earth be fairly dry when the plants are put in, let them be firmly rammed round the roots in planting, and then carefully watered for a time. No pot culture, however skilful, will compare with the beauty of the plants thus grown in the free soil of the open border." The advice of Mr. Marnock as to soil is sound enough if the climate be favourable; no doubt in some cases the moisture of peat and fibrous loam would help, but it is not easy to get such dainties for outdoor shrubs, and not always necessary. It will be best to try young healthy plants and not old pot-bound ones. It would be well also to try seedling plants in the open air.

Camomile (see Anthemis).

Campanula (*Hairbell*, *Bellflower*).—A large, beautiful, and most important family for the flower garden. The alpine species are charming for rock-gardens, being as a rule not difficult to cultivate. Some are very easy and free. A group of kinds somewhat larger than the high alpines adorn rocks and old walls on the mountains, and may be used for these in our gardens. Some are pretty window-plants, thriving in dry rooms; numbers are good border and edging plants of easy culture; the tall and straggling kinds admirable for the wild garden, or rough woody places or hedgerows. Some of the annual kinds, if well grown, are showy; and certain groups, such as the finer forms of the Peach-leaved Bellflower, deserve good culture in the flower garden proper, and flower freely in early summer. The Canterbury Bell is one of the finest of biennials, the tall chimney Campanula a very handsome and precious plant.

C. alliariæfolia is a strong and handsome plant with large heart-shaped leaves, covered with short hairs; the stems erect, and leafy; the flowers white, drooping, and generally disposed on one side of the stem; about 4 ft. high, flowering in July and August. Ripens seed freely, and may be readily increased by this means. Caucasus.

C. Allioni, an alpine kind forming an

underground network of succulent roots, surmounted by stemless rosettes of leaves, about an inch long, from which arise stalkless erect flowers, like those of the Canterbury Bell in early spring. Succeeds in exposed positions in the rock-garden in a moist, free, and sandy loam, but dislikes limestone. Division. Alps.

C. alpina (*Alpine Hairbell*).—Covered with stiff down, giving it a slightly gray appearance, 5 to 10 in. high; flowers of fine dark blue, scattered in a pyramidal manner along the stems. Valuable for front margins of mixed border, as well as the rock-garden. Division or seeds. Carpathians.

C. barbata (*Bearded Hairbell*).—One of the sweet blue flowers that abound in the rich meadows of alpine France, Switzerland, and Italy, and marked by

Campanula barbata.

the long beard at the mouth of its pretty pale sky-blue flowers, nearly 1¼ in. long, nodding gracefully from the stems, bearing two to five or more flowers. In high mountains in its native land it is sometimes only about 6 in. high, but in the valleys in Piedmont it is much taller. There is a white form worthy of culture, thriving freely in well-drained loam on the rock-garden or in the mixed border. Seed or division.

C. Barrelieri, allied to C. fragilis, has prostrate one-flowered stems and roundish heart-shaped leaves. Blue and large flowers. On rocks by the seaside about Naples; a good trailing rock-plant, which thrives also in baskets or pots in windows.

C. cæspitosa (*Tufted Hairbell*).—A charming and vigorous little plant, of which C. pumila is a dwarf variety. Its roots ramble very much, and it soon forms large patches in any garden soil. Its flowering stems rise from a mass of leaves to a height of 6 in., bearing abundantly five or six pendent light-blue flowers in July and August. A charming plant for edgings and rocks, the angles of steps in rock-gardens, and where flagstones are used to form paths it is one of the plants that run about among the stones with very pretty effect. C. pumila, dwarfer, scarcely exceeding 3 or 4 in. in height, usually flowers in pairs on a stem. There is also a white form as pretty as the blue. This variety is also known as C. pusilla—a distinct species. Alps. Division.

C. carpatica (*Carpathian Hairbell*).—A charming plant of free-flowering habit, the light-blue flowers large and cup-shaped, borne on foot-stalks12 to 15 in. high in July and August in succession. Readily increased by seeds, which are abundant. Pallida, a very pale blue, and

Campanula carpatica.

alba, a pure white, are good varieties; these, however, must be propagated by spring cuttings or root division, as the variation does not come true itself from seed. There is also a dark-blue sort named Bowoodiana, and a blue-and-white variety, which is excellent and

showy, but scarcely so free in blooming as the species.

C. celtidifolia.—A perennial, the branches bearing many light-blue flowers in June and July, and 3 to 4 ft., but requires three years to assume its true character. Siberia. Division.

C. cenisia (*Mont Cenis Hairbell*).—A high alpine plant growing among Saxifraga biflora on the sides of glaciers, making little show above ground but vigorous below, sending a great number of runners under the soil, and here and there it sends up a compact rosette of light-green leaves. The blue flowers are solitary, and somewhat funnel-shaped, and cut nearly to the base into five lobes. It should have a sandy or gritty and moist soil, and be near the eye on the rock-garden. Alps. Division.

C. collina (*Sage-leaved Hairbell*) is a species with a creeping root, stems 12 or 15 in. high, each bearing a few narrow leaves; the flowers blue, in May and June, somewhat sparsely; border plant. Caucasus. Division.

C. fragilis (*Brittle Hairbell*) is a glabrous plant, except that the young branches are coated with soft down; the flowering branches prostrate, 12 or 15 in. long; the flowers 1 in. or more in diameter, delicate blue. Of all the kinds this is the best for a suspended basket, and it does admirably in a cottage window. It is rather tender, coming from the south of Italy and Sicily. It should be increased by cuttings of the young shoots taken in spring. If planted in the rock-garden, a watchful eye must be kept against snails. A variety C. hirsuta is covered with stiff down, and looks almost woolly. Division, cuttings, and seeds.

C. garganica (*Gargano Hairbell*).—A compact and tufty plant. The flowers in branching racemes, pale blue, towards the centre shading off to white in summer, thriving in a rock garden or a border; but, owing to its pendent flowering branches, a good place for it is against a rocky ledge, over which its masses of flowers may hang. It may be readily increased by division or by cuttings taken in early spring. A variety C. floribunda receives its name from its free flowering. It is smaller, the corolla is more campanulate, and the racemes are more erect. There is also a pure-white form. The Gargano Hairbell is frequently called C. fragilis, from which, however, it is distinct.

C. glomerata (*Clustered Bellflower*).—A handsome plant about 2 ft. high, the stems terminated by dense clusters of pretty flowers, intense purple. The pure-white form is somewhat rare. C. glomerata is generally found throughout Europe in scattered isolated tufts in nearly all calcareous soils, and flowering in June and July. In the border it is very compact and useful. C. dahurica is larger, and is sometimes cultivated under the specific title of C. speciosa. It was introduced from Siberia by Fischer under the impression that it was a distinct species, but in cultivation it proves to be only a showy variety. One of the finest of all the Bellflowers.

C. grandiflora (*Platycodon*).

C. grandis.—A distinct perennial, with masses of barren shoots so rapidly extending that by the third year a small plant will cover a circle 3 ft. in diameter with a dense leafy carpet, from which a dozen or more flower-stems have developed to a height of 2 ft. or even more, the flowers densely arranged along the flowering branch, in June and July fully 2 in. in diameter. It is a border plant of somewhat short duration in flower. = C. latiloba.

Campanula hirsuta.

C. hederacea (see Wahlenbergia).

C. isophylla (*Ligurian Hairbell*).—A very pretty Italian species; the leaves are roundish or heart-shaped, the flowers of a pale but very bright blue, and with whitish centre. A charming ornament for the rock-garden, in sunny positions in well-drained, rather dry fissures, in sandy loam. Seed and cuttings.

C. lactiflora.—This plant, of Caucasian origin, is one of the bolder and larger Bellflowers, and is better suited for naturalisation than for the flower garden

or border, where its time of flower is short and its habit stiff. The flowers are large, and of a milky-white colour.

C. Langsdorffiana.—A plant scarcely exceeding 4 in. in height; the blue flowers borne singly, and nearly pendent. It is a rather shy grower, and does not increase rapidly at the root; but, no doubt, cuttings from the early spring growth would strike freely. Russia.

C. latifolia (*Broad-leaved Bellflower*).—A vigorous native kind, 3 to 4 ft. high; the flowers large, pendent, white or blue in colour, and one of the stateliest of our wild Bellflowers. Britain, generally found

Campanula Loreyi.

in woods; abundant throughout Northern and Central Europe. It flowers in June, and is good for woods, copses, and rough places or hedgerows, and for the waterside. Division and seed.

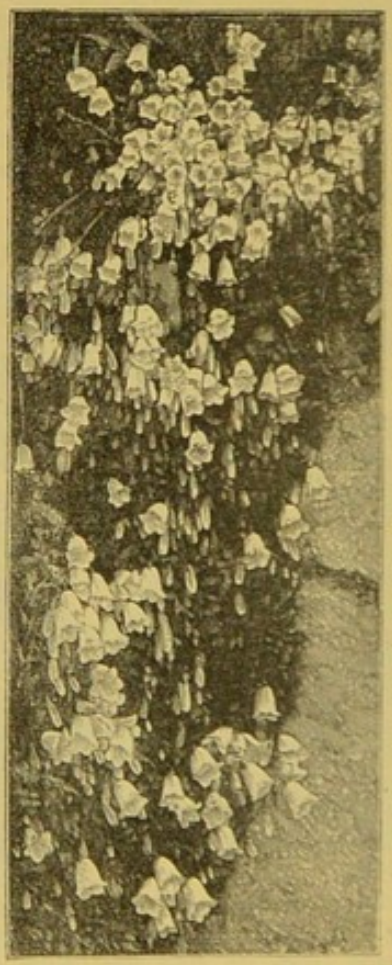
C. Lœfflingi.—A showy dwarf species, rarely exceeding 4 in. in height, with many violet-blue blossoms ¾ in. across, thriving on the rock-garden, or in borders. Portugal and Spain.

C. Loreyi.—An annual from Mount Baldi, in North Italy, 9 in. to 1 ft. high, its blossoms of a blue violet, a pretty border annual; best seen in masses. A variety called alba, with blossoms of silvery gray, is also pretty. It is an annual of easy culture sown out-of-doors in spring.

C. macrantha.—The stems of this handsome plant rise to a height of 5 ft., terminated by clusters of large deep-blue flowers almost as large as Canterbury Bells, but less contracted at the mouth of the tube. It is a free vigorous perennial from Russia, best fitted for naturalisation in woody places. It is probably a variety of C. latifolia, but none the less valuable.

C. macrostyla (*Candelabra Bellflower*).—A singular plant, having large flowers, with blue netted veins on a white ground which gets purple at the edges, and with a huge stigma, wholly distinct from any of the Campanulas in our gardens, and well deserves culture. It is readily recognised by its candelabra habit of growth. A native of Asia Minor, and a fine annual of easy culture.

C. Medium (*Canterbury Bell*).—A familiar old plant having now varieties of various colours bearing single flowers, doubles, in which two, three, and even four bells seem to be compressed into the outer



Alpine Hairbell in rock garden. Engraved from photograph by Ellen Willmott.

one; and duplex flowers, in which one bell grows in the other, the two combined resembling a cup standing in a saucer. There are many colours, such as white, lavender, mauve, several shades of

purple, pink, rose, salmon, and blue. The duplex strains have hitherto been confined chiefly to white and blue, but other colours are now being introduced. The habit of the plants as a rule is compact, when in bloom, ranging from 18 to

Campanula isophylla alba.

24 in. in height, and forming perfect pyramids of flowers. They may be lifted and placed in pots without injury even in full bloom, and invariably flower from the middle of June to the middle of July. If for corridor, house, or conservatory, it would be best to lift the plants early in May and pot them in 6-in. pots to enable them to get well established before blooming. The calycanthema section usually exhibits a taller and a looser growth, and should be planted in borders behind the double and single kinds.

March or April is the best time to sow seed in a warm spot in the open ground, but it is much safer to sow some also in shallow pans or boxes placed in a frame or on a shelf in the greenhouse. When the seedlings are large enough to handle, prick them out into some shady spot, and keep them watered until well rooted. From that time they may be safely left to take care of themselves until September, when they should be transplanted into their permanent places in the flower borders, where they will get well established before the winter and develop blooming crowns for the next year. The following are the principal varieties: rosea, r. plena, cœrulea, c. plena, alba, a. plena, cœrulea striata, albo lilacea, a. l. plena, rosea lilacina plena, azurea, a. plena, calycanthema, c. alba, c. lilacina, c. l. plena.

C. nobilis (*Noble Bellflower*).—A large-flowered kind, and in general habit of growth allied to C. punctata, having creeping underground stems. The flower-stems rise to a height of 18 to 20 in., and have a few narrow leaves, from the axils of which hang large pendent flowers almost 3 in. long. Their colour is light chocolate with a shade of blue; and there is also a creamy white variety. C. nobilis blossoms in May, and rarely seeds, but may be readily increased by the underground stems. China. Of easy culture in any soil.

C. persicifolia (*Peach-leaved Bellflower*).—A beautiful species, the cup-shaped flowers of which are fully 2 in. across. The stems, though wiry, are often weak at the base, owing to the rosettes of the previous year (from which they spring) having lost their vigour during growth, and having no root-hold—hence, when the flowers are in full bloom, the stems, if not provided with some artificial support, lie about in an untidy manner. C. persicifolia is 1½ to 3 ft. high, and flowers in July and August—the early removal of the flower-stems frequently causing a few scattered autumnal blooms.

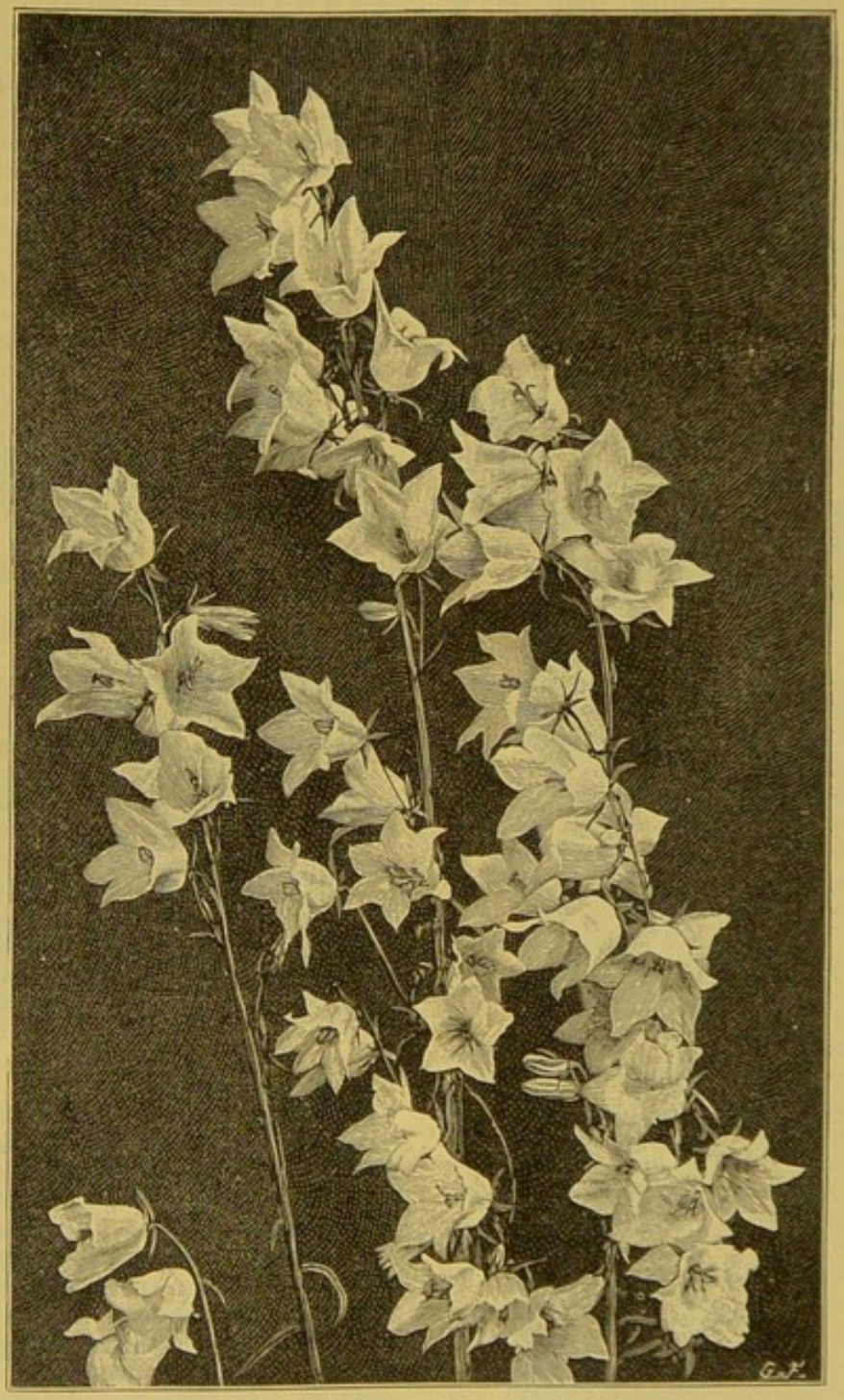
It is abundant throughout Northern and Central Europe, and appears to thrive best and bloom most freely on calcareous soils. C. p. maxima is a giant form. Besides the double blue and white forms there is an interesting variety named coronata, in which the corolla is doubled. These three varieties are admirable for borders, and should have a place in every selection of herbaceous plants; the double white variety being particularly desirable not only for the border but for pots. All the varieties well repay good culture. Plants occasionally divided and grown in rich beds give very fine crops of flowers.

C. planiflora (*Shining Bellflower*).—A rigid plant, as regards stem-leaves, the stem about 10 in. high, in dense rosettes, the flowers deep slaty blue. One of the few species that are natives of North America; it sometimes goes by the name of C. americana, a species of annual duration only, whereas C. planiflora is a long-lived perennial. There is a pure white and a double form, both desirable varieties. It likes a well-drained sunny corner of the rockery, being rather liable to damp off in the winter. Increased by division of the rosettes at the base of the flowering stem. =C. nitida.

C. Portenschlagiana (*Wall Hairbell*).—A dense tufted-evergreen species, with small bright-green leaves, irregularly notched, so dense as to obscure the foot-stalks, 1 in. or

more in length, by which they are supported. The flowers pale blue in August or September. It spreads slowly by the development of underground stems, and succeeds in crevices of the rock-garden. Dalmatia. =C. muralis.

C. primulæfolia (*Primrose-leaved Bellflower*).—Like the Canterbury Bell, this is little better than a biennial. In general contour it is distinct, as the stem rises erect and unbranched to a height of 2 ft. from a mass of broad leaves, corrugated and serrated, resembling those of a coarse Polyanthus; the flowers are wide, of a slaty blue, and gradually shade to white at the base of the corolla. Portugal. Flowers in July and August. Seeds, which it produces freely. =C. peregrina.



Campanula persicifolia alba (Peach-leaved Bellflower).

C. pulla (*Austrian Hairbell*).—This, when well grown, is one of the most charming of Hairbells. It is a native of the Austrian Alps, on high mountain pastures; if planted in the rock-garden, therefore, it should have to itself a shelf of soil in which a little peat and sand have been mixed. It may be rapidly increased in spring by taking off young shoots and placing them in a gentle bottom-heat. They will strike as freely as those of a Lobelia, and often make good autumnal flowering plants. After blooming the foliage disappears and the plant goes to rest. An excellent rock-garden plant.

C. pumila (=C. cæspitosa).

C. punctata (*Spotted Bellflower*).—Like many creeping plants it is difficult to establish, but when once established it is difficult to keep within bounds. Its leaves are rough; the flower-stems rise from the mass of foliage to a height of 8 or 9 in., each stem bearing in July two or three pendent milk-white flowers, 2 in. long, the spotted character of which, though slightly shown externally, is well seen inside. Siberia. Its creeping roots afford a means of increase.

C. pusilla.—Smaller than C. cæspitosa, rarely exceeding 4 in. in height, the shining green leaves heart-shaped and toothed, the flowers pale blue, in racemes, in June and July. Switzerland. Very gritty moist loam in the rock-garden is best for it. = C. modesta.

C. pyramidalis (*Steeple Bellflower*).—A vigorous plant, with thick and fleshy flower-stems, rising to a height of 4 to 6 ft., with numerous broad ovate leaves; the flowers, close to the stem, giving the inflorescence a steeple-like form. The flowers are blue or white; coming in succession, over a considerable time, in July, August, and September. Though not quite a biennial, it is better in general cultivation to treat it as such, as from seedling plants, well grown on during the first year, the finest stems arise. A border flower of the highest merit in favourable soils; so important, indeed, that occasional batches of seed should be sown to keep up a vigorous supply. Carolina.

C. Raineri (*Rainer's Bellflower*).—A dwarf, compact, sturdy plant, varying in height from 3 to 6 in., each branch bearing a large dark-blue flower. It thrives best in sunny positions in loam freely intermingled with pieces of stone, and well watered in dry weather, and is a gem for the rock-garden. Alps of N. Italy.

C. Rapunculus (*Rampion Bellflower*).—A biennial about 2 ft. high, with thick fleshy roots, once much cultivated for cooking, and still grown for that purpose in France. I have seen this plant naturalised on walls in the west of England. It is a native of Britain, and extends across the whole of Central and Southern

Campanula pyramidalis.

Europe, where it is generally found in hedgerows and open country districts. Flowers in May or June, purplish blue, and may be naturalised in hedgerows or copses.

C. rotundifolia (*English Hairbell*).—

In this pretty wild plant we have a true type of the Hairbell. So well known is the plant that it is needless to describe it. There is a white variety, generally dwarfer, and there are several forms all beautiful, and of easy culture in any soil. C. Hostii is a variety. These are all excellent border flowers, and also good for the rougher parts of the rock-garden, and I love to see the wild plant growing in Grass on rough slopes or places not mown till autumn.

C. r. soldanellæflora (*Double fringed Hairbell*).—A double variety reminding one of the fringed flowers of the Soldanella. When growing freely, it attains a height of 15 in., or more. The upper portion of each stem bears many pendent dark-blue flowers, on a branching raceme. All the leaves are linear, even those which spring from the root. It is a good border flower.

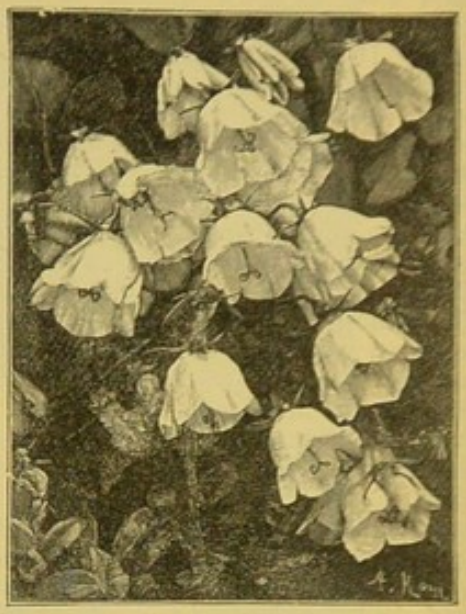
C. sarmatica (*Sarmatian Bellflower*).—A free perennial, with flower-stems about 2 ft. high, and bearing flowers almost throughout their entire length; the lower blooms singly on longish footstalks, the upper ones almost stalkless. Owing to the weight of its masses of flowers, it requires staking. It flowers in July and August, colour a light blue, and increases readily from seed. Rocky sub-alpine regions of the Caucasus. = C. gummifera.

C. Thomasiniana.—A handsome dwarf species nearly related to C. Waldsteiniana, but better as a garden plant, forming a dense tuft, and the flowers, six to twelve in number, tubular and about an inch long, borne on the points, weighing down the stalk, and giving the plant a drooping habit. July to September. A pretty plant for the rock-garden, and loving a shady position, not too damp. Istria.

C. Trachelium (*Rough Bellflower*).—A sturdy, compact herbaceous plant, with erect flower-stems, 2 ft. or more high; the flowers are in twos or threes; they are large and blue; but there are white and double varieties; it blooms in July. Britain.

C. turbinata (*Turban Bellflower*) is a dwarf plant with grayish-green leaves, the flowers borne singly on stems about 6 in. long, deep blue, and 1½ in. across. The flowering extends over June and July in succession; and if the plant be cut back, a second blooming frequently follows. Mountains of Transylvania; a charming plant for border or rock culture. C. t. elegans is a hybrid between this species and C. carpatica, and it is superior to both as a summer flowerer. The variety pelviformis bears saucer-shaped flowers very freely.

C. urticæfolia (*Nettle-leaved Bellflower*) has much of the aspect of C.



Campanula turbinata var.

Trachelium, but is smaller; the flowers are blue or white, and there are double forms of each. It loves the partial shade of woods. The double white variety is particularly desirable, on account of its distinctness and chaste beauty. Germany.

C. Van Houttei is a handsome plant of garden origin. It is strong, its flower-stems attaining a height of 1 to 2 ft.; its large pendent leaden-blue flowers are like those of C. nobilis.

C. Waldsteiniana (*Waldstein's Hairbell*).—A charming little free-flowering species, of compact habit, with wiry stems from 3 to 6 in. high, bearing pale-blue flowers. Hungary. It appears to be free in growth, and is readily increased by cuttings taken from the early spring growth and placed in a gentle bottom-heat. It thrives in limestone soil in a sunny position.

C. Zoysi.—A dense tufty plant allied to C. cenisia, but more compact; with flower-stems 2 or 3 in. high, terminating in one perfect bloom, large in proportion to the size of the plant, and of azure blue. Styria. Thrives in sandy loam in exposed parts of the rock-garden.

The following are mentioned in catalogues, but they are not much known, or are too much like others to be of value: C. aggregata, azurea, altaica, americana, attica, carnica, Cervicaria, divergens,

Elatines, laciniata, linifolia, macrorrhiza, peregrina, retrorsa, speciosa, strigosa, Scheuchzeri, tenella, Tenori, thyrsoidea, Vidali.

Campernelle (*Narcissus odorus*).

Campion (*Lychnis*).

Camptosorus rhizophyllus (*Walking Leaf*).—A curious N. American Fern, remarkable for its narrow fronds, which taper into slender prolongations, and take root at the tips like runners, giving rise to young plants. Thrives in gritty loamy soil in a somewhat shaded position in the rock-garden or hardy fernery.

Canary Creeper (*Tropæoleum*).

Candytuft (*Iberis*).

Canna (*Indian Shot*). — Handsome tropical plants with fine foliage, which make good growth out-of-doors in warm positions in our gardens. The larger kinds make rich masses of foliage, yet all may be intimately associated with flowering plants—an advantage not possessed by free-growing things like the Castor-oil plant. The tendency of most of our flower-garden plants is to flatness, and the special quality of the Cannas for counteracting this makes them valuable. Another good quality is their power of withstanding the cold and storms of autumn. They do so as well as some of our hardy shrubs, so that we may see them waving graceful and verdant when the last leaves have been blown from the Lime and the Dahlia, and the Heliotrope has been hurt by frost. Sheltered situations, places near warm walls, and sheltered dells are the best places for them. They are generally used about Paris and London in huge ugly masses, but to see their true beauty we must place them here and there among the flowering plants. A bed or two solely devoted to them will occasionally prove very effective ; but enormous flat masses, containing hundreds of plants of one variety, are very bad. As to culture and propagation, nothing can be more simple ; they may be stored in winter under shelves in the houses, in the root-room—in fact, anywhere, if covered up to protect them from frost. In spring nothing is easier than pulling the roots in pieces and potting them separately. Afterwards it is usual to bring them on in heat, and finally to harden them off previous to planting out in the middle of May. A modification of this practice is desirable, as some kinds are remarkably hardy, and make a beautiful growth if put out without a leaf on them. The soil should be deep, rich, and light. Cannas, protected by a coating of litter, have been left out in Battersea Park through severe winters, and during the unfavourable summer of 1867 attained a height of nearly 12 ft. Where it is desired to change the arrangements every year, it may be no advantage to leave them in the ground, and they may be taken up with the bedding-plants and stored as easily as Carrots. Wherever they are grown as isolated tufts, in small groups, or in small beds, it will be best not to take them up oftener than every second or third year, if the ground be warm and well drained. These noble plants would also adorn the conservatory, which is often as devoid of graceful vegetation as the unhappy flower gardens all over the country. Few subjects would be more effective, and none more easily obtained.

The only really hardy species is C. Achiras, a rather handsome plant, but less desirable than the more tender. Those available for massing or mixed planting are numerous. In the first place, the wild forms described amount to nearly 100, whilst the garden hybrids and varieties are numerous. Foremost among the raisers of new varieties may be named M. Année, a French amateur. He commenced many years ago, and several varieties bear his name, as C. Annei rosea, C. Annei floribunda. The Iris-flowered Canna is a lovely kind which is not seen out-of-doors in England ; it has flowered out-of-doors in Paris gardens, but it requires a warm moist house to develop its full size and beauty.

LARGE-FLOWERED CANNAS.—This is a comparatively new race of Cannas, for which we are mainly indebted to M. Crozy, of Lyons, France, who crossed the Iris-flowered Canna with the older kind. Here, however, they are more valuable for the greenhouse than the open air. Cannas are not a great success in the open in England. Our summers are too short and our autumns too uncertain to get that profusion of flower one sees in warmer climates, although the Canna is welcome for its bold, handsome leafage. The plants as a rule are much dwarfer than the old type of Canna, which attains many feet in height, the result being that in heavy winds the leaves get much torn. The newer French varieties range between 1½ ft. to 4 ft. in height, the leafage displaying many shades of colour. In some varieties it is quite chocolate, in others intense green without any other shade. When grown in pots, the soil for the Canna should consist of good loam with a liberal admixture of well-decayed manure, leaf-mould, and rough sand, in order to keep the soil open. The size of

the pot used will, of course, depend upon the vigour of the specimen, but fine-flowering examples may be obtained in pots from 8 in. to 12 in. in diameter. Whatever size of pot is used, do not fill it too near the rim with soil, as when the plant gets pot-bound the roots coil around the base of the ball and lift it slightly, so that unless this has been considered in the potting, the plant is apt to obtain an insufficient supply of water, from the effects of which it will soon suffer. The flowering season of these Cannas extends over a lengthened period, but they are seen perhaps at their best during June, July, and August, while even in September the majority will be still in flower, and in the warmest part of the greenhouse, or in a temperature slightly higher, some of them will bloom till late in the autumn or well on into the winter. The individual blooms do not remain long in perfection, but a succession is kept up for a considerable period from the same panicle, as the laterals develop after the expansion of the earlier blossoms, and shoots sufficiently strong to flower are continually being pushed up throughout the growing season. Being gross feeders, these Cannas are helped by an occasional dose of liquid manure as the pots get filled with roots. If the flowers are fertilised, seed is readily produced, which does not take long to ripen, and though some prefer to keep it till the spring before sowing, it is better to sow it at once, as then it quickly germinates, especially if soaked in some warm water for twenty-four hours previous to sowing; whereas, if kept till the spring, the seeds often lie in the ground much longer, even if subjected to the same treatment. If potted off as soon as large enough and kept in a cool part of the stove, the seedlings will continue to grow throughout the winter, and on the return of spring may be shifted into larger pots. In commencing the cultivation of these Cannas, by far the best time to get them is during the winter (say soon after Christmas), when the rhizomes, then in a dormant and well-ripened state, can be sent by post at little expense. The list of varieties is now a considerable one, so that a careful selection is absolutely necessary, otherwise some of them will be found to greatly resemble each other. A few of the finer ones are Paul Bert, with large, handsome, dark-coloured foliage and massive flowers of a distinct reddish-amber tint; Louise Chretien, deep yellow, spotted red; Geoffrey Saint-Hilaire, bright orange-red; Capricieux, red, edged yellow; Revol Massot, green foliage and very bright crimson-coloured flowers; Lutea splendens, clear soft yellow, slightly spotted; Ulrich Brunner, deep-coloured foliage and very bright

Cannabis sativa (Hemp Plant).

crimson flowers ; François Crozy, bright salmon-red, margined with yellow ; Antonin Crozy, crimson ; Admiral Courbet, yellow, spotted with red ; Félix Crousse, orange-red ; Francisque Morel, carmine ; and Antoine Chantin, a distinct golden-salmon flower.

There are many more varieties, but these are amongst the finest.

Cannabis sativa (*Hemp Plant*).—A well-known annual, a native of India and Persia, and largely cultivated in Europe for its fibre. In our country it is 4 to 10 ft. high, but in Italy sometimes 20 ft. high. In plants growing singly, the stem is much branched, but in masses it is generally simple. It is useful where the tender sub-tropical plants cannot be easily grown, well-grown plants looking graceful and distinct, and are useful at the backs of borders and in mixed groups ; and a few look well as a separate group. It should be sown in the open ground early in April, and to get larger plants it would be best to raise it in frames. It loves a warm sandy loam, and is one of the few plants that thrive in small London gardens. There are several varieties mentioned in seed catalogues, but not differing much in habit—at least in our climate.

Canterbury Bell (*Campanula Medium*).

Cape Honey-flower (*Melianthus major*).

Cape Pond-flower (*Aponogeton*).

Caragana.—Hardy but not showy pea-flowered shrubs, interesting in collections of hardy shrubs, but of less value from a flower-garden point of view.

Cardamine (*Cuckoo-flower or Lady's Smock*).—Plants of the Wallflower Order, few of which are cultivated, the best being the native Cuckoo-flower in its double form. This will grow well almost anywhere, although, like the wild plant, that colours the meadows with its soft-hued flowers, it delights in swampy ground. The single kind is too common to need cultivation ; the double kind is a pretty subject for the spring garden and for borders. Division. C. trifolia is a pretty species, with white flowers, from Switzerland ; 9 to 12 in. high ; a border or rough rock-plant. C. latifolia, C. asarifolia, and C. rotundifolia are pretty dwarf plants when in flower, but not popular in gardens.

Cardinal-flower (*Lobelia cardinalis*).

Carduus.—Thistle-like plants, of which the finest is C. eriophorus, the Woolly-headed Thistle, a handsome native plant, with a much-branched hairy stem 3 to 5 ft. high ; and very deeply cut and spiny leaves, the lower ones often 2 ft. long, the flower-heads large, purplish red, and surrounded on the under side by a dense white cottony web. Few plants are more distinct, and it is suitable for borders, or groups of hardy fine-leaved plants, growing well in common soil. It is a native of the limestone districts of the south of England and elsewhere. An interesting plant to naturalise. C. altissimus and acanthoides are also met with in botanical collections.

Carex (*Sedge*).—Plants well known in all northern and temperate countries, but few have a place in the garden.

C. paniculata is a very large Sedge, something like a dwarf Tree Fern, with strong thick stems and luxuriant masses of drooping leaves, the roots forming dense tufts, 1 to 3 ft. high, flowers in a large and spreading panicle. A few tufts are very effective on the margins of water near groups of picturesque plants. The finer specimens are of great age, and are seen best in the bogs where the plant is wild.

C. pendula.—A very graceful British plant, growing in large tufts, with numerous flowering stems and shoots from 3 to 6 ft. high, the leaves 2 ft. or more in length. When in flower the graceful pendent spikes, from 4 to 7 in. long, are pretty, and the plant is very suitable for the margin of water or for boggy or moist spots.

Some of the Sedges are variegated, as C. riparia, and there are some striking forms, such as C. Fraseriana, but compared with the above these are mainly of botanical interest.

Carlina acaulis.—A dwarf Thistle-like perennial, interesting from its foliage, which grows in a broad handsome rosette very close to the ground, its single yellowish flower, 3 in. or more across, on a very short erect stalk in the centre of the rosette. Although too dwarf for association with more imposing plants, it is worthy of a bank or slope or the margins of low beds or groups, where its distinct habit will be seen to great advantage. It thrives best in dry, stony, calcareous soil, and is easily multiplied by seeds. Central Europe.

Carludovica palmata.—A palm-like plant, 4 to 7 ft. high, with dark-green leaves 2 to 3 ft. broad, divided into four lobes, each of which is again divided at the apex into narrow segments. In warm gardens this interesting plant will endure the open air from early June till October, but requires warm house treatment in winter, with plenty of water at all times. Seed. Peru and New Granada.

Carnation (*Dianthus caryophyllus*).

Carpenteria californica.—A lovely and distinct shrub which lives out-of-doors against walls in favoured situations. A few years ago it was not perfectly known even to American botanists, for no flowers (only fruits) had been seen upon the specimens then collected. It is 6 to 10 ft. high, having slender branches with long narrow pale-green leaves, and great clusters of large white fragrant flowers. It comes from the mountains of the Sierra Nevada, particularly about the head waters of the San Joaquin River. It crept into English gardens without the

Carpenteria californica in a Sussex garden.

flourish that usually heralds the advent of a beautiful new plant. The first account of it in England was from Mr. Saul, of Washington, who sent dried specimens of it to *The Garden* in 1880, and from these pressed flowers and leaves the first drawing of the plant in this country was made. It is nearly related to the Mock Oranges (Philadelphus), which it somewhat resembles, but is handsomer, thriving in light warm soil, and increased from suckers, cuttings, or seeds.

Carthamus tinctorius (*Saf-flower*).—An annual of the Composite family, of little ornamental value, the yellow flowers yielding Saf-flower, largely used as a dye. Easily grown as an annual.

Caryota.—Elegant East Indian Palms, generally small in this country; and though they endure the open air in sheltered gardens in summer, they can never be important for our open-air gardening.

Cassandra calyculata (*Leather Leaf*).—A modest little evergreen shrub, bearing in spring tiny waxy white flowers, like those of some of the Andromedas, and doing best in moist peat soil.

Cassia marilandica (*American Senna*).—A hardy graceful perennial, 3½ to 5 ft. high, with pinnate leaves, resembling those of the Acacia, and slender stems bearing yellow flowers in numerous small clusters in autumn. It is somewhat late in growth in our climate, but grows with great rapidity, thriving in a south aspect, and may be multiplied either by division in spring or by seed. It should be planted in a warm, deep, sandy loam, and is suitable for borders or groups. Recent experience seems to show that our climate is not always warm enough to bloom it well. N. America. C. corymbosa is a pretty free-flowering greenhouse variety often used with good effect in the flower garden in summer, and for that purpose requiring to be stored in the greenhouse in winter.

Cassiope fastigiata.—This is a small ericaceous family, generally grown in gardens under the name of Andromeda, but now separated from that group, which contains only one species (A. polifolia), a native of our own moors. They are tiny bushes, and require peaty soil well drained, as they are all impatient of stagnant moisture about their roots, whilst absolute shade from the midday sun is also necessary. The best plan is to raise small banks of peat, and plant them on the top, taking care that they do not want for water both at the roots and overhead. They are increased by division, rooting freely when pegged down. As an alpine species C. fastigiata ranks amongst the best plants we possess; it may be grown without much trouble with the more common C. tetragona, a much inferior species, though oftener met with. Both are pretty for the rock or bog garden.

Castilleja.—Curious and showy Californian herbs which will not bear cultivation in the open air for any length of time. I brought home seeds which grew, and the plants flowered, but they soon disappeared. Seed imported yearly seems the only way of increasing them.

Castor-oil plant (*Ricinus communis*).

Catalpa.—Valuable trees flowering in August when other trees are flowerless. The commonest is the North American C. bignonioides (also called C. syringæfolia). C. speciosa, a newly discovered species also a native of North America, is said to be much hardier, and bears larger flowers earlier in the year. The golden-leaved variety of C. bignonioides is effective if kept dwarf by annual pruning. It is then suitable for associating with other fine-leaved plants of sub-tropical aspect. C. Kæmpferi and C. Bungei, natives of Japan and China, are a good deal like C. bignonioides in growth, but being less hardy are of less importance. All the Catalpas thrive best in good ground and in sheltered positions, the common kind often thriving by the margin of water, though it is more liable to be injured in severe winters in such places.

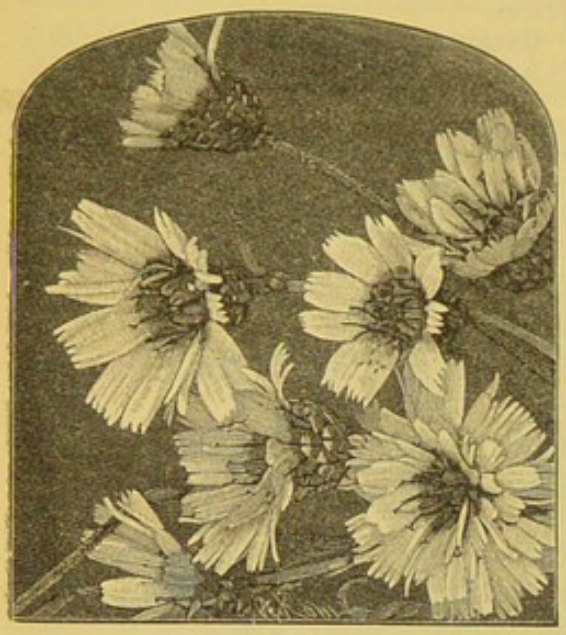
Catananche cœrulea (*Blue Cupidone*).—An old border plant, about 2 ft. high, flowering in summer; fine blue, and growing freely in borders and margins of shrubberies. There is a white variety as common as the blue, and a bicolor one. It is easily grown in any soil, and quickly raised from seed. Compositæ. Italy and S. France.

Catchfly (*Silene*).

Cassiope fastigiata.

Caterpillar plant (*Scorpiurus subvillosus*).

Cathcartia villosa.—A beautiful perennial Poppy from the eastern Himalayas,



Catananche cœrulea.

somewhat resembling the Welsh Poppy (Meconopsis cambrica). It has densely hairy and lobed leaves in flat dwarf tufts, and slender flower-stalks from 6 to 12 in. high, bearing drooping cup-shaped blossoms of a golden yellow. It is quite hardy in a well-drained rock-garden, thriving in shady damp spots not exposed.

Cat-mint (*Nepeta*).

Cat-Thyme (*Teucrium Marum*).

Caulophyllum thalictroides.—An interesting perennial of the Barberry family, of dwarf habit, with finely cut foliage and small white flowers, succeeded by deep blue berries, thrives in partially shaded borders in peaty soil. N. America.

Ceanothus (*Mountain Sweet*).—Though these beautiful shrubs are not quite hardy, they are so pretty that they are often planted by those who are fond of flowering shrubs. Some, however, of the varieties of the C. azureus race are hardy enough on light soils in sunny places to withstand our climate, even if fully exposed as bush plants. The majority form most beautiful wall shrubs, and, from their free growth and profusion of bloom, give pretty effects. In all the species the flowers are small, but this is compensated for by their abundance, as they come out in succession during the greater part of the summer. As wall shrubs it is necessary to prune them in April, or as soon as danger from frost is over; and as all the sorts flower on the shoots of the current year's growth, from one to three eyes of the preceding year's wood should be left, reserving, or at most only topping, such shoots as are required for filling up the open spaces on the wall. All the species are of free growth in good garden soil, if it is dry, and they will ripen their wood best and flower most freely in warm sunny exposures. As they are often natives of a charming climate—the Pacific slope of N. America—no one should attempt their culture except in warm soil. The following are distinct and pretty:—

C. AZUREUS.—From the temperate regions of Mexico, where it grows as a straggling bush about 10 ft. high. It is one of our prettiest wall shrubs, flowering abundantly, in dry sunny situations, the flowers bright blue, from June till September, and in mild autumns till November. C. pallidus is a handsome variety, with pale-blue flowers. It has been the means of obtaining a very beautiful race of hardy Ceanothuses by inter-crossing it with the hardier C. americanus. The result may be seen in such lovely shrubs as C. Gloire des Versailles, Arnoldii, Lucie Simon, Theodore Froebel, Bertinii, President Reveil, Lucie Moser, and others, all of which have flowers in large plumy clusters, some white, others rose, but mostly of some shade of blue.

C. AMERICANUS (*New Jersey Tea*).—Though one of the hardiest, this thrives best against a wall, and in a dry porous soil; the flowers, which come in succession from about the middle of June till August, are white, and numerous. It is found in abundance over a wide area in Canada and the United States as a dwarf deciduous bush 3 to 4 ft. high.

C. RIGIDUS is a sub-evergreen, or in sheltered places an evergreen, rarely exceeding 6 ft. in height, the branches stiff and wiry; the flowers, in clusters on the sides of the young shoots, are deep purple, in April and May.

C. PAPILLOSUS is a pretty species from the mountains of California, where it is a densely branched straggling bush 6 to 10 ft. high. The panicles of pale-blue flowers are borne on long foot-stalks from the sides of the young shoots. Like the other kinds, it loves the protection of a wall, on which it blooms in summer.

C. DIVARICATUS grows as a dense broad evergreen bush of about 10 ft. high. It is a free-growing handsome wall plant, flowering from May to autumn, the flowers a bright blue.

C. DENTATUS is an elegant little evergreen shrub, rarely higher than about 3 ft. The flowers, which appear in May or June, are deep blue, and continue the greater part of the season.

C. VERRUCOSUS forms a thickly branched evergreen bush about 6 ft. high. As a wall

plant it is of free growth, and has a good effect, the flowers coming in May and during the summer months, borne in corymbs along the whole length of the young branches, often so profusely as to hide the foliage.

C. VEITCHIANUS is one of the best kinds, the flowers of a rich deep blue, in dense clusters at the ends of leafy branches. C. integerrimus and velutinus Fontanesianus are in cultivation, but those described include the best for general cultivation.—G.

Cedronella triphylla (*Balm of Gilead*).—A distinct half-bushy herb, the leaves with a pungent but grateful odour, in our country 2½ to 4 ft. high, varying much according to soil, and not quite hardy, but living out-of-doors most winters if in dry free soil and planted against walls. A few plants against a wall are worth having where curious plants are cared for, but the flowers are not showy. There are other species, but not of high garden value, the most interesting being C. cana. Canary Islands. Easily raised from seed.

Cedrus (*Cedar*).—Noble trees of the mountains of Asia Minor and India, some hardy and often planted on lawns and within sight of the flowers. The India Cedar (Deodar) is really a tender tree, and though it may seem to promise well in sea-shore and favoured districts, planters should not forget that it is to the Cedars of the northern mountains they must look. Look at the beautiful Cedars that endure—the Lebanon and Atlas Cedars, which have been proved so hardy, and so well fitted for our country. No finer things can be within view of the flower garden, but they should never be planted near the house, or their great branches will darken it, and in small flower gardens they are sure to be in the way. Plant or group them within sight, but not where they can overshadow flowers or windows. Young healthy seedling plants, 5 or 6 ft. high, are the best to plant, and in this state people, not imagining how quickly they will grow, often put them in the wrong place; while the most experienced planter can hardly avoid placing them too thickly. The late Mr. Robert Marnock, the landscape gardener, who planted many thousand Cedars of Lebanon in his lifetime, wrote me as follows about them: "During a daily occupation amongst trees extending over a period of more than forty years, I have felt quite a growing affection for this noble gift of nature. The grand old Cedars at Upper Gatton and Warwick Castle are examples of what the Cedar becomes under favourable circumstances. Similar examples in various localities could be easily given, and notably those at Pains Hill, Surrey. During all these years I have, as often as opportunity offered, felt it an obligation laid upon me to influence all whom I could persuade to plant Cedars, and I look back with satisfaction at what I have been permitted to do in this way.

"With ample evidence to the contrary, it is marvellous to find so many persons clinging to the fallacy that the Cedar is a tree of slow growth. It is quite true that a Cedar or any other tree will grow slowly, planted, as they very often are, in exposed and draughty situations on open lawns—a treatment to which many Cedars have been cruelly subjected. If Cedars are planted like other ordinary trees, with the usual shelter of common plantations, and the latter properly attended to and duly thinned, they will soon surpass both in height and bulk of growth the ordinary evergreen trees with which they are surrounded.

"The Cedar is thoroughly hardy, and free from any capricious preference as to the soil in which it grows, provided it is fairly good of its kind. There are two localities within 30 or 40 miles of London where many Cedars had been heedlessly planted along with the common mixed trees of the ordinary plantations, one of these extending over an area of about 40 and the other 25 or 30 acres. In both cases these plantations may have been made fifty or sixty years ago. In one case the soil is a mixture of gravel and clay, and the other a thin covering of heavy loam on a subsoil of chalk. In both cases the Cedars are the larger trees."

Celandine (*Chelidonium*).

Celandine, Lesser (*Ficaria*).

Celastrus scandens (*Staff Vine*).—A shrubby climber, a native of North America—valuable for its rapid twining growth, which is excellent for trailing over trellis-work and arbours. It is also beautiful when allowed to spread on a lawn or to run over other shrubs and trees to a height of 12 or 15 ft. The flowers are inconspicuous, and the fruits orange-red, like those of the Spindle Tree.

Celosia (*Cockscomb*).—Indian annuals of the Amaranth family. They are generally too tender for the open air, though we have occasionally seen the dwarf and tall varieties used with effect in bold groups. For this purpose they should be sown in pans in March and kept near the glass to prevent the seedlings being drawn, and as soon as they are large enough to handle they should be pricked off into

small pots, grown on fast in gentle heat until the crowns are formed, planted out in June in rich soil, and liberally watered, they continue in good condition for a long time.

Celsia cretica.—A now popular and

Celsia cretica (Cretan Mullein).

pretty plant, once seldom seen outside a botanic gardens; it is handsome, with rich yellow flowers and polished buds may be treated as an annual, well grown in good soil, it is distinct and effective. Candia, N. Africa.

Cenia turbinata.—Low-growing half-hardy annuals of the Composite Order, from the Cape. The white and yellow varieties are sometimes grown, but are scarcely pretty.

Centaurea (*Knapweed*).—A very large genus, a great number inhabiting Southern and Middle Europe, some being good garden plants, most of them hardy. Some of the southern species require the greenhouse in winter, but, making free growth out-of-doors in summer, are freely used for their silvery foliage. As to flowers, the prettiest are those of the cornflower (C. Cyanus).

C. argentea has elegant silvery Fern-like leaves, and when planted out or plunged in pots has a good effect either as a bedding-plant or in the greenhouse; for bedding it must be plunged and partly starved to bring out its whiteness. Plumosa is a good variety.

C. babylonica.—A distinct and remarkable perennial, tall and with silvery leaves, hardy, and when in good ground its strong shoots with yellow flowers reach a height of 10 or 12 ft. The bloom, which continues from July to September, is less attractive than the leaves, but the plant is at all times picturesque. In groups of fine-leaved and tall hardy plants it has a striking effect. A free sandy loam suits it best. Seed. Levant.

C. Clementei.—A silver-gray-leaved plant of fine form. Small plants from seed are useful for edging bold beds, and when too large for that purpose they may be transferred to borders, or planted out singly on Grass. The blossoms are best picked off, as they detract from the beauty of the plant.

C. Cyanus (*Blue Cornflower*).—A beautiful native flower, an annual of easy culture, often sowing itself. The young plants stand our hardest winters, and flower better grown thus than if sown in spring. The spring plants are weaker and shorter than the autumn or summer-raised ones. It is best sown in September, either where it is to flower, or in beds to be transplanted. Self-sown plants too may be transplanted, or allowed to remain where they come up, as they are often the finest plants. In Prussia this plant is called Kaiser Blume, and is a great favourite. The typical colour is a beautiful blue, but there are white and purplish forms. The many garden varieties range through white, rose, sky-blue, striped, to dark purple, the delicate tints of which are most attractive. They are favourites in the flower market, but the greatest favourite, and we think by far the most beautiful, is the true wild blue kind. There are also a number of double kinds, dwarfer

than the wild plant and lasting long in water, but none so pretty as the wild form. The Cornflower will flourish in almost any soil or position, but best, perhaps, in strong soil.

C. dealbata.—A hardy perennial, with graceful and somewhat silvery leaves, 15 to 18 in. high, flowering in summer; rose-coloured. Caucasus. Borders. Division.

C. gymnocarpa.—A half-shrubby plant from the south of Europe, nearly 2 ft. high, with hard, branching, bushy

Mountain Knapweed.

stems, and elegantly cut leaves, covered with short whitish-satiny down. A variety (C. plumosa) has leaves much more divided and not so white. This plant is somewhat hardier than C. ragusina, but both require greenhouse treatment in winter, same soil, positions, and treatment as C. ragusina. Useful as it is for edging or bedding, it is when grown in fine single specimens that its beauty is most seen.

C. macrocephala (*Great Golden Knapweed*).—A strong plant from 4 to 5 ft. high, with a great golden head of bloom. In the back part of a herbaceous border, in semi-wild nooks and corners, or where herbaceous plants must compete with the roots of trees and shrubs, this robust plant deserves a place. In deep rich soils it forms an effective mass, and when cut the flower-heads are very effective with other flowers, or even with their own leaves.

C. montana (*Mountain Knapweed*).—A handsome border plant, 1 to 2½ ft. high, with slightly cottony leaves, and flowers resembling those of the Cornflower. There is a white and a red variety, all thriving in borders, margins of shrubberies, or the wild garden in any soil. This kind is somewhat coarse in borders, and scarcely worth a place therein, but grows anywhere, and, when cut, its flowers are pretty. They are grown by market-gardeners for their flowers, which are larger than those of the Blue Cornflower. Division.

C. moschata (*Sweet Sultan*).—A fragrant annual, well deserving a place if only for cut flowers. There are two shades—delicate purple and creamy white, the first giving the finest flowers; but both are valuable during summer and winter. They are somewhat "miffy" in growth until well established, and are fastidious as to soil. Aphides are very partial to the young seedlings, and unless the pests are quickly cleared off the plants soon dwindle away. The first essential is a calcareous soil, and any soil deficient in lime should have lime rubble worked into it. The best time to sow is about the middle of April, in an open and sunny place, sowing the seed where the plants are to remain, as they do not move well. After the seedlings are up they should be thinned early, leaving three plants in each patch, about a foot apart. The plants grow over a foot high. Persia. *Syn.*, Amberboa.—J. R.

C. ragusina.—A showy silvery-leaved plant, tender, but of rapid growth out-of-doors in summer, now much grown for market, and valued much for summer-bedding. Solitary plants look well in the centres of small circles and surrounded by any bright colour. On large groundworks of scarlet, purple, or blue, an elevated plant placed here and there breaks up the surface, and enhances the effect of the colours. Wherever any vivid or intense colour appears this plant should never be far away, and isolated plants dotted on lawns of bright-green Grass and amongst dwarf dusky-leaved shrubs have also a good effect. Centaurea ragusina is never injured by wet, as it is of robust habit. It thrives in the coldest situation throughout the summer. When taking cuttings, they should not be cut away, but pulled off with a "heel" so as to have a firm base; small firm shoots should be preferred; in taking them the knife should be used very little, and each cutting put singly into a small 2½-in. pot filled with a mixture of loam, leaf-mould,

and sand, and placed in a cold frame. One good watering is sufficient until they are rooted ; and if the weather is damp, the lights may be drawn over

Sweet Sultan.

them, and tilted up back and front ; otherwise they may remain exposed. Treated in this manner I have rooted a batch of 2,000 without losing twenty. Autumn is the best time to propagate them. They will fill their pots with roots in three weeks, and, if there is plenty of house room, they will make all the better plants by being shifted into 4-in. pots, where they will grow a little in autumn, and be strong for planting out the following season. A cold frame from which frost can be excluded is their best winter quarters ; the leaves should be kept dry, as they are rather liable to damp during the short days, and every opportunity should be taken for giving them air. They also winter well in an airy vinery or greenhouse. Old plants are sometimes lifted and kept over the winter ; where very large plants are required this is a sure means of obtaining them ; but for ordinary use autumn-struck cuttings are the best. *Syn.*, C. candidissima. C. ragusina compacta is more compact in habit and shorter in leaf than C. ragusina. It is not so easily increased from cuttings, but produces seeds much more freely, and although the seedlings from them are not all of the same habit, they are easily classified as to size.—J. M.

C. rutæfolia.—A hardy perennial 2 ft. high, with branching stems clothed with deeply cut foliage, the entire plant being covered with a dense white tomentum, as in C. ragusina. It is, however, of freer growth than that kind, increasing in size through the summer till checked by the cold. The flower-heads are pure white, about one-half the size of those of C. ragusina, but much more abundant. The plant is pretty from the whiteness of its foliage, which suffers little from rain. It succeeds in any soil, but its growth is more compact in rather dry soils or in the rock-garden.—W. T.

C. suaveolens (*Yellow Sweet Sultan*)—*Syn.*, Amberboa odorata.—A pretty citron-yellow hardy annual and favourite border flower, thriving best in light dry soil ; should be sown and treated like C. moschata. Sow in beds in April with flowers grown for cutting, raising one batch in frames, and sowing another in the open air in light rich earth where it is to remain.

C. uniflora.—The flower-heads of this, previous to opening, look like withered balls, for each of the scales is terminated by a dark-brown feather-like point ; and as these develop, they lie down close upon the head, and appear to enclose it in a net. The stems are 6 to 15 in. high, each bearing a solitary flower of lilac-rose, 2 in. or more across. A distinct and curious plant, growing freely in well-drained and sandy soil, in the rock-garden or in borders.

Centauridium Drummondi.—A showy half-hardy annual from Texas, from 2½ to 3 ft. high, and flowering from July to September. It should be sown in a frame on slight heat in April, and planted out in May. It has large citron-yellow flowers, much resembling those of Centaurea. Compositæ.

Centaury (*Erythræa*).

Centranthus macrosiphon is a hardy annual with pretty rose-coloured flowers, is useful for the rock-garden or flower border. It may be sown in September and pricked off into pots for winter for transplanting in spring, or again in the open ground in March and April, the seedlings being thinned out about 1 ft. apart. There are several varieties—white, red, and two-coloured, besides a dwarf variety (pygmæus).

C. ruber (*Red Valerian*).—A handsome hardy border plant, and an old inhabitant of gardens, often also naturalised. It belongs to the Valerian family, and comes from the Mediterranean. There are two

or three varieties—white, purple, and red or crimson. It has stout stems, woody at the base, and bold clusters of flowers, blooming in June and through the summer. It requires only ordinary garden soil, and occasional lifting and cutting in, without which it is apt to become weak and to die out after a few years. It grows well on the crumbling walls of an old ruin, and on rocky or stony banks or walls. Seeds, division, and cuttings.

Cephalaria.—Plants of the Scabious order of large coarse growth, and suitable for the wild garden. Their large flowers are, however, good for cutting, and for this purpose plants might have a place in the rougher parts of the garden. The best species are C. tatarica and C. procera, with white or yellowish flowers like a Scabious, and of easy culture.

Cerastium (*Mouse-ear Chickweed*).—A numerous group, but containing few garden plants of value in proportion to its number.

C. alpinum.—An interesting British plant, found on the Scottish mountains, and more sparsely on those of England and Wales. It is dwarf, seldom more than 2 in. high, with leaves clothed with a silky down, imparting a singularly shaggy appearance. It bears large white flowers in early summer and is at all times a pretty and distinct-looking object on those parts of the rock-garden that come near the eye. It is not, like the common garden kind, fitted for forming edgings. Division, cuttings, or seeds.

C. Biebersteini.—A very silvery species, useful for the same purposes, and propagated and cultivated with the same facility, as C. tomentosum, with which it is closely allied. Mountains of Tauria, flowering in early summer.

C. grandiflorum.—Less downy and silvery than the following, producing in early summer pure-white flowers in abundance. A fine plant for the front margin of a mixed border, or for the rougher parts of the rock-garden, but only to be associated with other strong and fast-growing things, as it spreads so quickly as to overrun and injure delicate and tiny plants if placed near them. A native of Hungary on dry hills.

C. tomentosum (*Snow in Summer*).—A very free-growing plant, used in almost every garden for forming compact silvery edgings to flower beds and borders. It is also useful for borders, and for rootwork or the rough rock-garden, but is too common for a place on a small or choice rock-garden that might be devoted to some of the many beautiful alpine plants which are rarely seen. South of Europe. Division.

Cerasus (*Cherry*).—Our lawns and shrubberies owe so much of their early summer beauty to the Cherries, that these must be ranked among the best flowering trees we have. The most beautiful for lawns and shrubberies are the double-flowered Cherries, as they endure longer in flower than the single forms. The finest is C. serrulata, a Chinese kind recognised at a glance by its long rigid branches, which invariably spread in an ascending direction, and rarely have a central leader. The flowers are double, like rosettes, white, and suffused with a delicate pink, and produced in clusters completely wreathing the branches. C. Sieboldi is synonymous with this species, and that known as Waterer's double-flowered Cherry is similar to if not identical with it. C. Juliana is another beautiful double-flowered Cherry, with large rosette-like delicate blush-pink flowers. It is known as St. Julian's Cherry. The double forms of the common Cherry, C. Caproniana and C. Avium, are handsome, and both known under the name multiplex. In both

Cherry flowers (Cerasus Watereri).

varieties the flowers are double and pure white. The earliest to bloom is C. Avium multiplex, and this is quickly followed by C. Caproniana multiplex, which is known also as ranunculiflora. The names of the various double Cherries are so much confused that one can never be sure of obtaining the correct sort by asking for it under a particular name. The best way is to choose it when in flower.

The single-flowered Cherries are not so numerous in nurseries, as the demand for them is not great. An indispensable tree, because of its graceful habit of growth, is C. Mahaleb, and in May the profusion of its white flower-clusters makes it highly attractive. The weeping variety (pendula) is one of the most elegant of deciduous trees, and is preferable to the original. The All Saints' Cherry is a graceful lawn tree, and interesting because it flowers from spring to autumn, and carries blossom and ripe fruit at the same time. In some years it flowers again in autumn. The graceful natural growth of the dwarf C. Chamæcerasus and C. depressa renders them useful for the margins of shrub groups or for associating with bold rocks. The Bird Cherries, of which our native C. Padus is the type, are valuable ornamental trees of large growth. Where the Bird Cherry does not grow naturally, it is quite handsome enough for a lawn tree, or for shrubberies. Still finer are the North American Bird Cherries, C. virginiana and C. serotina, both large deciduous trees, of regular form and with dense heads. Their flowers are in long clusters, like those of our own Bird Cherry, but are produced later and last longer, especially those of C. serotina, which is the finer of the two kinds, being hardier and more vigorous. The common evergreen Laurel (C. Laurocerasus) and the Portugal Laurel (C. lusitanica) cannot be strictly called flowering shrubs,though beautiful when in flower and fruit.

Cercis (*Judas Tree*).—Of the three different kinds of Judas Tree in gardens, the commonest and most beautiful is C. siliquastrum from South Europe, which for nearly 300 years has been a favourite in English gardens. It is of low stature, usually about 15 ft. in height, and when old makes a picturesque head. It prefers a light deep loam soil. There are several varieties, differing chiefly in the colour of the flowers. There are a white (alba), a deep pink (carnea), and a form with variegated leaves (variegata), but this is not recommended. It is of slow growth, and though young specimens flower profusely, only very old ones show the picturesque growth of the tree.

Flower of Judas Tree.

Cerinthe (*Honeywort*).—A small group of the Borage family, of which there are two or three interesting plants. C. aspera, probably the best species, produces abundance of yellow flowers, the tube of which is black at the base. In general habit it closely agrees with the other, but the seed is somewhat larger. C. minor is curved and branching, and the flower-stems arch over considerably, so that at the apex of the stem the delicate yellow tube-shaped bloom is hidden by the long and closely imbricated pale-green leaves with which the stem is furnished. C. retorta is by far the best and most beautiful kind. Cerinthes are half-hardy annuals, requiring to be sown in early spring and in frames, and afterwards to be planted out in good soil. They are, however, not likely to be much in favour, owing to their quiet colours, and are natives of Greece, but pretty general in Italy and other countries of Southern Europe.

Ceterach officinarum.—This is now placed with the Aspleniums, but is known so well under its present name that we retain it. It is a distinct and beautiful little native Fern, admirably suited for rock or alpine gardens, as it thrives best when planted between the chinks of rocks or stone walls. It dislikes a confined damp position ; hence it can be planted in the most exposed places with good

ffect, and, with a little careful attention to ts simple requirements at the outset, with lmost certain success. The chinks and revices should be filled with a mixture of andy peat and pounded limestone. It night be associated with some of the little lowering Sedums, and various other plants for walls and stony places.

Chænostoma.—A small group of the Figwort family, natives of the Cape. They are naturally perennial, but in the open air must be treated as half-hardy annuals. C. fastigiata is the prettiest. It grows 6 to 9 in. high, forming a dense compact tuft, and produces an abundance of small pinkish, and sometimes white, flowers. The seeds should be sown in warm frames in spring or in August, when the seedlings require to be wintered in a pit, and flowers are borne from June to November.

Chamæbatia foliolosa (*Tarweed*).—A little shrubby plant of the Rose family, remarkable for the Fern-like beauty of its leaves. The flowers are white and something like those of a Bramble. It grows about 1 ft. high, forming a dense spreading tuft, and covering the ground in California, its native country. It has not proved hardy in our climate, but I have seen it growing in mountain districts often covered with snow, and believe it to be worth trial on the rock-garden in the milder part of the country.

Chamædorea.—Graceful Mexican palms, with slender stems, resembling Bamboos, seldom more than 15 to 20 ft. high, and 1 or 2 in. thick, surmounted by tufts of eight or nine graceful leaves, nearly 8 ft. long. Among the best are C. elatior, C. elegans, and C. Ernesti-Augusti. These handsome palms may be placed in the open air in early summer, in sunny sheltered nooks, and taken in at the end of September. Their elegant heads fit them for placing here and there among groups of fine-leaved plants, or to associate with Cannas, but their open-air use must be very limited.

Chamæpeuce (*Fish-bone Thistle*).—Spiny-leaved plants allied to the Thistle, valuable for the flower garden, as their foliage is distinct and handsome. There are two kinds in cultivation—C. diacantha and Cassabonæ. C. diacantha has foliage of shining green, marking with silvery lines, and the spines are ivory white. C. Cassabonæ has deep-green white-veined leaves with brown spines. Both kinds grow in compact rosette-like masses about 9 in. high, till the second year, when they produce their Thistle-like flowers, and the flower-stems grow 2 to 3 ft. high. They require light well-drained soil and a warm position, and should seldom be watered. As flowers are not produced until the second year, the plants during the first year may be used for edgings, or the margins of groups, for which their light-green silver-veined leaves are very suitable, or they may fill a vacant place in the mixed border. Seed sown in February and carefully attended to will furnish good plants by May, but the best for immediate effect are those sown in a border in the open ground in September, potted up carefully, and given greenhouse treatment during winter.

Chamærops.—Handsome palms, quite hardy, and capable of good and distinct effects in the garden.

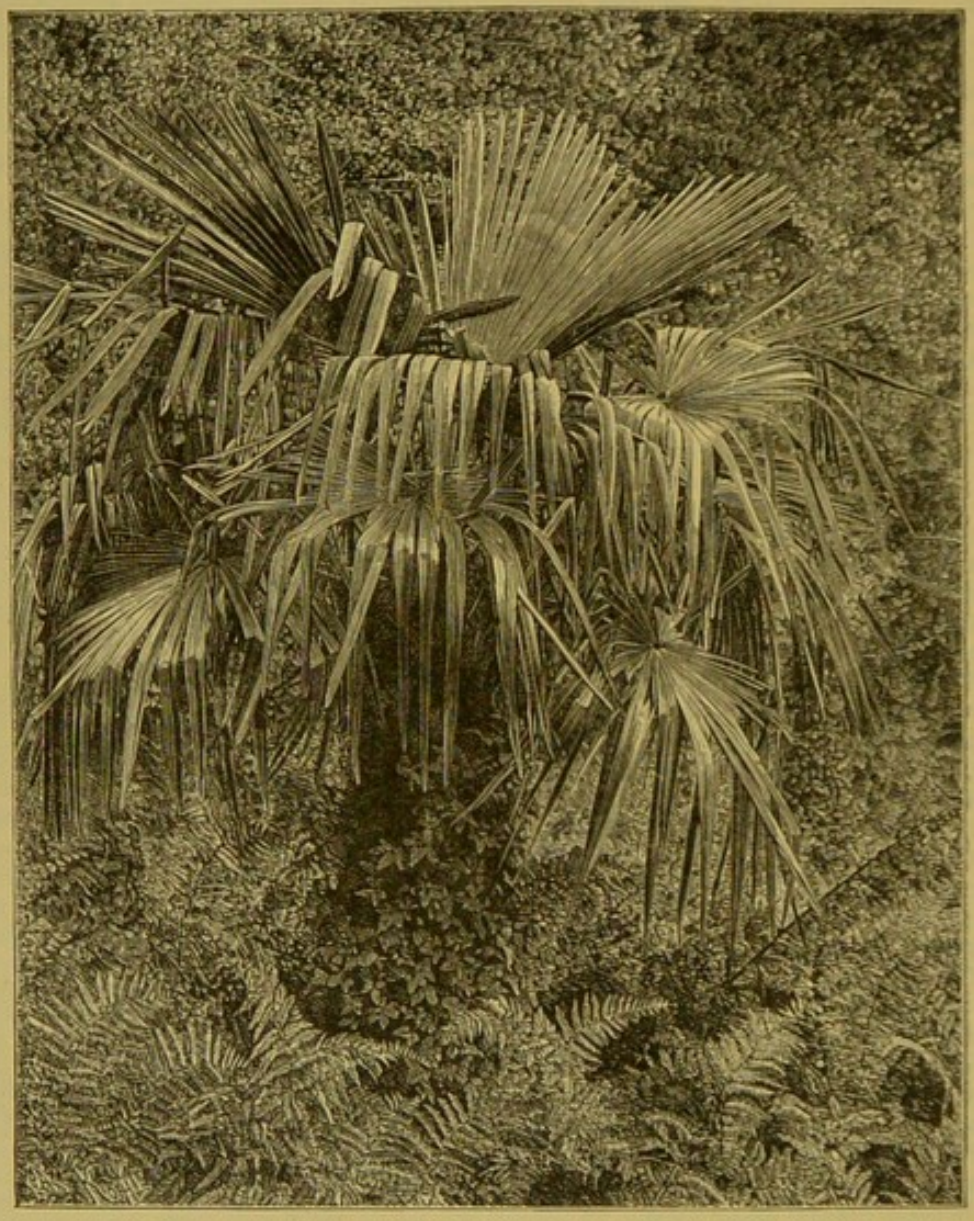
C. Fortunei (*The Chusan Palm*).—A most valuable Palm, often confounded with C. excelsa. It is stouter and has a more profuse matted network of fibres round the bases of the leaves and crown; the segments of the leaves are much broader, and the leaf-stalks shorter and stouter, being from 1 to 2 ft. long, and quite unarmed. It grows 12 ft. or more high, and has a handsome spreading head of fan-like leaves, slit into segments about half-way down, and is perfectly hardy. A plant in the garden at Osborne has stood out for many winters, also at Kew, though protected in winter. On the water side of the high mound in the Botanic Gardens, Regent's Park, it is in even better health than at Kew, though it has had no protection; and severe frosts have not hurt it. If small plants are procured, grow them on freely for a year or two in the greenhouse, and then turn them out in April, spreading the roots a little and giving them a deep loamy soil. Plant in a sheltered place, so that the leaves may not be injured by winds when they get large. A gentle hollow, or among shrubs on the sides of some sheltered glade, is the best place. C. humilis is also hardy—at least on sandy soil.

Chaste Tree (*Vitex Agnus-castus*).

Cheddar Pink (*Dianthus cæsius*).

Cheiranthus (*Wallflower*).—Beautiful cruciferous plants made familiar by the favourite Wallflower (C. Cheiri), which is almost the only species much grown in gardens, as other well-known plants that bear the name of Cheiranthus belong to the genus Erysimum. The Wallflower is a native of Southern Europe, growing on old walls, in quarries, and on sea-cliffs. It loves a wall better than any garden; it grows coarsely in garden soil, but forms a dwarf enduring bush on an old wall if planted in mortar, and grows even on walls quite new. No variety is unworthy of cultivation; but the choice old garden

kinds—the double yellow, double purple, double orange, dark, &c.—are worthy of a place among the finest border plants. These are the varieties most worthy of a place on dry stony banks near the rock-garden, and also on old ruins, on which the common kind is likely to find a home for itself. The fine mixed "German" The Golden Yellow—or, as it has been misnamed, Tom Thumb Yellow—is as robust and tall as the crimson kinds, and produces in great abundance masses of rich orange-yellow bloom. In country districts the common single Wallflower is usually a compound of all these, and therefore deficient in that rich and effective colouring so peculiar



Chamærops Fortunei in a Surrey garden.

kinds—so easily raised from seed—are also worthy of ruins and stony places.

The superb dark crimson-marked kinds grown around London need no description, and can be bought in the seed trade under the designations of Harbinger and Covent Garden Blood-red and Golden Yellow, all good strains. The Belvoir Castle Yellow is a close compact kind, with bright yellow flowers, and suitable for spring bedding. to good pure strains of the single Wallflower. The double biennials are remarkable for the variety of their colours and stout habit.

The double perennials familiar to us are the yellow, dark crimson, red, and dwarf yellow. The yellow is most common, and a beautiful clear-coloured kind it is, a great favourite with cottagers, who propagate it by putting in slips about

the time the plants are in flower. It can be propagated freely by means of slips put in under hand-lights in sharp sandy soil, and the plants will flower the next spring. The old dark crimson is now almost extinct; in colour the flowers are almost black, and very striking; the dwarf yellow has flowers of a dull, almost buff tint; the Raby Castle variety is valuable and sturdy.

INCREASE AND CULTURE. — Many persons sow seed too late—in June and July instead of April and May. If dry weather follows close on the sowing, or after the plants have grown 2 or 3 in., they receive a check, and, instead of being dwarf, vigorous, and bushy, they are thin and poor. The winter will sometimes injure the Wallflower severely, especially when very severe frost follows close on heavy rains, and the stronger and better rooted the plants are, the more likely are they to stand the weather. The plants used for filling beds should have been once transplanted at least, because the moving induces them to throw out fibry roots near the surface, and they can be lifted with soil adhering to them. When the Wallflower is allowed to grow where it is sown, a strong tap-root is formed, which strikes deep into the soil, and but few surface roots are put forth. In transplanting from the seed-beds, it is well to pinch off the tap-root, and thereby induce fibry roots. The great advantage of fibry roots is that the plants can be transplanted at any time during the winter when the weather is open. Mr. Ingram, of Belvoir Castle gardens, used to take precautions to induce fibry roots previous to transplantation, and would transplant into trenches and lines in soil, with slates or bricks buried a little in the soil to prevent the formation of the tap-roots, as he found that plants with tap-roots and with little fibre stood badly.

In London market-gardens, where the Wallflower is well cultivated, seed is sown in the open ground early in February; the young plants are put out into their permanent quarters in May, and by Christmas, if the winter be mild, they produce bloom, and are so large that they could not be covered by a bushel basket. For spring bedding they should be sown early and planted out about 12 in. apart in some spare ground. These plants will lift with good balls of earth early in winter, and in spring will produce superb masses of bloom. Some market-growers sow seed late in summer, allow the young plants to remain in the seed-bed all the winter, plant out in March, and, if the season be favourable, reap a good crop of flowers all through the next winter.

Save seeds from plants with the best branching habit and the darkest blossoms. When the plants are in flower, place a stake by each possessing those qualities, so as to mark it. Allow the plants to remain undisturbed until the seed is ripe; they may then be pulled up, roots and all, and housed in a dry place until a convenient season for threshing out the seed. Cuttings of the double kinds may be put in as soon as they can be got after the plants go out of bloom. Put them in firm sandy soil under a hand-light, and, when struck, plant them out. Cuttings put in in August, September, or October strike freely without any protection, in a shady border, or in pots or boxes of sandy soil.

Besides the Wallflower there are several perennial species of doubtful hardiness, such as C. arbuscula and mutabilis, natives of a warmer climate, which therefore, though pretty pot plants, cannot be recommended for general open-air culture. Besides these there are various hybrids, such as C. Sermoneri, Delahaynus, Bocconi, and Marshalli, the last the finest of the hybrid kinds said to have been raised between C. Cheiri and Erysimum ochroleucum. It is compact, from 9 in. to 1 ft. high, has many bright orange-scented blossoms, and is a brilliant border plant, and good for massing in spring; few plants indeed, so hardy and easy to cultivate, equal it in showy beauty from April till July.

All these perennials prefer dry soil during winter, but plenty of moisture in summer. Propagation is necessarily by cuttings, but top dressing with fine soil often induces the summer wood to root freely, and by autumn a good stock can be had. Cuttings should be taken off just as the plants are passing out of flower, put in under a hand-light, and treated as Pink pipings until rooted.

C. alpinus, ochroleucus, and others belong to Erysimum, which see.

Chelidonium (*Celandine*). — The best species of these Poppyworts is the native C. majus, a showy plant with yellow flowers found in lanes and rough places. The variety laciniatum, with deeply cut Fern-like foliage, is elegant, and there is another variety with double flowers, and another with variegated foliage. The Japanese Celandine (Stylophorum diphyllum) is known as C. japonicum. The native kinds are of easy culture, but not suited for a place in the garden proper.

Chelone (*Turtle-head*).—North American plants nearly allied to Pentstemon. The two species in cultivation are handsome border plants, flowering in late summer and in autumn. C. Lyoni grows from 2 to 3 ft. high, forms a dense mass of stems, with deep-green foliage, from July to September bearing dense clusters of showy pink blossoms. C. obliqua is taller and more slender, but the colour of the typical form is a richer pink, and there is a white-flowered variety. C. obliqua generally flowers earlier than C. Lyoni, and continues till the autumn. Both are of easy culture, thriving in open borders of good deep soil, and increased by seeds, cuttings, or division of the roots. These plants, though bearing pretty flowers, and free in growth, are not of high garden value. The graceful Pentstemon barbatus is also known as C. barbata.

Chenopodium (*Goosefoot*). — Few of these are of garden value, except C. Atriplicis, a vigorous Chinese annual, with erect reddish stem, slightly branched, over 3 ft. in height, and with its young shoots and leaves covered with a rosy-violet powder, pretty in foliage. C. scoparium (Belvedere) is a curious and graceful annual plant, like a miniature Cypress in form, and worth a place among curious annual plants.

Cherry (*Cerasus*).

Cherry-pie (*Heliotropium*).

Chimaphila (*Pipsissewa*). — Small shrubby plants, natives of the dry woods of N. America. There are in cultivation two species somewhat difficult to cultivate. C. maculata (Spotted Wintergreen) has small leathery leaves variegated with white, 3 to 6 in. high, and is pretty for a half-shady and mossy, but not wet, place in the rock-garden, with such plants as the dwarf Andromeda and the Pyrola, and succeeds best in very sandy leaf-soil. C. umbellata, with glossy unspotted leaves and somewhat larger reddish flowers, is also suited for such positions. Both are rare in cultivation, and very seldom well grown. They flower in summer, and are increased by careful division. We believe the difficulty lies chiefly in the fact that a good patch is rarely if ever imported, or if imported it becomes divided to such an extent that its life is endangered, and it has no strength for vigorous growth.—N.

Chimonanthus Fragrans (*Winter-Sweet*) is a lovely shrub, which in our country enjoys a wall, flowering in December and January; beautiful, and of delicious fragrance, the flowers coming upon young wood after the leaves have fallen, brownish-yellow, marked with purple inside; and precious for gathering for the house. The best variety is grandiflora, its flowers being longer and more open. This shrub does best on a wall with a southern or western aspect. The blossoms coming on the previous season's growth, pruning should be performed when the flowering is over; then the shoots that have blossomed should be cut back to the main branches, and when growth recommences, abundance of young shoots will flower the following season, and these afterwards should be pruned away in the same manner. A few twigs with blooms upon them placed in a room last a long time, and diffuse their pleasant fragrance, and little harm need be done by cutting these twigs, as in the ordinary course they would be pruned away after their flowers have faded. Layers and seed. Japan.

Chionanthus (*Fringe Tree*).—A beautiful small tree; in some old English gardens there are fine specimens, but it is rarely met with in modern gardens. Fully grown in this country, it is generally a dense bush about 10 ft. high, but in its native country it is said to make quite a tree. In early summer it bears long clusters of white flowers, with petals long and narrow like a fringe. A newer species is the Chinese C. retusus, which is not so pretty, though its flowers are white and fringy. N. America.

Chionodoxa (*Glory of the Snow*).—Although rather a new family, the Chionodoxas are now very popular. They are certainly among the most beautiful and useful of our early spring-flowering bulbs, and can be grown in English gardens more easily than was thought possible. In every garden where they have been established for a few years they have become quite weeds, self-sown seedlings coming up everywhere even yards away from the original clump. They should be naturalised in the woodland and in the wild garden. Their great hardiness, exceeding beauty, and the rapidity with which they increase are all in favour of their establishment on grassy slopes. Every one at little expense may have masses of the Glory of the Snow, and no more beautiful, natural, or better way can be suggested. Any good garden soil suits these plants.

C. Luciliæ is by far the most popular species. Its value will be increased when we see it in bold breadths in our woodlands and grassy slopes, much in the way Snowdrops and Daffodils have been used in our own gardens. C. Luciliæ was

first introduced by Mr. Maw, who, in describing the circumstances under which he found it, says that at the lower level it was out of flower, but near the summit of the mountain a mass was met with in full splendour, forming one of the most charming displays of floral beauty he ever beheld—a mass of blue and white, resembling Nemophila insignis in colour, but more intense. It is an extremely variable species in size as well as in the form and colour of its flowers, and there can be no mistake about the improvement, which is evident after a couple of years' cultivation in good rich soil. Newly imported bulbs as a rule produce small and few flowers, but when really well established size and number are almost doubled. It is one of the hardiest bulbs we possess, and will stand any frost without injury. It flowers during March and April. There is also a white-flowered form, but it is rare. Forbesi is apparently nothing more than a large, fewer-flowered form of the above. Grandiflora was first introduced to our notice in 1889 under the name of C. gigantea. The whole plant is more robust than Luciliæ, the flowers larger and more numerous and of a distinct soft violet-blue with a small white centre. It has not, so far as we are aware, shown the slightest signs of reversion, and may be taken as a really distinct and constant form. It is also a native of Asia Minor. The new C. Alleni, from what we have seen of it, is the same as C. L. grandiflora, and also a charming plant. Sardensis is a charming variety. The flowers, though more numerous, are smaller than those of any mentioned above, but of a brilliant true Gentian blue, and altogether distinct from those of C. Luciliæ. The bulbs were found close to the ruins of the ancient town of Sardis, at 4000 to 5000 ft. above sea level. It is hardy and a useful bulb for forcing. Tmolusi is, like C. Forbesi, a stronger, larger-flowered form.

C. nana is a dwarf, numerous-flowered species from Crete. The flowers are very small, white or lilac. It is of little value compared with any of the above. C. cretica may be taken as a larger-flowered form of C. nana, with blue and white flowers. Both are natives of Crete.

Chionodoxa sardensis.

Chlora perfoliata (*Yellow-wort*).—A pretty slender native plant abundant in some places by the seaside, about 1 ft. high, with grayish-green leaves and yellow flowers; there is a large-flowered variety called Grandiflora which is less common. C. perfoliata delights in stiff rich soil; it is biennial, but freely yields seeds, which sow themselves, or may be sown as soon as ripe. Not of high garden value, though beautiful when wild, and it does not readily submit to cultivation.

Chlorogalum Pomeridianum (*Soap Plant*).—A bulbous plant of the Lily Order, a native of California, not by any

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Chionodoxa (*Glory of the Snow*).—Although rather a new family, the Chionodoxas are now very popular. They are certainly among the most beautiful and useful of our early spring-flowering bulbs, and can be grown in English gardens more easily than was thought possible. In every garden where they have been established for a few years they have become quite weeds, self-sown seedlings coming up everywhere even yards away from the original clump. They should be naturalised in the woodland and in the wild garden. Their great hardiness, exceeding beauty, and the rapidity with which they increase are all in favour of their establishment on grassy slopes. Every one at little expense may have masses of the Glory of the Snow, and no more beautiful, natural, or better way can be suggested. Any good garden soil suits these plants.

C. Luciliæ is by far the most popular species. Its value will be increased when we see it in bold breadths in our woodlands and grassy slopes, much in the way Snowdrops and Daffodils have been used in our own gardens. C. Luciliæ was

first introduced by Mr. Maw, who, in describing the circumstances under which he found it, says that at the lower level it was out of flower, but near the summit of the mountain a mass was met with in full splendour, forming one of the most charming displays of floral beauty he ever beheld—a mass of blue and white, resembling Nemophila insignis in colour, but more intense. It is an extremely variable species in size as well as in the form and colour of its flowers, and there can be no mistake about the improvement, which is evident after a couple of years' cultivation in good rich soil. Newly imported bulbs as a rule produce small and few flowers, but when really well established size and number are almost doubled. It is one of the hardiest bulbs we possess, and will stand any frost without injury. It flowers during March and April. There is also a white-flowered form, but it is rare. Forbesi is apparently nothing more than a large, fewer-flowered form of the above. Grandiflora was first introduced to our notice in 1889 under the name of C. gigantea. The whole plant is more robust than Luciliæ, the flowers larger and more numerous and of a distinct soft violet-blue with a small white centre. It has not, so far as we are aware, shown the slightest signs of reversion, and may be taken as a really distinct and constant form. It is also a native of Asia Minor. The new C. Alleni, from what we have seen of it, is the same as C. L. grandiflora, and also a charming plant. Sardensis is a charming variety. The flowers, though more numerous, are smaller than those of any mentioned above, but of a brilliant true Gentian blue, and altogether distinct from those of C. Luciliæ. The bulbs were found close to the ruins of the ancient town of Sardis, at 4000 to 5000 ft. above sea level. It is hardy and a useful bulb for forcing. Tmolusi is, like C. Forbesi, a stronger, larger-flowered form.

C. nana is a dwarf, numerous-flowered species from Crete. The flowers are very small, white or lilac. It is of little value compared with any of the above. C. cretica may be taken as a larger-flowered form of C. nana, with blue and white flowers. Both are natives of Crete.

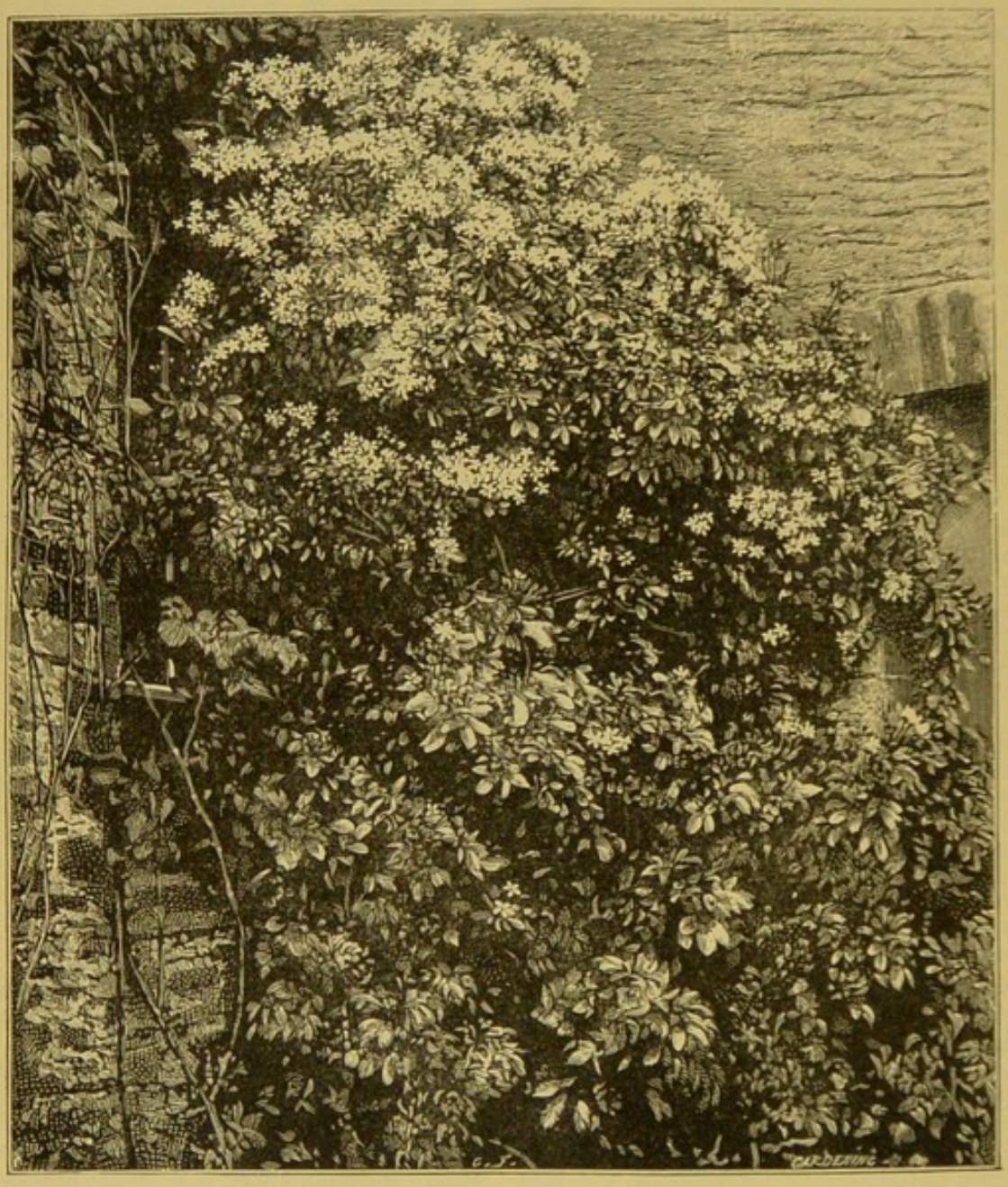
Chionodoxa sardensis.

Chlora perfoliata (*Yellow-wort*).—A pretty slender native plant abundant in some places by the seaside, about 1 ft. high, with grayish-green leaves and yellow flowers; there is a large-flowered variety called Grandiflora which is less common. C. perfoliata delights in stiff rich soil; it is biennial, but freely yields seeds, which sow themselves, or may be sown as soon as ripe. Not of high garden value, though beautiful when wild, and it does not readily submit to cultivation.

Chlorogalum Pomeridianum (*Soap Plant*).—A bulbous plant of the Lily Order, a native of California, not by any

means showy, the flowers small and white on slender branching stems a yard in height. It requires warm dry soil to thrive well in the open border. Bulblets or seeds.

Chlorophytum.—An important group, of which C. elatum variegatum is, however, worth notice. It is perhaps better known in English gardens as Anthericum or Phalangium variegatum. It may be termed a half-hardy ornamental-foliaged plant, and useful out-of-doors in summer. When frosts appear it may be lifted and potted, and after a few weeks in a warm pit or frame taken to the greenhouse or conservatory. Its flowers, small, white, on a loose panicle, are not of much merit; indeed, it will be found the better practice to keep them pinched off. The leaves are from 1 to 2 ft. long and 1 to 1½ in. broad, striped and edged with white. Each plant will produce twenty or more leaves, and their gracefully arching habit gives them an almost unique effect. It may be readily increased by division of the roots, and will do nicely in a cool greenhouse. C. Williamsi and C. argenteo-lineare are synonyms. It is a native of South Africa.



Choisya ternata (Mexican Orange-flower) in Devon garden.

Choisya ternata (*Mexican Orange-*

flower). — A handsome shrub, not thoroughly hardy, yet in the south and west often thriving with the shelter of a wall and a southern or western aspect. It is fast-growing, the flowers a lovely contrast to the deep rich green foliage. The illustration shows it as a garden wall shrub in Devonshire, a county that shows many beautiful things that in more northern districts are known only as glass-house plants. It is not only in the extreme south and west that one may succeed with this fine shrub. It thrives in many Sussex gardens, in Major Gaisford's garden at Offington, near Worthing, flowering twice a year, in spring and autumn. At colder Wakehurst it has reached the top of a wall 6 ft. high, and at Lydhurst there are several thriving bushes both in the open and against a wall. Those who have a bush near the house will know the pleasure of its strong, but not too powerful, Hawthorn-like fragrance. Bushes like this can only be expected in mild districts and on dry free soils, and failing these it should always be planted against a wall, not as a bush exposed, and should be protected during winter. Plants with well-ripened wood never get cut back in the same way as those in a "green" condition. Mexico, where it grows freely on the hillsides, forming a delightful picture during the flowering season.

Christmas Rose (*Helleborus niger*).

Chrysanthemum.—An extensive genus of perennials and annuals, some of which are valuable garden plants. Besides those mentioned below, there are in cultivation several kinds, such as Chrysanthemum absinthifolium, which have little claim for general culture.

C. arcticum.—A good plant for the rock-garden about a foot high, flowering all the summer, white tinged with lilac or rose. C. Zawardskii of Continental gardens is very nearly allied.

C. carinatum (*Tricolor Chrysanthemum*).—A showy annual from N. Africa, which varies much in cultivation, and is valuable if only for its yield of flowers for cutting. There are double white and yellow forms ; and the showy ones known as C. Burridgeanum, raised from seeds by Mr. Burridge, a seed-grower in Suffolk. C. Burridgeanum is compact, and bears large golden-yellow flowers, with a dark purplish-brown zone, a purple eye or disc, and bright and well-defined colours. Dunnett's varieties of the same plant are also good. C. carinatum is propagated from seeds sown in April or early in May in open beds or borders where the plants are to flower ; or they may be sown earlier in pans or boxes of light rich earth in a pit or frame, from which they can be transplanted after all danger from frost is over. Planted singly in rich soil in an open and sunny position, C. carinatum forms one of the most beautiful of composite-flowered annuals, and well deserves culture. It generally blooms in August, and lasts in beauty several months, or until cut down by frost.

C. coronarium (*Crown Daisy*).—A bold and handsome annual 2 to 3 ft. high in its wild form in N. Africa, and, in cultivation, breaking into a number of forms, few of them so pretty as the single wild flower, pale yellow or buff, treated as a half-hardy annual, and sown in good ground in April or early in May. In warm soil with mild winters one might hope to have autumn-sown plants survive, in which case there would be a stronger bloom.

C. frutescens (*Paris Daisy, Marguerite*).—A vigorous half-hardy plant ; in one season forming, when planted out, bushes 3 ft. in height and as much in diameter. It is much branched, and symmetrical in habit ; the foliage is pinnate, and glaucous ; the flowers are large, pure white, with a yellow centre, and produced in great profusion from June until cut down by frost. Extensively grown on the Continent for summer bedding and for pots. It is a fine Daisy-like plant, and several forms or allies are also valuable, such as the yellow Etoile d'Or, Comtesse de Chambord, and C. frutescens aureum. These are of easy culture and propagation, being for the outdoor garden best treated as bedding plants and put out in May, though in certain sea-shore and favoured districts they survive the winter.

C. indicum.—The numerous beautiful varieties of the Chrysanthemum, so popular as pot plants in autumn, deserve to be more extensively grown in the open air, as many varieties are well suited to the purpose, and add a wealth of beauty to the open-air garden in October and November. The varieties for open-air culture require to be well selected, and then their culture is simple.

CULTURE. — The Chrysanthemum is quite hardy, and will grow in almost any soil or situation, and therefore it is needless to lay down any general rule for its cultivation. The varieties, however, vary a good deal, and the treatment necessary for one is often unsuitable for another. Even in spite of such obstacles as smoke and fog, some of the finest flowers exhibited at the autumn shows are grown in

the small gardens and yards of densely populated cities. Much, however, depends upon soil; the Chrysanthemum is such a voracious feeder that where vigorous foliage and fine flowers are desired it cannot well be made too good. If practicable, it should consist of equal parts of fresh loam, rotten manure, leaf-mould, and sand. These, well mixed in autumn, and allowed to remain in ridges during the winter, will be in good condition to receive the plants in March or April. Many prefer autumn-made cuttings, and if intended for pot culture they are best, but for open-air culture strong suckers, if they can be procured, should be selected. They receive no check when planted, and in order to allow a free circulation of air the plants should stand at least 3 ft. apart. The same roots left undisturbed for two seasons in succession never produce fine flowers. They should, therefore, be replanted every year towards the end of May. Strong stakes should be placed to each plant, and the main stem should be firmly secured thereto during the growing season, the laterals being neatly tied into their proper places—but not too stiffly. The beauty of the foliage and size of the flowers may be increased by the application of liquid manure during the summer months. Early in October disbudding should be commenced. The centre or crown bud, if perfect, should be left, and all the others carefully removed. One fine flower on each branch is preferable to several small ones, except where a quantity is required for cutting.

VARIETIES.—The following sections are well adapted for the open air. The early-flowering Japanese varieties have been so much improved during the last five years that they are most deserving of attention, either for supplying cut flowers in quantity or for the decoration of the border; indeed, this type is the most deserving of all for outdoor culture. Insert stout cuttings in the early part of February in sandy soil where the stock is limited; otherwise, lift the roots from the open ground early in November, lay them in sandy soil in a cold frame, and early in March pull them to pieces. Many more plants can be made from a limited number of roots than by any other method. Plant portions of roots in ordinary cutting-boxes, and keep them close for a week or so until new growth has fairly commenced, when they should be grown on sturdily until the time arrives for finally planting them out. If for supplying cut-bloom simply, any open piece of the garden will suffice. The soil need not be made very rich, but should be dug deeply some time before planting. Put the plants in rows 3 ft. wide, with 2 ft. between each plant. The following varieties will make a capital display: Lady Fitzwygram (white), Mdme. C. Desgrange (white, cream centre) G. Wermig (pale yellow), Comtesse Fouchier de Careil (orange-yellow), Le Vierge (pure white), Gustave Grunerwald (pink,

Paris Daisy (C. frutescens).

passing to blush-white), Roi des Précocés (crimson), Ryecroft Glory (yellow, shaded

Montague (purple-crimson), Mdme. Eulalie Morel (deep cerise, gold shade in centre),

Chrysanthemum Mdme. Desgrange, grown in the open air.

bronze), Vicomtesse d'Avene (rose), Maria (mauve), Mrs. Gifford (silvery white),

Florrie Parsons (mauve), Strathmeath (bright magenta), Arthur Crepey (prim-

rose, changing to cream-white), Carrie Denny (pale bronze), Mdlle. Rénée Cohn (pale flesh-pink), October Yellow (bright creamy yellow).

Wall Chrysanthemums. — In many well-kept town gardens the eye is offended by unsightly brick walls, and the question is often asked, What can be done to hide them? The answer is, Train Chrysanthemums upon them; if well nailed in they take up but little room, and afford a pleasing background to the other occupants of the borders. Strong cuttings or suckers, or, what is better still, the old roots or stools that flowered in pots the previous season, planted at the foot of the wall 3 ft. apart early in March, in soil similar to that just recommended, will make remarkably rapid growth, and, if kept neatly nailed in and all the side-shoots removed as they appear, will soon cover a wall of ordinary height. Liquid manure from time to time will strengthen the plants and improve the foliage, and if carefully disbudded in September a grand show of large flowers will be the result. If these are not wished for, allow the plants to grow uninterruptedly, and develop all buds that appear on the point of each shoot. Should it be desirable to protect the blossoms from wind and weather it can be effectually done by nailing a 12-in. board on the top of the wall, so as to form a coping. This, supported by a few poles in front, is all that is required, and, if practicable, a canvas covering fastened in front when the nights are cold will generally prove sufficient protection; with these simple precautions the duration of the flowers will be greatly prolonged. The varieties named below are best for wall culture. Many early-flowering Japanese and reflexed kinds are included, as they are more suitable than the incurved section, the natural form of the petals being less likely to hold water from night dews and rains.

White.—Eynsford White, Lady Selborne, Mdlle. Lacroix, Elaine, Fair Maid of Guernsey, Mrs. Forsyth, Felicity, Avalanche, and Mrs. Rundle.

Yellow and Orange.—G. Glenny, Jardin des Plantes, Sunflower, Buttercup, Mrs. Horril, Mr. C. E. Shea, President Hyde, and Phœbus.

Blush and Rose.—Bouquet Fait, Princess of Teck, Venus, Maiden's Blush, Peach Christine, Christine, Etoile de Lyon, Annie Clibran, and Viviand Morel.

Crimson.—E. Molyneux, Cullingfordi, W. Holmes, King of Crimsons, M. Mousillac, M. Henri Jacotot, and Progne.

Red and Brown.—Triomphe du Nord, Gloire du Rocher, Val d'Andorre, Félix Cassagneau, Wm. Robinson, Julie Lagravère, and Source d'Or.

Purple and Amaranth.—Dr. Sharpe, M. Bernard, Alberic Lunden, and Mrs. Nisbet.

Pompons.—These are useful for wall covering; they grow compact and flower freely. The following is a good selection:

White.—Sœur Mélanie, Mdlle. Marthe, La Pureté, White Perfection, Snowdrop, Bijou de Horticulture.

Yellow.—Golden Circle, St. Michael, Primrose League, William Westlake, Nelly Dainford.

Red and Brown.—Black Douglas, Prince of Orange, Tiber, Vulcan, Victorine, Prince Victor, James Forsyth, Fremy, Eleonore.

Purple.—President, Comte de Morny, and Pygmalion.

Single-flowered Varieties are very useful for covering walls. The best are—

White.—White Perfection, Miss H. H. Bates, The Virgin, Exquisite.

Yellow.—Yellow Jane, Golden Star, Admiral Sir S. T. Symonds, Prince of Yellows, Canariense, and Charming.

Blush and Pink.—Florence, Mary Anderson, America, and Crushed Strawberry.

Red.—Lady Churchill, Souv. de Londres, Scarlet Gem, David Windsor, and Effie.

Pompons.—These require the same treatment as the large-flowering varieties. They may be advantageously planted, either in front of tall-growing kinds or in beds by themselves. If for the latter purpose, they should be planted in April. Each root should be set about 12 in. apart, and the head or leader should be taken off when about 4 in. high, and all lateral branches encouraged in growth. These when sufficiently developed should be secured to stakes to keep them upright and prevent the branches growing crooked. Allow all shoots that grow to develop as many blooms as form at the point of the shoots. Liquid-manure may be given them occasionally.

As to effect that greatly depends upon a judicious arrangement of the colours. The following are all good free-flowering kinds:—

White.—Mdlle. Marthe, Miss Talfourd, White Trevenna, Cedo Nulli, Mdme. Domage, Sœur Mélanie, La Pureté, Snowdrop, Maid of Kent.

Blush and Rose.—Adonis, Andromeda, Hélène, Rose Trevenna, Trophée, Rose d'Amour, Rosinante.

Red and Brown.—Bob, Brilliant, Miss Julia, Mustapha, Aureole, Victorine, Vulcan, Adèle, Prisette.

Yellow and Orange.—Aigle d'Or, Drin-Drin, General Canrobert, Golden Cedo Nulli, Aurore Boréale, La Vogue, St. Michael, Golden Circle, Nelly Rainford, Charles Dickens.

Crimson.—Salomon, Duruflet, President Decaisne, Miranda, Crimson Perfection, Black Douglas, Miss Wheeler, Prince Victor, Fremy.

Summer and Early Autumn Flowering Kinds.—This is an important class, furnishing a number of beautiful varieties that are valuable for cutting from, and they enliven the borders when other hardy flowers are on the wane. Some are very dwarf and of various shades of colour, and for the open air are of much value. They are invaluable mixed with herbaceous plants or in ribbon borders. Their free habit and profusion of brightly coloured flowers render them very attractive. The following are worth a place in every garden :—

Early Pompons.—Nanum (white), Mdme. Dufoy (white), Souvenir d'un Ami (white), St. Mary (white), Chromatella (yellow),

Chrysanthemum "Cottage Pink."

Hendersoni (yellow), Le Luxembourg (yellow), Mdme. Piccol (Rose), Adrastus (rose), Frederick Pele (deep crimson-red), Scarlet Gem (red), Alice Butcher (red, shaded orange), St. Crout's (light pink), Blushing Bride (rose-lilac, fading to blush), Fiberta (canary-yellow), Wm. Cullingford (blush-white, fading to white), Mignon (yellow), Précocité (bright yellow), Flora (yellow), J. B. Duvoir (white, shaded lilac-rose), Piercy's Seedling (bronze, passing to yellow), Mdme. Jolivart (white, tinted pink), Miss Davis (soft pink), Lyon (deep rosy-purple).

The Japanese varieties are too late for open-air culture.—A. S.

C. lacustre (*Marsh Ox-eye Daisy*) resembles the large Ox-eye Daisy of our pastures, but is much larger in every way. It is about 2 ft. high, and thus may be distinguished at a glance from Pyrethrum serotinum, a plant with flowers strikingly similar, but which is much taller, growing in a good soil from 6 to 8 ft. high. The Marsh Ox-eye Daisy is a stout perennial, and fit for a large collection, but somewhat coarse for choice positions. Some may give it a place for its yield of cut flowers, and there are several new varieties with prettier flowers —valuable for cutting, all of easy culture, and I find them excellent to naturalise among strong weedy plants—in the roughest places.

C. segetum (*Corn Marigold*).—A showy yellow native plant, as worthy of cultivation as many an exotic, and in certain cases worth growing for cutting. Treat as a hardy annual, preferring autumn sowing.

Chrysobactron Hookeri (*Anthericum*).

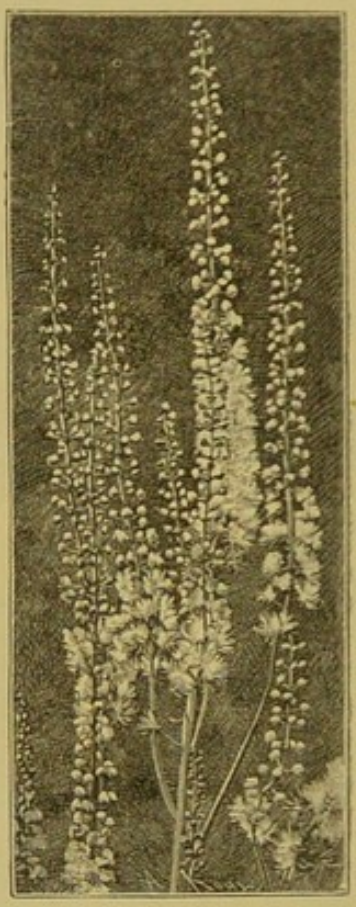
Chrysocoma.—A small genus belonging to the Composite family; of little garden value.

Chrysopsis (*Golden Aster*).—North American plants of the Composite family, suitable mainly for botanical collections. C. Mariana is, however, worth cultivation.

Chrysurus (*Lamarckia*).

Cichorium Intybus (*Chicory*).—A pretty native plant, from 2 to 5 ft. high, bearing in summer and autumn handsome blue flowers. It is worth introducing as a wild plant into localities where it is not common. It is a rampant grower, and will take care of itself under almost any conditions. The seed may be sown on rubbish heaps and in stony places, old quarries, and by roadsides.

Cimicifuga (*Bugbane*).—A genus of the Crowfoot Order, nearly allied to the Baneberry (Actæa). They are all tall herbaceous plants; one at least is handsome—C. racemosa (Black Snakeroot), 3 to 8 ft. high, with feathery racemes of white blossoms 1 to 3 ft. long, which, being slender, droop gracefully. C. Serpentaria, a variety of the preceding, is also a handsome plant. Both are of easy culture in good garden soil, and effective for the mixed shrubbery border, or as



Cimicifuga racemosa.

groups in the wild garden. Being strong and vigorous, they are well fitted for naturalising by woodland walks. Some have an odour which is not pleasant. Division. North America.

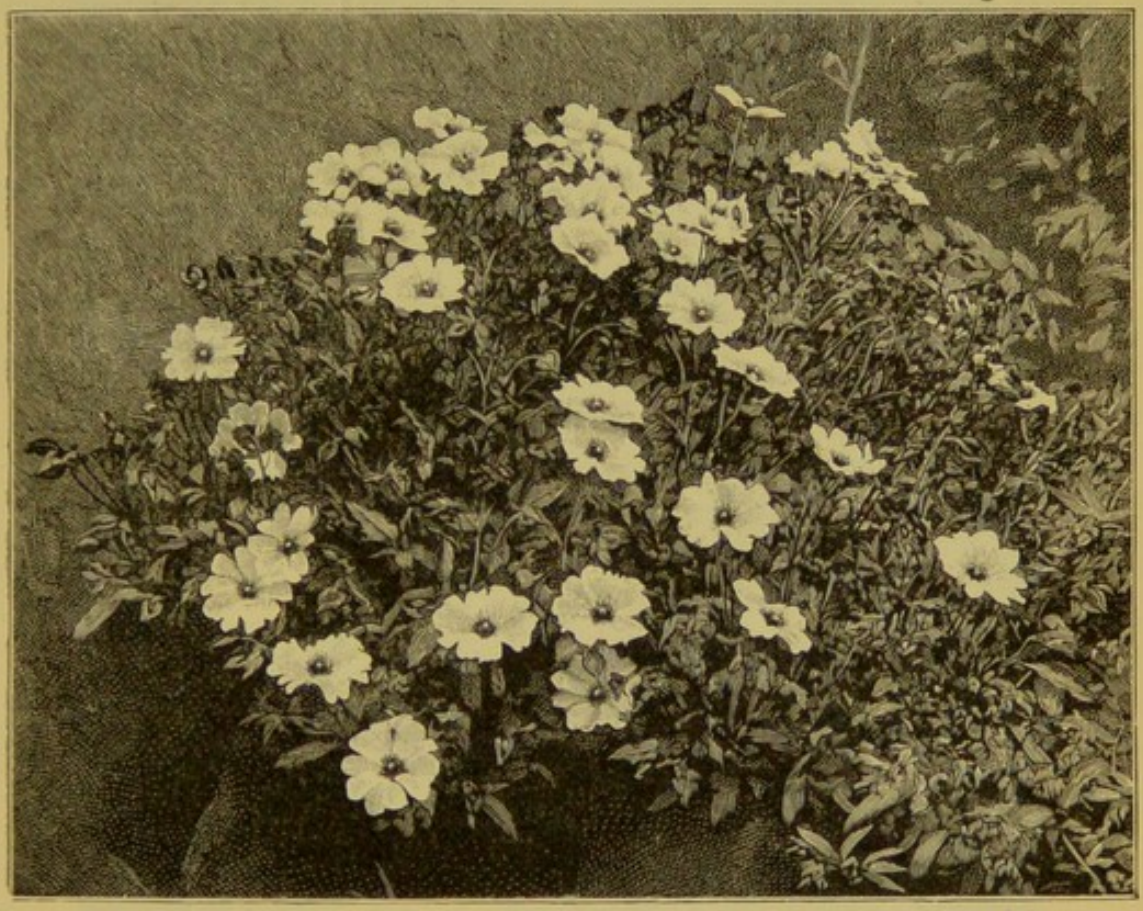
Cineraria maritima.—A very handsome bushy perennial with finely cut leaves, covered on the under side with silvery down. It bears in summer numerous heads of bright yellow flowers. If the effect of its foliage only is desired, the flowering stems should be pinched off on their first appearance, the plant then becoming more leafy and branching. On the margins of shrubberies, isolated on banks or on the turf of the pleasure-ground, it would form an agreeable variety among the dark-green subjects recommended for groups. It is also used with good effect for edgings to flower

beds. The best way to increase it is from cuttings in spring, choosing the twiggy side shoots; but the quickest way to obtain plants is to sow seed in heat in February and transplant in the open in May.

Cinquefoil (*Potentilla*).

Cirsium.—Thistle-like plants, few of which are fit for the garden, and now included with Cnicus.

Cistus (*Rock Rose*).—The Rock Roses are amongst the most beautiful of flowering shrubs, but in our country it is only on the lightest and warmest soils and on walls that they may be trusted to survive our winters. Most of the species have been at one time or another in cultivation in this country, and with but little trouble they could be easily kept in spite of the recurring severe winters which kill unprotected plants of so many of the kinds. They strike readily from cuttings, and a pot of each wintered in a cold frame would take up little room, and insure the species from being lost in case a very unfavourable winter proved destructive to the parent plants. The wintered stock planted out in spring would soon attain a considerable size, and flower freely the same year. All the Cistuses are Old World plants, most of them being natives of South-western Europe; some extend to North Africa and Asia Minor, and one to the Canary Islands. According to different authors, the number of species is made to vary considerably. Nyman, in his "Conspectus Floræ Europæ," enumerates fourteen; Willkomm, in his "Monograph of the Cistus Family," makes twenty-four; and Loudon, in the "Arboretum et Fruticetum Britannicum," describes thirty. Many of the species vary a good deal in colour, size of leaves, and not a few appear to hybridise freely. In spite of the fugacious character of the flowers (they do not last more than one day), their bright colours and the profusion in which a succession is kept up for a considerable time render the Cistuses amongst the most welcome of garden shrubs during the summer months. They prefer a dry sandy soil, and, although some grow freely enough in almost any garden soil, they are much more likely to suffer during winter in rich ground.



Cistus florentinus.

C. albidus.—This is now and then met with under the name of C. pulverulentus, and there are several hybrids intermediate in general character between their parents. The best known of these are C. crispo-albidus and C. albido-monspeliensis. The specific name of this is owing not to the colour of the flowers, for these are a fine rose, but to the whitish tomentum which clothes the leaves and young shoots. It forms a compact bush 2 to 4 ft. high ; the old branches are covered with a brownish or almost blood-coloured bark. The rose-coloured flowers are nearly 2 in. across, and the style is longer than the tuft of golden-yellow stamens. Southern France, Portugal, Italy, and Corsica.

C. crispus.—This forms a compact bush 1 to 2 ft. high, with procumbent, tortuous, often interlacing branches, the deep rose-coloured flowers nearly 1½ in. across, the style overtopping the golden stamens. There are some hybrids between this species and C. albidus which are nearer the seed-bearing parent than they are to C. albidus. Unfortunately, too, one of these has been named C. crispo-albidus, a name which has been also applied to another hybrid of the same parentage, which is mentioned under C. albidus.

Cistus formosus.

C. Bourgæanus is a native of the Pine woods of Southern Spain and Portugal, where it flowers in the month of April, grows a foot in height, and has somewhat prostrate branches, covered with Rosemary-like dark-green leaves. The white flowers are about an inch across, and it is a charming plant for pot cultivation in a cold frame, or for a sunny spot in the rock garden.

C. Clusii in general aspect comes near C. Bourgæanus, and is a native of Southern Spain, Portugal, and Sicily. In habit it is more erect than the last-named, but the flowers are the same colour and size, as are also the leaves. As a rock-plant, or grown in pots for cool house decoration, it is charming. In some gardens it is met with under the names of C. fastigiatus and C. rosmarinifolius.

C. florentinus.—This plant is, according to Nyman, a hybrid of C. monspeliensis. It is a dwarf free-blooming plant, one of the best for a sunny spot in a dry border. Nyman enumerates as identical with C. florentinus, C. olbiensis, C. porquerollensis, and C. valentinus, with others.

C. formosus.—Much-branched, bushy shrub, with leaves greenish when old, but with a whitish tomentum when young, and large bright yellow flowers with a deep purplish-brown blotch near the base of each petal. The plant thrives well in any rich, dry soil, but is apt to succumb in severe English winters. It is, however,

such a beautiful plant that it is well worth the trouble of putting in a pot of cuttings each autumn in a cold frame, planting these out in the open the following spring. If raised from seeds, which in ordinary seasons ripen in abundance, a considerable range of variation in the depth of the yellow colour and in the size and intensity of the purplish blotch is obtained.

C. glaucus.—A much-branched bush 1 to 2 ft. in height, with reddish-brown bark; the upper surface of the leaves is dull green, glossy, and glabrous, the lower strongly veined and clothed with a hoary down. The flowers are large, white with a yellow blotch at the base of each petal, and the very short style is much exceeded by the stamens. Southern France. = C. Ledon.

C. hirsutus is a shrub from 1 to 3 ft. in height, the young shoots and flower-stalks are hairy, as are the leaves on both surfaces, the flowers whitish, smaller than those of C. glaucus, and the style is shorter than the stamens. South-western Europe.

Cistus ladaniferus.

C. ladaniferus.—This is one of the most beautiful of all the Cistuses; the leaves, smooth and glossy above, clothed with a dense white wool beneath. The very large flowers are white, in the more

handsome forms with a large dark vinous-red blotch towards the base of each petal; in others without blotch. It also varies in the size of the leaves, the extreme forms having narrow, almost linear leaves. It is a native of Spain, Portugal, and Southern France. The specific name was probably given under the belief that it was this species which furnished labdanum, a resin at one time largely used in medicine.

C. laurifolius is probably the hardiest Rock Rose in cultivation. In some southern shrubberies large plants exist, which have withstood (without suffering much) many winters. The flowers are less than those of C. ladaniferus, are white with a small citron-yellow blotch at the base of each petal. Loudon speaks of this as follows: "A very robust species, with large green Laurel-like leaves. It produces an abundance of flowers, which, with their light-red bracts, are very ornamental before they expand, resembling at a distance the bursting buds of Roses. It requires no protection, and may be raised from seeds, which ripen in abundance, and also by cuttings, which, however, do not strike so freely as in some of the other species." This attains a height of about 6 ft.; it is a native of South-western Europe.

C. longifolius.—A native of Southern France and Eastern Spain; said to be a hybrid between C. populifolius and C. monspeliensis. A shrub 2 to 4 ft. high, with slender, twiggy, glandular, viscid, hairy branches with red bark. The flowers are white with a small yellow blotch near the base of each petal; in size they measure about an inch and a half across. It is a pretty shrub for a warm corner.

C. monspeliensis, a species widely distributed throughout the Mediterranean region, is very variable in size of its leaves and also in stature of plant; in some spots it hardly grows more than 6 in. in height; in others it attains a height of about 6 ft. The flowers are white, about an inch in diameter, each petal bearing a yellow blotch at the base.

C. parviflorus, a South-eastern European Rock Rose, forms a compact bush a couple of feet high; the old branches are covered with an ashy-coloured bark, the younger shoots and the peduncles being clothed with a whitish tomentum. The rose-coloured yellow-centred flowers, which measure rather more than an inch in diameter, are borne in a close cyme.

C. populifolius is a robust-growing kind, with large rugose, stalked, Poplar-like leaves and medium-sized white flowers, tinged with yellow at the base of the petals. Varieties of C. salvifolius are often misnamed C. populifolius in nurseries and gardens. Amongst the numerous garden forms of this species may be mentioned C. narbonnensis, with shorter flower-stalks, smaller leaves—altogether a smaller plant than the type—and C. latifolius, another with broader leaves. C. populifolius is found in Southern France, in Spain, and Portugal. It is an erect-branched shrub, 3 or 4 ft. high.

C. salvifolius.—This is a distinct kind, very variable, and of slender habit, with Sage-like leaves and long-stalked, white, yellow-blotched flowers. In a wild state it is found all along the Mediterranean, and a number of slightly varying forms have received distinctive names; but as these do not appear to have been introduced to British gardens, it is not worth while to enumerate them here.

C. vaginatus is the largest of the red-flowered section; robust, with large-stalked, hairy leaves and large deep rose-coloured yellow-centred flowers. The stamens are more numerous in this than in, perhaps, any other Cistus, and form a dense brush-like tuft, overtopped by the long style. It is a native of the Canary Islands. For many years a fine plant flowered freely against the wall of the herbaceous ground at Kew, but the severe winters of several years ago proved too much for it, and the plant is perhaps now lost to cultivation.

C. villosus, a widely distributed Mediterranean kind, is a very variable plant, an erect bush with firm-textured leaves. The flowers of all the forms are rose-coloured, with long styles. C. undulatus is a variety with wavy-margined leaves. C. incanus represents what may be regarded as the common typical form. C. creticus is another with deeper rose-red flowers than those already mentioned.

From this and some other Cistuses is obtained the labdanum, a resin which is exuded from the leaves and branches, and which is collected by whipping the plants with long thongs attached to a rake-like frame, the resin adhering to the straps; during the prevalence of the plague labdanum was largely used as a remedial agent.—G.

Cladium Mariscus.—A vigorous native fen plant, 2 to 6 ft. high, in flower crowned with dense, close chestnut-coloured panicles, sometimes 3 ft. in length, the leaves glaucous, rigid, and often 4 ft. long. Worthy of a place on the margin of water.

Cladrastis.—This name strictly includes the beautiful North American Yellow-wood Tree (C. tinctoria), but as the accepted name in gardens for that tree is Virgilia lutea, it will be noticed under Virgilia. The only other Cladrastis in cultivation is C. amurensis, a shrub introduced a few years ago from the Amoor Valley, and known also under the name Maackia amurensis. Its leaves resemble those of the Yellow-wood, but are of thicker texture, not so large, and of a duller green. In late summer it produces a plentiful crop of flowers, even when only a few feet high. The spikes are dense, the blossoms white, and inclined to yellow, and endure a long time. Small bushes flower freely. It is hardy.

Clarkia.—These Californian plants are among the prettiest of hardy annuals, robust, of easy culture, and flower for a long time. There are two species from which the numerous varieties now in cultivation have been obtained. C.

Clarkia alba.

elegans grows 2 ft. high, erect, much branched, and bears long leafy racemes of flowers with undivided petals, varying from purple to pale red or a salmon colour. The principal varieties of this species have double flowers, and two—Purple King (deep purple) and Salmon Queen (salmon-pink)—have flowers produced freely on strong branching plants, and are very effective border flowers. The other species, C. pulchella, may be readily distinguished from the preceding by deeply cut petals. It varies in height from about 1 ft. in the Tom Thumb sorts to 2 ft. It has magenta flowers normally, but there is every variation between deep purple and pure white. There are also several very pretty double-flowered forms of C. pulchella. There is also a very distinct variety called integripetala, from which have been obtained some beautiful varieties, notably limbata and marginata, the former dark rose and white, the other pale rose and white. Altogether about a score of varieties are mentioned in seed lists, most of which are distinct from each other, and well worth growing.

CULTURE.—All the varieties are suitable for borders; the dwarfer kinds, by their habit of growth, being well suited for sunny spots in the rock-garden or on the ridge of sloping banks. Their growth is much affected by the nature of the soil. Like all other hardy annuals, they may be sown either in autumn or spring. By sowing in the beginning of September the seedlings gain strength before the winter, and flower well in early spring. The first spring sowing should take place in the middle of March, when the plants would flower in July. Until about the middle of June other sowings may be made for flowering in September and October. The best soil is ordinary garden mould, not too rich or dry.—G.

Clary (*Salvia Sclarea*).

Claytonia.—A small group of the Purslane Order, of which three species are pretty garden plants. C. caroliniana is a spreading dwarf species bearing in spring loose racemes of pretty rose flowers, and C. virginica (Spring Beauty) is a slender erect plant, with pink blossoms. Both are suitable for warm spots in the rock-garden in loamy soil, but C. sibirica, also a dwarf species with pink flowers, requires a damp peaty soil like an artificial bog. C. perfoliata and C. alsinoides are weeds in many localities.

Clematis (*Virgin's Bower*).—Although with few exceptions these are shrubby climbing plants, yet their use in the flower garden, often in a dwarf or frequently cut-down condition, is so frequent and important that they cannot be omitted. There are over a hundred species, mostly from cold or temperate climates. They are widespread, in Europe from Russia to Portugal and the Balearic Isles; in Asia from the Ural range to India and Java, and even to China and Japan. They show them-

selves in both Americas, in several Polynesian islands, and even in New Zealand. Thus they extend from pole to pole, from the sea-shores to the slopes of the highest mountains. So graceful is their habit, so bold and showy their flowers, that scarcely a species is without beauty. The earliest-flowering hardy species commence unfolding their blossoms in April, and are succeeded by other species and varieties throughout the summer and autumn, some of them continuing in bloom up to Christmas in mild localities. In colour they present almost every shade and combination of red and blue, while pure scarlets and crimsons are not wanting. The lilac, pale-blue, purple, mauve, claret, and violet-purple varieties are connected by every intermediate shade. There are also yellow species and varieties, and many pure white-flowered ones, the flowers varying from less than 1 to 8 or 9 in. in diameter. It is not only as climbers on trees or for covering walls, trellises, that Clematises are useful, as they trail or creep quite as well as they climb, and are also admirably suited for festooning. The original large-flowered Japanese kinds are more or less tender, and in severe winters are often cut to the ground ; but many of the hybrids—Jackmani for example—will bear severe frosts. However, whether cut down by frost or knife, they will grow again in spring, and flower perhaps even more profusely. They never form very thick stems, and are not suitable for permanently covering large spaces, particularly where the height is considerable. To obtain their flowers in perfection the plants must be freely pruned. On the other hand, such species as C. Flammula, montana, and vitalba, especially the last two, grow quickly to a great height or length. A few, such as C. erecta, tubulosa, and integrifolia, are herbaceous.

Traveller's Joy (Clematis vitalba).

The sections into which this family may be grouped for garden use are well treated of in Moore and Jackman's

"Clematis as a Garden Flower," which we quote.

THE MONTANA, PATENS, AND FLORIDA TYPES.—These sections include the earliest or spring-flowering divisions of the family. The majority of the species and varieties of which they consist come into blossom naturally about May; but some few of them, such as C. calycina and its allies, blossom from the commencement of the year onwards. These latter are best suited for planting against walls, in warm sheltered situations, where their opening flowers may in some degree be protected against inclement weather. The varieties of C. patens and C. florida (represented by C. Sieboldi, one of the same type) are perfectly suited for planting against walls or in corridors; and some of them make elegant early-blooming beds, especially where their blossoms are thoroughly sheltered either naturally or artificially from severe spring frosts, which occasionally, though rarely, somewhat injure them. C. montana, also a spring or May bloomer, is vigorous and hardy, and specially suited for covering walls, trellises, or arbours, or, in fact, for any position where rapidity of growth is desired. These plants, especially those of the montana type, are not particular as to soil, but will grow in any good garden earth fairly enriched, efficiently drained, and maintained in a healthy state. Where it can be provided, a rich soil of a light loamy texture is the best for all these plants, especially if mixed with chalk or lime. Mulching, which consists in covering the surface of the soil for some little distance round the plants with half-rotten manure, is very beneficial. When growth commences in the spring the young shoots must be attended to, and trained around or against the supports provided for them. The weaker shoots may, if necessary to prevent entanglement, be cut away during the summer; but all the vigorous shoots for which there is space should be trained in, since it is these, when thoroughly developed and matured, which furnish the flowers for the ensuing year. The strong montana is a good verandah plant, and suited for rapidly covering bare spaces; but the less robust plants of the florida and patens types are better suited for training on walls or for furnishing corridors, or for any similar positions where their blossoms may be brought more closely into view. The pruning should take place in February or March, after the severe frosts of winter.

THE GRAVEOLENS TYPE.—This small group comprises a series of hardy fast-growing species, which require scarcely any cultivation. They grow freely enough in any ordinary garden earth of sound texture and fairly drained, though many, probably most of them, prefer calcareous soil. They will scramble over trellises or thickets, or clamber up snaggy poles, or among the boughs of trees, and therefore may be employed in any position where a summer screen is wanted; but being deciduous they are not suited for winter screens. As to training, they make hold-fasts of their leaf-stalks, and take care of themselves; and the natural growth thus made and thus disposed would, in most cases, be of a more picturesque character than would result from artificial training. When, however, they are planted near large trees, or at all within their influence, it is desirable, in order to promote vigorous and rapid growth, to mulch the soil during winter, forking in the manure about March. In such situations, too, drought may overtake the roots, since the trees will suck up much moisture, and in a greater or less degree keep off the rain. In dry weather, therefore, and especially until the plants become tolerably well established, watering should not be forgotten.

THE LANUGINOSA TYPE.—These plants are hardy and tolerably vigorous, and have enormous blossoms, so that liberal cultivation is an absolute necessity. They will, indeed, succeed in any good, sound, well-drained garden soil which is freely and annually manured, but would no doubt prefer a light mellow loam, and therefore in very light soils it would be a material benefit, in trenching up and preparing the ground before setting them out, to resort to the admixture of the best loam available. The more fertile the soil the less the manuring necessary, and *vice versâ*; but in any case a really well-enriched soil, either natural or artificial, should be secured if the full beauty of this race of the Clematis is to be developed.

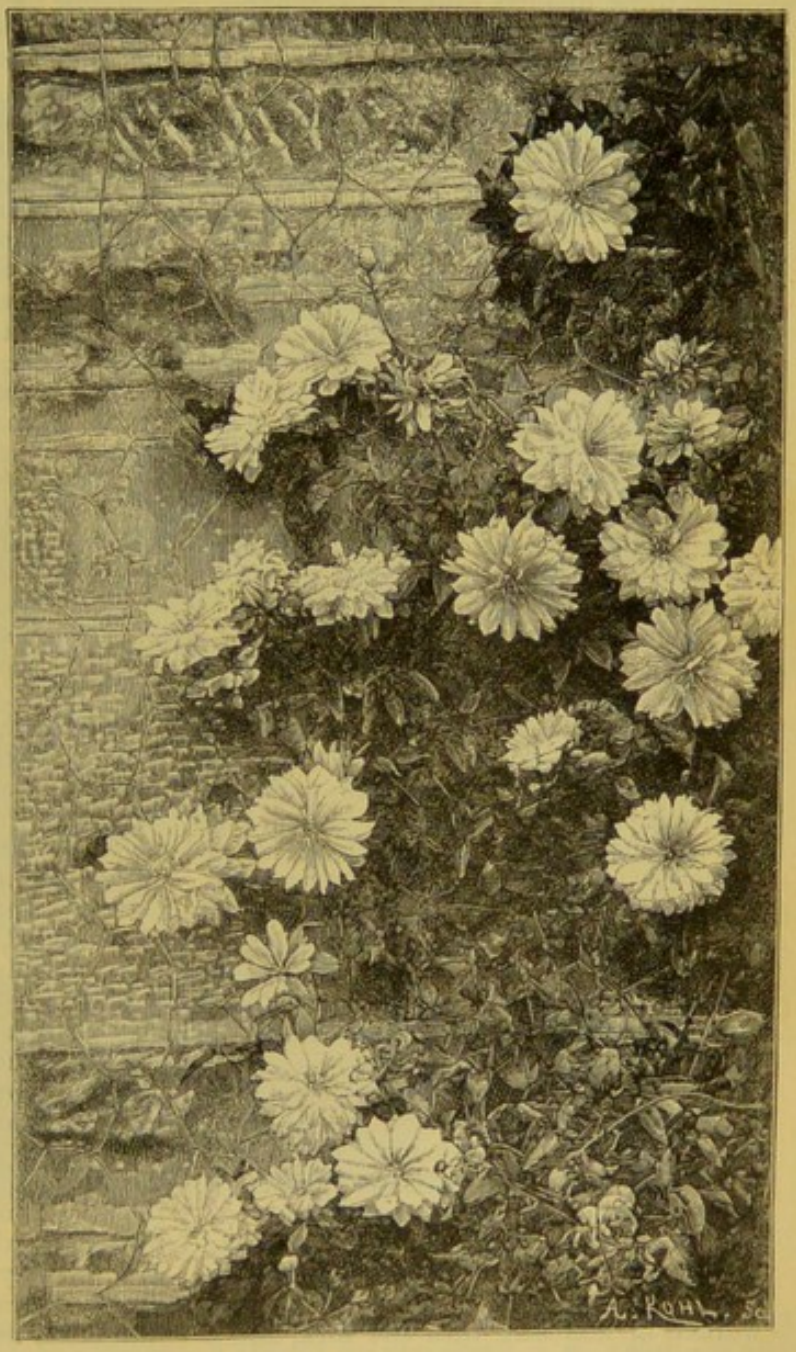
C. lanuginosa and its varieties are well suited for conservatory walls or trellis-work, whether the latter be put up in the form of a screen or a verandah, and also for poles or pyramids. In the case of poles and pyramids especially, they should be annually pruned down to about 3 ft. from the ground, to prevent their becoming lanky and bare of new shoots near the base, the tendency of the new growth being to develop itself with excessive vigour at the extremities. When thus cut rather low, so as to secure a supply of foliage near to the base, the beauty of the

plants is much enhanced. The same remarks apply to those on walls and trellises, if they are required to cover a space ; but it frequently happens that the lower part can be filled out by less aspiring subjects, and then it is as well to utilise the more vigorous growth towards the top. In any case the successional summer growths should be trained in so as to secure the later crops of blossoms, the habit in this race being to throw out a sprinkling of flowers at intervals till the frost comes to arrest further growth.

Clematis lanuginosa alba growing through Azara.

PRUNING.—From what has been said it will be evident that comparatively slight pruning is here required. The type itself and those varieties nearest to it in habit, indeed, die back almost sufficiently to render pruning unnecessary ; but where a mixture of blood has led to a more extended growth it will be necessary to remove the weak and ill-ripened portions of the year-old wood. Under favourable conditions the plants will make an annual growth of 8 to 10 ft. in length, and of this the unripened extremities, together with the weak or superfluous shoots and the dead wood, are the only parts to be removed. This pruning is best done in February, after the severe winter frosts, and before the plants burst out into new growth. We have said that these plants are hardy, and for all practical purposes they may be so regarded. They are, however, less robust than some of the allied groups, and hence, in their case, the mulching which has been recommended as an advantage to all may be looked upon as being rather more of necessity, provided they are where it is at all admissible. The annual feeding, by working in some half-decayed manure during the early spring, should on no account be omitted, as the size and succession of the blossoms depend entirely upon the vigour kept up in the plants ; but where mulching would be unsightly, a covering of some other material, such as the refuse of the fibre of the cocoa-nut, would be a good substitute.

THE VITICELLA AND JACKMANI TYPES.—These groups represent some of the hardiest as well as some of the noblest of the whole family. The severest winters do not materially injure them, and, from their wonderful fertility of flowers, the plants, in the late summer and the autumn, literally become masses of blossoms, which are successively and continuously renewed. In regard to soil, the same free, well-drained, deep, and well-enriched staple which has been noted as suitable for the preceding groups will be found equally suited for these. A friable loam is the best they can have; if the soil is less suitable in quality, it should at least be deep, so that the roots may penetrate freely. A loamy soil is the best, because the plants must have manure liberally supplied to them to keep up their strength; and, in a loamy staple, the fertilising properties of the manure are not liable to be dissipated, as in one which is poor and porous. When, however, the soil approaches this latter description, it is all the more necessary that manure should be abundantly applied. In the case of light soils, a good proportion of loam—made friable by frosts if at all heavy or clayey—should be incorporated to render it more holding; deep trenching should also be resorted to for the same purpose. Heavy soils should be ameliorated by the free intermixture of friable soil or of any sharp gritty material, the drainage being made efficient, and the soil well aërated before planting.



Clematis Duchess of Edinburgh.

When the ground has been prepared, the plants may be put out in any open weather between the middle of September and the end of April. After planting, it is beneficial, though not absolutely necessary, to apply a mulching of a few inches of partially rotten manure; this will protect the newly disturbed roots and fertilise the ground. The varieties of these types of Clematis are essentially outdoor or border plants requiring abundance of root-space; they may, indeed, be grown for exhibition, but, even then, they require liberal root-accommodation and high feeding. To sum up, the Viticella and Jackmani types require to be grown in rich deep soil, to be manured freely every season, and to be planted out in the open ground, that their roots may have free pasturage.

These forms of Clematis flower on the vigorous summer shoots, and form dense

masses of blossom. The object in pruning, therefore, should be to favour to the utmost the development of these vigorous young shoots, by cutting the summer growth back to within about 6 in. of the soil, early in the season as soon as the frosts have disfigured the plants, say about November. The mulching, which is then to be applied with a liberal hand, serves to prevent the soil from becoming severely frost-bound, and about the middle or end of February should be neatly forked in, along with an additional supply of rotten manure in some cases, the latter being regulated by the manurial qualities of the original mulching and by the natural strength of the land. Thus treated, the plants will commence flowering about the first week in July, and will go on yielding flowers as long as their strength will enable them to throw out lateral growths. To obtain a later bloom some of the plants should be left over at the November pruning, and should not be cut back till the end of April, after they have commenced to grow.

The uses of these types of Clematis are exceedingly various. They may be trained either singly or several together, up snaggy poles, to form pillar plants, or be allowed to scramble over masses of rock-garden or over rootwork. They may be festooned, trained over verandahs, fastened to walls or trellis-work, or led over ornamental iron supports as single standard specimens for lawns. In every way they are thoroughly effective flowering plants, many of them indeed, and especially those of the true Jackmani type, producing a startling impression in consequence of the gorgeous masses of their rich Tyrian hues. One of the most useful purposes to which these varieties could be put would be to drape a mural ruin or to cover an unsightly bank or slope. They grow in almost any situation, if the soil is not absolutely destitute of food, or if the roots of other plants do not rob them of nutriment; and they require nothing but a few tree roots or rough branches for them to scramble over. Thus planted, a layer of manure worked in annually with the fork, and a supply of water in very dry weather, would secure a good result. Again, they rank among the noblest of ornaments for low walls, trellises, &c., to which they must be nailed or tied; but, once firmly fixed, they should be allowed to fall down in rich picturesque masses. Probably, however, their simplest and grandest use would be to plant them on large masses of the rock-garden, giving them a good depth of rich, light, and sandy earth, and allowing their shoots to fall over the face of the rocks without any training or pruning. We shall find among the varieties of the Viticella and Jackmani types those kinds especially suited for bedding out for summer and autumn flowering.

NON-CLIMBING TYPES. — The non-climbing species and varieties of Clematis consist of two small but distinct groups, the one herbaceous, the other sub-shrubby.

The herbaceous species thrive best in good, rich, deep, loamy soil, and, when well established, they form somewhat striking plants for the mixed border, though scarcely any of them stand in the front rank of herbaceous perennials. The single and double-flowered varieties of C. erecta and C. maritima are most ornamental, and are well worth introducing even into a select collection. These herbaceous species grow freely enough in any tolerably fertile garden soil, but it should be of good depth, as the roots are strong and strike downwards. A free application of manure is beneficial, especially if the soil is not naturally fertile.

The sub-shrubby varieties of the non-climbing group include some exceedingly ornamental plants. They are especially suited for the back rows in mixed flower borders where plants 5 to 6 ft. high would not be obtrusive; for prominent positions in the front parts of shrubbery borders; or for dwarf standards or iron trainers in beds, whether of Clematis or of other plants. They require a good preparation of the soil, which should be deep and rich, exactly as recommended for the varieties of the Jackmani and lanuginosa groups. In spring, before growth recommences, the plants should be pruned back to the well-ripened wood 1½ to 2 ft. from the ground, and a firm stake or support provided for each. To this support, as they grow, the young shoots must be tied. When the branches begin to ramify, which they do at a height of 3 or 4 ft., they may be allowed to fall down on all sides, and in this way they will ultimately form a mass of flowers like a huge bouquet. C. cœrulea odorata is a most desirable plant of this group, for its abundant well-contrasted blossoms, and for their fine scent.

The various forms and allies of the erect Clematis (C. erecta) are very fragrant and hardy; they are from 3 to 4 ft. high, and bear large umbel-like clusters of white blossoms, with an agreeable perfume. They are admirably suited for

the sides of frequented walks, &c., but delight in full exposure. The principal varieties are the double-flowered kind, with many small button-like blossoms, lasting longer than the single blossoms; pumila, much dwarfer than the type; and pauciflora, producing smaller flowers in less dense clusters. C. erecta inhabits various parts in South Central Europe.

THE CLEMATIS AS A BEDDING PLANT.—As a bedding plant the Clematis should be permanently planted out, so that the roots may not be disturbed. The soil should be rich, open, and deep, and if possible of a calcareous, loamy character. If it be heavy, it must be well drained and ameliorated by the admixture, in moderate quantities, of gritty matter, such as road-scrapings, the sand washed up by the roadside, burnt clay, or even ashes; an admixture of half-rotten leaf-mould would also be beneficial. If on the contrary the soil be light and dry, it should be strengthened by the admixture of good and rather heavy loam. Deep trenching and liberal manuring should be resorted to before planting; and a thorough dressing of good sound manure should be forked in every November, when the summer growth may usually be cut back.

White Clematis on fence.

The young plants, when planted out, should be set about 2 ft. apart, so that they may cover the surface quickly. When they become strong and well established some of them may be removed, as the more vigorous growth of established plants will branch more freely and spread more quickly. The growing shoots should be looked to at least once a week, and pegged down or trained where they are required to

cover the surface most. Their clasping leaf-stalks cling together so firmly that this should always be done before they get entangled, for the young shoots would suffer from disentanglement. The plants should be raised so as to give a convex surface to the bed, and the better to display their flowers. This may be done by raising the surface of the bed, by pegging down a layer of twiggy branches, such as pea-sticks, for the plants to grow over, by fixing a common hooped trellis of rods to which the shoots should at the first be tied, or by arranging, on the surface of the beds, root-masses of a suitable bulk for the plants to scramble over; which last would be the best plan of all in many

Clematis Davidiana.

situations, but would be scarcely admissible in a dressed parterre. Whatever plan be adopted, the plants must be trained as already recommended till they have furnished the space to be covered, when they may be allowed to grow more at random. As they do not throw up flowers from the lower portion of their stems, it is desirable that the points of one series should be arranged so as to overlap the portions of the adjoining ones which remain bare. This should be borne in mind until the whole surface is evenly covered with flowering wood.

Continuity of flowering is dependent upon continuity of growth. This at once suggests summer feeding. Thus, in dry weather, manure water should be given alternately with pure water, the water not being applied over the leaves and flowers but beneath them. If the summer is at all dry, it is well to have the beds thoroughly saturated with pure water just as the buds begin to acquire size; if done thoroughly, this will increase the size of the flowers, and will carry the plants on for a considerable period. If the season is such as to require it, one or two such thorough waterings may be given subsequently, applying at least one dose of liquid manure when the plants have been flowering for a considerable period. No other attention is required till the frosts of November, after which the plants may be pruned hard back.

THE CLEMATIS AS A WALL PLANT.—When grown on walls the plants of the early-flowering section are not liable to injury from frost, being hardy, and flourishing even in exposed situations. Their chief risk arises from the incidence of the morning sun upon them when a sharp late spring frost has caught the expanded flowers. In moderately sheltered positions, however, this risk is slight, and the plants will grow freely and flower satisfactorily, coming into blossom about the middle or end of May, and continuing to flower up to the end of June or beginning of July, more or less abundantly, according to situation. In very sheltered situations, some of the varieties of the montana group, notably C. calycina, may be had still earlier; while as a May bloomer, vigorous, hardy, and most prolific of flower, C. montana—with its variety —is strongly to be recommended as a distinct type.

The summer and autumnal flowering groups are gorgeous wall plants, and include not only the nobler forms bred from C. lanuginosa, but the descendants of C. Viticella. They bloom in July, and continue till October or November. The lanuginosa breed is specially effective when grown on walls, on account of the immense size of the blossoms of many of the varieties. These varieties require, in such positions, the most liberal feeding and moderate pruning, the summer growths being carefully trained in to secure the successional flowers they produce.

The Viticella and Jackmani varieties

attract rather by the profusion than by the size of their flowers. These plants, while fed to the utmost, to meet the demand upon their powers, should be pruned hard back every autumn (unless a considerable space is intended to be covered), and in the early part of the summer the young shoots should be trained up to their full extent, until flowers begin to appear, when, as all the lateral growths develop flowers, it may be better to let them fall in graceful wreaths of pendent spray. Very good results have been obtained for a time by not pruning back.

PILLARS, ROCK-GARDEN, AND ROOT-WORK.—For pillars we recommend the varieties of the C. Jackmani type—hardy, free-flowering, and continuous-blooming. Such pillars of purple are amongst the most beautiful objects which can be dotted about a garden. Deep soil and thorough drainage greatly conduce to success. The plants, being perfectly hardy, may be planted out during any open weather between September and April, and will be all the better if mulched. Mulching will afford shelter to the newly embedded roots, and will, by continuous infiltration, furnish, as the rains descend, a supply of congenial food. This may result in free rapid growth. Before starting, the plants should be cut back to within a few buds of their base—say within from 4 to 6 in. of the ground—and then all is ready for the spring growth. At some convenient time after planting, and before the necessity for training has arisen, poles should be placed about the plants. A single snaggy pole, well provided with short lateral branches, may be inserted, and the plant trained about it ; or three or four poles may form a pyramid ; but the plan best suited to the character of the plants is to set three or four poles a little distance apart, much as Hop poles are set up, and to train the plants over and about them. While the plants are at home in dressed ground, as bedding plants, pillar plants, or umbrella plants, in single specimens or in masses, they are as much at home in wilderness scenery, about ruins or rock-gardens, or among those grotesque arrangements of old tree stumps to which the term rootery is commonly applied. In fact, the bed, the pillar, the wall, the rock, or whatever it may be, is merely the skeleton or foundation on which the glorious blossoms of the Clematis may be displayed. A deep rich soil must be provided, and this will, in the present case, be facilitated by throwing up irregular mounds, on which to arrange, as taste may direct, the stumps or stony masses which are to give name to the spot. In both cases there will exist the same necessity for ample feeding. The same general rule as to close pruning must also be followed, unless the rootery requires more filling up, when it may be desirable to leave the whole of the matured bine of the previous season until the plants are sufficiently extended to entirely cover the prescribed space with their annual growth. In regard to training, all usually required is to lead the

Clematis Lady Caroline Nevill.

young shoots, during their spring and early summer growth, as evenly as possible over the masses of roots—or rocks if planted in a rock-garden—leaving them to fill out the picture in their own natural way. The result, unshackled by formality, will certainly not be the least pleasing of those in the several departments of the garden to which the Clematis may be introduced. Catalogues abound with the names of the newer and finer

hybrid forms. The following selections for outdoor work are given by Messrs. Moore and Jackman :—

FOR PLANTING AGAINST CONSERVATORY WALLS AND IN CORRIDORS.—*Spring-flowering sorts* (for S., W., or N.-W. aspects only).—C. Albert Victor, barbellata, calycina, Countess of Lovelace, Edith Jackman, Fair Rosamond, George Cubitt, Lady Londesborough, Lord Derby, Lord Londesborough, Lord

Clematis Lucy Lemoine.

Mayo, Maiden's Blush, Miss Bateman, monstrosa, montana (any aspect), montana grandiflora, patens floribunda, Sophia plena, Standishi, Stella, The Queen, Vesta.

Late summer-flowering and autumn-flowering sorts.—C. Alexandra, cœrulea odorata, Flammula, Gem, Gloire de St. Julien, Henryi, Jackmani, Jeanne d'Arc, Lady Bovill, Lady Caroline Nevill, Lady Maria Meade, lanuginosa, lanuginosa candida, lanuginosa nivea, Lawsoniana, Madame Van Houtte, magnifica, marmorata, Mrs. James Bateman, Otto Froebel, perfecta, Prince of Wales, purpurea hybrida, reginæ, Renaulti cœrulea grandiflora, rubella, rubro-violacea, Sensation, splendida, Star of India, Thomas Moore, tunbridgensis, velutina purpurea, Victoria, Viticella rubra grandiflora, Viticella venosa.

FOR PERMANENT BEDDING-OUT.—C. Helena patens, Sophia, Standishi, Alexandra, Jackmani, magnifica, Prince of Wales, rubella, rubro-violacea, Star of India, tunbridgensis, velutina purpurea.

FOR GROWING ON PILLARS AND POLES.—C. Alexandra, Beauty of Surrey, Excelsior, Flammula, Gem, Gloire de St. Julien, Henryi, Jackmani, Jeanne d'Arc, Lady Bovill, Lady Caroline Nevill, Lady Maria Meade, lanuginosa, lanuginosa candida, lanuginosa nivea, Lawsoniana, Madame Van Houtte, magnifica, Marie Lefebvre, marmorata, Mrs. James Bateman, Otto Froebel, Prince of Wales, reginæ, rubella, Sensation, Sir Robert Napier, Star of India, Thomas Moore, tunbridgensis, velutina purpurea, Victoria, Viticella rubra grandiflora, Viticella venosa.

FOR PLANTING ON ROOTERIES.—C. Alexandra, Flammula, graveolens, Hendersoni, Jackmani, Lady Bovill, magnifica, marmorata, modesta, Mrs. James Bateman, orientalis, Prince of Wales, purpurea hybrida, Renaulti cœrulea grandiflora, rubella, rubro-violacea, splendida, Star of India, Thomas Moore, tunbridgensis, velutina purpurea, Viticella atrorubens, Viticella major, Viticella purpurea plena, Viticella rubra grandiflora, Viticella venosa.

C. coccinea is a red-flowered kind, very distinct, and is charming for the flower garden, for walls or railings, thriving in warm soils in the southern and eastern counties at least. It has been introduced some years into English gardens.

Cleome (*Spider-flower*).—A genus of the Caper family, several species of which are often enumerated in seed catalogues ; but though vigorous and distinct they are not likely to take any useful place in the flower garden. They are mostly annuals doing best under the treatment of half-hardy annuals.

Clerodendron.—Only two species in this beautiful genus, for the main part tropical, have any claim to hardiness, but both are worth growing. They are C. fœtidum, a native of China, and C. trichotomum, a Japanese plant. C. fœtidum is an old garden plant usually

seen in greenhouses, but hardy enough for open-air culture in all southern and warm parts. In southern gardens, especially near the sea, it grows 5 ft. high, and is handsome for the several weeks it is in bloom. The other species, C. trichotomum, is less common, and is a free-growing shrub, 6 ft. high or more, bearing large loose clusters of flowers, the corollas white, the calyces a deep brownish-red, blooming in September.

Clethra (*Sweet Pepper Bush*).—Shrubs and small trees, the hardy species natives of North America. The Alder-leaved Clethra (C. alnifolia) in the wet copses of Virginia reaches a height of 10 ft. or more. With us it grows from 3 to 5 ft., makes a dense bush, bearing in summer white sweet-scented flowers in feathery spikes. C. acuminata has more pointed leaves, and it also has spikes of white scented flowers, not erect like those of C. alnifolia, but drooping. It is inclined to grow taller; and, in fact, it is quite a small tree in the woods of the Alleghanies. Both are valuable shrubs for moist peaty places; their place is by the lake, pond, or stream, or in any low-lying position.

Clianthus (*Glory Pea*).—Brilliant plants seldom seen out-of-doors in the London district or home counties, but one kind is quite free as a wall plant in Irish and west-country gardens, and should be more frequently planted in sea-shore and warm places. It is C. puniceus—as handsome a shrub when in bloom as one could wish to see. Its splendid crimson blooms appear in large bunches during summer. It is easily increased by cuttings of the young shoots. Winter protection about the root is desirable except in the most favoured districts.

Climbing Fern (*Lygodium*).

Clintonia.—The pretty annual species of this duplicate genus are now referred to Downingia, which see.

Clintonia.—A small group of the Lily family, natives of N. America. C. borealis is unattractive, with greenish-yellow flowers, but C. Andrewsiana is pretty, with a tuft of ample bright-green leaves about 1 ft. long and about 4 in. wide, from which arises a stout flower-stem some 6 in. high, terminated by a dense umbel of deep-rose blossoms, from April to June; thrives well in a peaty soil in a partially shaded position, in such a place as suits the Mocasson flower. It is yet scarce in cultivation, not having been introduced long.

Cloudberry (*Rubus*).

Cloud Grass (*Agrostis*).

Clove Carnation (*Dianthus*).

Cnicus benedictus (*Blessed Thistle*).—A handsome biennial, having bold deep-green leaves, blotched and marbled with silvery white. It is useful for associating with plants of fine foliage, but must have good deep soil and plenty of space. It grows freely and luxuriantly in a thin shrubbery, or on any bank of rubbish.

Cobæa scandens.—In favourable localities in the southern and western counties this well-known greenhouse plant thrives against an outside wall, and will cover a considerable space of trellis-work during summer. It should be planted in light rich soil, and if watered liberally during the growing season will soon cover a large space and flower freely. With some protection it will survive an ordinary winter. Plants may easily be raised from seeds, which should be sown during spring in a frame or hand-light. Cuttings also strike readily in a brisk heat in spring. The variegated form must be raised from cuttings.

Cocculus carolinus.—Like the Moon-seed (Menispermum canadense), this is a twining shrub with inconspicuous flowers. It is useful as a trailer for arbours, pergolas, and the like, but of no great value.

Cockscomb (*Celosia*).

Codonopsis.—Interesting and sometimes pretty plants of the Bellflower Order, easy to cultivate in light and warm soils, C. ovata (known as Glossocomiæ ovata) being a fine bushy plant. They are suited for warm borders. Some are annuals, but most are hardy perennial flowers from the mountains of India.

Colchicum (*Meadow Saffron*).—Hardy bulbs, which are often erroneously termed "autumn Crocuses," and which flower in the autumn just when the summer-blooming plants have lost their freshness. Unlike many bulbs, their presence early in spring, when the borders are being prepared for summer-flowering plants, is not likely to be overlooked, for their leaves, bearing with them the seed-pod, are amongst the earliest harbingers of spring. The individual flowers do not, as a rule, last long, but, as they are produced in succession, there is a long season of bloom. The flowers are often destroyed through being grown in unsuitable positions, viz. in bare beds of soil, where the splashing of the blooms during heavy rainfalls impairs their beauty. A good way is to plant them in grassy places near shrubberies, where the soil is well drained and rich. In the rock-garden, too, among dwarf Sedums and similar subjects, Colchicums thrive, and make a pretty show

in autumn, when rock-gardens are often flowerless. They look better in grassy places or in the wild garden than in any formal bed or border. Their naked flowers want the relief and grace of Grass and foliage. There are about thirty kinds, though only about half of them are in cultivation Among these there are some whose differences are so slight as to be scarcely worth growing, except in a very full collection. The plants have a rather wide range, some species extending to the Himalayas; others are found in North Africa; but the majority are natives of Central and Southern Europe. Though there are so many names to be found in catalogues, the distinct kinds are few, and there is such a striking similarity among these that they may be conveniently classed in groups. The best known is

C. autumnale, commonly called the autumn Crocus. The flowers appear before the leaves, rosy purple, in clusters of about six, 2 or 3 in. above the surface, flowering from September to November. There are several varieties, the chief being the double purple, white and striped; roseum, rose-lilac; striatum, rose-lilac, striped with white; pallidum, pale rose; album, pure white; and atropurpureum, deep purple. Similar to C. autumnale are C. arenarium, byzantinum, montanum, crociflorum, lætum, lusitanicum, neapolitanum, alpinum, hymetticum; all, like autumnale, are natives of Europe, and from a garden standpoint are identical.

C. Parkinsoni.—A distinct and beautiful plant, readily distinguished from any of the foregoing by the peculiar chequered markings of its violet-purple flowers. It produces its flowers in autumn and its leaves in spring. Other similar kinds are Bivonæ, variegatum, Agrippinum, chionense, tessellatum, all of which have the flowers chequered with dark purple on a white ground.

C. speciosum, from the Caucasus, is large and beautiful, and valuable for the garden in autumn, when its large rosy-purple flowers appear nearly 1 ft. above the ground. Like the rest of the Meadow Saffrons, C. speciosum is as well suited for the rock-garden as the border, thriving in any soil; but to have it in perfection, choose a situation exposed to the sun, with sandy soil—in fact, a spot likely to dry up during summer; here the plants will luxuriate, and enjoy the autumn, winter, and early spring rains.

Colchicum in Grass.

Coleus.—A few kinds of these pretty-leaved plants succeed in the open air in summer, and, when used judiciously, give a fine effect. In some of the London parks they are arranged by themselves in large masses, generally of one kind only. Though there is a host of varieties, few succeed in the open air. Mr. Wildsmith, of Heckfield, writes: "We have tried at least a score of varieties for bedding-out, with the result that the first kind recom-

mended (Verschaffelti) is still the only one that succeeds well. The culture of all the varieties is of the simplest nature ; cuttings strike freely in any sandy soil, in

Colchicum Parkinsoni.

a moist heat of 70°. As soon as struck, pot them in light loam, containing a tenth part of well-rotted manure ; grow them on in a moist heat of from 65° to 70°, not allowing them to get pot-bound till they have attained the size desired, and at all times well exposing them to the light, to bring out their colour. For bedding-out they should be struck in March, grown on in warmth till about the middle of May, and then gradually inured to full exposure in readiness for planting out the first week in June."

Colletia.—Shrubs from Chili, some species of which are hardy enough for the open air in all but the coldest parts of the country. They have spiny branches with a few minute leaves. C. cruciata is the commonest ; its stems are armed with stout flattened spines, its flowers white and small, making a bush about 4 ft. high. C bictoniensis is the same as C. cruciata. C. spinosa has its spines round or awl-shaped, and, when in bloom, is prettier than C. cruciata, as the white flowers, though small, are very numerous in summer. Under favourable conditions, C. spinosa grows much taller than C. cruciata, and against a wall will attain a height of 10 ft. It makes a formidable hedge in the southern counties, where it flourishes. C. serratifolia is less common than the others, but is pretty when in bloom, the whole bush being a mass of tiny white blooms. It grows tall and slender, either planted in the open or against a wall.

Collinsia.—A charming family of N. American annuals, and very dressy and pretty in spring where well grown. If sown in autumn, they will, on many soils, survive the winter, and flower much better than spring-sown plants, the flowers coming early. They are of the easiest culture if sown in the open air. Plants from seed sown in spring flower in twelve weeks. There are from nine to a dozen species or varieties in cultivation and enumerated in the catalogues, the only one requiring special treatment being C. verna, which *must* be sown in autumn. "The seeds of this kind (says Mr. W. Thompson) must be sown about the end of August, or from that time to the middle of September, in pans of light vegetable soil kept thoroughly damp. In a fortnight the seedlings will show themselves, and when they have made their first pair of leaves (besides the seed-lobes) they should be pricked out singly in pans, boxes, or pots ; in pots if they are intended for blooming under glass. From this moment it is important to keep them cool and damp, and as near the glass as practicable, so that their growth may not be forced. If intended to bloom in the open ground, they may be planted out in light rich soil, in partially shaded situations, or on a north or north-west aspect, and they will require no attention but slight protection during severe weather. Thus treated they will, in ordinary seasons, commence blooming early in April, and continue in flower six or eight weeks." Notwithstanding its charming colour, C. verna has never become so well known as C. bicolor, grandiflora, violacea, heterophylla, and the other forms. The prettiest use for these plants is for the spring-garden in beds, or occasionally as a broad edging.

Collomia coccinea.—A bright annual, 1 ft. to 18 in. high, flowering in summer and autumn. Sow it in April in open ground ; or else in a frame in autumn and protect it during winter, if good plants are desired either for pots or planting out. On warm soils it grows best and sows itself every year, surviving the winter, and, consequently, growing much stronger and taller.

Colt's-foot (*Tussilago*).

Columbine (*Aquilegia*).

Colutea (*Bladder Senna*).—The Bladder Sennas cannot be called choice flowering shrubs, but they are very useful for poor hungry soils, particularly for dry sunny banks where few other plants can exist. Like the Gorse and a few other shrubs of the Pea family, they delight in a dry sandy soil, and when in flower, which is during several weeks in late summer and in autumn, they have a pretty appearance, their foliage being light and elegant. They have numerous names, but there are only one or two distinct kinds. The commonest is C. arborescens, which, under favourable conditions, grows 6 or 8 ft. high, has large flowers, varying in different varieties from yellow to a deep reddish-yellow. C. cruenta, C. haleppica, and C. media are smaller, and have bright yellow flowers; but all have much the same aspect

Comfrey (*Symphytum*).

Commelina cœlestis (*Blue Commelisse*).—A charming old garden plant with flowers of a very fine blue. There is a white variety, C. c. alba, about 2 ft. high, covered with blossoms from early summer till autumn. C. cœlestis delights in light, well-drained soils. The roots are fleshy, and suffer from severe frosts ; and in some districts it is advisable to cover them with coal-ashes on the approach of winter. In cold wet districts the roots may be lifted, and stored in dry leaf-mould, or the plant may be treated as a half-hardy annual ; the seed being sown in heat, the seedlings being pricked off into small pots as soon as they are fit to handle, and planted out about the end of May. The roots, if lifted and stored in winter, will be the better for a start in slight heat in spring, and may be increased by division. On some warm or stony soils, and in districts near the sea where light soil prevails, C. cœlestis grows like a weed. It is so fine in colour that a group or small bed is always welcome. Mexico.

Compass-plant (*Silphium laciniatum*).

Comptonia asplenifolia (*Sweet Fern*).—A quaint little shrub 2 to 3 ft. high, Fern-like in leaf, the leaves long and cut into rounded lobes, somewhat like those of the Ceterach, and aromatic. It spreads freely in sandy soils, and may be increased by layers, suckers, or seeds. A pretty plant in the sandy woods of New Jersey, and many other parts of N. America, and it would be happy in like places in this country if we had it plentiful enough to naturalise. In gardens its place is among small shrubs and on the margins of peat beds.

Conandron ramondioides.—A small Japanese plant allied to Ramondia having thick wrinkled leaves, in flat tufts from which arise erect flower-stems some 6 in. high, bearing numerous lilac-purple and white blossoms. Though said to be quite hardy, it requires a sheltered position, such as is afforded by snug nooks in the rock-garden. Plants placed between blocks of stone thrive if there is a good depth of soil in the chink and the soil is moist.

Convallaria majalis (*Lily-of-the-Valley*).—This universal favourite delights in partial shade and moisture, and in a rich light soil that can be readily penetrated by its fibrous roots. It is found in mountain copses sheltered by shrubs, and in the forest under trees. The best situation for it is partial shelter and shade from wall, fence, or trees. It is well to have a plantation of Lilies-of-the-Valley upon a south aspect, for the sake of earliness and of producing them in succession, for by this means flowers may be gathered a fortnight or three weeks earlier than otherwise. The best places are those under shady walls. Give liberal surface-dressings of rotten manure, and an abundant supply of moisture throughout active growth. The chief point to guard against is frost, this being destructive to the blooms, which appear with the leaves. A few Spruce or other evergreen branches placed sparsely over the beds are an efficient protection, and afford a beneficial shelter, encouraging growth. Preference should be given to a soft loamy soil well enriched with rotten manure, though fine Lilies may be grown in rather heavy loam. In preparing soft loam it will be best to give a liberal admixture of leaf-soil and sharp sand. Whatever the soil, it should be moderately firm before planting.

The best time to plant is early in autumn, immediately after the foliage decays, selecting the crowns singly and dividing them. For beds likely to remain undisturbed for several years, the crowns may be planted 2 or even 3 in. apart, as they do not become crowded so soon as to require thinning out. Cover the surface after planting with 1 or 2 in. of rotten manure, thorough maturity being only insured by repeated applications of water—weak manure-water being the most effective. Treated thus, with annual surface-dressings of manure, the beds will keep in good condition for years, and bear fine blossoms in abundance. When the plants become crowded with shoots they should be thinned out, or, better still, lifted and

replanted, for weakly, abortive crowns tend to retard vigorous development. C. majalis is now largely forced into flower early, the roots being usually imported from the Continent, where they are grown and prepared for the purpose. It may be naturalised, too, on any place sufficiently moist and shaded, and soon spreads into broad masses. There is a variety with gold-striped foliage, and another with double flowers, but this is not pretty. The finest form is called Fontin's, which is much more robust than the common kind, having larger flowers.

Convolvulus (*Bindweed*).—Handsome climbing herbs; very hardy, and where properly used effective.

C. althæoides (*Riviera Bindweed*).—This pretty Bindweed grows in many places around the basin of the Mediterranean, but is happy in an English garden. It is cheery in the colour of its rosy-pink cups, and graceful in growth, hardy, and good for a border or a bank, or for the rough rock-garden.

C. dahuricus (*Dahurian C.*)—A showy twining perennial, bearing in summer rosy-purple flowers. Excellent for covering bowers, railings, stumps, cottages, &c., and also for naturalisation in hedgerows and copses. It grows in almost any soil, and, like its relation the Bindweed, is readily increased by division of the roots, which creep. Caucasus.

C. major (= *Ipomœa*).

C. mauritanicus (*Blue Rock Bindweed*).—A beautiful prostrate twining plant, with slender stems. Flowers blue, 1 in. across, with a white throat and yellow anthers. The rock-garden, and raised borders; supposed to require sunny positions, in sandy, well-drained soil, but I find it very fine on stiffish cool soils, and a plant well repaying attention. Division or cuttings.

C. minor (see C. tricolor).

(Lily-of-the-Valley)

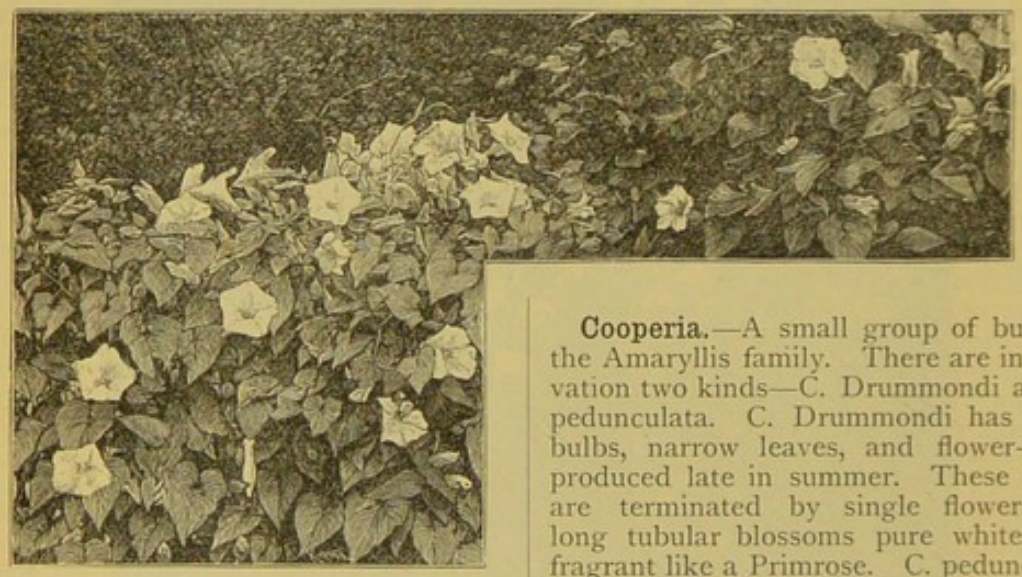
C. pubescens fl.-pl. (*Double Bindweed*).—Very handsome and useful for clothing trellises, stumps, porches, and rustic-work. It grows rapidly to the height of 6 ft. The flowers are large, double, and of a pale rose. They appear in June and onward, continuing for some months. The Double Bindweed likes a light rich soil and a warm aspect. It may be grown in large pots, tubs, or boxes, and prettily used for forming small bowers on balconies, to hide low fences, or to climb round posts. Division. China.

C. Scammonia (*Scammony*) is a beautiful slender plant, having, throughout the summer, a profusion of large white

blossoms. It grows well in any position or soil, and is a capital plant for rambling over roots, low shrubs, and such objects. There are in gardens other species such as C. Cneorum, lineatus, Cantabrica, dorycnoides, and erubescens, but they are either too tender or too inconspicuous for general cultivation.

C. sepium (*The Greater Bindweed*).—This, although generally a great pest, may be a most useful and beautiful auxiliary in certain spots where it would not be a nuisance; but it is surpassed by the larger white C. sylvaticus.

C. Soldanella (*Sea Bindweed*).—A distinct trailing species with fleshy leaves; flowering in summer; with pale-red flowers, large and handsome in the rock-garden, if planted so that its shoots droop over the brows of rocks. Also suited for borders, in ordinary soil. Division. Europe and Britain.



Convolvulus sylvaticus.

C. sylvaticus.—No plant forms more beautiful and delicate curtains of foliage and flowers than this, which grows vigorously in any soil. The wild garden is the place where it is most at home, and where its vigorous roots may ramble without doing injury to other plants. Among bushes or hedges, over railings, or on rough banks, it is charming, and takes care of itself.

C. tricolor.—One of the most beautiful of hardy annuals, too well known to need description. There are now in cultivation numerous varieties, varying more or less in colour of flowers or in habit of growth. The flowers of the type are blue, yellow, and white, but there are varieties entirely white (albus), striped violet and white (striatus), and rich purple (splendens). Others again differ in habit of growth, like unicaulis, which has flowers crowded at the tips of the branches. The forms monstrosus, undulatus, quadricolor, and kermesinus are desirable; in fact, every variety is worth growing. C. tricolor being perfectly hardy, may be sown in the open ground in September for flowering in spring, or sown in February, in a heated frame, for transplanting in May for mid-summer flowering, and in the open ground from April to the end of May for flowering in late summer and autumn. C. tricolor likes good warm soil, not too dry or too wet, especially for the autumn-sown plants, which have to stand the winter. (= C. minor.)

Cooperia.—A small group of bulbs of the Amaryllis family. There are in cultivation two kinds—C. Drummondi and C. pedunculata. C. Drummondi has small bulbs, narrow leaves, and flower-stalks produced late in summer. These stalks are terminated by single flowers, the long tubular blossoms pure white, and fragrant like a Primrose. C. pedunculata is somewhat similar, but is a night-flowering plant. They are both natives of Texas, and are not perfectly hardy. They thrive, however, in the warmer parts of England, in sunny sheltered borders of light soil, but it is advisable to give them frame-protection in winter. They are lovely plants, growing well in pots and in frames.

Coprosma Baueriana variegata is a tender shrubby plant, with shining green leaves broadly banded with creamy yellow. It is useful for margins of large beds or borders. It is easily increased by cuttings put in in spring or early in summer, on a gentle bottom-heat under bell-glasses, and not allowed to get too dry. It is often used in the flower garden with good effect, and should be taken up and housed in autumn to keep it from severe frosts. New Zealand.

Coptis trifoliata (*Gold Thread*).—A little evergreen bog plant 3 or 4 in. high,

with trifoliate shining leaves, deriving its common name from its long bright yellow roots. It is occasionally grown in botanic gardens. Northern parts of America, Asia, and Europe, flowering in summer; flowers white. Easily grown in moist peat or very moist sandy soil Division.

Coral Root (*Dentaria bulbifera*).

Cordyline australis, Bosachan, Cornwall.

Cordyline.—Although common in greenhouses, and also frequently in sub-tropical gardening, it is only in the mildest parts of England and Ireland that Cordyline can be grown well in the open air. In the neighbourhood of London it has occasionally been tried, but, although it may survive a mild winter, it succumbs to hard frost. In the Isle of Wight, and from thence along the shores of Devonshire and Cornwall to the Scilly Isles, it succeeds well, forming a fine feature even in cottage gardens whilst in some larger gardens

whole avenues of it are planted. But, in far less favoured places, it is often seen thriving for years in the open air, though it is not worth trying in cold, high, and inland places, especially on clay soils.

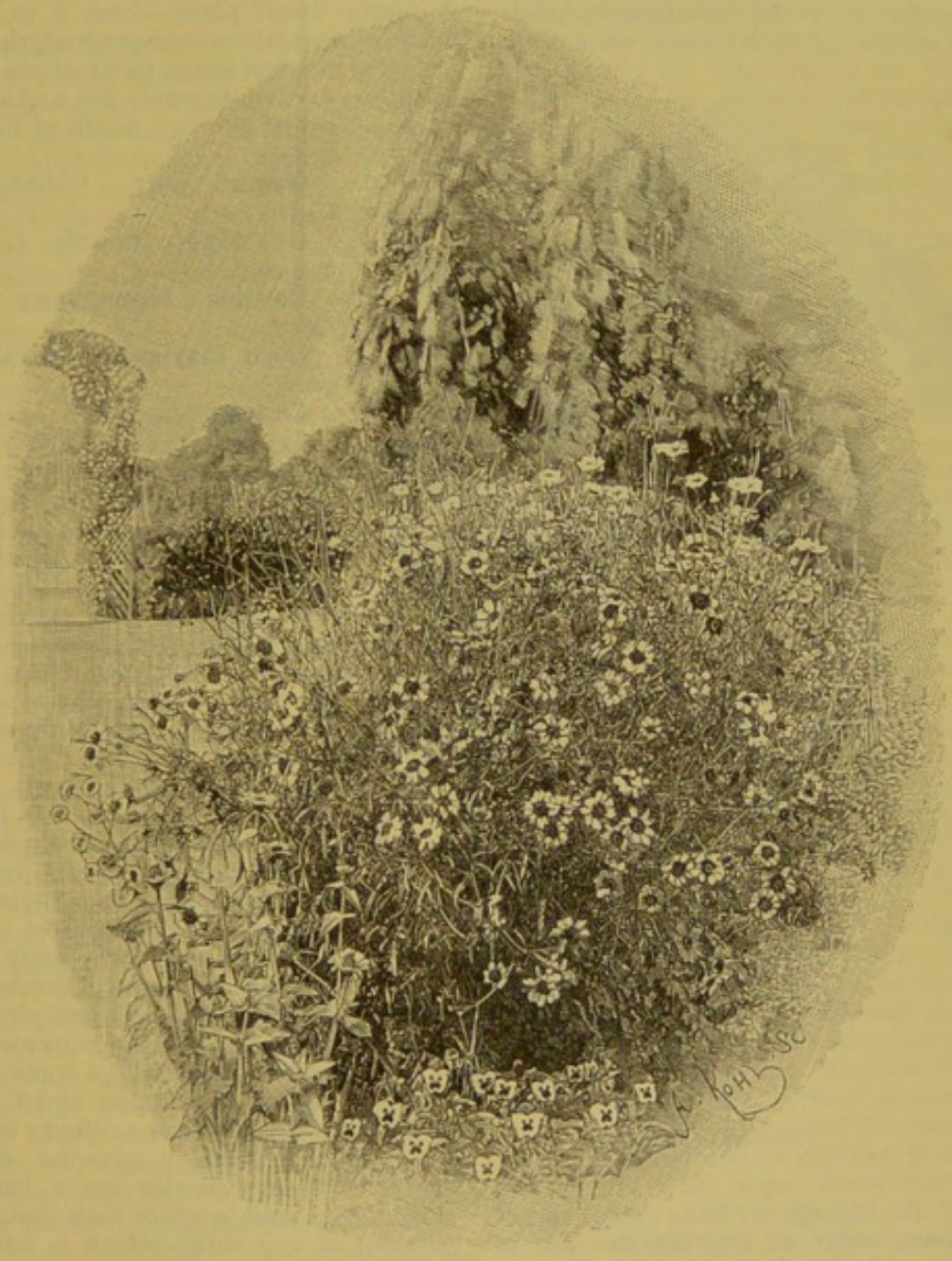
The true C. indivisa is distinct, and a large number of plants have at different times been in cultivation; owing, however, to their being treated as tropical plants, they usually proved short-lived, and C. indivisa is now a rare plant. One of the finest specimens in the country is in Mr. Rashleigh's garden at Menabilly, Cornwall. Its habit is rather remarkable, being of so very dwarf a growth that plants old enough to have become numerously branched have not attained a height of more than 3 or 4 ft., but form low-spreading bushes. Even in the greenhouse it displays the same stunted appearance. The leaves are 6 to 9 in. long, pointed, and dark green, forming a compact, rounded head, that may be compared with the stiff-leaved variety of C. australis in miniature. C. indivisa is also a native of New Zealand, and there are many forms. C. i. lineata is a fine variety, with leaves much broader than those of the type. They are sometimes 4 in. across, and are coloured with reddish pink at the sheathing base. Other good forms are: C. i. atro-purpurea, with the base of the leaf and the midrib on the under side of a dark purple colour; and C. i. Veitchi, in which the habit and size of the leaf are the same as in the species, but with a sheathing base in addition, and with the midrib on the under side of a beautiful deep red. Where it does well in the garden or pleasure-ground in the southern or western counties it surpasses any Yucca in distinctness and grace. At Knockmaroon Lodge, near Dublin, a plant, 16 ft. high, with a stem some 6 in. in diameter, annually flowered and bore an abundance of seeds, from which seedlings were easily raised in a cold frame. In the Scilly Islands the plant becomes a great tree, luxuriating in the mildness and moisture from the Gulf Stream. The fact that in Dublin young plants annually flower and ripen seed is sufficient proof of its hardiness and of its prospects of success in many districts. It is readily increased also from pieces of the stem and offsets. If a plant is cut down close to the ground, there soon spring up a number of young shoots, which can be taken off as cuttings, and which strike with freedom. Recent severe winters may have hurt it in many places; but after so many years' success no one in a likely district will give up its culture.—B.

The following notes relative to the specimen here figured have been kindly sent us by Mr. A. P. Vivian, in whose garden the plant is growing:—

"The Cordyline figured was planted out from a small pot in 1878, and has now attained a height of 16 ft. The stem, which, at the ground-line, measures 2 ft. 7 in. in circumference, runs up straight and clean to about 10 ft. The head, which is much divided, measures 11 ft. through, and this season produced twenty-one beautiful flower-spikes, varying from 5 to 6 ft. long, and thickly studded with white bell-shaped flowers. This plant is also interesting while the seed is passing through the various stages of ripeness, from white, pale pink, to dark brown, and the fertility of it is proved by the many fine specimens to be found here that have been raised from it within the last few years. It also throws up suckers, which, if carefully divided, do very well. As a pot plant for house or table decoration it has few equals, and, with a little attention, it will last in beauty for many weeks."

Coreopsis (*Tickseed*).—This family of North American Composites, which now includes Calliopsis, contains several important garden plants—the annuals being showy summer flowers, and the perennials valuable late-blooming plants. One of the best of the perennials is C. auriculata, about 2 ft. high, with a spreading growth, and bearing, in autumn, abundance of rich yellow blossoms on slender stalks. A useful plant for cutting from; grows well in any ordinary soil, and freely propagated by seed or division. Nearly allied and similar to it is C. lanceolata, an equally showy plant, also delighting in a rich damp soil. C. tenuifolia is a pretty plant, with elegant feathery foliage and rich golden-yellow blossoms from summer till autumn. C. verticillata is similar to it, and is also a showy border plant. Neither of these is so robust as the taller kinds, and they therefore require more select spots, such as the front rows of a mixed border in the rougher parts of the rock-garden. Other perennials in cultivation are C. palmata, maritima, tripteris, and delphinifolia, but they are not of great value. The annuals are among the showiest summer flowers; being hardy, they make a fine display in spring from seeds sown in September; while an almost continuous bloom may be had from July to October by sowing successively from early March till the

middle of June in ordinary garden soil—that of a moist description being preferable for the spring sowings. The following are the principal annuals: C. aristosa, 2 to 3 ft. high, with large golden-yellow blossoms; C. Atkinsoniana, 1 to 3 ft. high, flowers orange-yellow spotted with brown in centre; C. coronata, orange-yellow, with a circle of brownish crimson in centre; C. Drummondi, 1 to 1½ ft. high, golden-yellow; C. tinctoria, 1 to 3 ft. high, flowers crimson-brown tipped with orange-yellow.



Coreopsis tinctoria.

Coreopsis grandiflora is a very fine showy plant. It fully deserves its name, as its flowers are very much larger than those of any other Coreopsis grown in gardens, whether annual or perennial. When first introduced it was said, on the authority of Dr. Gray, that its blooms were about the same size as those of C. lanceolata, but it was not long in cultivation before it produced flowers that altogether surpassed in size and beauty even the best forms of the older C. lanceolata.

The first group that I grew bloomed from early summer till early winter, but not one plant survived. In two smaller

groups of plants raised last year some plants at the present time have strong side shoots that will certainly grow again another year, whilst those that flowered most freely are very weak and in all probability will die. Some may think this discouraging, but the plant ripens an abundance of seed even whilst flowering, and it is advisable if prolonged blooming is desired to keep the faded flower-heads picked off, except such as are wanted for seed. In raising it from seed, slight variations occur as regards the size of flowers, and it will be wise therefore to encourage and save seed from the finest.

Coreopsis Drummondi.

Even if we eventually come to treat it entirely as an annual, this will not detract from its value, for it is a graceful flower and worthy of special care. Raising a batch of seedlings once a year is easily done. The seed may be sown at any time in spring, and strong plants be ready to put out into their flowering quarters in autumn. The leaves of this species are quite distinct from those of C. lanceolata, being large, pinnate, and like those of the old C. auriculata. Its handsome flowers are borne on strong stems 12 to 18 in. in length. In the garden the flowers are brilliant and long-lasting, and they are also valuable for cutting.—A. H.

Coris monspeliensis (*Montpelier C.*)—A pretty dwarf plant, about 6 in. high, usually biennial in our gardens, thriving on dry sunny parts of the rock-garden, in sandy soil, and among dwarf plants. South of France. Seed.

Cornflower (*Centaurea Cyanus*).

Cornish Heath (*Erica vagans*).

Cornish Moneywort (*Sibthorpia*).

Corn Marigold (*Chrysanthemum*).

Cornus (*Dogwood: Cornel*).—Most of the Dogwoods known in cultivation are shrubs or small trees, distributed throughout Europe, Asia, and temperate America; a few occur in Mexico and the Himalayan region, and one in Peru. All are readily raised from seeds, and nearly all can be propagated freely from cuttings. Those which do not strike easily are increased by means of layering. The very dwarf species (Cornus canadensis and C. suecica) like a damp bottom, and their slender underground stems run freely in a peaty soil or in a light rich ground, and they are easily divided at the root. Many of the Cornels are pretty shrubs, and useful in the park and pleasure-garden, or along watercourses, and in wild unkept spots. The shoots of C. alba and C. alba sibirica give fine colour; indeed, the younger growths of the variety sibirica are a beautiful red, deeper and brighter than that of the growths of any shrub which is hardy in Britain.

Cornus alba, the white-fruited Dogwood, is a native of Siberia and Northern Asia, growing to a height of from 5 to 10 ft., with slender branches clothed with bright-red bark, giving a charming effect all through the year, either in a mass or as a specimen plant on a lawn or in the shrubbery. The flowers, white or cream-coloured, are in crowded cymes, followed

by white fruits. The variety Spathi is one of the finest—in our climate, at any rate—of shrubs with coloured leaves. In spring the leaves are bronzy, in summer deeply and irregularly margined with gold. The habit of the plant is vigorous, the variegation constant, and the foliage does not scorch in bright sunlight, as is the case in not a few plants with golden variegated leaves.

C. alba sibirica is dwarfer in habit than typical C. alba, but has still brighter-coloured bark. Nothing is definitely known of the origin of this charming shrub. Apparently the first mention of it is in Loddiges' catalogue for 1836. There is a form of this variety with variegated leaves, but it is not so desirable as the type.

C. alternifolia is found wild in rich woods and along borders of streams and swamps from New Brunswick and Nova Scotia, and south along the Alleghanies to North Alabama. It forms a shrub or tree from 5 to 25 ft. high, with deep-green bark with pale-yellow flowers in clusters followed by deep-blue berries borne on bright-red stalks. The species owes its name to the fact that the branchlets and leaves, instead of being opposite to each other, as in most of the other species of the genus, are alternate. Full-grown plants make handsome pyramids with branches arranged in flat horizontally spreading tiers.

C. asperifolia.—A native of the Eastern United States from Ontario and Iowa southward to Carolina ; a tall, erect-growing, distinct species, with reddish-brown branchlets, roughly hairy narrow leaves and small flowers, followed by showy white berries in red-stalked clusters. This species grows naturally in dry or sandy soils.

C. Baileyi.—This extends from the region of the Great Lakes into Canada, and is distinguished from C. stolonifera by its erect habit, by its not being stoloniferous, by the duller and browner bark, the pearly white fruit, and the white woolliness of the lower leaf surfaces. It grows on the sand-dunes about the lakes, "often in the loosest, shifting white sands," as Professor Bailey writes, and flowers continuously all summer from June to September.

C. canadensis (the dwarf Cornel or Bunchberry) is a pretty little herbaceous plant with creeping underground rhizomes and upright simple stems from 4 to 8 in. high, the leaves in a whorl of four or six near the summit of the stems ; the true flowers are minute, but the four rather large white or cream-coloured bracts conspicuous. The berries are red and show well above the short stems : in taste they are sweet and palatable. This species grows in Japan and Manchuria, and across the continent of N. America, extending as far north as the Fir forests, and is one of the prettiest plants for the bog garden or the cool parts of the rock-garden.

C. capitata.—This plant is more widely known under the name of Benthamia fragifera.

C. circinata.—This is conspicuous by reason of its large round leaves, which are 4 or 5 in. long and 3 in. or more wide, and its clusters of bright-blue fruits, each individual being about the size of a Pea. It is 3 ft. or more—rarely reaching 10 ft.—in height, and has rather rigid erect stems covered with warted bark, which is at first pale green, and later becomes light brown or purple. The flowers are small, yellowish white in colour. A native of the Eastern United States.

C. florida (the Flowering Dogwood) is very showy in flower, scarcely less so in fruit, and very beautiful in autumn when the leaves change colour before falling. Unfortunately, we do not obtain sufficient summer heat to thoroughly ripen the wood, and so the flowering of this species in Britain is a rare occurrence, although it was one of the earliest amongst North American shrubs to find its way to British gardens. Are there flowering specimens of this in Britain now, and, if so, where ? I saw it in fine flower many years ago in Northern France, and ever since then have longed to see it bloom in this country, but in vain. Perhaps if grown against a wall in a sunny spot the wood might get sufficiently ripened to produce flowers.

C. Kousa is a native of Japan, and was exhibited in fine condition by Messrs. J. Veitch and Sons at one of the meetings of the Royal Horticultural Society in 1892. It is quite hardy, but needs to be thoroughly well established and several years old before it really shows to advantage. The white flowers appear in May and June.

C. macrophylla.—This occurs from North India to Japan, and is a handsome shrub or small tree of vigorous habit, and when old, with large showy clusters of small cream-coloured flowers. C. brachypoda is united with this now by botanists who have studied the genus, and the following names also represent plants we have seen in gardens and cannot distinguish from C. macrophylla : C. glauca, C. Religiana (perhaps Regeliana is meant), C. Theleriana. There is also a variegated form, of no particular merit as an ornamental plant.

C. mas (the Cornelian Cherry or Jew's Cherry).—Although the individual flowers

of this species are small, they are borne so freely by old trees that, perhaps with the exception of the Witch Hazels and Jasminum nudiflorum, there are no large shrubs flowering in February or March which can vie with it, the clusters of bright-yellow flowers being very conspicuous on the leafless twigs. Old trees fruit freely, and bear fruit half an inch long or more, bright red and individually as handsome as a Cherry or small Plum. On the Continent in many places selected varieties are grown for the sake of the fruit, which is excellent for preserving. Amongst the forms are some with yellow, bright blood-red, and violet-coloured fruits, and another with fruit much larger than that of the wild plant. Koch recommends C. mas as a hedge plant, and no doubt it would make an effective and pretty fence. The Cornelian Cherry is a native of Central and Southern Europe, and sometimes attains 20 ft. in height. There are many fine-leaved varieties ; the best are C. mas variegata, a pretty shrub with white variegated leaves, and C. mas elegantissima, with gold and green leaves often suffused with red.

C. Nuttalli is the western representative of the eastern C. florida, and is even a more beautiful tree, in its native habitats 50 or 60 ft. high. Generally it has six large, broad white bracts 2 in. or 3 in. long, so that the so-called flower measures 4 in. or 6 in. across. It is one of the most beautiful trees in the forests in many parts of California and Oregon. C. Nuttalli has been recently introduced to European gardens, and no difficulty is experienced in its cultivation. Perhaps when a few years older it will succeed better—as far as flowering is concerned—in our climate than C. florida. In some parts of the Eastern United States it does not live more than a year or two ; seeds germinate there freely, but the seedlings die before they get a foot high.

C. officinalis takes the place in Corea and Japan of our Cornelian Cherry, which it resembles in general aspect. It may, however, be readily distinguished from C. mas by the tufts of rusty-coloured hairs in the axils of the principal veins of the leaf. It is quite hardy in England.

C. paniculata has flowers whiter than most of the other N. American species, in panicled clusters in great abundance, and followed by showy fruits varying from white to pale blue in colour. Sometimes it attains tree-like dimensions (20 ft.). It has smooth gray bark, narrow, pointed, pale leaves, green on both surfaces, and likes moist soil.

C. pubescens.—This occurs from Southern California to Vancouver Island and British Columbia, forming a shrub from 4 to 12 ft. high, and has smooth purplish branches, with more or less hairy branchlets and oval leaves, whitish and silky beneath. The white flowers are borne in compact cymes, and are followed by white fruit.

C. sanguinea.—Our native Dogwood is not so ornamental as most of the species already mentioned, and its dark dull-red bark is not nearly so bright and effective as that of C. alba and its varieties. C. sanguinea candidissima has light yellowish-green bark, and is a curious and interesting form. The variety latifolia has much broader, larger leaves than the type. A variegated form is not worth a place in the shrubbery, as the colouring is not decided and by no means constant.

C. sericea has yellow rather than white flowers, borne in rather small clusters, and in such abundance as to make the plant very attractive when in bloom. The habit, too, is excellent ; the long graceful branches spread over the ground and form fine masses of foliage. The bark is dull purple in colour, and the fruit is a pale blue. This kind likes wet ground, growing from 3 to 10 ft. in height, and is a native of the Eastern United States.

C. stolonifera, the red Osier Dogwood, is widely distributed throughout the Northern United States. It spreads and multiplies freely by prostrate or subterranean shoots, and grows 6 or 8 ft. high ; the leaves light green above and paler beneath ; fruit varying from white to lead colour. In winter the growths, especially those of the previous season, are of a bright red-purple colour. In its native habitats it affects wet places, but in Britain I have seen it do well in dry ground.

C. suecica is a native of Northern and Arctic Europe, Asia, and America, in Britain occurring on high moorlands from Yorkshire northwards, and ascends to 3000 ft. It is a charming little plant, flowering in July and August, with conspicuous, rather large white bracts, followed by red drupes. This species, like C. canadensis, grows but a few inches high and with unbranched stems from slender creeping root-stocks. It should be grown in light soil or in peat in partial shade in the bog garden.—N.

Coronilla, a small genus of the Pea family, consisting chiefly of shrubs, but containing at least two really good herbaceous plants, which are valuable for the rock-garden and the mixed border. They are C. iberica and C. varia.

C. Emerus (*Scorpion Senna*).—An elegant loose bush, 3 to 6 ft. high, with small pinnate leaves, which, in mild seasons, remain green through the winter. The flowers are reddish when first expanded, but become quite yellow. It blooms freely in early summer, and flowers again in autumn. This is the only bushy Coronilla that can be satisfactorily grown in the open air generally, but in mild districts C. glauca, a beautiful shrub with glaucous foliage and yellow flowers, usually grown in greenhouses, may be grown out-of-doors.

C. iberica is about 1 ft. high, and has a dense tuft of slender stems that trail on the ground or fall gracefully over the ledge of a rock. It makes a pretty show in early summer with its bright-yellow blossoms, resting on deep-green foliage. Its place is the rock-garden, where it delights to send its roots down the side of a big stone, to plenty of good soil, not less than 18 in. deep. Groups of three or four will, in a year or two, result in masses of colour that will compare with any alpine flower. It also does well on the margins of borders, but not so well as on a bank or in the rock-garden. Cuttings, inserted in early spring.

C. varia.—A handsome, free, and graceful plant, with pretty rose-coloured flowers; found in stony places and on many railway banks in France and Northern Italy, forming low dense tufts, sheeted with rosy pink, their beauty marking them among the weeds. It ought to be in every garden as a border flower, or naturalised. Perhaps, however, the most graceful use for it would be to plant it on some tall bare rock, and allow its vigorous shoots and bright little coronets to form a curtain to the stone. It is also admirable for chalky banks, or for running among low-trailing shrubs. There is a deep rose-coloured variety named Hausknecktì well worthy of culture, and another called compacta. Other species in cultivation are montana, libanotica, minima, valentina, ramosissima, and vaginalis. Seeds.

Cortusa (*Alpine Sanicle*).—Plants resembling Primroses of the cortusoides type, but which have become less important since the introduction of finer forms of primroses. C. Matthioli is a Piedmontese plant, about 1 ft. high, and thrives in peat, in shady or half-shady spots. C. pubens, more recently introduced, requires the same treatment.

Corydalis (*Fumitory*).—A numerous family, not many of the species worth cultivation, though some are important.

C. Ledebouriana (*Ledebour's Fumitory*).—Distinct on account of its peculiar glaucous leaves, arranged in a whorl about half-way up the stem, 9 to 12 in. high. Flowers are a deep vinous purple, with pinkish spurs. It is early and hardy.

C. lutea (*Yellow Fumitory*).—This well-known plant is not so much esteemed as it deserves, for its graceful masses of delicate pale-green leaves are dotted with spurred yellow flowers. It is pretty in borders, and grows to perfection on walls, and the tufts, when emerging from some chink in a fortress wall where rain never falls upon them, are often as full of flower as when planted in fertile soil. It is well suited for the rougher rock and root work. A naturalised plant in England, and widely spread over Continental Europe. Division or seeds. In any stony position it spreads about with weed-like rapidity.

C. nobilis (*Noble Fumitory*).—A distinct and handsome plant, 10 in. or 1 ft. high; the flower-stems are stout and leafy to the top, and in summer bear a massive head of rich golden-yellow flowers with a small reddish-chocolate protuberance in the centre of each. It is easy of culture in light borders, but is rather slow of increase. Where it does not thrive as a border plant, it should be placed in deep, light, rich soil on the lower flanks of the rock-garden, and associated with plants of the vigour and stature of the Vernal Adonis, the American Cowslip, and the Rocky Mountain Columbine. Siberia. Division.

C. solida (*Bulbous Fumitory*).—A compact tuberous-rooted kind, 4 in. to 6 or 7 in. high, with dull purplish flowers in April, and a solid bulbous root, quite hardy, and of easy culture in almost any soil. A pretty little plant for borders, for naturalising in open spots in woods, and also for the spring garden. It is naturalised in several parts of England, but its home is in the warmer parts of Europe. (*Syn.*, Fumaria solida.) Very like it in appearance is C. tuberosa (=C. cava), with the small floral leaves entire; and this has a good white variety, C. tuberosa albiflora. Division.

The preceding are the most distinct and useful species. C. aurea, C. bracteata, C. pallida, C. Marschalli, and C. Semenowi are also cultivated.

Corylopsis.—A small and little-known group of hardy shrubs, allied to the Witch Hazel (Hamamelis), from China, Japan, and N. India. They are thin and dwarf, have ribbed leaves resembling the Hazel, and bear flowers in drooping racemes. The oldest and best known

is the Japanese C. spicata, 3 or 4 ft. high, with cowslip-coloured and cowslip-scented flowers, in spikes produced before the leaves in spring, like those of the Witch Hazel. It is quite hardy, though, being rare, it is generally grown against a wall. C. pauciflora, also a native of Japan, is similar to C. spicata. C. Himalayana is a fine type from the Khasya hill region, with yellow and white flowers, and is rare. As these are early spring-flowering shrubs, they should be planted in spots sheltered from cold winds, but the most satisfactory way is against a wall.

Corypha australis.—A noble Australian palm, over 30 ft. high in its native country, and effective for the sub-tropical garden in summer, from June till October. Its leaves are nearly circular, often more than 5 ft. broad, on spiny leaf-stalks, from 6½ to nearly 10 ft. long. It requires abundance of water, and should have a warm, sunny, and sheltered position. Few places, however, can have tropical subjects of this character in the open, except where there are large conservatories.

Cosmos.—Mexican plants of the Composite family. One species, C. bipinnatus, is a handsome annual, 3 ft. to 5 ft. high, having finely divided feathery foliage, and large Dahlia-like bright-red-purple blossoms, with yellow centres. It requires to be treated as a tender annual, sowing the seeds in February or March in a heated frame, and the seedlings transplanted in May in good, rich, moist soil, with a warm exposure. It flowers from August to October. Good for grouping with bold and graceful annuals, and better than many more popular ones.

C. atropurpurea, called the "Black Dahlia," is a handsome perennial, with nearly black Dahlia-like flowers—does well in ordinary soil.

Costmary (*Balsamita vulgaris*).

Cotoneaster (*Rockspray*). — Valuable rock-shrubs and low trees of much variety. Some of the rock-trailing kinds are common, but the bright-berried low trees from the mountains of India are little used. These might give good effects if grouped here and there on rough banks, and they are very hardy and easy to grow. The trailing kinds are excellent rock and wall plants of very easy culture and propagation. One (C. horizontalis), lately come from India, is a beautiful rock-shrub.

C. frigida.—A low tree reaching 20 ft. or more. During mild winters some of the leaves will be retained throughout the year, while if the weather is very sharp it will become quite bare, the showy fruits being of a bright crimson. If untouched by birds, the berries retain their beauty a long time; but, if the weather be severe, they soon disappear. Mountains of India.

C. affinis is allied to the preceding, from which it differs in the leaves being larger, the branches stouter, while the habit is more tree-like.

C. bacillaris, another low tree, is free-flowering. The berries that succeed them are brown when ripe, and they are, therefore, not so conspicuous in autumn.

C. acuminata is rather an upright, straggling shrub, with pointed leaves and bright-red berries. It is deciduous. This Cotoneaster bears a certain resemblance to the better-known C. Simonsi, but it is altogether more vigorous and straggling in habit, and far from common.

C. Simonsi.—This is less graceful than many of the others, perhaps, its style of growth being rather thin and straggling, but in planting this can at least be modified by association with other subjects. The berries of this Cotoneaster are when ripe of an orange-scarlet tint, and the long shoots are in many cases crowded with them for some distance. It is useful for grouping here and there, its main value, however, being from the beauty of its berries.

C. horizontalis.—In this the branches are frond-like and almost horizontal, while the small leaves are regularly disposed along the thick sturdy branches. A charm of this species is the manner in which the leaves die off in the autumn: frequently the leaves will be of a glowing red colour, with the exception of those on the tips of the shoots. The berries are very showy, bright vermilion, and the flowers large and pretty.

C. microphylla, an evergreen thickly clothed with tiny deep-green leaves, in the spring crowded with whitish blossoms, the berries crimson, and, if untouched, remaining on the plants for a long time. There are some well-marked varieties of C. microphylla, one of which—thymifolia—is smaller in all its parts, while congesta is even more of a procumbent habit. C. microphylla is useful for sloping banks or like positions, while it will cover a wall with such a dense mass that nothing else can be seen. Again, in the larger parts of the rock-garden a place may be found for it; and its variety, congesta, is more at home when draping a large stone than in any other way. On the lawn the spreading shoots dispose themselves in a very pretty way when planted as a small group.

C. buxifolia, a free-growing bush that

at times attains the height of 6 ft., forming a rather wide-spreading bush, the branches clothed with deep-green box-like leaves ; the crimson berries, nestling in profusion among the leaves, are pretty in autumn.

C. rotundifolia is like the preceding, but with thicker branches and rounder leaves. The berries are of a brighter tint. Both these species may, where a group of the larger Cotoneasters is planted, be used for the outskirts of the clump.

Cotton Grass (*Eriophorum*).

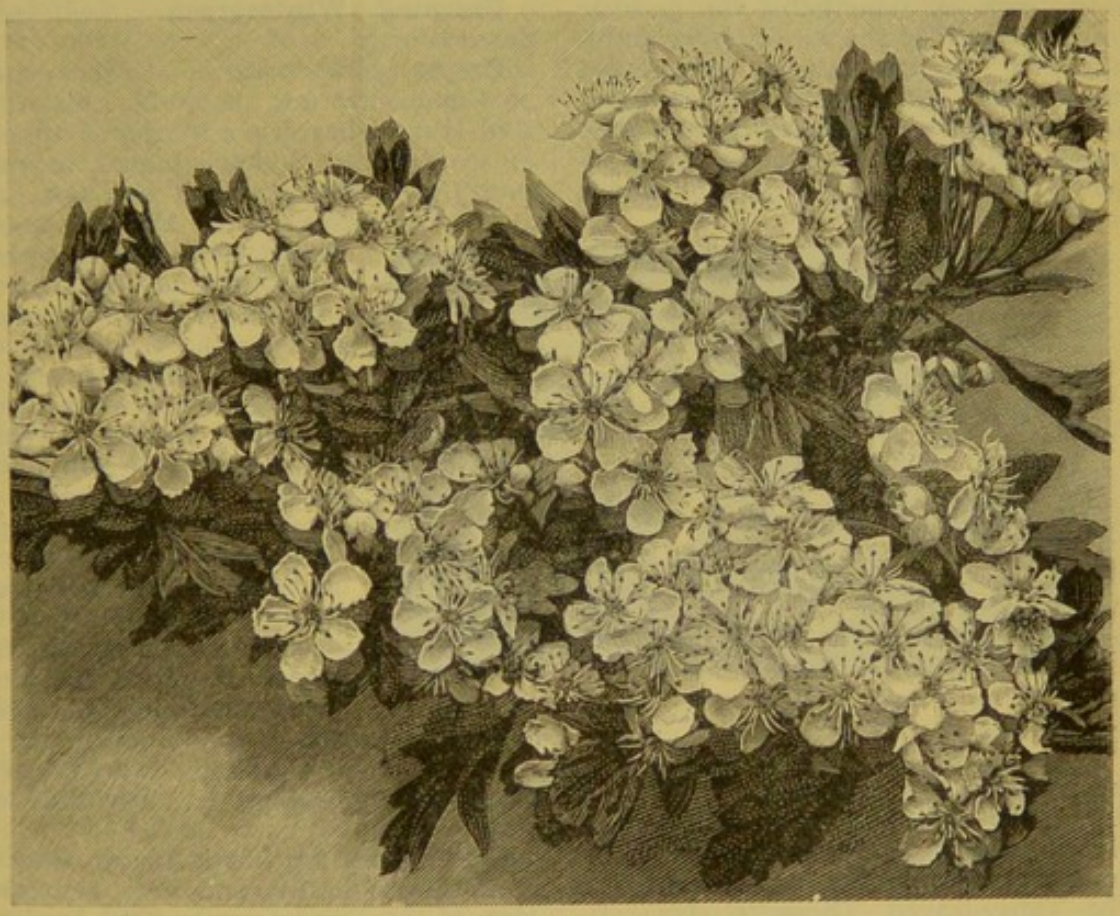
Cotton Thistle (*Carduus eriophorus*).

kind, has white flowers and much-branched stems, the ramifications of which are elegant, but it is not so valuable as C. cordifolia.

Cranberry, American (*Vaccinium macrocarpum*).

Cranesbill (*Geranium*).

Crassula alpestris.—A pretty rock-plant, with creeping and slightly branched stems, which are of a bright reddish tint. The flowers are white with orange-red-tipped stamens, wax-like, and in terminal clusters. Though it is a native of the Cape, from whence we have so many



May, Hawthorn.

Cotyledon Umbilicus (*Wall Navelwort*).—A native of Britain, Ireland, and many parts of Western Europe, and common on walls. Of little importance for cultivation, except perhaps now and then in a hardy fernery or a bog.

Cowslip (*Primula veris*).

Crambe cordifolia.—One of the finest of hardy and large-leaved herbaceous plants, as easily grown as the common Seakale, and in rich ground having many stout leaves and dense sprays of small white flowers. C. cordifolia may be planted wherever a bold type of vegetation is desired. C. juncea, a dwarf

tender types of Crassula, it proved at Kew quite hardy enough to live unprotected in this climate. It thrives well in the rock-garden, in a thoroughly drained and open position, and continues to flower throughout the summer.

Cratægus (*Thorns*).—Beautiful hardy flowering trees, of which some of the most beautiful kinds are seldom seen outside botanical gardens : many are charming for their flowers, others for their pretty fruits, while in a few the habit is picturesque. Perhaps the most beautiful of all is C. Oxyacantha, the Hawthorn or Whitethorn, and its varieties have every

gradation of tint from deep crimson, through pinks, to the snowy whiteness of the double sort. Paul's Double Scarlet, the double pink, double white, the single scarlet (Punicea), rose (Carminata or Rosea), and various others are precious for the garden. Some varieties, like the graceful Pendula, are remarkable for their habit, others have distinct foliage, and a few differ as regards fruit, there being white and yellow-berried varieties.

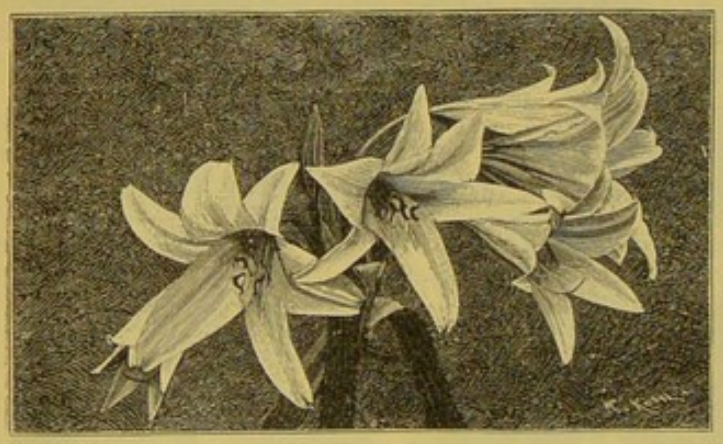
Other species deserving of a place in gardens are many. A selection of the best includes: The Cockspur Thorn (C. Crus-galli), from North America, usually about 10 ft. high, is remarkable for peculiar growth, especially the variety pyracanthifolia. In this the branches spread out like a table, and the older the tree becomes the more pronounced the table-like growth. Other distinct sorts of the Cockspur Thorn are nana, linearis, ovalifolia, and prunifolia. The Scarlet-fruited Thorn, also North American, is beautiful both when covered with white bloom in early summer or with scarlet fruits in autumn. The Tansy-leaved Thorn (C. tanacetifolia) is distinct in foliage, with cut leaves of a whitish hue, and it is one of the latest Thorns to flower. C. Azarolus, Aronia, and orientalis are all natives of the Levant, and they are so beautiful in autumn, with fine-coloured fruits as big as Hazel nuts, that they deserve a place. One specimen of any of these on a lawn would be sufficient in a small garden, as they are spreading, and in good soils 15 or 20 ft. high. The Washington Thorn (C. cordata) flowers when all the others are past; hence its value. C. glandulosa, also known as C. flava, has yellow fruits. C. Douglasi has dark-purple haws, and C. melanocarpa and C. nigra have black haws. The Pyracantha (C. Pyracantha), so common as a wall climber, is a favourite because of its orange-scarlet berries and evergreen foliage. It is suitable for planting in the open, and some beautiful effects may be made by making its spreading and trailing growth serve as a margin to groups of taller Thorns, or other small trees. The variety Lælandi fruits more freely than the common Pyracantha when planted as a bush. The hardy Thorns grow on nearly all kinds of soils with equal vigour.

Creeping Jenny (*Lysimachia Nummularia*).

Creeping Vervain (*Zapania nodiflora*).

Creeping Wintergreen (*Gaultheria procumbens*).

Crepis (*Hawk's-beard*).—Of this genus of Compositæ few, save B. rubra, the Red Hawk's-beard, are worthy of culture. It is a hardy Italian annual, bearing pretty pink flowers about the size and form of the Dandelion, and should be sown in spring or autumn like other hardy annuals in any ordinary garden soil. It flowers from June to September, and is suitable for borders or beds of annual flowers. There is also a variety with white flowers. C. aurea is a perennial, 6 to 12 in. high, with small orange blossoms, but seldom more than one to each slender stem. C. incisa is a good species for border, owing to its compact habit and large showy light-purple flowers, as is also indica, a dwarf species, free-flowering and pretty. Division and seed.



Crinum Moorei album.

Crinum.—A few South African species of these are hardy, and very beautiful. One of the best-known and the hardiest is C. capense, a handsome bulbous plant, 2 to 3 ft. high, flowering late in summer, the large funnel-shaped pink blossoms in umbels of ten or fifteen blooms on a stout stem. There are several varieties; album, pure white; riparium, deep purple; fortuitum, white; and striatum, striped pink and white; and fine hybrids have also been raised—all useful in tufts or small beds, with groups of hardy plants, especially those that flower in late summer and early autumn; or for grouping and massing near the margin of water. Few plants repay better for a sheltered and warm position, and deep rich soil, with abundance of water in summer, and in very cold situations a little pile of leaves

may be placed over the roots in winter; by planting the top of the bulbs 6 in. deep there need be no fear of the weather. Division and seed.

C. campanulatum is also hardy, but as it scarcely ever flowers it is not worth growing in the open. C. Moorei and ornatum are in warm districts hardy, and certain hybrids of recent origin may prove hardy.

Crocosma aurea (*Tritonia*).

Crocus.—Of a genus of nearly seventy species, it is surprising that only three or four are generally used for garden decoration; and these—C. aureus and C. vernus and their varieties, and perhaps one or two other species—have been in cultivation at least three hundred years. Crocuses flower at a time when every flower is of value; and we do not doubt that ere long species recently introduced will add largely to our means of garden decoration during the dull months from late autumn to early spring.

CULTURAL DIRECTIONS seem almost superfluous; but there are a few points to which it may be convenient to refer. The genus must be viewed as in succession, from the beginning of August till April; but of these only the earlier autumnal, or the distinctly vernal, species can be relied upon for open-air decoration. Although all are hardy, those that flower in November, December, and January are so liable to injury by frost and rain that they are practically worthless.

Crocuses are easily multiplied by seed, which should be sown in July as soon as ripe, though germination will not take place till the natural growing period of the species. Seedlings take from two to three years to arrive at maturity, and should be left for the first two years undisturbed in the seed-bed, and then taken up and replanted. Holland, with its rich light alluvial soil, and Lincolnshire, with its "Trent warp," have for many generations been the sources from which the English market has been supplied with the varieties of the three or four species grown in English gardens. The last five or six years have put us in possession of nearly the whole of the known species, and we must commend them to the Dutch and Lincolnshire bulb-growers.

For the less robust and less floriferous species a brick pit is necessary. The bottom of this should be well below the level of the ground, and it should be filled up with about 1 ft. in depth of fine river silt or sandy loam, the surface of which should be a little below the level of the adjacent ground. Proper drainage is essential, but Crocuses delight in a uniformly moist subsoil during their period of growth. It is convenient to separate the different species by strips of slate or tiles, buried below the surface, the corms being planted about 3 in. deep. A mulching of rotted Cocoa-nut fibre or finely sifted peat keeps the surface moist, and prevents the loam from clogging or caking on the surface. At the time of the maturity of the foliage, generally about the end of May, water should be withheld and the bed covered up and allowed to get quite dry till the end of July, when a copious watering may be given, or the pit may be exposed to rain.

Of the earlier autumnal species suitable for the open border the following may be enumerated for successional flowering:—

C. Scharojani, orange; early in August.
„ vallicola, straw-coloured; late in August and early in September.
„ nudiflorus, blue; September.
„ pulchellus, lilac; Sept. and Oct.
„ speciosus, blue; Sept. and Oct.
„ iridiflorus, blue; Sept. and Oct.
„ Salzmanni, „ Clusi } lilac or blue; October and November.
„ cancellatus, „ Cambessidesi, „ hadriaticus } in the early autumn.

These are succeeded by a long series of late autumnal, winter, and early vernal species, which are grown to best advantage in a brick pit.

Of the vernal species suitable for the border, the earliest is C. Imperati, flowering in February, followed by

C. susianus, or Cloth of Gold, in February.

C. biflorus, „ etruscus, „ suaveolens, „ versicolor, „ vernus, „ Tommasinianus, „ dalmaticus, „ banaticus, „ Sieberi and var. versicolor, „ chrysanthus, „ aureus, „ sulphureus, „ vars. pallidus and striatus, „ stellaris, „ Olivieri, „ minimus } Flowering from the end of February to the first week in April.

Of the Crocuses recently introduced, many vernal species will probably be suitable for the spring garden, but, as they are rare and scarcely procurable, we give

Crocus etruscus
Crocus biflorus pusillus
Crocus balansae
Crocus leucorhynchus
Crocus reticulatus

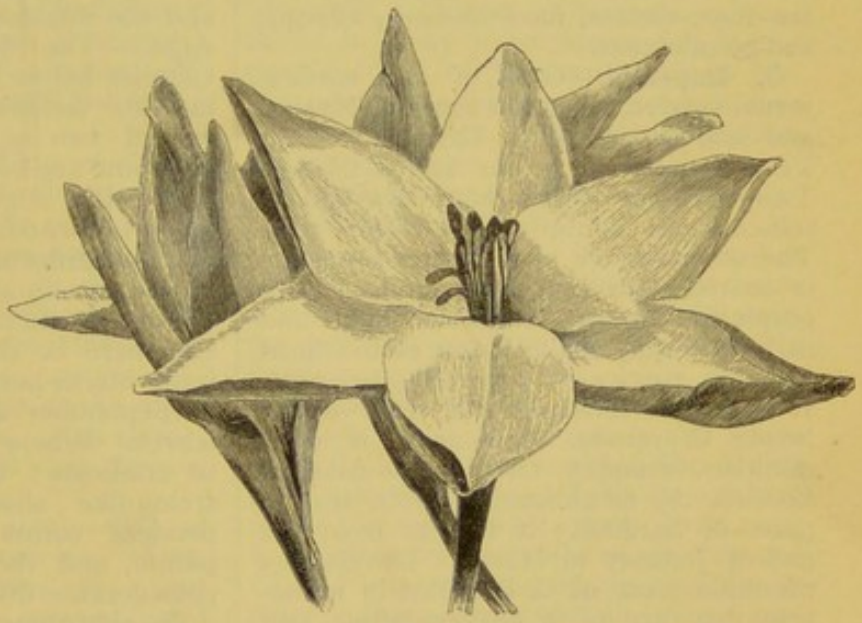
those more generally known and easy to obtain.

C. alatavicus.—The flowers of this new Asiatic species are white, yellow towards the throat, the outer surface of the outer segments being freckled with rich purple. It is a free-flowering species, but from its early-flowering time, January and February, it can only be grown to advantage under a cold frame. A white variety without external purple freckling is not uncommon. The leaves are produced at the flowering time in early spring.

C. aureus.—A handsome plant. The Banat, Transylvania, European Turkey, Greece, and Western Bithynia, generally at low elevations, flowering in February. It was one of the first introduced to cultivation, and is the parent of our yellow garden or Dutch yellow Crocus, and of a number of old varieties—lacteus, sulphureus, pallidus, striatus, &c., the history of which is unknown; they are not found wild, and are sterile. The wild plant varies considerably, from unstriped orange to varieties striped with gray lines, like those in the Dutch yellow Crocus. The stigmata are short, unbranched, pale yellow, and much shorter than the anthers; in the Transylvanian plant the stigmata are occasionally orange. The anthers are wedge-shaped, tapering towards the point, and notably divergent. The unstriped form readily produces seed when in cultivation, but the striped Dutch yellow is sterile, though effete capsules are occasionally formed. C. Olivieri resembles C. aureus, but is smaller.

C. banaticus.—Common in the Banat, Hungary, and Transylvania, where it takes the place of C. vernus, to which it is allied. It is highly ornamental; the flowers are a deep rich purple, occasionally varied with white, with a darker purple blotch near the end of the segments. The throat is glabrous, which easily distinguishes it from C. vernus. It is cultivated in several Continental and English gardens under the name of C. veluchensis—a distinct species. Flowers in February and March.

C. biflorus.—The Scotch, or Cloth of Silver, Crocus is a large variety of the typical form, and is abundant throughout a large portion of Italy. The segments vary from white to a pale lavender, the outer surface of the outer segments being distinctly feathered with purple markings. In var. estriatus, from Florence, the flowers are a uniform pale lavender, orange towards the base. In var. Weldeni, from Trieste and Dalmatia, the outer segments are externally freckled with bright purple. In C. nubigenus, a very small variety from Asia Minor, the outer segments are suffused and freckled with brown; C. Pestalozzæ is an albino of this variety. In C. Adami, from the Caucasus, the segments are pale purple, either self-coloured or externally feathered with dark purple. C. biflorus is an early-flowering spring species, and is highly ornamental for border decoration.



Crocus Imperati.

C. Boryi.—Flowers white, but bright orange at the throat. Abundant at Corfu and in the neighbourhood of Patras, flowers in October, but it does not bloom freely in cultivation, and requires the protection of glass for the development of its flowers.

C. byzantinus (see C. iridiflorus).

C. cancellatus.—A beautiful autumnal species, varying from white to pale bluish-purple. The flowers are generally veined or feathered towards the base of the segments. They appear without the leaves, which come in spring. The flowering time is from the end of October to December. A robust species, easy of culture, but, like many late autumnal species, is seen to best advantage under a cold frame. It is known as C. Schimperi, C. Spruneri, C. cilicicus, and C.

damascenus. The western forms are nearly white, and the eastern are either blue or purple; but the differences of colour are not sufficient to distinguish them as species.

C. chrysanthus.—A vernal Crocus, flowering from January to March according to elevation, which varies from a little above the sea-level to a height of three or four thousand feet. The flowers are smaller than those of C. aureus, and are usually of bright orange, but occasionally bronzed and feathered externally. A white variety is also found in Bithynia and on Mount Olympus above Broussa; this species also varies with pale sulphur-coloured flowers, occasionally suffused with blue towards the ends of the segments, dying out towards the orange throat. There are four varieties of this Crocus, distinct in colouring; they are fusco-tinctus, fusco-lineatus, albidus, and cœrulescens.

C. Imperati.—One of the earliest vernal species, abundant south of Naples, and said to extend to Calabria. Lilac. Very variable in colour and markings. Two varieties occur near Ravello—a self-coloured white and a clear rose. The outer surface of the outer segments is coated with rich buff, suffused with purple featherings. Its robust habit and early flowering make it one of the most valuable species for spring gardening. It flowers a fortnight and three weeks before C. vernus. Similar to it is C. minimus, abundant on the west coast of Corsica, the neighbouring islets, and in parts of Sardinia; it flowers from the end of January to March. The flowers resemble those of C. Imperati in miniature, but are of a darker purple and heavily suffused with external brown featherings. Although perfectly hardy, it is not robust enough for gardens. C. suaveolens is also closely allied to C. Imperati, and flowers in February. The flowers are somewhat smaller and the segments more acute than in C. Imperati. It is hardy and free-flowering, and under bright sunshine is a good ornament to the early spring garden.

C. iridiflorus.—The Banat and Transylvania. Bears in September and October bright-purple flowers before the leaves. Remarkable for purple stigmata and the marked difference between the size of the inner and the outer segments of the perianth. This beautiful plant should be secured if possible. It is often sold as C. byzantinus.

C. lævigatus.—A pretty species from the mountains of Greece and the Cyclades. The flowers vary from white to lilac, being distinctly feathered with purple markings. Its usual flowering time is from the end of October to Christmas, but through the winter to March under cultivation. It does not flower freely in cultivation, and, like the allied species, it is seen to best advantage under a cold frame.

C. longiflorus.—Abundant in the south of Italy, Sicily, and Malta; flowers in October. The flowers are light purple, yellow at the throat. In general aspect it somewhat resembles C. sativus, especially in the stigmata, which are usually bright scarlet and entire, but occasionally broken up into fine capillary divisions. In Sicily the stigmata are collected from the wild plant for saffron. It is free-flowering, and very ornamental.

C. medius.—A beautiful purple autumn-flowering species, limited to the Riviera and the adjacent spurs of the Maritime Alps. The flowers are produced in October before the leaves, which appear in the following spring, and rarely exceed two or three to a corm; the blossoms are bright purple, veined at the base; the stigmata bright scarlet and much branched.

C. nudiflorus.—A pretty and well-known species. Pyrenees and North of Spain. Naturalised at Nottingham and elsewhere in the midland counties. Its large bluish-purple flowers are produced in September and October before the leaves. Where established it is difficult to eradicate; the corms produce long stolon-like shoots, which form independent corms on the death of the parent, and the plant soon spreads to considerable distances.

C. ochroleucus bears many creamy-white flowers, with orange throat, from the end of October to the end of December. It well deserves a cold frame, to preserve its showy flowers from frost and rain.

C. pulchellus.—An autumnal species, invaluable for the garden. The pale lavender flowers, with bright yellow throat, are freely produced from the middle of September to early in December. Seed.

C. serotinus.—S. of Spain. Flowers in November. The blossoms are more or less distinctly feathered with darker purple. C. Salzmanni is closely allied to C. serotinus, but is of larger stature, flowering with the leaves in October and November. It is robust and readily multiplied. As the flowers are liable to injury by frost and snow, it is seen to best advantage under a cold frame. C. Clusi closely resembles C. serotinus, and flowers with the leaves in October.

C. Sieberi.—A vernal species common in the Greek Archipelago and the mountains of Greece. The flower is usually bright lilac, orange at the base, but the form found in Crete and the Cyclades presents a great variety of colour, from white to purple, and these colours are mottled, intermixed, and striped in endless variety, contrasting with the bright orange throat. The Cretan variety is of exceptional beauty. It flowers in cultivation from the end of February to the middle of March.

C. speciosus.—Among the handsomest autumn Crocuses. Flowers at the end of September and early in October. Ranges from North Persia, through Georgia, the Caucasus, and the Crimea, to Hungary. The perianth segments, 2 in. high, are rich bluish-purple, suffused with darker purple veins, with which the bright orange much-divided stigmata form a beautiful contrast. It has been long in cultivation, and readily multiplies by small bulbels at the base of the corm.

C. susianus.—The well-known Cloth of Gold Crocus, an early importation from the Crimea. Both the orange and bronzed susianus are among the earliest vernal Crocuses, flowering in the open border in February. C. stellaris is an old garden plant somewhat resembling C. susianus. The flower is orange, distinctly feathered with bronze on the outer coat of the outer segments. It is sterile, and never produces seed. It flowers early in March.

C. vernus (*Spring Crocus*).—One of the earliest cultivated species. Alps, Pyrenees, Tyrol, Carpathians, Italy, and Dalmatia. Naturalised in several parts of England. Remarkable for its range of colour, from pure white to deep purple, endless varieties being generally intermixed in its native habitats, and corresponding with the horticultural varieties of our gardens. Flowers early in March at low elevations, and as late as June and July in the higher Alps. The parent of nearly all the purple, white, and striped Crocuses grown in Holland.

C. versicolor.—This well-known species has long been in cultivation. The flowers present a great variety of colouring, from purple to white, and are variously striped and feathered. It differs from the two preceding species in having the whole of the perianth segments similarly coloured, and the external buff coating of C. Imperati and C. suaveolens is absent. Its flowering time is March.

C. zonatus.—Mountains of Cilicia. Bright vinous-lilac flowers, golden at the base, abundant about the middle of September. It is highly ornamental and free-flowering, and easy of culture. The flowers come before the leaves, which do not appear till spring. It has been in cultivation about fourteen years.

This account of the genus is condensed from an article in *The Garden* of 28th January 1882, by Mr. Geo. Maw, of Benthall Hall, near Broseley. The article contains a full account of the family with descriptions of species not in cultivation, giving botanical authorities, and fuller technical descriptions.

Crowberry (*Empetrum nigrum*).

Crown Imperial (*Fritillaria imperialis*).

Crucianella stylosa (*Fœtid C.*)—A pretty dwarf herb, with leaves in whorls 9 to 12 in. high, flowering in summer; pale rose. Thrives on borders, or bare banks, in sandy or calcareous soil, but in certain states of the atmosphere its fox-like odour is offensive, and hence it does not deserve a place in the choice garden. Division. Persia.

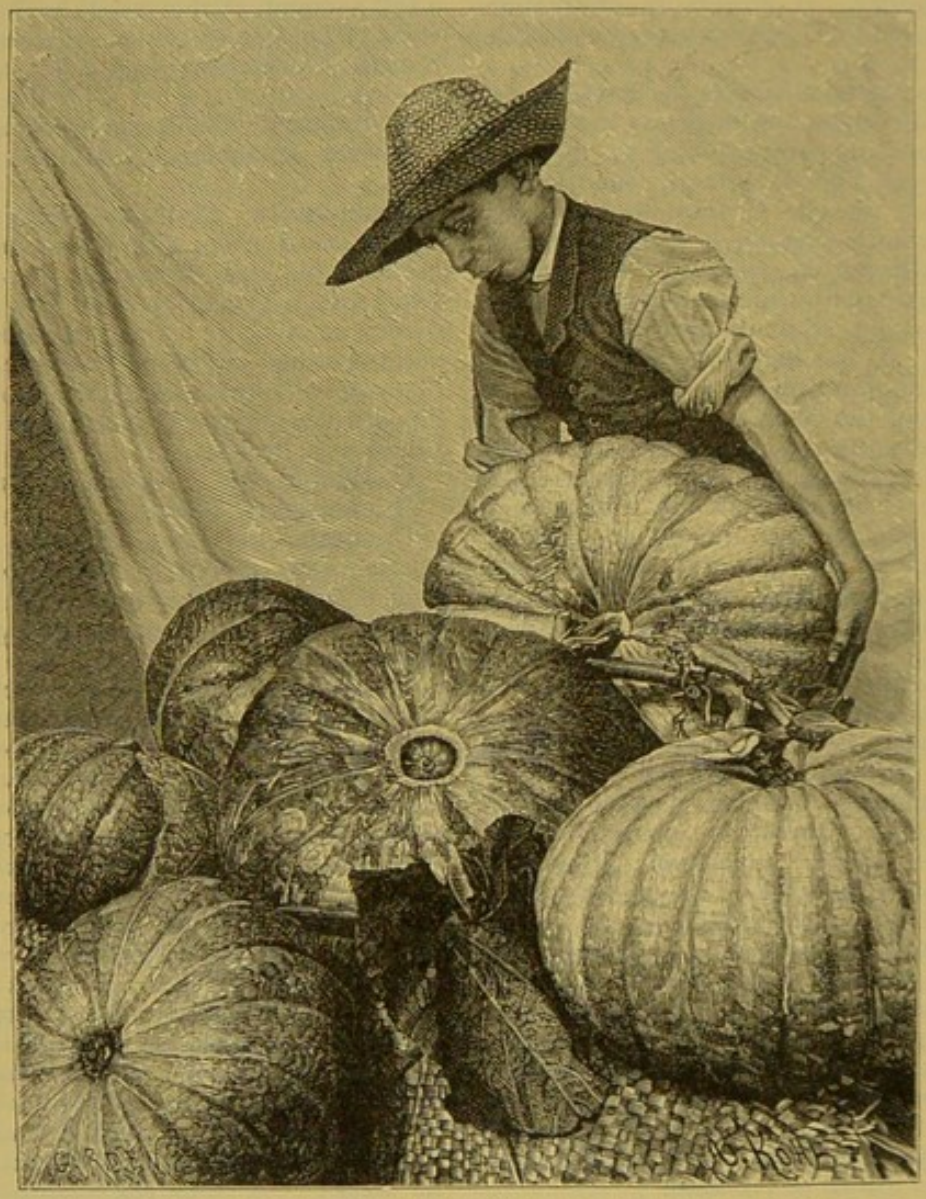
Cuckoo-flower (*Cardamine pratensis*).

Cuckoo-pint (*Arum*).

Cucumis.—Certain of the hardier species—for example, the Gooseberry Gourd (C. grossularoides)—are interesting, but they have no essential place in flower gardens.

Cucurbita (*Gourd*).—There is no Order more wonderful in the variety and shape of its fruit than that to which the Melon and Cucumber belong. From the writhing Snake Cucumber, which hangs down 4 or 5 ft. long from its stem, to the enormous round Giant Pumpkin or Gourd, the variation in colour, shape, and size is marvellous. There are some pretty little Gourds which do not weigh more than ½ oz.; while, on the other hand, there are kinds as large as a barrel. Eggs, bottles, gooseberries, clubs, caskets, folded umbrellas, balls, vases, urns, balloons, all have their likenesses in the family. Those who have seen a good collection will understand Nathaniel Hawthorne's enthusiasm when he says: "A hundred Gourds in my garden were worthy, in my eyes at least, of being rendered indestructible in marble. If ever Providence (but I know it never will) should assign me a superfluity of gold, part of it should be expended for a service of plate, or most delicate porcelain, to be wrought into the shape of Gourds gathered in my garden. As dishes for containing vegetables they would be peculiarly appropriate. Gazing at them, I felt that by my agency something worth living for had been done. A new sub-

stance was born into the world. They were real and tangible existences which the mind could seize hold of and rejoice in." They may be readily grown in this country, and there are many ways in which they may be grown with great advantage—on low trellises; depending from the edges of raised beds; the smaller and medium-sized trained over arches or



Gourds in a Surrey garden.

arched trellis-work, covering banks, or growing on the level earth. Isolated, too, some kinds would look very effective; in fact, there is hardly any limit to their use. They cover arches, and the large leaves make a perfect summer roof. A cool tent might be made with free-growing Gourds, and it would have the additional merit of suspending some of the most singular, graceful, and gigantic of fruits from the roof. A bold and effective use may now and then be made of them on walls and on the roofs of sheds or out-houses, as the roofs "carry" the large leaves and showy fruit so well.

A SELECTION OF GOURDS.—Amongst the most beautiful are the Turk's-cap varieties, such as Grand Mogul, Pasha of Egypt, Viceroy, Empress, Bishop's Hat, &c.; the Serpent Gourd, Gooseberry Gourd, Hercules' Club, Gorilla, St. Aignan, M. Fould, Siphon, Half-moon, Giant's Punchbowl, and the Mammoth, weighing from 170 lbs. to upwards of 200 lbs.; while amongst the miniature varieties the Fig, Cricket-ball, Thumb, Cherry, Striped Custard, Hen's-egg, Pear, Bottle, Orange,

Plover's-egg, &c., are very pretty examples, and very serviceable for ornament. All these are well suited to our climate, and there are many others equally suitable. Mr. W. Young, indeed, exhibited a collection of 500 varieties, all English-grown, the greater number of which had been sown where grown, and had come to maturity without protection. The ground being manured and dug one spit deep, the seed was sown the second week in May. Many of the plants had no water through the season, but others had it in various quantities, and the more the water the larger, freer, and better the produce. Sowing in a frame at the end of April, and exposing the plants to the air during the day to prevent their being drawn, and then removing the frame altogether to harden them off before planting out, is the best way to secure an early growth. Sowing in the open ground under hand-lights would do, but not so well. Where there are waste heaps of rubbish or manure it is a good plan to cover them with Gourds. Although they grow under the conditions described above, they do best with plenty of manure, and should be mulched or well watered if the soil be not deep and rich.

Cup-flower (*Scyphanthus elegans*).

Cuphea.—Pretty plants, of which C. platycentra (Cigar-plant) is useful for the summer flower garden. It is a dwarf plant, about 12 in. high, with vermilion tube-shaped blossoms. Easily propagated by cuttings taken in September or April, and put in slight heat, and also raised from seed sown in heat in spring. C. strigulosa is a pretty variety, useful for planting out as single plants in the mixed border for cutting from, but chiefly used as a pot plant for the autumn greenhouse. C. Zimapani is a most useful annual, growing about 1½ ft. high, with flowers of a rich deep purple bordered with a lighter hue, resembling those of a Sweet Pea, and of about the same size. They are well fitted for cutting, as the branches lengthen and the flowers expand a long time in water. Other kinds are C. eminens, Galeottiana, miniata, ocymoides, purpurea, Roezli, and silenoides, all of less importance for the flower garden than those before named.

Cupressus (*Cypress*).—Graceful low trees, often seen in the garden landscape, and forming charming backgrounds. Not many, however, are really hardy, save in sea-shore and in warm southern districts, and even there they often perish in hard winters. They are often beautiful in Ireland and the western coasts, but there we have seen the Californian Cypress, C. macrocarpa, perish after looking happy for years. The beautiful Eastern Cypress, so marked a feature in the Italian garden and landscape, is worth planting under the best conditions; but so distinct and fine a tree would, if hardy, have been everywhere planted long ago. We have seen very fine specimens of it here and there, as at White Knights. The graceful Cypress of Goa is charming in some sea-shore gardens.

Currant, Flowering (*Ribes*).

Cushion Pink (*Silene acaulis*).

Cyananthus lobatus (*Lobed C.*)—A pretty Himalayan rock-plant, about 4 in. high, flowering in August and September; purplish-blue flower, with a whitish centre, and thriving in sunny chinks in the rock-garden. It grows best in a mixture of sandy peat and leaf-mould, with plenty of moisture during growth, and is increased by cuttings. The seed requires a dry season; in wet weather the large, erect calyx becomes filled with water, which rots the seed-vessel. Polemoniaceæ.

C. incanus.—This flowers more freely than C. lobatus; like that species, it should be planted in a dry, sunny, well-drained position, as, if the situation be too damp, the fleshy root-stock is liable to rot. It is even a good plan to place something over the plant during the resting season. The flowers are not so large as those of the other species, but are more charming in colour, their beauty enhanced by the white tuft of silky hairs in the throat of the corolla. Campanulaceæ.

Cyathea dealbata (*Silver Tree-fern*).—This very handsome Fern, known in N. Zealand as the Silver Tree-fern, has a slender, almost black stem, 4 to 8 ft. high, ending in a fine crown of fronds, dark-green above and milk-white below. It may be placed in the open air, in the southern and milder districts, from the end of May till the end of September.

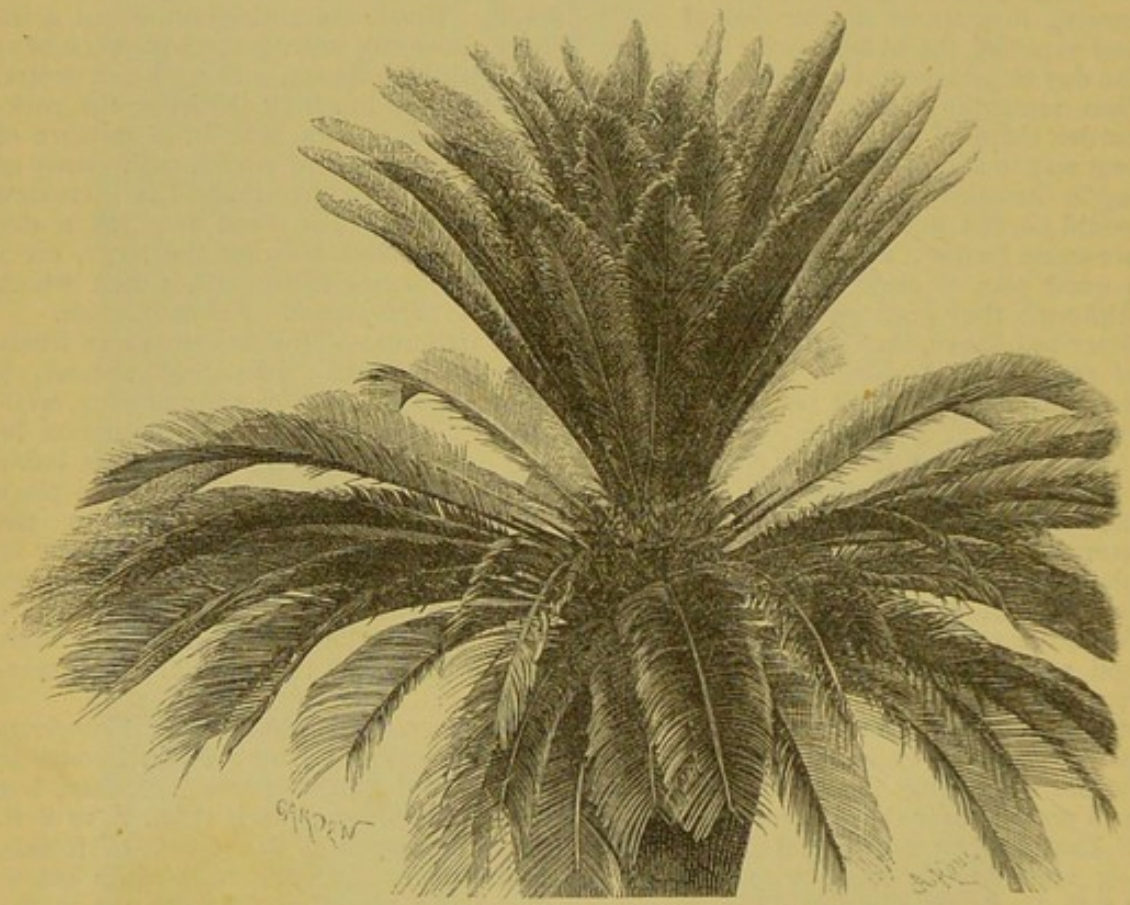
Cycas revoluta.—A tropical plant, with a stout stem, sometimes 6 to 10 ft. high, from the top of which issues a beautiful crown of superb dark-green leaves 2 to 6 ft. long. It is one of the most valuable greenhouse plants, that may be placed out from the end of May till October, and is particularly graceful in the centre of a bed of flowering plants, or isolated with the pot or tub plunged to the rim in the turf, always in a warm position. It is increased by seeds, or separation of suckers, which are occasionally thrown up.

Cyclamen (*Sowbread*).—Except the

Persian, Cyclamens are as hardy as Primroses ; but they love the shelter and shade of low bushes or hill copses, where they may nestle and bloom in security. In the places they naturally inhabit there is usually the friendly shelter of Grasses or branchlets about them, so that their large leaves are not torn to pieces by wind or hail. The Ivy-leaved Cyclamen is in full leaf through winter and early spring, and for the sake of the beauty of the leaves alone it is desirable to place it so that it may be safe from injury. It is easy to naturalise the hardier Cyclamens in many parts of the country. Good drainage is necessary to their open-air culture, as they grow naturally among broken rocks and stones mixed with vegetable soil, grit, &c., where they are not surrounded by stagnant water. Mr. Atkins, of Painswick, who paid much attention to their culture, thought that the tuber should be buried, and not exposed like the Persian Cyclamen in pots. His chief reason was that in some species the roots issue from the upper surface of the tuber only. They enjoy plenty of moisture at the root at all seasons, and thrive best in a rich, friable, open soil, with plenty of well-decayed vegetable matter in it. They are well suited for the rock-garden, and enjoy warm nooks, partial shade, and shelter from dry, cutting winds. They may be grown on any aspect if the conditions above mentioned be secured, but an eastern or south-eastern one is best. We have seen them under trees among Grass, where they flowered profusely every year without attention.

They are best propagated by seed sown, as soon as it is ripe, in well-drained pots of light soil. Cover the soil after sowing with a little Moss, to insure uniform dampness, and place them in shelter out-of-doors. As soon as they begin to appear, which may be in a month or six weeks, gradually remove the Moss. When the first leaf is fairly developed, they should be transplanted about 1 in. apart in seed pans of rich light earth, and encouraged to grow as long as possible, being sheltered in a cold frame, but always allowed abundance of air. When the leaves have perished in the following summer, the tubers may be planted out or potted, according to their strength.

There appears to have always been



Head of Cycas revoluta.

great difficulty in defining the species of Cyclamen, from the great variation in shape and colour of the leaves both above and below. Too much dependence on these characteristics has caused confusion and an undue multiplication of species. Some of the varieties become so fixed, and reproduce themselves so truly from seed, as to be regarded as species by some cultivators. The following are the more important species and varieties.

C. Atkinsi.—A hybrid variety of the Coum section. The flowers are larger than in the type, varying in colour from deep red to pure white, and are plentiful in winter.

C. Coum (*Round-leaved Cyclamen*).—This, like the others of the same section, is perfectly hardy, and frequently in bloom in the open ground before the Snowdrop; yet, to preserve the flowers from unfavourable weather, the plants will be better for slight protection, or a pit or frame in which to plant them out. Grown in this way during the early spring, from January to the middle of March, they are one sheet of bloom. When so cultivated, take out the soil, say 1½ to 2 ft. deep, place at the bottom a layer of rough stones 9 to 12 in. deep, and cover them with inverted turf to keep the soil from washing down and injuring the drainage; then fill up with soil composed of about one-third of good free loam, one-third of well-decayed leaf-mould, and one-third of thoroughly decomposed cow manure. Plant 1½ to 2 in. deep; and, every year, soon after the leaves die down, take off the surface as far as the tops of the tubers, and fresh surface them with the same compost, or in alternate years give them only a surface dressing of well-decayed leaves or cow manure. During summer, or indeed after April, the glass should be removed, and they ought to be slightly shaded with Larch Fir boughs (cut before the leaves expand) laid over them, to shelter from the extreme heat of the sun. As soon as they begin to appear in the autumn, gradually take these off. Do not use the glass until severe weather sets in—at all times, both day and night, admitting air at back and front—and in fine weather draw the lights off, remembering that the plants are hardy, and are soon injured if kept too close. They do not like frequent removal. There is a pretty white variety of C. Coum. (=C. hyemale.)

C. cyprium.—This well-defined species has rather small heart-shaped leaves of dark green, marbled on the upper surface with bluish gray and of a deep purple beneath. The flowers, which are pure white, tinted with soft lilac (the restricted mouth being spotted with carmine-purple), are well elevated above the foliage. This distinguishes it from most of its allies, except C. persicum, and its foliage distinguishes it from that at a glance. It is one of the most chaste and beautiful of the hardy kinds. Cyprus and other places in South Europe. It is found on shaded rocks in mountainous districts. (=C. neapolitanum.)

C. europæum (*European Cyclamen*).—The leaves of this species appear before and with the flowers, and remain during the greater part of the year. Flowers from June to November, or, with slight protection, until the end of the year. The flowers are a reddish purple. Some of the southern varieties, by attention to cultivation under glass, may even assume a perpetual flowering character. C. Clusi, littorale, and Peakeanum are varieties of this section. The flowers are much longer, and of a more delicate colour, often approaching peach colour, and are almost the size of those of C. persicum; pure white are rare, but pale ones are not uncommon: they are very fragrant. C. europæum thrives freely in various parts of the country in light, loamy, well-drained soil, as a choice border and rock-garden plant. Where it does badly in ordinary soil it should be tried in a deep bed of light loam, mingled with pieces of broken stone. In all cases it is best to cover the ground with Cocoa fibre. It is very desirable on account of its fragrance and long succession of flowers. It luxuriates in the *débris* of old walls and on the mountain side, with a very sparing quantity of vegetable earth to grow in. The bulb varies considerably in size and shape; sometimes it is elongated and irregular, and the plant is then the C. anemonoides of old authors. (= C. odoratum, C. æstivum.)

C. hederæfolium (*Ivy-leaved Cyclamen*).—Switzerland, South Europe, and the north coast of Africa. Tuber not unfrequently 1 ft. in diameter, and covered with a brownish rough rind, which cracks irregularly so as to form little scales. The root-fibres emerge from the whole of the upper surface of the tuber, but principally from the rim; few or none issue from the lower surface. The leaves and flowers generally spring direct from the tuber without any stem (there is sometimes, however, a small stem, especially if the tuber be planted deep); at first they spread horizontally, but ultimately become erect. The leaves are variously marked; the greater portion appear after

the flowers, and continue in great beauty the whole winter and early spring, when, if well grown, they are one of the greatest ornaments of borders and rock-gardens. Often these leaves are 6 in. long, 5½ in diameter, and 100 to 150 spring from one tuber. They are admirable for table decoration during winter. The flowers continue from the end of August until October, and are purplish red, frequently with a stripe of lighter colour. There is a pure-white variety, and also a white one with pink base or mouth of corolla ; these reproduce themselves tolerably true from seed. Strong tubers will produce 200 to 300 flowers. Some are delightfully fragrant. They are quite hardy, but are worthy of a little protection to preserve the late blooms, which often continue to spring up till the end of the year. This species is so perfectly hardy as to make it very desirable for the rock-garden and the open borders. It will grow in almost any soil and situation, though best in a well-drained rich border or rock-garden, which it well deserves. It does not like frequent removal. It has been naturalised on the mossy floor of a thin wood, on very sandy poor soil, and may be naturalised almost everywhere. It would be peculiarly attractive in a semi-wild state in pleasure-grounds and by wood walks. C. græcum is a very near ally, if more than a variety, and requires the same treatment. The foliage is more like C. persicum, or the southern form of C. europæum. C. africanum (algeriense macrophyllum) is hardy in warm sheltered situations. It is much larger in all parts than C. hederæfolium, but otherwise is very nearly allied.

C. ibericum (*Iberian Cyclamen*).—Belongs to the Coum section. There is some obscurity respecting the authority for the species and its native country. The leaves are very various. It flowers in spring, the flowers varying from deep red-purple to rose, lilac, and white, with intensely dark mouth ; and are more abundant than those of C. Coum.

C. vernum (*Spring Cyclamen*).—The leaves rise before the flowers in spring ; they are generally more or less white on the upper surface, and are often purplish beneath. Though one of the most interesting species, and perfectly hardy, it is seldom cultivated successfully in the open border or rock-garden ; it is impatient of excessive wet about the tubers, and likes a light soil, in a rather shady nook sheltered from winds, its fleshy leaves being soon injured. The tubers should be planted deep, say not less than 2 to 2½ in. below the surface. C. vernum of Sweet is considered by many as only a variety of Coum, and it is known as C. Coum var. zonale. It is also known as C. repandum. There is a white-flowered variety.

Cyclobothra (*Calochortus*).

Cydonia (*Quince*).—There is perhaps not a commoner flowering shrub in English gardens than the Japanese Quince (C. japonica), which, introduced only about half a century ago, adorns the walls alike of the cottage and mansion. The old sort is beautiful, with brilliant crimson flowers, but the newer varieties are pretty in colour, the finest being cardinalis, deep rich crimson ; nivalis, snow-white ; alba, white, slightly tinged with pink ; rosea, delicate rose-pink ; and princeps, deep scarlet. These are all distinct in colour, and would make a beautiful lawn group, with their low rounded outline broken by a taller plant, such as Pyrus floribunda. When soil and climate favour the Japanese Quince, it forms a wide-spreading bush 6 or 8 feet high. I have used this plant a good deal in hedgerows. C. Maulei is less vigorous than C. japonica, has slenderer branches, smaller foliage, and flowers on every young twig ; orange-scarlet, yellow fruits of spicy fragrance, and about the size of small Pippins, succeed the flowers in autumn, and remain on the bushes a long time. It is perfectly hardy, and makes a capital hedge on account of its spiny branches. C. chinensis, the Chinese Quince, is somewhat similar to C. japonica, but less beautiful, and is rarely seen beyond botanical gardens. The common Quince, familiar as it is, is beautiful, particularly in old age, and well deserves a place on a lawn in company with the Medlar, Mulberry, Apple, and Pear.

Cynara Scolymus (*French Artichoke*).—This plant, much grown for cooking, has as a foliage-plant much beauty ; its long silvery deeply divided leaves, height (4 to 5 ft.), purplish flower-heads, and habit render it very suitable for the rougher parts of pleasure grounds, grass, &c., which are often occupied by fine plants far less handsome.

Cyperus longus (*Galingale*).—A water plant of fine form from 2 to 3 ft. high, crowned by a handsome, loose, umbellate panicle of chestnut-coloured flower-spikes, at the base of which there are three or more leaves, often 1 or 2 ft. long, the lower ones of a bright shining green arching gracefully. The root-stock is thick and aromatic, and was formerly much used as a tonic. A rare native plant, suitable for the margin of water.

Cypripedium (*Lady's Slipper*).—Handsome Orchids, embracing several beautiful perfectly hardy species, of which the Mocasson-flower (C. spectabile) is the finest cultivated hardy kind. The following are a few of the cultivated kinds.

C. acaule (*Stemless Lady's Slipper*).—A dwarf species with a naked downy flower-stalk, 8 to 12 in. high, bearing a green bract at the top, flowers early in summer, large, solitary purplish with a rosy-purple (rarely white) lip, nearly 2 in. long, which has a singular closed fissure down its whole length in front. Northern States of North America in woods and bogs. Thriving in moist peaty or sandy soil or leaf-mould.

C. Calceolus (*English Lady's Slipper*).—The only British species and the largest flowered of our native Orchids, 1 to 1½ ft. high, flowers in summer, solitary (sometimes two) large flowers of a dark-brown colour, with an inflated clear yellow lip netted with darker veins, and about 1 in. in length. North Europe, and occasionally in the northern counties of England, where, however, it is now almost exterminated. Very ornamental for the rock-garden, where it should be planted in sunny sheltered nooks of calcareous soil, or in narrow fissures of limestone rock, in well-drained, rich, fibrous loam, in an east aspect.

C. guttatum (*Spotted Lady's Slipper*).—A handsome kind, seldom seen in gardens, 6 to 9 in. high, flowers in summer, solitary, rather small, beautiful, white, heavily blotched, or spotted with deep rosy purple. Found in Canada, N. Europe (near Moscow), and N. Asia, in dense forests amongst the roots of trees in moist, black vegetable mould. Requires a half-shady position in leaf-mould, moss, and sand, and should be kept rather dry in winter.

C. japonicum (*Japanese Lady's Slipper*).—About 1 ft. high, and its hairy stems, which are as thick as one's little finger, bear two plicate fan-shaped leaves

Mocasson-flower (Cypripedium spectabile).

of bright green, rather jagged round the margins. The flowers are solitary, the sepals being of an apple-green tint; the petals, too, are of the same colour, but are dotted with purplish crimson at the base; the lip large, and curiously folded in front, as in the better-known C. acaule, to which it seems most nearly allied; the colour of the lip is a soft creamy yellow, with bold purple dots and lines.

C. macranthum (*Large Lady's Slipper*).—This bears a considerable resemblance to C. ventricosum, but has lighter-coloured flowers, large, of a uniform purplish rose with deeper-coloured veins; early in June. Lip globose, inflated, and finely marked with deep purple reticulations. This handsome and at present rare plant grows best in pure loam of a heavy nature. Siberia.

C. pubescens.—A dwarf species with a pubescent stem, seldom more than 2 ft. high, flowers early in summer, on each stem one to three flowers; scentless, greenish yellow, spotted with brown, with a pale-yellow lip from 1½ to 2 in. long, and flattened at the sides. America, found in bogs and low woods, from Pennsylvania to Carolina. Does well on dry sunny banks, among loam, stones, and grit.

C. spectabile (*Mocasson-flower*).—The most beautiful of this group; 15 in. to 2½ ft. high, flowers in summer, one or two on each stem (rarely three), large, with inflated, rounded lip, about 1½ in. long, white, with a large blotch of bright rosy carmine in front. A variety (C. s. album) has the lip entirely white. In America it grows in open boggy woods, moist meadows, and also in peaty bogs in the Northern States. Good native specimens produce from fifty to seventy flowers on a single tuft, 3 ft. across, formed on a thick mat of fleshy roots. The plant is hardy, and succeeds if planted out in a deep, rich peaty soil, with a few nodules of sandstone or rough sandstone grit mixed with the soil. It also thrives in turfy loam on a moist bottom; in any case, however, deep planting is necessary, as the roots are then cool and moist during the hot weather, and do not suffer from frost in the winter.

Cystopteris (*Bladder Fern*).—The cultivated kinds of this native group are small elegant Ferns of delicate fragile texture. They grow on rocks and walls, chiefly in mountainous districts. The best-known are: C. fragilis, which has finely cut fronds about 6 in. high. It is of easy culture, succeeding in an ordinary border, though seen to best advantage on shady parts of the rock-garden in a well-drained soil. There are two or three varieties, Dickieana being the best. C. alpina is much smaller, and when once established not difficult to cultivate or increase, but more affected by excessive moisture than C. fragilis. A sheltered situation in a well-drained part of the rock-garden suits it. C. montana is another elegant plant requiring the same treatment as C. fragilis.

Cytisus (*Broom*).—The few kinds of hardy Cytisus are all valuable ornamental shrubs. Common as the British Broom (C. Scoparius) is, it should certainly be in gardens in places where it does not grow wild; and in company with Heath and Furze it is most useful for dry sandy banks where other shrubs would fail. It is easily raised from seed. C. Andreanus is a handsome form of the common Broom well worth growing, and coming fairly true from seed. The White Portuguese Broom (C. albus) is well known as one of the finest of all early-flowering shrubs. A strong bush, particularly in light soils, and frequently 10 ft. high. Towards the end of May every slender twig is wreathed with small white flowers. The Spanish Broom is a handsome and distinct shrub, often flowering a long time on dry banks. C. nigricans is also a beautiful shrub. The purple Broom is naturally a long trailing shrub with purplish flowers, but is generally seen grafted mop fashion on Laburnum stems. It is really an alpine shrub, and its place is among rocks and boulders, where its wiry branches can fall over and make dense cushion-like tufts. The foregoing are the most important kinds. Others, suitable for a fuller collection, are C. austriacus, biflorus, sessilifolius, capitatus, and C. Ardoini. The last is a pretty alpine shrub a few inches high, and suitable for the rock-garden; its tufted growth is covered in summer with yellow flowers.

Dabœcia polifolia (*St. Dabeoc's Heath*).—A beautiful heath-like shrub 12 to 24 in. high, the stems bearing crimson-purple blooms in drooping racemes. There is a white variety much less common and no less beautiful, and also a pretty variety with purple and white flowers, called bicolor, flowering in summer and admirable for grouping with hardy heaths in peat beds. Abundant in some parts of Ireland, hence called Irish Heath.

Dactylis (*Cocksfoot*).—The variegated forms of this native Grass are attractive to those concerned much with bedding out, D. glomerata variegata being one of the most useful of edging plants, and

easily increased by division in autumn or spring, thriving in almost any soil, but if the soil be too poor the plant is apt to look rusty in dry autumns. There are several other variegated forms graceful as edgings to beds, as carpets or mixtures, or as tufts in borders. The graceful leaves should not be clipped.

Daffodil (*Narcissus*).

Dahlia.—The Dahlia group is not a large one, so far as wild plants go, and every species is a native of Mexico. It is valued chiefly for the many beautiful varieties that have been raised from seed, the garden varieties being separated in various classes. When well placed in the garden the Dahlia is superb, its profusion of bloom creating fine masses of colour in the late summer and autumn months, especially when the best forms of the Cactus section are used. Distinct beds of Dahlias present a fine aspect, if the colours are well contrasted, and many otherwise good effects are spoilt by mixing up tall and dwarf bushy kinds indiscriminately. A mass of one colour looks well, especially if backed by dark-leaved shrubs, whilst distinct beds are a welcome feature in the flower garden, being gay far into the autumn when the weather is not frosty.

CLASSES.—The recognised classification of Dahlias is convenient, but not very distinct. A few years ago the two leading classes were the Show and Fancy Dahlias—distinctions confusing to some, as a White or Yellow Dahlia, edged or tipped with a dark colour, was classed as an edged, tipped, or laced Dahlia, and included among the show flowers ; but if the disposition of colour was reversed, and dark-coloured flowerets were tipped with a light colour, the plant was classed as a Fancy Dahlia. All the kinds with Carnation-like stripe were Fancy Dahlias. The catalogues abound with names of varieties, and the grower can make his own selection, especially as new forms are often raised. Varieties that do not conform to the stiff ideal of the hard-shell florist sometimes please the artist or the gardener best.

SHOW AND FANCY DAHLIAS.—These are not so much grown in gardens as formerly, but are still seen at the exhibition, Dahlias being shown in a far freer way than was usual a generation ago, and the Cactus and Single classes have, to some extent, overshadowed the formal Show and Fancy varieties. The reason why these are less valuable than many other kinds of Dahlia in the garden is because of the weight of the flowers. There is little graceful beauty about them, the stems being bent with the burden of a too heavy blossom, hence the greater popularity of the many lovely Cactus varieties.

Show Dahlias.—Agnes, Alexander Cramond, Bendigo, Colonist, Crimson Globe, Canary, Eclipse, Ethel Britton, George Gordon, George Rawlings, Glowworm, J. T. West, John Walker, Harry Keith, John Wyatt, Mr. Harris, Mrs. W. E. Gladstone, Mrs. S. Hibberd, Nellie Cramond, Queen of the Belgians, Richard Dean, R. T. Rawlings, Shirley Hibberd, J. T. Saltmarsh, W. H. Williams, W. Garratt, Wm. Keith, Wm. Rawlings.

Fancy Dahlias.—Buffalo Bill, Charles Wyatt, Comedian, Duchess of Albany, Frank Pearce, Gaiety, General Gordon, H. Eckford, H. Glasscock, Fanny Sturt, Mrs. Ocock, Mrs. Saunders, Peacock, Rebecca, Rev. J. B. M. Camm, Sunset, T. W. Girdlestone.

POMPON OR BOUQUET DAHLIAS are not so popular as either the Cactus or single forms. They seem to have gone out of cultivation to some extent, though they are useful for cutting. The tendency of recent raisers has been to increase the size of the flowers, but they should be quite small, as the name Pompon suggests, not like a Show or Fancy Dahlia. Although many additions have been made to this section, the pure-white variety, White Aster, still retains its popularity, and it is grown largely for cutting, and also for its effect. The Pompon Dahlias are very free-blooming, throwing their charming flowers well above the leaves.

Pompon Dahlias.—Admiration, Arthur West, Countess von Sternberg, Coquette, Crimson Beauty, Cupid, Darkness, Dove, E. F. Jungker, Eurydice, Eva, Fairy Tales, Gem, German Favourite, Glowworm, Golden Gem, Hedwig Pollwig, Juno, Lilian, Little Bobby, Little Ethel, Marion, Midget, Pure Love, Tommy Keith, Vivid, White Aster.

SINGLE DAHLIAS.—D. coccinea (D. Mercki), D. variabilis, and others formed the foundation, so to say, of this group. The value of Single Dahlias as beautiful garden flowers was not considered until a reaction set in against the show blooms, and then the elegant single kinds became popular. It is so easy to cross them and raise seedlings that the earlier varieties were quickly improved upon in colour and habit of growth, until we have now a delightful group of garden plants, free, and making a continuous display through the late summer and early autumn months. In the best kinds the flowers

are carried erect above the foliage, the growth bushy, and the flowers abundant. No summer flower gives a greater variety of brilliant colours, rich selfs and delicate hues of mauve and rose to pure white.

to judge of its merits. The striped kinds are also sportive, like striped Carnations, and depend in a large measure for their peculiar colour upon the weather. This class must not be confounded with those

Dahlia imperialis.

With all this choice, one, unfortunately, sees much of the striped kinds, too often praised, for the reason perhaps that they are well shown at some exhibition, but a new Dahlia should be seen in the garden

that have flowers boldly margined with colour. As the round-flowered form of Single Dahlia is declining in popularity one sees less of the big saucer-shaped blooms, so large that it was necessary to

support them when gathered. These flabby varieties won few friends, and the more recent kinds are far smaller and better.

Single Dahlias.—Annie Hughes, Butterfly, Chilwell Beauty, Conspicua, Duke of York, Duchess of Westminster, Eclipse, Evelyn, Gulielma, Jack, James Scobie, Miss Glasscock, Midget Improved, Mikado, Magpie, Nellie Ware, Paragon, Rose Queen, Yellow Boy, Yellow Satin.

"CACTUS" DAHLIAS.—These originated from D. Juarezi, which was introduced from Mexico about 1879, and they retain the characteristic shape of that species, the petals twisted, so to say, and reminding one of those of some of the Cacti. The earlier Cactus Dahlias had one fault—hiding the flowers amongst the leaves; but this is to a large extent changed, so that we have now a beautiful race of garden plants for summer and autumn, with flowers of bold form and charming and varied colours. A new group is formed by the single Cactus kinds. The flowers are quite single, about as large as those of a good single Dahlia of the ordinary type, and with twisted petals.

Cactus Dahlias.—Beauty of Eynsford, Bertha Mawley, Cannell's Own, Countess of Gosford, Countess of Radnor, Delicata, Ernest Cannell, Juarezi, Kentish Invicta, Kynerith, Lady Penzance, Matchless, Mrs. Francis Fell, May Pictor, Professor Baldwin, Robert Cannell.

TOM THUMB DAHLIAS.—This is a very dwarf race, the plants forming little bushes, but they are not satisfactory, as they appear not to bloom with great freedom, whilst the growth does not retain its true dwarf character. When true, the habit is compact, dense, and the single flowers borne well above the mass of leaves. Fortunately the colours of the flowers are for the most part simple, and raisers should steer clear of the ugly striped kinds. Dwarfing any flower naturally tall and graceful is a doubtful practice.

BEDDING DAHLIAS.—This is the name given to a small list of dwarf varieties, which are used for massing, blooming profusely. One kind named Rising Sun has the flowers brilliant scarlet, and used with good effect in the London parks.

SPECIES.—Amongst these we may note the following:—

D. coccinea, a tall plant with bright-scarlet flowers that rarely vary. Nearly related to it, and differing only in some slight points, is D. Cervantesi, also with showy scarlet flowers.

D. glabrata is a beautiful plant of dwarf spreading growth, more slender than any of the other species. The flowers are smaller than those of other kinds, and vary from pure white to deep purple. It is hardier than any other Dahlia, and plants left in the ground are generally uninjured throughout the winter. Its dwarf growth adapts it for positions unsuitable for the latter kinds, and it has a good effect in masses, its colour being unlike that of any other Dahlia. It is known also as D. Mercki, repens, and Decaisneana.

D. gracilis is a distinct and graceful plant, with slender stems and finely divided foliage, which gives it a freer habit than any other Dahlia. The bright-scarlet flowers are of the ordinary size.

D. imperialis has large and graceful much-divided leaves, and flowers, of a beautiful French white, thrown up in a great cone-like mass. It rarely flowers in the open air, but it is of service both in the flower garden and conservatory. Planted in rich soil, and placed in a warm, sheltered position in the open air at the end of May, it grows well in summer, and its large and graceful leaves make it an ornament worthy of being used as a "fine-foliaged" plant. Similar to this, but not so fine, is D. Maximiliana.

D. Juarezi is now well known. It is the more desirable because of its easy culture, as it requires no different treatment from ordinary Dahlias. It is not quite double, but is very fine in form and brilliant in colour, though it flowers somewhat sparsely.

D. variabilis is the supposed parent of all the garden varieties. The wild plant has scarlet flowers like coccinea, and is of similar growth. A packet of seed, however, will yield plants with flowers of all shades, from crimson to white and yellow.

CULTURE.—To get a good result it is essential to have rich, deep, and moist soil, and to put out strong plants as early as may be safe, so as to secure a good growth for autumn bloom. Where weak plants are put a little too late they may only give a few poor blooms before the frost comes. If planted in May and frost is feared, protect the young plants at night by turning a garden pot over them. If the soil is not deep, rich, and moist, manure-water should be used. Watering is usually necessary in early growth, afterwards it is not so in moist districts where the plant is well treated as regards depth and quality of soil. In dry places water is essential in most seasons. Staking and tying out the

shoots must be attended to, as the stems are brittle and break under little wind-pressure. Earwigs are great enemies to Dahlias, but can be trapped in small round troughs which may be got from any pottery. They may also be caught on pieces of Hemlock stem, 6 in. long, by leaving a joint at one end, and sticking the pieces here and there through the Dahlias. Small pots, with a little bit of dry Sphagnum Moss inside, inverted on the tops of stakes, also form good traps.

Cactus Dahlia "Juarezi."

INCREASE.—The usual practice is to take up the roots and store them in a dry frost-proof cellar in winter. Dahlias may be propagated by cuttings, root-division, and seed, the last way being used only where new kinds are sought. Cuttings are the best means of propagating Dahlias, though division of the roots is usually practised. If started in February or March in a temperature of 60° to 70° F., each crown will produce three or four cuttings every two or three days. These may be taken off even as early as March, close to the crown, without however injuring it, as others will come up at the base of those removed. The cuttings must not be too long before they are taken from the tubers, as then they flag. When the crowns have supplied all the cuttings that can be got from them they may be divided, and therefore nothing is lost. Cuttings may be successfully struck during the summer months; but this is unusual except in the case of choice varieties. Three-inch pots are best for putting the cuttings into, six cuttings being put in each pot. They should be plunged in a brisk bottom-heat, covered with hand-glasses, and shaded from bright sunshine. In less than a fortnight they will be all rooted, and may be potted off singly into large 3-in. pots. Harden them off gradually until planted out in May.

To raise seedlings sow the seed in heat in February, and treat the young plants in the same way as cuttings. To propagate from layers the lowest branches of the plant should be pegged down. If the soil be sandy they will root freely, but in the absence of sandy soil a quantity of leaf-mould with a mixture of sand may be laid down for them to root into. Pure white sand alone is best suited for striking them in, and a mixture of leaf-mould and sand is very good to start the crowns in.

WINTERING.—As long as the weather keeps mild Dahlia roots are best in the soil, and need not be taken up till the end of November; but should sharp frosts be followed by heavy rain they should be promptly removed from the ground. Lift the roots on a dry day, and cut off the stems to within 2 or 3 in. of the crown. Remove the greater portion of the soil from the tubers and lay the latter out in the sun to dry before storing. The floor of a greenhouse where frost can be excluded, or a dry cellar, is a good place to store the roots in. A little ventilation is necessary to keep them from getting mouldy; but a hot dry atmosphere must also be avoided, as the tubers might shrivel in it. By lifting the roots with some soil adhering to them, they are kept plump during the winter, which is best when they are required for early forcing. They will generally keep well on the floor of a greenhouse, as it is light and airy, and during mid-winter much water should not, as a rule, be given. The tubers of some sorts are more difficult of preservation than others, and choice varieties are frequently bad keepers.

The species of Dahlia are natives of Mexico and adjacent regions: 1, arborea; 2, astrantiæflora; 3, coccinea; 4, excelsa; 5, gracilis; 6, imperialis; 7, Maximiliana; 8, Mercki; 9, platylepis; 10, pubescens; 11, scapigera; 12, variabilis; 13, Juarezi.

D. Zimapani (*Cosmos*).

Daisy, Blue.—Applied to various plants—Agathæa, Kaulfussia, and Bellis.

Daisy (*Bellis perennis*).

Daisy, Bush (*Olearia*).

Daisy, Crown (*Chrysanthemum coronarium*).

Daisy, Marsh Ox-eye (*Chrysanthemum lacustre*).

Daisy, New Holland (*Vittadenia triloba*).

Daisy, Ox-eye (*Chrysanthemum leucanthemum*).

Daisy, Paris (*Chrysanthemum frutescens*).

Daisy, Tree (*Olearia*).

Dames' Rocket (*Hesperis*).

Danes' Blood (*Sambucus Ebulus*), also called Dane Weed and Dane Wort.

Daphne.—Most of the hardy Daphnes are beautiful flowering shrubs, besides being among the finest of Evergreens. There is a group of small-growing species among them that claims a place in the rock-garden. The best-known and the most popular Daphne is the old Mezereon (D. Mezereum), whose leafless branches are often wreathed with fragrant blossoms before winter is past. The common sort has reddish-purple blooms, but there are pink and white, single and double-flowered forms. It is indispensable for every garden, and should always be planted

Garland-flower (Daphne Cneorum).

where its beauty can be enjoyed in early spring, and it does best in an open sunny place in almost any soil. In some seasons it flowers from the end of January until April. The pretty D. Cneorum (the Garland-flower) is a favourite little shrub, 6 to 12 in. high, more suited for the rock-garden than the shrubbery. The deep-pink flowers are deliciously fragrant, and appear in dense clusters at the tips of the shoots, the unopened buds being crimson. It flowers in April and September, often twice a year, the fragrant flowers being borne in dense terminal umbels. It is a native of most of the great mountain chains of Europe, and is suitable for the rock-garden, for the front margin of the mixed border, or as an edging to beds of choice low shrubs, being of trailing growth, and forming dense cushion-like masses of evergreen leaves a few inches high, thriving

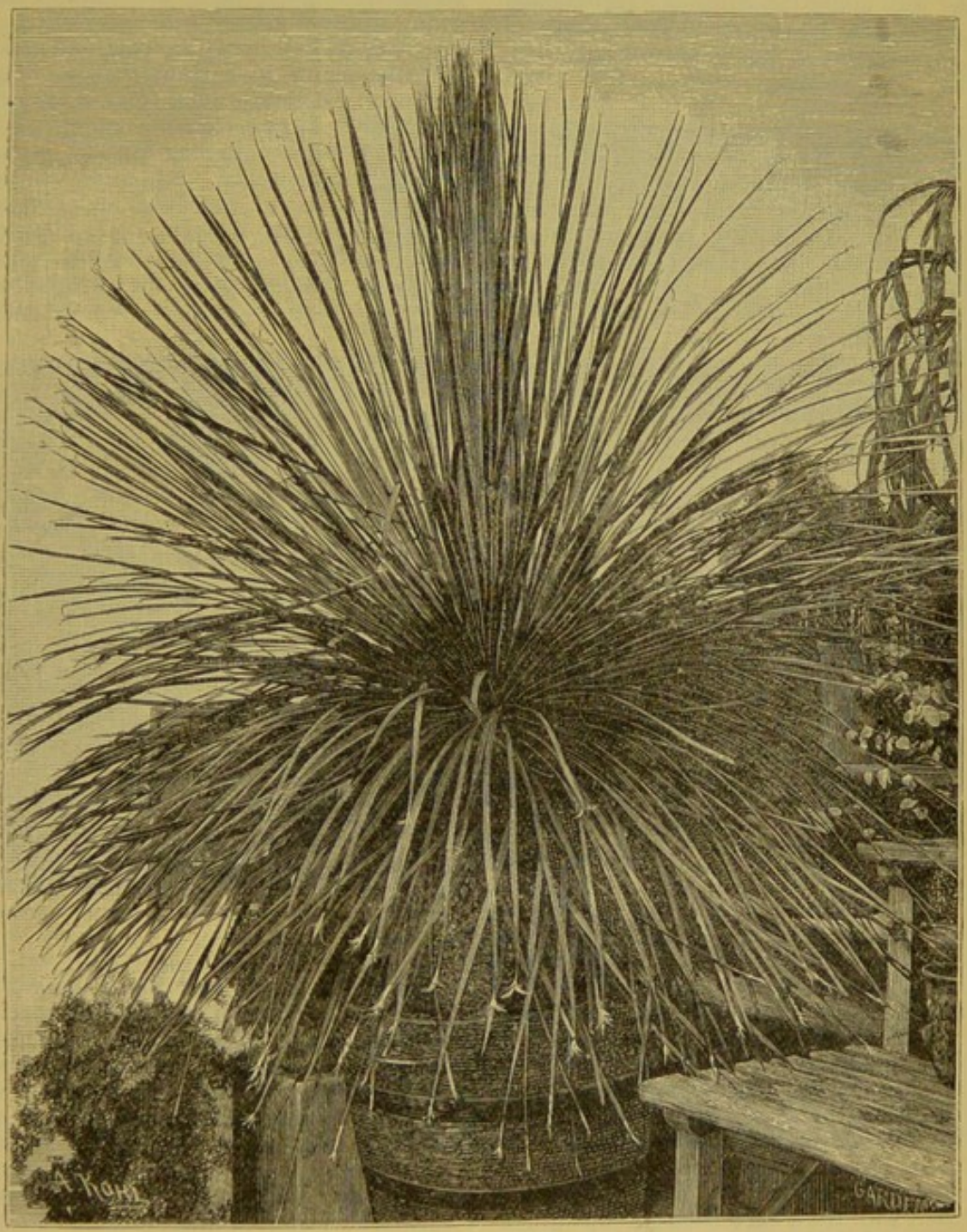
best in an open situation in sandy peaty soil. Increased by layers. D. rupestris (Rock Daphne) is a neat little shrub, with erect shoots forming dense, compact tufts, 2 in. high and 1 ft. or more across, which are covered with bloom which sometimes almost eclipses the plant. Its colour is a soft-shaded pink or rose, and its flowers are larger and more waxy than those of D. Cneorum, but form clustered heads in the same way. It is essentially a rock-plant, growing wild in fissures of limestone in peaty loam. In cultivation it is of slow growth, and it takes some years to form a moderate-sized tuft, but the plant is a gem worth waiting for. It seems to thrive in very stony and peaty earth with abundance of white sand, and should be planted in a well-drained but not in a dry position. D. Blagayana is a beautiful dwarf alpine shrub, 3 to 6 in. high, also suitable for the rock-garden. It is of straggling growth, the leaves forming rosette-like tufts at the tips of the branches, and encircling dense clusters of fragrant white flowers. It blooms in spring for several weeks, and is of easy culture, thriving in the rock-garden in well-drained spots surrounded by stones for its wiry roots to ramble among. It is hardy, and in open spots thrives in any good soil; increased by layers pegged down in spring and separated from the plants as soon as roots are emitted. Another Daphne is the Japanese D. Genkwa, introduced about twenty years ago, but still uncommon. In spring, before the leaves appear, it bears freely large lilac fragrant flowers. D. Fortunei, from China, is similar to it. The foregoing are the best hardy Daphnes; others in cultivation are: D. alpina, a dwarf deciduous shrub, about 2 ft. high, with clusters of fragrant white flowers; D. collina, from South Europe, a dwarf evergreen form, 2 or 3 ft. high, bearing clusters of fragrant pink blossoms during the first half of the year; D. neapolitana, from Italy, similar to this, and probably only a variety of it; D. altaica, with neat growth, like that of D. Mezereum, has white scentless flowers; D. pontica and Laureola are good Evergreens, although not remarkable for blossom; while the pretty D. odora and its variety Mazeli are scarcely hardy enough for open-air culture. Such a beautiful family deserves the best attention. The following is a list of the species, to which some beautiful things, it is hoped, will be added from the often little-known lands some of the species inhabit.

DAPHNE.—*alpina*, S. Europe and Himalayas. *altaica*, Sibiria. *aurea*, Orient. *Blagayana*, Carniolia. *cannabina*, Himal. *caucasica*, Caucas. *Championi*, China. *Cneorum*, S. Europe. *decandra*, Java. *Genkwa*, China. *glomerata*, Caucasus. *gnidioides*, Asia Minor. *Gnidium*, S. Europe. *involucrata*, India. *jasminea*, Greece. *Jezoënsis*, Japan. *Kuisiana*, Japan. *Laureola*, Europe. *linearifolia*, Syria. *Mazeli*, Japan. *Mezereum*, Europe and N. Asia. *odora*, Japan. *oleoides*, S. Eur. Asia Minor. *pendula*, Burma. *petræa*, Tyrol. *pontica*, Asia Minor. *pseudomezereum*, Japan. *Rodriguezi*, Minora. *Roumea*, China. *sericea*, S. Eur. and Asia Minor. *Sophia*, Asia. *striata*, S. Europe. *tangutica*, China. *tenuiflora*, Ins. Timor. *triflora*, China.

Darlingtonia californica (*Californian Pitcher-plant*).—A most singular plant, resembling the Sarracenias, but very distinct: the leaves, which rise to a height of 2 ft. or more, are hollow, and form a curiously shaped hood, from which hang two ribbon-like appendages, the hood often a crimson-red, and the flowers are almost as curious. This remarkable plant is found to grow in our climate if care be taken with it; and it would be difficult to name a more interesting plant for a sheltered bog garden. It is less trouble out-of-doors than under glass; indeed, it only requires a moderately wet bog in a light spongy soil of fibrous peat and chopped Sphagnum Moss. A place should be selected by the side of a stream, in an artificial bog or in any moist place, and the plants should be fully exposed to direct sunlight, but sheltered from the cold winds of early spring when they are throwing up their young leaves. They require frequent watering in dry seasons, unless they are in a naturally wet spot. When they become large they develop side shoots, which, if taken off and potted, soon make good plants. The plant is also raised from seed, but this requires several years.

Dasylirion.—Remarkable plants, better fitted for a temperate climate than for our own, but useful in places where many plants have to be turned out of greenhouses for the summer. They are related to the Yuccas and Beaucarneas, forming with these a well-marked group of the great Lily Order, all of them North American plants. Dasylirions are found only in Mexico and the Southern States, where they grow to a large size, forming stout woody stems and large heads of elegant leaves. They are slow growers, which is an advantage where space is limited and where they must be kept indoors. But there is no reason for treating Dasylirions as semi-tropical plants; they are as hardy as Agave americana, and they may be used for outdoor effect in summer in the same way as the Agaves are employed. Along the Riviera

there are fine specimens of Dasylirion and Beaucarnea. In the winter garden at Kew there is a plant of D. acrotrichum, which has been in its present position two years, and is in the best of health. The species at Kew have trunks 5 ft. high, and they flower now and again. The flowering spikes are erect, about 10 ft. long, the flowers in a narrow panicle. The male flowers are very small and



Dasylirion acrotrichum.

temperature of this house sinks as low as 35° in severe weather, and it never gets as warm in summer as the air outside. This fact is important, as showing that the Dasylirion may certainly be placed outside in summer Some of the plants of this crowded with pollen, the female ones bearing small triangular brown nut-like ovaries. Male and female flowers are borne by different plants. D. graminifolium has a short trunk and a large head of leaves, which are similar to those of D. acrotri-

chum, except that they have not the tuft on the end. D. glaucophyllum, sometimes called D. glaucum, has stiffer, broader leaves than the preceding, almost silvery. D. serratifolium is similar, but shorter in the leaf. D. quadrangulatum is sometimes met with under the name of Xanthorrhœa hastilis, the leaves resembling those of Xanthorrhœa in being narrow and rush-like. D. quadrangulatum is a fine plant, the leaves, from 3 to 4 ft. long, forming a large head, the lower ones recurved and elegant. D. Hookeri has a bole-like stem, not unlike that of Testudinaria, with tufts of glaucous leaves springing from the upper part, and elegant in a young state. These plants like plenty of water in summer, little or none in winter, and they do not require much root-room.

Datura (*Thorn Apple*).—Plants of the Nightshade family, including several handsome garden plants that well deserve cultivation. Being natives of Mexico and similar countries, none are hardy, but owing to rapid growth some succeed well if treated as half-hardy annuals, and make effective plants in a short season. The best are : D. ceratocaula, from 2 to 3 ft. high, with large, scented, trumpet-like flowers, often 6 in. in length, and 4 or 5 in. across, white, tinged with violet-purple, expanding in the afternoon and closing on the following morning. D. fastuosa is a handsome species, having white blossoms smaller than the preceding; there is a fine variety of it with the tube

Datura meteloides.

Date Palm (*Phœnix*).

Datisca cannabina.—A tall and graceful herbaceous perennial from 4 to 7 ft. high, the long stems clothed with large pinnate leaves, yellowish-green flowers appearing towards the end of summer. The male plant is very strong and graceful in habit : the female remains green much longer than the male ; when it is laden with fruit, each shoot droops gracefully, and the plant should be included in any selection of hardy plants of good form. Seed will be found the best way to increase it, and would secure plants of both sexes. The border is not its place ; it is, above most other plants, suited for the grassy margin of an irregular shrubbery, and will be all the more effective if planted on a grassy slope, where its deep-seeking roots will soon defy the most protracted drought.

of the flower violet and the inside white. The most striking forms of this species bear "double" flowers, the primary corolla having a second and sometimes a third corolla arising from its tube, all being perfectly regular in form, and often being particoloured, as in the single variety with violet flowers. D. fastuosa Huberiana of the seed catalogues, and several varieties of it that are offered, are reputed to be hybrids of this species with the dwarf D. chlorantha flore-pleno or D. humilis flava of the gardens ; but although they offer a greater variety of colour, they are less hardy than the older forms just described, and appear to require a warmer climate for their complete development. D. meteloides is a handsome Mexican plant, called in gardens Wright's

Datura. Isolated specimens of it have a fine aspect in sunny but sheltered nooks. It is from 3 to 4 ft. high, has wide-spreading branches, and blooms from the middle of July till frost sets in, the flowers white, tinged with mauve ; from 4 to 6 in. across, showy and sweet, but the leaves emit a disagreeable odour. Besides these there are other kinds in cultivation, such as D. ferox and quercifolia, but those described are the finest. Fresh seeds are readily raised, in an ordinary hot-bed ; the young plants while small should be pricked out singly in pots, and finally planted out where they are to stand. They need ample space for their full growth, and should be grown in light warm soils. (See also Brugmansia.)

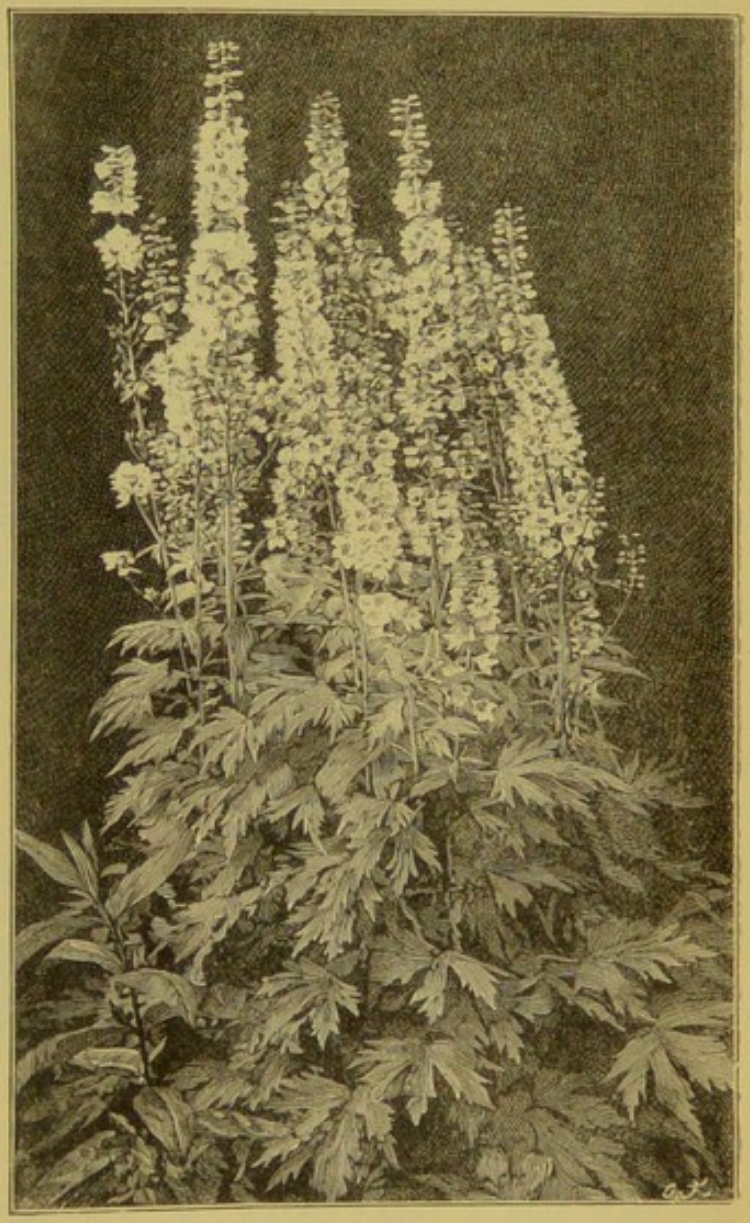
The plants hitherto known as Brugmansia are now considered to belong to Datura, and the following are the accepted species.

DATURA.—*arborea*, S. America. *ceratocaula*, tropical America. *chlorantha*. *cornigera*, Mexico. *discolor*, Mexico. *dubia*. *erinacea*, Brazil. *fastuosa ferox*, China. *floribunda*, S. America. *inermis*, Abyssinia. *Leichhardti*, Australia. *Metel*, tropical countries. *meteloides*, W. America. *microcarpa*. *nigra*, Malaya. *præcox*. *quercifolia*, Mexico. *sanguinea*, S. America. *scandens*, Brazil. *Stramonium*, common everywhere. *suaveolens*, Mexico. *trapezia*, India.

Day Lily (*Hemerocallis*).

Decumaria.—Two species of this interesting genus are in cultivation ; both are hardy, and useful climbers for walls and buildings. D. barbara, a native of Carolina, where it is found in shady places along the margins of swamps, is a very elegant plant. The branches cling to the wall by small rootlets, as in the Ivy, and when allowed to ramble at will are very grotesque, ascending trees or walls to a considerable height, and requiring no nailing and little attention. The flowers are in large bunches in May and June, pure white and fragrant, resembling Hydrangea. D. sinensis is a native of Central China, and a beautiful hardy species. It is a climber, and was found by Dr. Henry covering the cliffs of the Ichang Gorge with clusters of fragrant white flowers.

Delphinium (*Larkspur*).—Few plants contribute so much to the beauty of the garden as these fine plants of the Crowfoot Order. There are in cultivation many species, both annual and perennial,



Delphinium.

but the most important are the tall hybrid perennials, of which there are many varieties with a wonderful range of lovely colour. They are very valuable for their great variety in height, from 1 to 10 ft. ; for their greater variety in shades of colour, which range from almost scarlet to pure white, from the palest and most chaste lavender up through every con-

ceivable shade of blue to deep indigo; and for the variety of size and form of their individual blooms, some of which are single, some semi-double, and some perfectly double, and all set on spikes ranging from 1 to 6 ft. in length. About a dozen species have given rise to the cultivated varieties, the chief species being D. grandiflorum, formosum, lasiostachyum, cheilanthum, elatum, and peregrinum.

CULTURE AND POSITION.—The combinations in which they can be placed are numerous. They are splendid objects in various positions, and may be used in various ways—in the mixed border, in masses or groups in one or several colours, or associated with other flowering plants or with shrubs. Perennial Larkspurs thrive in almost any situation or soil; they are easily increased, and are quite hardy. A deep friable loam, enriched with rotten manure, is a good soil for them, but they will grow well in a hot sandy soil if it be heavily manured and watered. Every three or four years they should be replanted and divided, and this is best done in spring, just as they are starting into growth, or in summer; if it is done in summer, cut down the plants intended for division, and let them remain for a week or ten days until they start afresh; then carefully divide and replant them, shading and watering until they are established. Late autumn division is not advisable. Delphiniums can be made to bloom for several months by continually cutting off the spikes immediately after they have done flowering. If the central spike be removed, the side shoots will flower, and by thus cutting off the old flowers before they form seeds we cause fresh shoots to issue from the base, and to keep up a succession of bloom. Another plan is to let the shoots remain intact until all have nearly done flowering, and then to cut the entire plant to the ground, when in about three weeks there will be a fresh bloom. In this case, however, to keep the plants from becoming exhausted, they must have a heavy dressing of manure or manure-water. Top-dressings keep the soil cool and moist, give the plants a healthier growth, increase the number and improve the quality of the flowers.

The following is a selection of the good kinds: *Single Varieties.*—Belladonna, Hendersoni, Cambridge, Granville, Gloire de St. Mande, Barlowi, versicolor, Coronet, magnificum, Lavender, pulchrum, formosum, lilacinum, Celestial, Madame Hock, mesoleucum superbum, Defiance, and Attraction. The grower should consult his own taste, and raise seedlings of his own, taking care to have a good stock of the standard varieties he likes best. *Double Varieties.*—Madame E. Geny, Madame Henri Jacotot, Madame Richalet, Pompon Brilliant, Roi Léopold, Hermann Stenger, Claire Courant, George Taylor, Roncevaux, Le XIXe. Siècle, Keteleeri, Prince of Wales, General Ulrich, Arc en Ciel, Sphere, Michael Angelo, Delight, Glynn, Barlowi vittatum, Star, Perfectum novum, Triomphe de Pontoise, Pompon de Tirlemont, Victor Lemoine, Trophée, Madame Henri Galotat, Louis Figuier, Azureum plenum, and Madame Ravillana. The beautiful old D. grandiflorum fl.-pl., another double variety, is one of the most charming of border plants.

The best of the numerous perennial species distinct from the hybrids are—D. cashmerianum, with flowers nearly as large as those of D. formosum, and with stems about 15 in. in height. The flowers are 1 in. in diameter, and are usually of a light blue-purple, but they vary in shade to mauve and dark blue, and are produced in terminal corymbs of six or more. D. cashmerianum is well suited for the border or for a large rockery; in either case perfect drainage is essential, and this is best attained in rock-garden culture. Its branches have a prostrate habit, apparently adapting it to such conditions. It is best increased from seed. D. cardinale is a beautiful species of tall growth, having bright-scarlet flowers, like those of D. nudicaule. It blossoms later in summer, and continues longer in flower than D. nudicaule, owing in part to its slower development. It is a most desirable plant, and as hardy as D. nudicaule. Seedlings will probably not flower till the second season. In very damp soil it would be prudent in winter to protect the root with a hand-light or inverted pot. D. chinense is distinct from other Larkspurs, and is neat and rather dwarf in growth, having finely cut feathery foliage, and freely producing spikes of large blossoms, usually of a rich blue-purple, but sometimes white. It is a good perennial, is easily raised from seed, and continues to flower throughout the summer till late in autumn. It is suited for borders and beds. D. nudicaule has scarlet blossoms, a dwarf, compact, branching growth, a hardy constitution, and a free blooming habit, 1 to 3 ft. high. The flowers are in loose spikes, each blossom being about 1 in. in length; the colour varies from light scarlet to a shade verging

closely on crimson, and when seen in the open air, especially in sunshine, dazzles the eye by its brilliancy. D. nudicaule is perfectly hardy, and commences growth so early that it may almost be termed a spring flower, but it may be had in bloom during several of the summer months, and is handsome for warm borders. Although somewhat apt to damp off on level ground, it is a perennial on raised ground, and keeps up a succession of bloom. It is as easy to raise from seed as other Larkspurs. A tall variety of nudicaule is called elatius.

of the Rocket Larkspur may be arranged in three great groups: 1. D. Ajacis majus (large Larkspur).—The stem of this is single, and varies in height, from 3 to 4 ft. 6 in.; the flowers double, in a long, single, and compact spike, generally rounded off at the extremity. This kind has given the following varieties—white, flesh-coloured, rose, mauve or puce-coloured, pale violet, violet, ash-coloured, claret, and brown. 2. D. Ajacis minus (dwarf Larkspur).—The stem of this is from 20 to 24 in. in height, and is even shorter when the plant is sown thickly or

Delphinium grandiflorum.

THE ANNUAL LARKSPURS.—In these hardy annuals there is also a wealth of beauty for the summer garden, and we have a host of beautiful sorts with a wide range of colour. There is great diversity too in the habit of growth, some being as dwarf as a Hyacinth, others 3 or 4½ ft. high, others with a branching habit resembling a candelabrum. The species which have given rise to these varieties are D. Ajacis (Rocket Larkspur) and D. Consolida. D. Ajacis has the flowers in long loose spikes forming an erect and spreading panicle, the stem vigorous with open spreading branches. All the varieties in dry or poor soils. The flowers are very double, and in a single well-furnished spike, usually cylindrical, and rounded off at the extremity, but rarely tapering. The principal varieties are—white, mother-of-pearl, flesh colour, rose, mauve, pale mauve, peach blossom, light violet, violet, blue-violet, pale blue, ash-gray, brown, light brown, white striped with rose, white striped with gray, rose and white, and flax-coloured and white. 3. D. Ajacis hyacinthiflorum (dwarf Hyacinth-flowered Larkspur).—The varieties of this group have been raised in Belgium and Germany. They do not differ from

other kinds in form of flower, but only in the spike on which the flowers are set, being more tapering, and the flowers

Portion of a group of Delphiniums in the garden at The Grange, Knutsford, Cheshire.

farther apart than those of the two previously mentioned groups. There is a strain called the tall Hyacinth Larkspur. Other strains mentioned in catalogues are the Ranunculus-flowered (ranunculiflorum) and the Stock-flowered, both of which are worth cultivating.

D. Consolida (Branched Larkspur).—This species has branching stems and beautiful violet-blue flowers hung on slender stalks, and coming later than those of D. Ajacis. It embraces several varieties, both single and double, all of which may be reproduced from seed. The principal sorts are white, flesh colour, red, lilac, violet, flaxen, and variegated. The varieties especially worthy of cultivation are candelabrum, bearing pyramidal spikes of flowers of various colours; and the Emperor varieties, of symmetrical bushy habit, which form compact and well-proportioned specimens, 1½ ft. high by 3½ ft. in circumference, doubleness of flowers possessing great constancy. There are three colours—viz. dark blue, tricolored, and red-striped. In D. tricolor elegans the flowers are rose-coloured, streaked with blue or purple, and about 3 ft. high.

CULTURE.—Annual Larkspurs should be sown where they are to remain at any time after February when the weather permits—usually in March and April. They may also be sown in September and October, and even later when the ground is not frozen, but the produce of winter sowing is liable to be devoured by slugs and grubs. The sowing may be made either broadcast or in rows 4 in. to 8 in. apart, and the plants should stand 4 in. or 5 in. asunder. The branching varieties may be sown in reserve beds, and in March when about 12 in. or 16 in. high should be transferred to the flower beds, lifted carefully with balls of earth round the roots, so that they may not suffer. These branching varieties are well suited for the garden, either in masses of one colour or of various colours. They may be planted in borders or among shrubs thinly planted. One great advantage of this class is that it flowers earlier and longer than the dwarf Larkspur—that is to say, it flowers throughout the summer, and, according to the period of sowing, from the end of June or July to September, and even to October if the flower-stems that have shed their blossoms be cut off. They succeed, moreover, in the driest calcareous soils, and even upon the declivities of hills. By pinching, dwarf plants useful under certain circumstances may be obtained. Seed should be taken only from flowers perfectly double; and for this purpose single-flowered plants should be carefully

weeded out. Larkspurs are at their best in June and July; they bloom almost anywhere, especially in dry localities, and do not require much attention. They look well whether they are all of one colour, or of all the colours mixed, and, by separately using varieties possessing different colours, striking contrasts may be produced. Other annual Larkspurs, such as D. orientale and D. cardiopetalum, are scarcely worth cultivating, now that we have so many beautiful varieties. Those who are fond of Delphiniums will find in the *Index Kewensis*, recently published, a list of the accepted species.

Dendromecon rigidum (*Shrubby Poppy*).—A rare shrubby poppy from the summits of mountains near St. Barbara, North America, where it was first found by Nuttall. It flowers in June, and should be planted in a sandy loam in a warm corner.

Dentaria (*Toothwort*).—Interesting spring-flowering plants of the Crucifer Order, of which there are in cultivation some half a dozen species all worth growing in half-shaded positions in peat beds, among shrubs, on the margins of borders, or in the cool shrubbery. They grow best in a light sandy or peaty soil enriched by decayed leaf-mould. Their flowers are welcome in early spring, and remain some time in beauty, and they are easily increased from the small tuber-like roots. Some, like D. bulbifera, bear bulblets on the stem, and from these the plant may be increased. None of them ripen seed freely. The species are—D. bulbifera, 1 to 2 ft. high, flowering in spring; purple, sometimes nearly white, rather large, and borne in a raceme at the top of the stem. D. digitata, a handsome dwarf kind, about 12 in. high, flowers in April; rich purple, in flat racemes at the top of the stem. A native of Europe. D. diphylla is a pretty plant, from 6 to 12 in. high, bearing but two leaves, the flowers purple (sometimes white) and yellowish. N. America. D. enneaphylla is about 1 ft. high; has in April and June clusters of creamy-white flowers, and is a pretty plant for a shady border. Mountain woods in Central Europe. D. maxima is the largest of the species, being 2 ft. high, with many pale-purple flowers, and is a native of N. America. D. pinnata is a stout species at once distinguished by its pinnate leaves; it is from 14 to 20 in. high, flowering from April to June, bearing large pale-purple, lilac, or white flowers, in a cluster. It is a native of mountain and sub-alpine woods in Switzerland. D. polyphylla, similar to D. enneaphylla, is about 1 ft. high, with cream-coloured flowers in clusters. It is a handsome plant; from woods in Hungary.—Cardamine.

Deodar (*Cedrus Deodara*).

Deptford Pink (*Dianthus armeria*).

Desfontainea spinosa.—In favoured gardens along the southern coast and in other mild parts this very beautiful evergreen shrub from Chili can be grown and flowered out-of-doors. It is of moderate growth, having foliage very much like the Holly, the handsome flowers in the form of a tube of bright scarlet tipped with yellow. It usually flowers about the end of summer, and in some parts of Devonshire it blooms profusely, thriving in a light loamy soil.

Desmodium (*Tick Trefoil*).—A few of the North American species are cultivated, but their weedy appearance prevents their general culture. These are D. canadense, marilandicum, and Dilleni, all from 2 to 4 ft. high, with slender stems, terminated by dense racemes of small purplish flowers. D. penduliflorum is a really pretty shrub, and hardy if the stems are annually cut down, with graceful shoots, bearing along their upper portions numerous rich violet-purple blossoms in September.

D. penduliflorum is the name by which the beautiful Lespedeza bicolor is generally known. It is a slender shrub, graceful when in flower 6 ft. or more in height, bearing drooping racemes of small Pea-shaped flowers of a carmine-purple colour. It is a native of China and Japan, and hardy enough for open-air culture except in cold districts. It makes a good wall shrub.

Deutzia.—The best of the few species in cultivation are D. gracilis and D. crenata, both common and well-known shrubs, the first generally seen in greenhouses, the second in almost every shrubbery. D. gracilis, so often grown in pots, is quite hardy, and, under good conditions, makes a dense bush about 2 ft. high, in a free soil flowering as freely as when in pots. D. crenata (commonly called D. scabra) is a much larger bush 6 to 8 ft. high, its leaves large and rough, and, when in flower, its slender stems are wreathed with racemes and panicles of pure-white blossoms. There are two distinct and beautiful varieties of it—viz. flore-pleno, with double flowers, tinged with purple, and candidissima, with an abundance of double snow-white flowers. This is one of the finest hardy flowering shrubs, and is called the Pride of Rochester. Deutzias grow in any good soil, best in slight shade; if too much exposed

they are liable to suffer during drought. They should be pruned annually, the old wood being cut away, and the young growths thinned

The species are *D. gracilis*, Japan. *grandiflora*, China. *macrantha*, Himal. *mexicana*, Mexico. *parviflora*, China. *scabra*, Japan. *Sieboldiana*, Japan. *staminea*, Mountains of India.

Devil-in-a-bush (*Nigella*).

Dew-Berry (*Rubus*).

Dianthera americana (*Water Willow*).

Deutzia parviflora.

—A perennial herb, from 2 to 3 ft. high, with erect slender stems and small purplish flowers growing in streams and ponds in North America, and being quite hardy is suitable for such places here. Acanthaceæ.

Dianthus (*Pink*).—Plants of the highest garden value, containing several of our finest families of hardy flowers—the Carnation, Pink, and Sweet William—besides numerous alpine and rock plants that are among the most charming of mountain plants. Many of the species are plants of the heath, dry meadow, or maritime Alps; or shore plants, such as the Fringed Pink (D. superbus); and, so far as our climate is concerned, they are almost at home in lowland gardens. On the other hand, some are among the very highest alpine plants, like the Glacier Pink and the Alpine Pink.

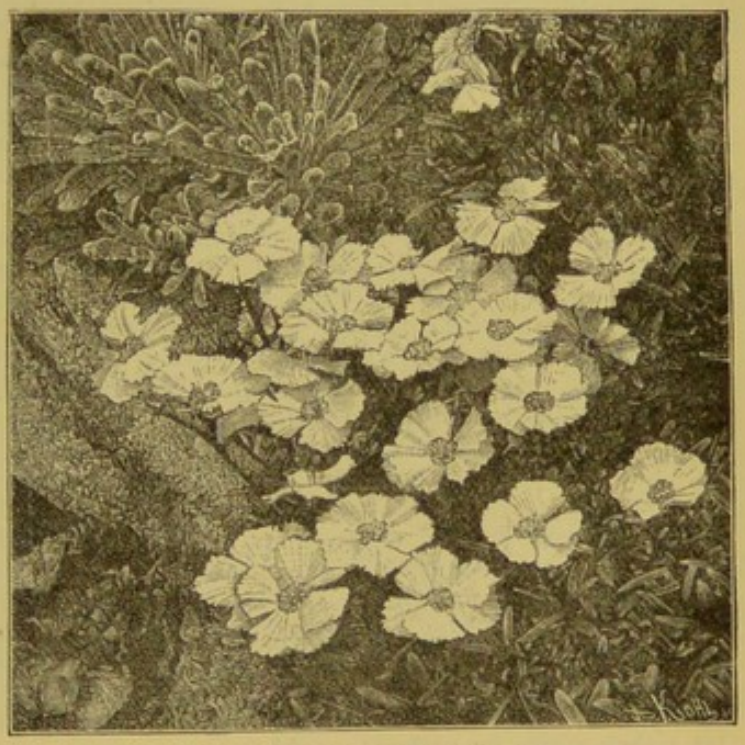
The following is a selection of the best species for gardens.

D. alpinus (*Alpine Pink*).—A beautiful and distinct plant, distinguished at a glance from any other cultivated Pink by blunt-pointed shining green leaves. The stems bear in summer solitary circular flowers, of deep rose spotted with crimson, and when the plant is in good health they are so numerous as to hide the leaves. In poor, moist, and very sandy loam this Pink thrives and forms a dwarf carpet, though the flower-stems are little more than 1 in. in height; but both leaves and stems are much more vigorous and tall in deep, moist peaty soil. Wire-worms cause its death more frequently than unsuitable

soil. It should be placed in a fully exposed spot, and carefully guarded against drought, especially when recently planted. It is not difficult to increase from seed, and it comes true; and it may be also increased by division. Alps of Austria.

D. barbatus (*Sweet William*).—One of the most admired of garden flowers, hardy and vigorous; bearing a profusion of bright flowers which form sheets of bloom, the colours being vivid and pretty, and the flowers often finely and distinctly marked. What makes the Sweet William of such high value for small gardens is that its culture is so easy, and it may be raised from seed without the aid of glass.

The Sweet William has been greatly improved of late years, and the old varieties are surpassed. The points the "florist" improver aims at are a circular flower, with no indentation where the petals meet, thick in petal, and with all the petals marked alike, the colours meeting each other in clearly defined lines without any feathering or flushing into each other; but in this, as in other flowers, the more variety the better. In the Sweet William colours vary, and they may be classed under two heads—dark and light kinds. Of the latter there is a strain known as the Auricula-eyed, the blooms of which have a clear white eye in a setting of red or purple or some other rich dark colour. Smooth-edged flowers, such as Hunt's strain, have their admirers. Fine, evenly rounded trusses are always present in a good strain, but size is generally allied to high culture. Except for shows, however, very large trusses are not the best, as they usually need support. The finest strain is usually found where year after year care has been exercised in selecting only the finest flowers, with the largest trusses and most varied markings. The only self-coloured flowers are those of pure white, pink, or crimson; all the others are parti-coloured or variously marked, some very prettily mottled, others more or less edged with white or pale pink.



Dianthus alpinus (Alpine Pink).

CULTURE.—This is very simple; sow the seed in April, in a well-prepared bed in a sunny spot, thinning out the young plants when they are large enough, or, if a large stock is required, planting them out about 6 in. apart in good soil. About the end of September transplant them to their permanent quarters, and in the following summer they will bloom. When, however, any particular strain is to be rapidly increased the following plan is a good one: Sow in pots, and allow the seedlings to become a little drawn and lanky before planting out. Plant out in light loam, dressed only with a little leaf-mould or loam from rotted turfs, placing the seedlings so that a few of the lower joints are under the soil. When the blooming stems are well above the foliage, prick in a dressing of guano all round the plants, give plenty of water in dry weather, and a further slight dressing of guano just before the flowers begin to open. The result will be vigorous stocky shoots from the buried joints, all rooted and ready to plant out as soon as the bloom is over. Sweet Williams may also be propagated by cuttings taken off in early summer; for the main stems, which should rise for bloom, creep along the ground, and throw up from every joint shoots suitable for cuttings; and a little sheaf of cuttings may be taken from the tips of the main stems, so that each plant would furnish over a hundred cuttings.

Double-flowered kinds, as a rule, are not desirable except the double dwarf

magnificus, the deep velvety crimson flowers of which are the finest among the double kinds: the large heads of flower are numerous, the colour is rich and effective, it is a dwarf, vigorous grower, and soon forms a strong tuft.

D. Caryophyllus (*Carnation*).—This beautiful flower, so much loved in all countries where it can be grown both under glass and in the open air, in all its forms, is derived from a wild Dianthus of Western Europe and the Alps, which as regards our own country is wild on Norman castles such as Rochester. From very early days it seems to have been a favourite flower, as in Dutch pictures nearly 200 years old the Carnation, mostly in its striped forms, is shown in perfection. Clearly at this early date the tendency of the flowers to vary in colour and markings was greatly admired. At a very early date the Carnation was divided into four classes—viz. Flakes, Bizarres, Picotees, and Painted Ladies. The Flakes had two colours only, the stripes going the whole length of the petals. Bizarres (from the French, meaning odd or irregular) were spotted or striped with three distinct colours. Picotees (from the French, *piquotée*) had a white ground with additional colours in spots, giving the flowers the appearance of being dusted with colour. Painted Ladies had the under side of the petals white and the upper side red or purple, so laid on as to appear as if really painted. Unfortunately this class has so entirely disappeared that many growers are not aware that it ever existed. The first two classes still remain unchanged; but the Picotee, instead of being spotted, has the colours confined to the edge of the petals, and any spot on the ground colour (which may be either white or yellow) would detract from the merits of the flower as an exhibition flower.

Another class, too long neglected, consists of self-coloured kinds. A familiar type is the old crimson Clove, a sweet and lovely thing, which may be had also in several different shades of self-colour. The florists of the old school did not pay much attention to self-coloured Carnations, and till recently there was a scarcity of fine varieties. We may now have them in all shades of colour. They combine hardiness and vigour with free blooming and great effect. For the flower garden they are the most important. They should be grown in bold groups or simple masses associated with Roses or choice hardy flowers.

The Tree Carnation is very valuable as a pot plant; or, if planted out in a greenhouse border, it produces flowers in winter and spring, when none can be had out-of-doors. The most popular of this class is Souvenir de la Malmaison, with large cream-coloured blossoms and delightful fragrance, and from this have been obtained sports of different colours; so that, with these and other varieties, there is now no difficulty in obtaining all colours, from pure white to bright scarlet.

As a rule, the choice-named varieties of Picotees and Carnations for show are grown in pots, but we confine our remarks to their culture in the garden, also treating of it, shortly, from the exhibiting florist's point of view.

A great number of people still think Carnations are tender, and they coddle them up in frames throughout the winter. The florists, too, continue much in their old ways, which do not tend to the advancement of Carnation culture in gardens where we should see and grow fine selfs of brilliancy and beauty. As garden flowers Carnations have been badly treated, and yet there is no brighter and sweeter flower for the garden throughout summer and autumn. This fact is dawning on English raisers, but we have had the greatest success with fine French-raised selfs that combine hardiness with good form and colour, and, what is more precious, a perpetual blooming habit. Nothing could be better than Countess of Paris, Carolus Duran, Colin de Harleville, M. Roland, Murillo, Madame Lafausse, Mdlle. Rouselle, Veronica, Jenny Lind, Comte de Melbourne, and Flora. Of English kinds the only one we have had to equal the preceding is Alice, a white self of perfect form and a perpetual bloomer. Some standard kinds of the present are: Ketton Rose, Purple Emperor, Mrs. Muir, Germania, Rose Celestial, Emma Lakin, Hebe, Mary Morris, Mrs. Reynolds Hole, Aline Newman, Celia, and Joe Willett.

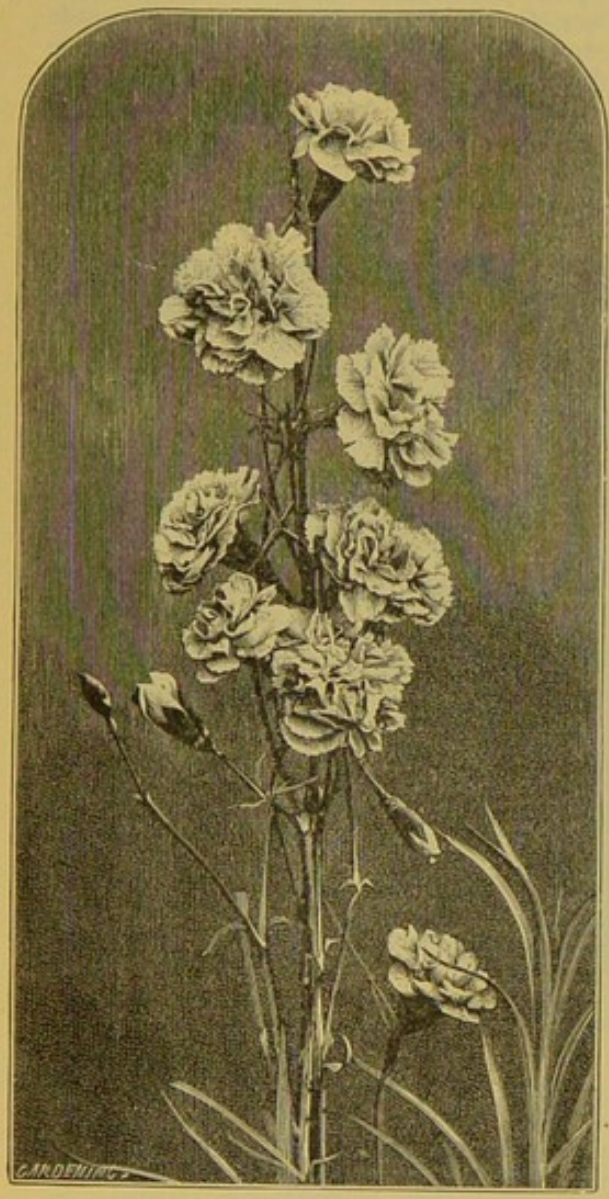
Soils.—The soil has a marked influence upon Carnations. In very light hot soils as in Surrey they cannot be grown well at all. They want a loamy soil, but as this varies in texture and richness so the plants vary in growth. In very rich soils they are so luxuriant that it is necessary to make new plantations, annually destroying the old plants. In some soils however they make a harder growth, and stand two or more years, spreading into great tufts and bushes.

Culture for Borders and Beds.—First, then, of the wants of the general

grower, who rightly esteems a good crimson or white Clove as it grows in the open garden as much as the most exact staged flower. And rightly so, because, in the opinion of those who have thought and studied most about it, the superiority in form is wholly with the bold, free, undressed flower. What applies to the individual flower applies with greater force to its culture in the garden. It does not appear at its best in lines, or circles, or dotted here and there as in pattern gardening ; but good kinds planted in groups of from twelve to fifty, according to room, will give us when in flower the truest idea of the value of fine Carnations for ornamenting the garden. These groups should be renewed annually, or fresh ones should be made elsewhere, a stock of plants having been raised from layers. Only in a few cases are Carnations likely to spread and make healthy tufts, able to stand for two or three years. It is generally advisable to destroy the old plants after flowering, and, if we do not, the frost often does. Young strong layers, planted during September about 9 in. apart, will produce an effect hardly to be surpassed. Layering has to be performed when the plants are in full flower, and as it is undesirable to interfere with the groups in flower, the best plan is to have a few plants of each kind grown in nursery quarters solely for layering. We can then enjoy all that is gained from planting groups thickly, and suffer no inconvenience. We shall also have plenty of flowers, and can cut great numbers without missing them. Varied colour is the distinctive charm of the florist varieties. Few of them are likely to produce bold effects like the selfs, but they may be grown in special beds and borders in a less prominent spot. Some nurserymen are beginning to see the mistake of neglecting a noble flower like this, and are trying to raise bold, free, and varied border flowers easily grown in every garden. They will succeed, and our gardens will be all the better for it. In specially cultivating the better kinds in beds, it is usual to cover the surface with 1 in. or more of fine rotten manure passed through a sieve, and in dry weather to give plenty of water ; but as many will not pay more attention than is necessary, it may be stated that neither water nor top-dressing is usually required in good garden soil, and, without either, the result will be quite as valuable from an ornamental point of view. But when a good collection is grown in special little beds in a warm border of the kitchen garden, a top-dressing of one barrow of mould to three of decayed manure could be given in a very short time, and if the weather or soil were very dry an occasional heavy watering would improve matters. Varieties are

Bed of Carnations at Bulwick.

endless ; and as English, Continental, and American florists are busy raising seedlings, these varieties are likely to be much added to, though enough attention has not as yet been paid to the raising of vigorous border and flower garden kinds with a great range of colour, form, continuity of bloom, and fragrance. It would be well for raisers to discard the kinds which



Carnation.

burst their flowers. This is a great defect, an unnatural habit too long condoned, and its evils are most manifest in the flower garden. In ordering, the public should distinctly make known their wishes as to colour, form, and fragrance. The Carnation does not depend for its beauty on elaborate instructions, which only the special grower for exhibition cares to master.

CARNATIONS IN POTS AND VASES.—It is a common practice to have pots and vases of flowers in the garden, but the Carnation is rarely seen in them. It is a grand flower for the purpose if naturally grown, allowing its flower spikes to droop where they will. The flowers on these last longer in bad weather, as they protect themselves from wet. Wherever pots can be stood they look admirable, but are seen to special advantage if above the line of sight. In window boxes they would make a pretty picture. The essential thing to do them well is to pot up some good strong layers in autumn and keep in a frame all the winter. In spring they should be potted into their flowering pots or vases. There should be no tying or training.

PERPETUAL CARNATIONS IN THE OPEN AIR.—These, if from a good strain of French seed, are very satisfactory plants, and useful for cutting. Their drawback is the habit of flowering in winter, but this can be obviated by sowing early, so as to get them to a good size by autumn, when they will flower in the spring and continue to bloom all the summer. Pipings struck in the spring and planted out in the autumn will behave in the same way. Old plants are difficult to manage in the open air, but survive the winter if well thinned out ; the only danger is damp cold, which rots them at the surface of the ground. They grow very well in light rich soil on chalk. Their free-rooting habit makes them unsuitable for pots. Many of my plants filled almost 3 ft. of soil with their roots ; it is manifest waste to cram such free-growing plants in pots.—J. D.

GARDEN CULTURE FOR EXHIBITION.—About the end of July cover the bed intended to be devoted to Carnations, &c., about 2 in. with good rotten manure, and if the soil be sandy add to this 2 in. of good mellow loam, or, if it be stiff, add the same quantity of sand. Then, whenever time can be spared, fork in the dressing well and dig it over. Then put the plants in firmly, putting all of the same sort in a row with a good legible label at the end. Being perfectly hardy, they will need no attention till next spring. At the same time take up and put in in the same way any seedlings sown in the spring, which will now be fine strong plants. The next spring, when the severe cold has ceased (about March or April), hoe the beds over carefully between the rows, and in fine weather water them if they are dry. When the flower-stems begin to rise, place a stick about 30 in. long to each

plant. These sticks should be painted a light whitish green. The flower-stems must be kept well tied up as they grow, but they must be tied quite loosely, for if they are tied tightly they will knee and bend, and finally break. About 20th June (or later), when the buds appear, take off all but three on each shoot, so as to leave each bud a little footstalk to itself when it grows (what is lost by this in quantity will be regained twenty-fold in quality). From this time until the buds are near showing colour, give occasionally a little weak manure-water—a handful of well-rotted stable manure to a large pot of water. As soon as they show colour at the top, tie them round with a little strip of bass about half-way down. This should be done every morning in July, as it saves much trouble as well as the unsightly peculiarity termed a "split pod." If in spite of this the pods split on one side, carefully open the bud all round at the other segments, using the flat wedge handle of a knife used for layering. Unless it is intended to save seed, cut off dead blooms as soon as they wither, and the flower-stems as soon as all the buds have come out, which will be about the end of August or beginning of September. Not later than the last week in July see to layering. As soon as the layers are rooted, which will be early in September, take them off and lay them in by the heels for a time, while taking up and throwing away the old stools, top-dress and fork over the bed with 2 in. of well-rotted stable litter or cow-house sweepings, replace the layers, and they will be in the same condition as at the beginning.

Redbraes Picotee.

PROPAGATION BY SEED.—The proper time to sow is about April or May. Prepare a compost of equal parts of loam, leaf-mould, and silver sand, sift it fine, and fill a number of 3-in. pots (as many as you have sorts of seed) to within 1 in. of the rim. Sprinkle each pot with a fine rose, flatten the surface, and with the

point of a knife put down the seeds separately about ½ in. apart. Cover them very lightly with finely sifted compost, and put them in a cold frame or house out of danger of frost. When they show three pairs of leaves, prick them out about 2 in. apart round the edges of 5-in. pots filled with the same compost, and keep them still in the cool house till there is no fear of frost. When they are about 3 in. high, prick them out into beds, keeping them about 4 in. apart. The beds may be enriched with a little sand and manure. In the autumn they will be nice little plants, and may be planted where they are to flower, which will be the next year. Keep and name any really good kind, discarding all singles, and using the rest for borders or beds for cutting from.

BY PIPINGS.—When the plants throw up shoots too numerous to layer, or when the root is attacked by disease, the shoots may be taken off as follows: Take the shoot just above the fourth or fifth joint from the top, and with a sharp pull draw it out from the socket formed by the next joint, which it will pull away with it. Just through the joint make a little upward slit in the cutting, and thrust it firmly into a pot filled to within 1 in. of the top with the compost described, and the rest with silver sand. Water the pot and plunge it in fibre under a hand-light for three or four weeks, when the pipings will be rooted. They may then be potted off singly or bedded like layers, and will flower the next year. Plants thus struck are never so good as those propagated by layers, but this method is a useful expedient to save a good sort or to get up a good stock.

BY LAYERS.—This is the best and most generally accepted method of propagating Carnations and Picotees. It should be commenced at latest the last week in July, and finished by the second week in August. It is performed as follows: Scrape away the earth round the plant to the depth of 2 in., and substitute for the earth removed the compost prescribed. Strip each shoot up to the top three or four joints, going all round the plant before proceeding farther. Then with a fine sharp knife cut half through a shoot, just below a joint, make a slanting cut up through the joint, and bring the knife out just above it; take a peg with a hook in it, and thrust it into the fresh compost just above the tongue, so that as the peg comes down it will catch the tongue and peg it into the earth. Cover it with a little more compost placed firmly. Proceed thus all round the plant, finally watering carefully with a fine rose waterpot to settle the soil around the layers. In about a month the layers will be rooted, and by the second week in October all the young plants ought to be in their winter quarters.

SEVERAL DISEASES affect Carnations. Two of the worst are fungoid growths. One of these is a fungus which grows between the membranes of the leaf, and the only method of destroying it is to pick off and burn every infected leaf. It appears at first as a small blister which bursts, scattering its spores and leaving a dark-brown scar. A more familiar disease is that known as spot; a damp atmosphere or overcrowding of the plants being the causes. It spreads rapidly, but some kinds enjoy a complete immunity from it. Dusting the plants two or three times with a mixture of soot and sulphur has been found effectual. The gout is a swelling of the stem close to the surface of the ground, which eventually bursts, supposed to be caused by little worms which eat their way into the collar of the plant and lay eggs there which hatch worms that feed upon and eventually kill the plant. The Maggot is a small insect with great powers for mischief. It comes in the spring from an egg laid no doubt in the skin or tissues of the leaf, and, eating its way down under the skin of the leaf, it makes a home in the main stem of the plant, eating out the centre and killing it. The only remedy appears to be diligently searching for and hunting it out before it has traversed the leaf. Wire-worm is a pest to be reckoned with, but usually only gives trouble in fresh soil. Spittle fly, which appears when the flower-spikes are growing, must be destroyed, or it will do serious harm. An open situation and a well-drained soil are conditions unfavourable to the spot diseases, whilst rotation in planting keeps the stock free from the worm pests and maggots.

D. cæsius (*Cheddar Pink*).—One of the neatest and prettiest of the dwarf Pinks, the fragrant and rosy flowers appearing in spring, on stems 6 in. high, and in good soil sometimes taller. This Pink requires peculiar treatment, as in winter it perishes in the ordinary border, while quite happy on an old wall. It is a native of Europe and Britain (the rocks at Cheddar, in Somersetshire). To establish it on the top or any part of an old wall sow the seeds on the wall in a little cushion of Moss, if such exists, or, if not, place a little earth in a chink with the seed, and it may also be grown upon

the rock-garden, in firm, calcareous, or gritty earth, placed in a chink between two small rocks.

D. deltoides (*Maiden Pink*).—A pretty native plant, with bright pink-spotted or white flowers, on stems from 6 to 12 in. long. It grows almost anywhere, in borders or on rockwork, does not appear to suffer from wire-worm, like most other Pinks, and often flowers several times during the summer. It may be readily raised from seed, and is easily increased by division. The variety glauca has white flowers with a pink eye. It is abundant on Arthur's Seat, near Edinburgh, and forms a charming contrast to the crimson kind.

D. dentosus (*Amoor Pink*).—A distinct and pretty dwarf Pink, with violet-lilac flowers, more than 1 in. across, the margins toothed, and the base of each petal having a regular dark-violet spot, which forms a dark "eye" nearly ½ in. across in the centre of the flower. The plant flowers from May or June till autumn, and thrives in sandy soil, in borders, or on rockwork; seed. South Russia.

D. neglectus (*Glacier Pink*). — A brilliant alpine plant, forming, very close to the ground, tufts like short wiry grass, from which spring many flowers, 1 in. across, and of bright rose. It grows freely in very sandy loam, either in pots or on the rock-garden, rooting into the sand through the bottom of the pots as freely as any weed, is hardy, easily grown, increased by division and seed. Alps and Pyrenees. *Syn.*, D. glacialis.

D. petræus (*Rock Pink*).—A charming Pink, forming hard tufts, 1 or 2 in. high, from which spring numerous flower-stems, each bearing a fine rose-coloured flower. It seems to escape the attacks of wire-worm. It flowers in summer, and should be planted on the rock-garden in sandy and rather poor moist loam. Hungary; seed or division.

Dianthus neglectus (Glacier Pink).

D. plumarius (*The Common Pink*).—This is the parent of our numerous varieties of Pinks, and has single purple flowers, rather deeply cut at the margin, and is naturalised on old walls in various parts of England. The wild plant is rather handsome when grown in healthy tufts, but on the level ground it is apt to perish. The many fragrant double varieties are welcome everywhere, and should be cultivated as rock or bank plants, as they live longer and thrive better when raised above the general level of the ground, though they grow well in ordinary soil. They have for

many years been amongst the favourite "florists'" flowers in European countries, and are hardier and dwarfer than the Carnation. In August, Pinks should be planted 9 in. apart, the ground being rich and well prepared. If the winter be very severe, a little litter should be put over them, and in spring the surface of the beds should be stirred a little, and given a top-dressing of fine old manure and a slight dusting of guano. As they push up their flower-spikes these should be staked, and if they are for exhibition the buds should be thinned, as many varieties produce buds too freely. The culture of Pinks, however, either for exhibition or for the garden, is simple, and the outlay small. Get newly struck pipings in August and September—the best months to plant them in a sunny place. In a smoky town a cold frame will be needed; but if the air be clear, an open bed will do. When the pipings are once planted in the open garden, they require little care till they begin to push up their flower-stems. Spring planting should be commenced as early as the weather permits, and, as soon as the plants begin to grow, the bed should be mulched about 1 in. deep with equal quantities of well-rotted horse manure and leaf-mould. The plants will then fast push on their new growth.

INCREASING STOCK.—If the plants have made good growth in July, cut the strongest shoots with a sharp knife, cut off the ends of the grass, and cut the shoot two or three joints below the grass or leaves. Prepare some ground as follows: Scatter a little salt on the surface, then riddle on 2 in. deep of fresh soil, prick in the pipings, and put a light or hand-glass over them; and they will be rooted in a few weeks.

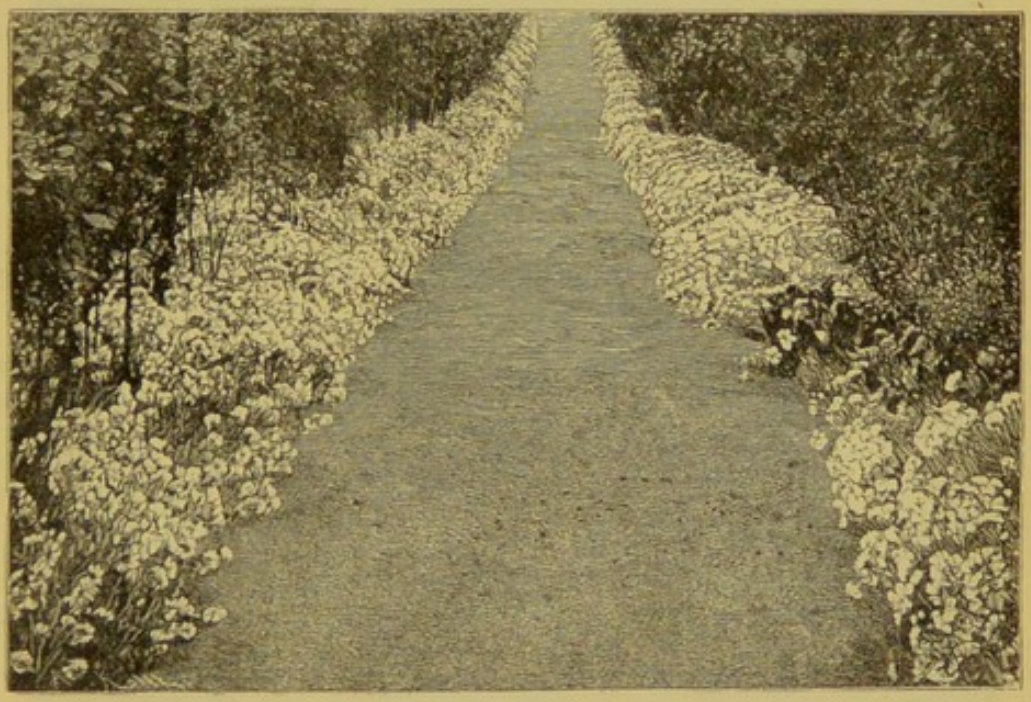
Where seed is wanted, protect the flowers from wet, and as they decay remove the withered petals, which encourage damp and form a harbour for insects. Seed should be saved only from the finest and most constant varieties of vigorous and hardy growth, and may be sown early in June in pots, or in the open ground.

GARDEN OR BORDER PINKS.—The show Pinks may be left to the exhibitor. There are certain kinds both old and new which must be taken care of by the "general lover" of flowers. These are the hardier border kinds, grown for their beauty and fragrance. As in the case of the hardier Carnations, we must encourage these. Some of the best of the hardier kinds are—Anne Boleyn, Ascot (soft pink), Fimbriatus major, Fragrans (pure), George White, Hercules, Lady Blanche, Mrs. Moore, Mrs. Pettifer, Mrs. Sinkins (Mule Pink), Marie Paré (Mule Pink), Napoleon III., Multiflorus, Newmarket, Pluto, Purity, Robustus, Rubens, Thalia, White Queen, Wm. Bruce, High Clére, Multiflorus flore-pleno, Multiflorus roseus, Striatiflorus, Speciosus fl.-pl., Coccineus, Early Blush, Fimbriatus albus (old white), Lord Lyons, Miss Joliffe, Nellie, White Perpetual, the Clove Pink, Her Majesty.

DWARF SINGLE AND DOUBLE PINKS.—Messrs. Dicksons, of Edinburgh, have raised some dwarf profuse-blooming Pinks so compact in habit and stiff in stem that they do without stakes. Most Pinks are better without stakes, especially when their foliage is healthy, and is in such wide tufts as to shield the flowers from splashed earth; but these new dwarf sorts may be compact enough for the rock-garden. Mr. J. Grieve, who raised them, says: "Both the single and the dwarf double varieties will prove quite a boon to the flower-gardener and for bouquets. To the ordinary eye all florists' Pinks consist of but one variety; whereas amongst the single and dwarf sorts there are endless colours, and many of the flowers are so varied in colour as to render them easily mistaken for other plants. Numbers of the single sorts look like miniature Petunias." Carnea Beauty, Delicata, Rosea, Spicata, and Odorata are among the best of these new dwarf Pinks, and the class will no doubt be added to.

D. sinensis (*Chinese Pink*).—This has given rise to a race of beautiful garden flowers. It is an annual, or biennial, according to the way it is sown and grown. If sown early, the plants will flower the first year; if late, the second. On dry soils, and if the winters be mild, they will live for two or three years. The varieties, both single and double, are now very numerous and beautiful, and may be classed under D. Heddewigi and D. laciniatus. The forms of Heddewigi, the Japanese variety, are dwarf and handsome, while there are double-flowered forms, particularly diadematus, the flowers of which are large and very double. The petals of the laciniated section are very deeply cut into a fine fringe. Of this class there are also double-flowered forms. The colours of both are much varied, and there are striped crimson and white sorts. There is a pretty dwarf class (nanus), about 6 in. high, but it is less useful than the taller varieties for cutting from. Two beautiful and distinct selected sorts,

Crimson Belle and Eastern Queen, are among the best varieties. Sow D. sinensis under glass in February, with very little or no bottom-heat ; give air freely during open weather, and in April plant out in well-cultivated soil, which need not be rich. Place the plants 9 in. to 12 in. apart each way, and they will form compact tufts. Encourage the laterals by pinching off decayed flowers, and the result will be a mass of blossom throughout the summer, and probably till November. Some sow in autumn, and winter the young plants in frames or under hand-glasses, — hardening them off by degrees in spring, until they have become fully established. These Pinks are admirable for the flower garden, either in beds by themselves, or mixed ; they may be well used with taller plants of a different character dotted sparsely among them.



Border of White Pinks.

D. superbus (*Fringed Pink*).—A fragrant wild pink, easily known by its petals being cut into strips for more than half their length. It inhabits many parts of Europe from Norway to the Pyrenees, and is a true perennial, though it perishes so often in gardens that many regard it as a biennial. It is more likely to perish in winter on rich and moist soil than on poor and light soil, and, when it is desired to establish it as a perennial, it should be planted in fibry loam, well mixed with sand or grit. It grows, however, on nearly any soil ; and, by raising it every year from seed, an abundant stock may be kept up even where the plant perishes in winter. It comes true from seed, and is often more than 1 ft. high ; flowering in summer or in early autumn, and is better suited for mixed beds and borders than for the rock-garden.

Diapensia lapponica.—A sturdy and dwarf evergreen alpine shrub, often under 2 in. in height, growing in dense rounded tufts, having narrow closely packed leaves and bearing in summer solitary white flowers, about half an inch across. It may be grown well on fully exposed spots on the rock-garden, in deep sandy and stony peat which is kept well moistened during the warm season. It is a native of N. Europe and N. America, being found on high mountains or in arctic latitudes.

Dicentra (*Bleeding Heart*)—Graceful plants of the Fumitory Order, including about half a dozen cultivated species, of which the finest are—

D. chrysantha.—This handsome plant forms a spreading tuft of rigid glaucous foliage, from which arises a stiff leafy stem, 3 to 4 ft. high, with long branching panicles of bright golden-yellow blossoms, about 1 in. long in August and September ; it seems hardy in light rich soil if warm and sheltered. Seed. California.

D. cucullaria (*Dutchman's-breeches*) and D. thalictrifolia are less important, and rather belong to the curious garden.

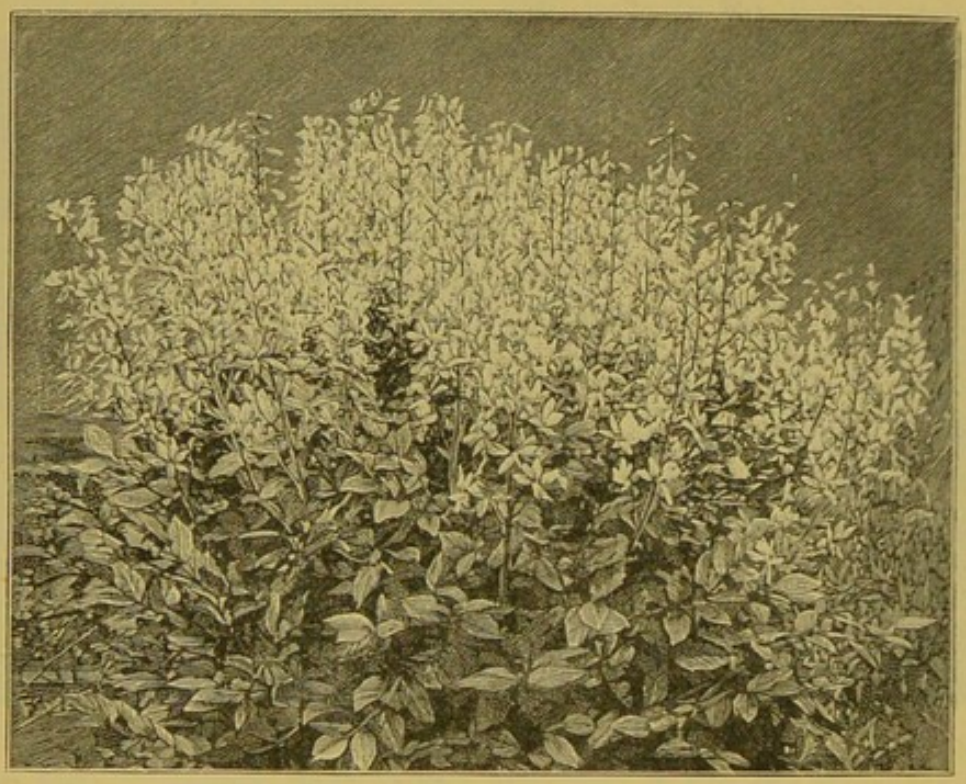
D. eximia combines a Fern-like grace with the flowering qualities of a good hardy perennial. From 1 to 1½ ft. high, with numerous reddish-purple blossoms in long drooping racemes. It is useful for the rock-garden and the mixed border, or for naturalising by woodland walks; thriving in rich sandy soil. Division. N. America.

D. formosa is similar to the preceding, having also Fern-like foliage, but is dwarfer in growth, its racemes shorter and more crowded, and its flowers lighter. Suitable for same positions as D. eximia. California.

D. spectabilis.—A beautiful plant, too well known to need description, as nearly every garden is adorned with its singular flowers, which resemble rosy hearts, and, in strings of a dozen or more, are gracefully borne on slender stalks. It succeeds best in warm, light, rich soils, if in sheltered positions, being liable to be cut down by late spring frosts. It is moreover suited for the mixed border, but is of such remarkable beauty and grace that it may be used with the best effect near the lower flanks of rockwork, in bushy places near it, or on low parts where the stone or "rock" is suggested rather than shown. It is worthy of naturalisation on light rich soils by wood walks. It is also excellent for mixed borders, and for snug corners on the fringes of choice shrubs in peat, as such soil suits it well. There is a "white" variety, which is by no means so ornamental, though worth growing for variety's sake. Propagated by division in autumn.

The species are *D. canadensis*, N. Amer. *chrysantha*, Calif. *Cucullaria*, N. Amer. *eximia*, do. *formosa*, do. *lachenaliæflora*, Siberia. *ochroleuca*, Calif. *pauciflora*, Calif. *pusilla*, Japan. *Roylei*, Mts. of India. *scandens*, do. *spectabilis*, Japan. *thalictrifolia*, Mts. of India. *Torulosa*, do. *uniflora*, N. America.

Dicksonia antarctica.—A noble evergreen Tree Fern, with a stout trunk, 30 ft. high or more, the fronds forming a magnificent crown, often 20 to 30 ft. across. They are from 6 to 20 ft. long, becoming pendulous with age. It is the hardiest of Tree Ferns, and the most suitable for the open air, in sheltered shady dells. From the end of May to October. In favourable localities it may even be left out all the winter.



Dictamnus fraxinella.

Dictamnus fraxinella (*Fraxinella*).—A favourite old plant, about 2 ft. high, forming dense tufts, flowers pale purple, and with darker lines (there is a white form) borne in racemes in June and July. This plant does best in a light soil. It is

propagated by seeds sown as soon as they are ripe, or by its fleshy roots, which, if cut into pieces, in spring, will form good plants much quicker than seedlings. It is a slow-growing plant in most gardens, though it is freer in some warm soils, and a very long-lived plant where it likes the soil. It is at home in the sunny mixed border among medium-sized plants. Caucasian Mountains.

Didiscus cœruleus.—A native of New Holland, and from 1 to 2 ft. high. Its stems are erect and much branched, each branch terminating in a flat umbel of small flowers, of a pleasing clear blue colour, which are borne freely from August to October. It is a half-hardy annual, and requires rather careful treatment, as it is impatient of excessive moisture, especially in the early stages of its growth. It requires to be raised in a gentle hotbed, and the seedlings should be transplanted in May to a warm friable soil, in which they will flower freely. Those who seek distinct and novel effects might use this plant, as its pretty blue flowers are uncommon in the Parsley Order, which usually has pale flowers. A little bed or groundwork would be charming if only as a change. *Syn.*, Trachymene cœrulea.

Dielytra (*Dicentra*).—A name erroneously given to Dicentra.

Diervilla (see Weigela).

Digitalis (*Foxglove*).—The most important plant of this genus is our native Foxglove, and the handsomest of the several species in cultivation. The best of the exotics is D. grandiflora, a tall slender plant, bearing large bell-shaped yellow blossoms in long racemes. The other kinds are D. ferruginea, aurea, eriostachys, fulva, lævigata, lanata, lutea, ochroleuca, parviflora, Thapsi tomentosa, but these are suited mainly for botanical collections.

D. purpurea (*Foxglove*).—Wild Foxgloves seldom differ in colour, but cultivated ones assume a variety of colours, including white, cream, rose, red, deep red, and other shades. The charm of these varieties, however, lies in their pretty throat-markings—spots and blotchings of deep purple and maroon, which make large flowers resemble those of a Gloxinia; hence the name gloxiniflora is applied to some finely-spotted kinds. The garden plants make grand border flowers; they are more robust than the wild plant, and have stouter stems and larger flowers. If associated with other tall plants, they look well as a background to mixed borders; and the improved varieties have a fine effect in the wild garden if planted or sown in bold masses. They are good, too, among Rhododendrons, where these bushes are not too thick, and they charmingly break the masses of foliage. The seed is small, and is best sown in pans or boxes, under glass, early in May. When the young plants are well up they should be placed out of doors to get thoroughly hardened before being finally planted out. In shrubbery borders varied clumps of several plants produce a finer effect than when set singly. The Foxglove frequently blooms two years in succession; but it is always well to sow a little seed annually; and if there be any to spare, it may be scattered in woods or copses where it is desired to establish the plants. Those who do not require seed should cut out the centre spike as soon as it gets shabby, and the side shoots will be considerably benefited, especially if a good supply of water be given in dry weather. In a good variety a side shoot will supply an abundance of seed.—D.

The species are:—*D. ambigua*, W. Asia. *atlantica*, Algeria. *ciliata*, Caucas. *cochinchinensis*, Cochinch. *dubia*, Balearics. *eriostachya*. *ferruginea*, S. Europe. *Fontanesii*. *gloxinioides*. *laciniata*, Spain. *lævigata*, Danube and Greece. *lanata*, do. *leucophæa*, Greece. *longibracteata*, Austria. *lutea*, S. Europe. *lutescens*, France. *mariana*, Spain. *minor*, Spain. *nervosa*, Persia. *obscura*, Spain. *orientalis*, As. Min. *parviflora*, S. Europe. *purpurascens*, Europe. *purpurea*, do. *sibirica*, Siberia. *Thapsi*, Spain. *viridiflora*, Greece.

Digraphis (*Ribbon Grass*).—Grasses, of which the Ribbon Grass (D. arundinacea variegata) is the most familiar. Being hardy and perennial, it is valuable for good effect in the flower garden. It should be treated liberally, and renewed by young plants every other year. If it be not desired in the flower garden proper, a few tufts by a back shrubbery will suffice. It grows anywhere.

Dimorphanthus mandschuricus.—A handsome hardy shrub, with very large much-divided spiny leaves, resembling those of the Angelica tree of North America. In this country it attains a height of from 6 to 10 ft., and probably much more when well established in favourable positions. It is of the highest importance for the sub-tropical garden. In a well-drained deep loam it thrives with the greatest vigour, and in ordinary garden soil grows well in some sheltered but sunny spot; it may also be grouped with similar subjects, if space be allowed

for the spread of its great leaves. Although a shrub, we group it here because, like the Ailantus, its fine foliage

Dimorphanthus mandschuricus.

may be useful in a flower-garden where tender fine-leaved plants will not thrive. Araliaceæ.

Dimorphotheca pluvialis (*Cape Marigold*).—A hardy annual from the Cape, 18 in. to 2 ft. high ; with flowers, white and purplish-violet beneath, expanding in fine weather. Plants from spring-sown seed flower from July to September. It is a bold free annual thriving in any good soil and an effective ground plant with the larger flower-garden subjects ; alone, however, it is well worth growing. Compositæ.

Dioscorea (*Yam*).—Climbing plants with inconspicuous flowers, but with elegant leaves and growth which make them suitable for covering trellises and bowers, D. Batatas, D. villosa, and D. Japonica are the species in cultivation ; and all of these grow in good garden soil. They may occasionally find a place in the curious garden, but we have so many climbers with fair flowers and good foliage, that there is scarcely room for the yams in the select garden

Diotis maritima (*Sea Cotton-weed*).—A dwarf cottony herb suitable for the rock-garden, and sometimes employed in the flower-garden as an edging plant. It is apt to grow rather straggling, and to prevent this it is kept neatly pegged down and cut in well. It should have deep sandy soil. Increased by cuttings, as it seldoms seeds in gardens. Native of our southern shores.

Diphylleia cymosa (*Umbrella-leaf*).—An interesting perennial of the Barberry family, about 1½ ft. high, with pairs of large umbrella-like leaves, and in summer loose clusters of white flowers, succeeded by bluish-black berries. A native of N. America, on the borders of rivulets and on mountains, it thrives in the moister spots of peat borders and fringes of beds of American plants. Hitherto only seen in single weak specimens, this plant, if more plentiful, might be made good use of in a choice garden of American plants and flowers. Division.

Diplopappus.—Perennial plants resembling the Michaelmas Daisy. They are natives of N. America ; but so many fine Asters flower at the same time, that the species of this genus are scarcely worth growing. D. linearifolius is perhaps an exception. It is an erect plant about 1 ft. high, with stiff narrow foliage and dense heads of violet blossoms. Other cultivated kinds are D. umbellatus, amygdalinus, chrysophyllus, and cornifolius. They grow freely in any soil.

Dipsacus (*Teasel*).—Coarse-growing plants, annual or biennial, striking in form, in woods and hedgerows, where their fine foliage and habit have a good effect. There are three native species, D. Fullonum, pilosus, and sylvestris ; the boldest kind is D. laciniatus, a European species growing 5 to 8 ft. high, with large deeply-cut foliage. The seed may be sown in woody places and by freshly broken hedge-banks, where the plants will often perpetuate themselves.

Dittany of Crete (*Origanum*).

Dodecatheon (*American Cowslip*).—Beautiful plants, of the Primrose family, perennials from N. America, where they were called Shooting Stars. They are all hardy, requiring a cool situation and light loamy soil. The nature of the soil is, however, of small importance, as they grow almost as freely in peat or leaf-mould as in loam ; situation is the principal point. In borders where Primulas and Soldanellas

thrive, Dodecatheons will soon establish themselves. All the kinds grow freely in sandy loam, and soon form large tufts, which should be divided every third or fourth year. The best time for transplanting them is the end of January or the beginning of February, when the roots are becoming active; but care must be taken not to divide them into pieces too small, for fear of losing the plants while they are in a weakly condition. All may be easily raised from seed.

D. integrifolium.—A lovely flower; the petals have a white base, and spring from a yellow and dark orange cup, the flowers deep rosy crimson, on stems from 4 to 6 in. high, in March. It is a native of the Rocky Mountains, and a choice plant for the rock-garden, if planted in sandy peat or sandy loam with leaf-mould. It is easily grown in pots placed in the open air in some sheltered and half-shady spot during summer, and kept in shallow cold frames during winter. Strong well-established plants produce abundance of seed, which should be sown soon after it is gathered. Careful division.

D. Jeffreyanum.—A stout kind, more than 2 ft. high in good soil, with larger and thicker leaves than D. Meadia, reddish midribs strong and conspicuous, and the flower somewhat larger and darker. D. Jeffreyanum is a hardy and distinct plant, thriving in light, rich, and deep loam, in a warm and sheltered spot, where its great leaves are not broken by high winds.

D. Meadia (*American Cowslip*), a graceful plant and a favourite among old border flowers, its slender stems from 10 to 16 in. high, bearing umbels of elegantly drooping flowers, the purplish petals springing up vertically from the pointed centre of the flowers, something like those of the greenhouse Cyclamen. It loves a rich light loam, and is one of the most suitable plants for the rock-garden, for choice mixed borders, or for the fringes of beds of American plants. In many deep light loams it thrives without any preparation, but where a place is prepared for it, it is best to add plenty of leaf-mould and plant in a somewhat shaded and sheltered position, though it often thrives in exposed borders. It is best increased by division when the plants die down in autumn; but if seed is sown, it should be sown soon after it is gathered. There are numbers of pretty and distinct varieties, differing more or less in height of plant and size and colour of flower. Among the best are D. giganteum, elegans, albiflorum, and violaceum. D. californicum, though sometimes thought a species, is probably only a variety of D. Meadia. It is, however, a distinct and pretty plant and worth growing.

Dog Rose (*Rosa canina*).

Dog's-tooth Violet (*Erythronium*).

Dog Violet (*Viola canina*).

Dogwood (*Cornus*).

Dolomiæa macrocephala.—A bold and curious stemless plant somewhat resembling a Thistle. It has a tuft of deeply-cut leaves, from the centre of which springs a cluster of short-stalked purple flowers, an inch or more across. It is rare in cultivation, and is difficult to grow well, as it is somewhat tender. N. W. India. This and another species, D. lucida, are best in botanical collections.

Dondia Epipactis.—A singular and pretty little herb, 3 to 6 in. high, with small heads of greenish-yellow flowers in spring, and suitable for the rock-garden, margins of borders, or banks; increased by division after flowering. Carinthia and Carniola. *Syn.*, Hacquetia Epipactis.

Doronicum (*Leopard's Bane*).—Showy plants of the order Compositæ, of which

Doronicum plantagineum excelsum.

half-a-dozen species are in gardens, all of vigorous growth, flowering in spring, and thrive in any soil; they are therefore excellent for rough places, for naturalising, or for dry banks, where little else will thrive. All are readily increased by division of the roots. They range in height from 9 to 12 in., and have large, bright yellow Daisy-like flowers. The best species are D.

austriacum and caucasicum, both of which are neater than the rest and produce in early spring a profusion of blossoms that enliven the borders besides being useful for cutting. The other kinds are D. Clusi, carpatanum, Columnæ, Pardalianches, and plantagineum, all natives of Europe. D. plantagineum var. excelsum (*syn.*, Harpur Crewe) is by far the best.—D.

The species are: *D. altaicum*, Siberia. *austriacum*, Europe. *Bourgaei*, Canaries. *cacaliæfolium*, As. Minor. *carpetanum*, Spain. *caucasicum*, As. Minor. *Clusii*, Pyrenees. *Columnae*, S. Europe and As. Min. *corsicum*, Corsica. *croaticum*, S. Europe. *dentatum*. *Falconeri*, Spain. *glaciale*, do. *grandiflorum*, Europe. *hirsutum*, do. *hungaricum*, S.E. Europe. *macrophyllum*, Caucas., Persia. *maximum*, Armenia. *oblongifolium*, Caucas. *orphanides*, Greece. *pardalianches*, Europe. *plantagineum*, Europe. *Roylei*, Mts. of India. *scorpioides*, Europe. *stenoglossum*, China. *Thirkei*, Bithynia.

Doronicum (Leopard's Bane).

Downingia.—Charming little Californian half-hardy annuals, generally known as Clintonia. There are two species, D. pulchella and elegans, similar to each other, resembling the dwarf annual Lobelias in habit, but more brilliant in colour. D. pulchella is of dwarf habit, rarely exceeding 6 in. in height, and is suitable for edging small beds or borders, as when covered with its bright blue flowers it is very pretty. In March and April the seed should be sown in the open ground in a free soil and an open situation, but, if the plants are intended for pot culture, the sowing should be two months earlier. Each plant should be allowed quite 8 in. for development, and in hot weather those from the latest sowing should be well watered. The flowers of the several varieties of D. pulchella differ in colour, the best variety being alba (white), rubra (red), and atropurpurea (dark purple).

Draba (*Whitlow Grass*).—Minute alpine plants, most of them having bright yellow or white flowers, and leaves often in neat rosettes. They are too dwarf to take care of themselves among plants much bigger than Mosses, and therefore there are few positions suitable for them; but it would be very interesting to try them on mossy walls, ruins, or bits of mountain ground with sparse vegetation. The best-known and showiest is D. aizoides, found on old walls and rocks in the west of England. It forms a dwarf, spreading, cushion-like tuft, which, in spring, is covered with bright yellow

blossoms. D. aizoon, alpina, ciliaris, cuspidata, lapponica, rupestris, frigida, and helvetica are very dwarf, compact-growing plants. In each the small flowers, white or yellow, are produced abundantly. Rarer kinds are D. Mawi, glacialis, and bruniifolia, all worth growing in a full collection of alpine flowers for a choice rock-garden.

Dracæna. See Cordyline.

Dracocephalum (*Dragon's-head*).—Plants of the Sage family, among them a few choice perennials suitable for the rock-garden or the mixed border, succeeding in light garden soil and increased by division or seed. D. altaiense has bright green leaves, and axillary clusters of large tubular flowers of a dense Gentian-like blue, spotted with red in the throat. D. austriacum has flower-stems nearly 1 ft. in height, densely covered with rich purple blossoms; D. Ruyschianum, a handsome species, has narrow Hyssop-like leaves and purplish-blue flowers, but its variety japonicum, a new introduction from Japan, is even more showy. D. peregrinum, with pretty blue flowers always produced in pairs, is desirable, and so is D. argunense, which is a variety of D. Ruyschianum. The most beautiful of all is D. grandiflorum, a rock-garden plant, which is the earliest in flower. It is very dwarf, and has large clusters of intensely blue flowers, which scarcely overtop the foliage. In D. speciosum, a Himalayan species, the small deep purple flowers are nearly smothered by the large green bracts. The hardy annual kinds, such as Moldavicum and D. canescens, are ornamental, and worth a place in a full collection.

Dragons (*Arum Dracunculus*).

Dragon's-head (*Dracocephalum*).

Dragon's-mouth (*Arum crinitum*).

Drimys Winteri (*Winter Bark*).—An interesting evergreen shrub from South America, not hardy enough for open-air culture except against a wall. In mild districts its fragrant milk-white flowers appear, but its outdoor culture should not be attempted in cold places.

Drop-wort (*Spiræa filipendula*).

Drosera (*Sundew*).—Most interesting little bog-plants, of which all the hardy species but one are natives of Britain. All are characterised by tufts of leaves which have their surfaces covered with dense glandular hairs. When the native kinds are grown artificially the condition of their natural home should be imitated as far as possible. In a bog on a very small scale it is not easy to secure the humid atmosphere they have at home, but they will grow wherever Sphagnum grows. The native kinds are intermedia, longifolia, obovata, and rotundifolia. The North American Thread-leaved Sundew (D. filiformis) is a beautiful bog-plant, with very long slender leaves covered with glandular hairs, the flowers purple-rose colour, half an inch wide, and opening only in the sunshine. It is quite hardy, but appears difficult to cultivate.

Dryas octopetala (Mountain Avens).

Dryas (*Mountain Avens*).—Mountain plants of the Rose family, containing two or three dwarf alpine plants of spreading growth and neat evergreen foliage. They thrive in borders in light soil, though they are seen to best advantage in the rock-garden, where they can spread over the brows and surfaces of limestone rocks, best on an exposed spot, not too dry, though when well established they will flourish under almost any conditions. Division in spring. The kinds are D. Drummondi, a dwarf, hardy, evergreen trailer, with flower-stems 3 to 8 in. high; its yellow flowers, 1 in. across, appear in summer. N. America. D. octopetala, a creeping evergreen, forming dense tufts, with pretty white flowers. A very small form of octopetala called minima is useful for covering stones in the rock-garden. It has white flowers with yellow centre, which are 1 in. or more across, borne on stalks 3 to 8 in. high. A British mountain plant.

Duckweed, Fruiting (*Nertera depressa*).

Dusty Miller (*Primula auricula*).
Dutch Agrimony (*Eupatorium*).
Dutchman's-breeches (*Dicentra*).
Dutchman's-pipe (*Aristolochia Sipho*).
Dutch-Myrtle (*Myrica Gale*).

Dyckia rariflora.—An interesting plant of the Bromeliad family, which is for the most part tropical. Though this is a native of Brazil, it is hardy in sheltered localities if planted in sandy loam in dry snug nooks of a well-drained rock-garden. It is about 2 ft. high, with a rosette of spiny leaves and spikes of orange-coloured flowers, which here, however, are but seldom produced in the open air.

Dyer's-weed (*Genista tinctoria*).

Eccremocarpus scaber.—A delightful old climber for walls, trellises, and pillars, its orange-red flowers are beautiful, and its rambling shoots graceful. If the roots are protected during winter, they are uninjured, and the plant annually increases in size. Increased freely by seed, and should be raised in this way occasionally. = Calampelis.

Echeveria.—Dwarf succulent plants, much used in the flower garden, especially the half-hardy species like secunda. Other species are tenderer and need a greenhouse to keep them through the winter, and a warm house or frame to propagate them in the spring. E. secunda is well known by its pale green rosette, leaves tipped with red. E. s. major is but a mealy form of the same. E. s. glauca differs only in having leaves rather more pointed and glaucous. E. s. pumila is a smaller form, with narrow leaves of the same colour as E. s. major. E. glauca metallica is intermediate between the well-known E. metallica and E. secunda glauca. Dwarf and massive, the leaves are very solid and fleshy. E. metallica is a noble species, and distinct in the size of its leaves and in their rich metallic hue. The dwarfer kinds are used mostly as edgings or panels. The fine E. metallica is very effective on the margins of beds and groups of the dwarfer foliage plants, or here and there among hardy succulents. It should be planted out about the middle of May.

INCREASE.—As soon as the seed is ripe prepare to sow it. Fill some 4-in. pots to within ¼ in. of the rim with equal proportions of leaf-mould and well-sanded loam. Make the surface very firm, and water the soil so that the whole body of it becomes thoroughly moistened. Having allowed the moisture to drain away, scatter the seed lightly and cover it thinly with silver sand. Place the pot in a hand-light or in a close frame; cover with a pane of glass and shade. The seed will germinate before the soil can dry, and if it is sown as soon as it is ripe every seed will come up. As soon as the seedlings are large enough to handle, prick them out thinly into pans or 6-in. pots; keep them close until they are fairly established, and then allow them the full benefit of sun and air. After the middle of September give no water, and take care to remove all decay as soon as it is perceived. If planted early in April in well-worked and fairly-enriched soil, these little plants will be strong by the autumn. There is another method of increasing them. With a sharp knife cut out the heart of the plant, so as to induce offshoots. These taken off will speedily make good specimens. E. metallica may be increased in the following manner: Take off the flower-stems which come early in the season; cut off the embryo flowers and place the stems in pots of sandy soil. These stems will strike and will produce little offsets from the axils of the flower-stem leaves. If these are taken off they will readily strike. E. metallica may also be raised from seed in the manner above described.

Echinacea (see Rudbeckia).

Echinocactus Simpsoni.—A beautiful little Cactaceous plant, a native of Colorado, occurring at great elevations, and believed to be hardy. It grows in a globular mass, 3 or 4 in. across, which is covered with white spines. It flowers early in March, bearing large pale purple blossoms which are very beautiful. No one appears to have had any lengthened experience in cultivating it, but, so far, it seems to thrive. Its natural conditions should be imitated as far as may be. In its native habitat it enjoys a dry climate, and, in some seasons at least, is more or less protected from frost by a covering of snow. In this country, however, it has withstood 32° of frost, and therefore in a dry spot may escape and flourish.

Echinocereus.—Plants of the Cactus family (from arid regions in N. America), some of which have been said to be hardy. Mr. E. G. Loder, of Weedon, Northamptonshire, grows and flowers them successfully. He thus writes to *The Garden*: "I have a wall here where the Ivy hangs over in such a way that it keeps a large portion of the winter's snow and rain off the plants growing underneath. In this position I have grown several species of Echinocereus and Opuntia, an Echinocactus, and a Mammillaria. Only small plants were tried, yet several flowered in spite of our

very severe winters and not favourable summers. We had 41° of frost one winter, but none of these Cacti were injured by it. No species of Cactus which I have tried does well in a level border. A narrow rock border, raised about 1 ft. high, against a south wall, would be a capital position, but it is much improved if the wall has a good wide coping. The most attractive is a natural one of Ivy. What success I have in the culture of these plants has amply repaid me for all the trouble and care spent upon them; but much greater success may reasonably be expected by any one who will undertake their cultivation in a more sunny part of England. All of them are beautiful, and some quite splendid when in flower. E. Fendleri bears some of the brightest coloured flowers that I have ever seen—a rich purple." The species of Echinocereus that Mr. Loder grows are E. nœphiceus, gonacanthus, Fendleri, viridiflorus, and paucispinus. We have no doubt that various hardy Cacti of N. America would flower well on raised stony borders and sunny banks in rock-gardens. Give them soil which is well drained and sunny, but exposed, away from all coping or artificial protection, but take great care so to place them in relation to surrounding objects that their stems cannot easily be hurt in clearing or passing. A few protecting stones and low evergreens can be grouped so as to keep off the digger and also dangerous animals. A close turf of some dwarf clean alpine will prevent earth-splashings and will improve the effect.

Echinochloa (*Panicum*).

Echinocystis lobata (*Wild Balsam Apple*).—A tall climbing annual of the Gourd family, having greenish-yellow flowers, succeeded by large oval fruits. Useful for covering arbours, but scarcely worth growing. N. America.

Echinops ruthenicus (*Globe Thistle*).—A fine hardy plant from S. Russia, 3 to 5 ft. high, covered with a silvery down, the flowers blue, in round heads. Thrives in ordinary soil. Easily multiplied by division of the tufts, or by cuttings of the roots in spring. It is the most ornamental of its distinct family, and is highly suitable for grouping with the bolder herbaceous plants. It would also look well when isolated on the turf. There are other species, mostly from S. Europe and the Levant, among which are E. Ritro and E. banaticus; but we have never seen any so good as E. ruthenicus, and, as the species are very much alike, it is enough to grow the best. E. sphærocephalus is a fine species tall and handsome; giganteus is a garden variety of the above, more robust, and with larger heads.

Echinospermum. — Sometimes mentioned in seed catalogues, but the species at present introduced are of little value.

Echinops ruthenicus (Globe Thistle).

Echium (*Viper's Bugloss*).—Handsome plants of the Forget-me-not Order, the finer kinds of which, though superb in the open gardens of S. Europe, are too tender for flower gardens. E. plantagineum is one of the handsomest of the annual or biennial species. Its showy flowers, of rich purplish-violet, are in long slender wreaths that rise erect from a tuft of broad leaves. It is handsomer than our indigenous species, E. pustulatum and E. vulgare. E. rubrum is a scarce and handsome species, its habit is similar to those above mentioned, but its colour is a reddish-violet, similar to the attractive E. creticum. The Salamanca Viper's Bugloss (E. salmanticum) is another fine kind, but difficult to obtain, except from its native locality. These five species are now in cultivation, and are representative of the annual and biennial Echiums. They are all showy and of the simplest culture. The seeds should be sown in ordinary garden soil, either in spring for the current year's flowering, or late in autumn for flowering in early summer. Our native E. vulgare is good in certain positions; its long racemes of blue flowers are handsomer than those of the Italian Anchusa. Against a hot wall, where nothing else would grow, Dr. Acland, of the Grammar School, Colchester, planted some, and they gave a beautiful bloom. It is valuable for such positions, particularly on hot gravelly or chalky soils.

Edelweiss (*Leontopodium alpinum*).

Edraianthus. See Wahlenbergia.

Edwardsia tetraptera (*Sophora*).

Elæagnus (*Oleaster*).—Several of the Oleasters are beautiful shrubs, and deserve to be much more widely cultivated than they are now.

E. angustifolia, the form which grows wild in South-eastern Europe, is the wild Olive of the old Greek authors, and in some modern books is called Jerusalem Willow. The long silvery-gray fruit is constantly sold in the Constantinople markets under the name of Ighidé agághi, and is sweet and pleasant to the taste, abounding as it does in a dry, mealy, saccharine substance; it possesses the property of retaining, for a considerable time after being gathered, its usual size and form. The general aspect of this form is much more that of a Willow than an Olive, the long lanceolate leaves being grayish above and silvery-white beneath. Under cultivation I have seen this thrive in a dry, hungry, sandy soil, and attain tree-like proportions with a stem as much as a foot in diameter. This deciduous species is capable of being turned to good account by the landscape gardener; the yellow tubular flowers are produced in profusion.

E. argentea, or **E. canadensis** (the *Silver Berry*, or *Missouri Silver Tree*), has very fragrant tubular yellow flowers, followed by an abundance of nearly globular, dry, mealy, edible fruit. This species gives a characteristic feature to the vegetation of the Upper Missouri valley, and in a wild state grows 8 or 10 ft. in height, and throws up an abundance of suckers, a habit which, at any rate in a young state, does not appear to occur so much under cultivation. The oval leaves are silvery-white. In nearly all British and foreign nurseries this species is confused with the Buffalo Berry (Shepherdia argentea), a genus belonging to the same natural order as the Elæagnus, but altogether different from it.

E. hortensis, a somewhat variable plant with a wide geographical distribution, is cultivated in many countries for the sake of its fruit. In Dr. Aitchison's *Botany of the Afghan Delimitation Commission* it is described as a shrub or tree occurring at an elevation of 3,000 ft. and upwards, near running streams, and cultivated largely in orchards for its fruit.

E. longipes, a thoroughly deciduous Japanese species, is one of the most desirable members of the genus. Mr. Sargent thus writes of it in *Garden and Forest*: "The plant may well be grown for the beauty of its fruit alone, which, moreover, is juicy and edible with a sharp, rather pungent, agreeable flavour. Both the size and the flavour can doubtless be improved by careful selection, and it is quite within the range of possibility that it may become a highly esteemed and popular dessert and culinary fruit. To some persons, even in its present state, the flavour is far preferable to that of the Currant or the Gooseberry." The fruit, as implied by the specific name, is borne on long stalks; it is bright red in colour and covered with minute white dots. The branches are covered with rusty brown scales, and the somewhat leathery leaves are dark green above and silvery-white beneath. Pheasants are said to be very fond of the fruit, and I can vouch for the fact that blackbirds and other fruit-eating birds will soon strip a bush unless it be netted. Some French growers make a preserve of the fruit, and this is said to be very similar to that made from the fruit of the Cornelian Cherry (Cornus mas); a spirit, too, with a taste like kirsch, has also been made from the fruit. E. longipes, known in some gardens under the names of E. edulis, E. odorata edulis, and E. rotundifolia, is apparently as hardy as the first-named species.

E. macrophylla, an evergreen species from China and Japan, has large roundish leaves, grayish above and silvery beneath. Old plants are said to produce suckers freely, but the species is a somewhat recent introduction to British gardens, and all the specimens which I have seen up to the present have not shown any tendency to sucker. It is quite distinct in appearance from any other hardy cultivated shrub, and is worthy of much more general employment in the ornamental shrubbery. In its native habitats it is said to sometimes attain tree-like dimensions; under cultivation I have only seen it as a dense bush.

E. pungens, E. glabra, and **E. reflexa** are beautiful evergreens, which are not very dissimilar in general aspect, and which without long dry scientific descriptions it would be impossible to distinguish. Variegated forms exist of all three, and any of them, as well as the types, are thoroughly well worthy of a place in the garden or pleasure-ground. They are all natives of Japan, &c., but do not appear to be quite as hardy as the species previously mentioned; all could be tried, however, with every prospect of success in the southern counties. Some of them in the south of Europe assume a somewhat climbing habit, and round the North Italian lakes, for example, grow up to the tops of high Fir and Pine trees.

E. Simoni, said to be a native of China, seems quite hardy, but is the least ornamental of those which have been mentioned in these notes. A variegated form of this, with leaves margined with dark green and with the centres constantly variegated with golden-yellow and yellowish-green, originated in the Belgian nurseries a few years ago ; it is highly spoken of in some of the Belgian periodicals.

E. umbellata is a beautiful bush. The leaves are deep green and glabrous on the upper surface ; in a young state earlier in the season they are silvery-gray, and silvery-white beneath. The creamy-white flowers are produced in the greatest profusion in June. In some localities the plant is practically evergreen ; in the neighbourhood of London, however, it is—at any rate during such winters as the two last—to all intents and purposes deciduous. It is probably perfectly hardy throughout Britain, as it withstands the much severer winters of Northern Germany without protection. In a wild state it occurs from the Himalayas to China and Japan. Elæagnus parvifolia is a name under which this species occurs in some gardens.—G. N.

Elymus arenarius (*Lyme Grass*).—This wild British Grass is strong-rooting and distinct, and often adds a feature to the garden. If planted in deep soil a short distance from the margin of a shrubbery, or on a bank on the Grass, and allowed to have its own way, it makes an effective plant. It is hardy in all parts of these islands. In very good soil it will grow 4 ft. high ; and as we should cultivate it for the leaves, there would be no loss if the flowers were removed. It is frequent on our shores, but more abundant in the north than in the south. E. condensatus (Bunch Grass) is a vigorous perennial Grass from British Columbia, forming a dense, compact, column-like growth, and more than 8 ft. high. It is covered from the base almost to the top with long

Lyme Grass (Elymus arenarius).

arching leaves, and in the flowering season is crowned with erect rigid spikes 6½ in. long, so that it resembles an elongated ear of wheat. It is very ornamental, and may be grown in the same way as the Lyme Grass. Other kinds might be mentioned, but one or two give us the best effect of the race.

Embothrium coccineum (*Fire Bush*).—A very beautiful S. American evergreen shrub of the Protea family, hardy in warm parts of Britain, even without the protection of a wall. At Coombe Royal, in South Devon, it grows quite 20 ft. high, and is a spectacle of wondrous beauty about the end of April or the beginning of May, when every twig carries a cluster of fiery flowers. Even on the favoured Devonshire coast a sharp late frost will sometimes injure the flowers. It is, therefore, only suited for warm gardens on the south coast.

Emilia sagittata.—A pretty half-hardy annual, 9 to 18 in. high, with slender flower-stems, terminated by bright orange-scarlet heads nearly 1 in. across. It likes a light rich soil, and flowers from July to September if the seed be sown in heat in February and March, the seedlings put out in May. East Indies. *Syn.*, Cacalia. Compositæ.

Emmenanthe penduliflora.—A Californian annual, about 1 ft. high, and of neat tufted habit, like a Nemophila; the pale primrose-yellow flowers are in loose racemes. Succeeds best as a hardy annual on any ordinary soil.

Empetrum nigrum (*Crowberry*).—A small evergreen Heath-like bush, of the easiest culture, which may be associated with the dwarfer rock shrubs. It is a native plant, and the badge of the Scotch clan McLean.

Eomecon chionanthus (*Cyclamen Poppy*).—A very charming hardy perennial Poppy intermediate between Stylophorum and Sanguinaria. The root-stocks are usually as thick as the finger; they run freely underground, and increase rapidly; leaves all from the base, long-stalked, and resembling those of the hardy Cyclamen. The flowers, 2 to 3 in. in diameter, are pure white, with a bunch of yellow anthers in the centre; several borne on stems about 1 ft. high. It is a native of China, and will be found perfectly hardy out-of-doors; it has stood the winters of 1890 and 1891 without injury. This Poppy will be found a delightful plant in moist situations in free soil, and fully exposed to the sun. The pure pearly-white Poppy flowers, in a setting of bold yellow-green foliage, make an elegant picture, and as it continues in flower all through the summer, it is a good plant for the rock-garden. It can be increased to any extent by division.

Epigæa repens (*Mayflower*).—A small Evergreen found in sandy soil in the shade of Pines in many parts of N. America, with pretty rose-tinted flowers in small clusters, which exhale a rich odour, and appear in spring. Its natural home is under trees, and it would be well to plant some of it in the shade of Pines or shrubs. It was at one time lost to our nurseries and gardens, owing to the habit of planting all things in the same kind of exposed situation. It is a charming plant for the wild garden, in sandy or peaty soil under trees, growing only a few inches high. Caprifoliaceæ.

Epigæa repens (Mayflower).

Epilobium (*French Willow*).—Few of these plants are worthy of cultivation, but some are important, and the best perhaps is the showy crimson native E. angustifolium, of which there is a pure white variety. This plant runs in a border so quickly as to soon become a troublesome weed, but is fine when allowed to run wild in a rough shrubbery or copse, where it may bloom with the Foxglove. It is a native of Europe and many parts of Britain. Division. Other kinds somewhat less vigorous are E. angustissimum, E. Dodonæi, and E. rosmarinifolium. The common native E. hirsutum is stouter than the French Willow, and is only useful by the margins of streams and ponds, associated with the Loosestrife and such plants. There is a variegated form. The Rocky Mountain Willow Herb (E. obcordatum) is a beautiful rock-

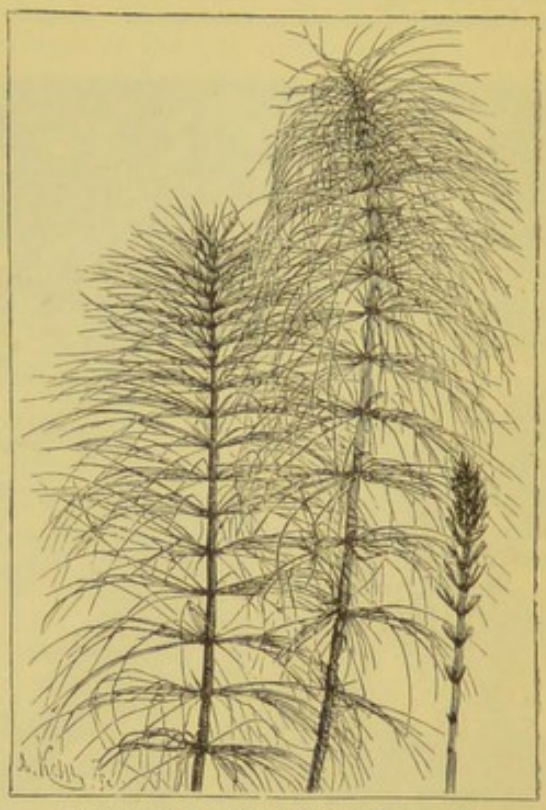
plant. The Willow Herbs of our own latitudes are very tall and vigorous, but on the dreary summits of the Rocky Mountains and the Californian Sierras one species has succeeded in contending against the elements by reason of its very dwarf stature; it has imitated the Phloxes and Pentstemons of the same region; though not more than 3 in. high, it has retained the size and beauty of flower of the finest species, the colour being rosy-crimson. It is hardy, and thrives in ordinary sandy soil in the rock-garden. Some of the small New Zealand species, such as glabellum nummulariæfolium, and longipes, are very useful for draping stones on rock-gardens.—D.

Epimedium (*Barren-wort*).—Interesting and, when well grown, elegant plants of the Barberry Order, but not shrubby. E. pinnatum is a hardy dwarf perennial from Asia Minor, 8 in. to 2½ ft. high, with handsome tufts, and bearing long clusters of yellow flowers. The old leaves remain fine until the new ones appear in the ensuing spring. It is not well to remove them, as they shelter the buds of the new leaves during the winter, and the plants flower better when they are allowed to remain. Cool peaty soil and a slightly shaded position are most suitable. Other species are alpinum, macranthum, Musschianum, purpureum, rubrum, niveum, and violaceum, all loving half-shady spots in peat, or in moist sandy soil. None are so valuable for general culture as the first-mentioned.

Known species.—*E. alpinum*, Europe. *concinnum*, Japan. *elatum*, Himal. *macranthum*, Japan. *Musschianum*, do. *Perralderianum*, Algeria. *pinnatum*, Persia. *pteroceras*, Caucas. *pubescens*, China. *pubigerum*, Caucas. *rubrum*, Japan. *sagittatum*, do.

Epipactis palustris (*Marsh E.*)—A somewhat showy hardy Orchid, 1 to 1½ ft. high, flowering late in summer, and bearing rather handsome purplish flowers. A native of moist grassy places in all parts of temperate and southern Europe. A good plant for the bog-garden, or for moist spots near a rivulet, in soft peat. In moist districts it thrives very well in ordinary moist soil.

Equisetum Telmateia (*Giant Horse-tail*).—A tall British plant, of much grace of habit when well developed, and from 3 to 6 ft. high in moist peaty or clay hollows in woods. The stem is furnished from top to bottom with spreading whorls of slender branches, slightly drooping, the whole forming a graceful pyramid. It is fit for the hardy fernery, shady peat borders, near cascades, or among shrubs, and grows best in deep vegetable soil. Division. E. sylvaticum is another native Horse-tail, much dwarfer, but graceful when well



Equisetum Telmateia (Giant Horse-tail).

grown, the stem standing 8 to 15 in. high, and being covered with slender branches.

Eragrostis (*Love Grass*).—Grasses, some of which are worth cultivating for their elegant feathery panicles. E. ægyptiaca, with silvery-white plumes maxima, elegans, pilosa, amabilis, pellucida, capillaris, plumosa, are all elegant annuals. They are useful for cutting for the house during summer. Seed may be sown in autumn or spring in the open air, on or in a slightly heated frame. For preserving, the stems should be gathered before the seeds are too ripe.

Eranthis hyemalis (*Winter Aconite*).—A pretty early plant with yellow flowers surrounded by a whorl of shining green. It is 3 to 8 in. high, and flowers from January to March. It is seen best in a half-wild state, under trees or on banks in woody places, though it is occasionally worthy of a place among the earliest border flowers. It often naturalises itself freely in Grass, and is very beautiful when the little yellow flowers peep out in early spring. When the branches of large trees are allowed to rest on the turf of the lawn, a few roots of it scattered beneath will soon form a carpet, glowing in sheets of yellow in winter or spring. We may therefore enjoy it without giving it

positions suited for more delicate plants, or taking any trouble about it, but it is more vigorous on chalky or warm soils, and dwindles on some cold soils.

Eremurus robustus.

Eremostachys.—Perennials of the Sage family, suitable only for botanical collections. E. laciniata has deeply-cut leaves and flower-stems about 4 ft. high, with numerous leafy bracts enclosing large purplish flowers arranged in whorls. E. iberica differs from E. laciniata in having the flowers yellow. Both seem difficult to cultivate, and we have never seen them well grown.

Eremurus.—Noble bulbous plants from Northern India, Persia, and Central Asia, as yet little seen in our gardens. Of their culture or fitness for our climate generally little can be said with certainty. Most of the forms are handsome, and well suited for the warm sheltered glades of gardens where hardy flowers and plants are grown in a natural and informal way. In such a home they can be associated in bold groups with some of the finest hardy plants, with a background of fine-foliaged subjects and choice shrubs. In planting, however, care should be taken to place the roots where they would not be over-grown or shaded by other plants, so that the crowns should receive the greatest amount of sunshine during the ripening period previous to going to rest. They thrive admirably in deep, rich, sandy loam, such as would suit Lilium auratum, with the addition of some thoroughly decayed cow manure. My own plants were grown in a bed filled in 3 ft. deep with a compost of good fibrous loam, sharp river-sand, peat, decayed cow manure, and charcoal, with a well-drained sheltered situation facing due south. Once well planted, they should never be disturbed, as the roots are extremely brittle and very liable to injury. The surface soil above the roots should be kept clean by hand weeding and enriched by occasional surfacings of old manure, leaf-soil, and a little grit, thoroughly broken up and mixed together. Autumn is the best period for planting, which should take place as soon as the young plants have ripened their growth, the sites being well and deeply prepared some little time beforehand, so as to allow the soil to thoroughly settle before the plants are placed in it. As the whole family dislike stagnant moisture, care should be taken to avoid this at the time of planting, and in any favourable situation this can be managed by spreading out the roots of the young plants upon the prepared surface of the bed and covering them with soil so as to form a mound. This can be afterwards surfaced with Cocoa-nut fibre refuse to

exclude frost. In any case it is a great advantage to keep the crown of the plant slightly above the soil. I found a plan adopted by Mr. Gumbleton, who is a most successful cultivator of these plants, to be an excellent protection during winter and early spring, especially at the latter period, when the young growth is liable to be injured by frost and the plants to be disfigured for the whole season, if not permanently injured. The shelter, in fact, is very simple and is easily managed — being merely the placing over each plant of a hand-light upon supports. As it takes some of the forms several years to flower, old plants are valuable, but are difficult to move. It is better, therefore, to begin with three-year-old plants if possible, and care should be taken to obtain the plants from a trustworthy source, or, after waiting patiently, cultivators may find that instead of the beautiful E. robustus or E. himalaicus, they have the uninteresting E. spectabilis, or some other species that they do not care for.

Owing to losing my garden, I had, unfortunately, to break up my collection in the finest condition, before all the forms I had collected had flowered. I, however, flowered E. robustus, Olgæ, himalaicus, and Bungei, all of which are very beautiful, and amenable to cultivation.

These four forms all flowered finely, and throve admirably in a Herefordshire garden. A most interesting account of this family, with a list of the species and varieties known to cultivation, may be found in vol. xxix. (p. 96) of *The Garden*, which cannot fail to assist those who contemplate the introduction of these beautiful plants into their gardens.—W. J. G.

The Rev. F. Page-Roberts writes from Scole Rectory :—

With a little trouble Eremuri may be grown successfully by every lover of beautiful flowers. All that is necessary for their well-being is protection from slugs, which soon scent them from afar. I keep a perforated zinc collar round the crown and protect from spring frosts. The plant early forces its way up even through the frost-bound earth, but the tender flower-spike, tender only in infancy, is nipped in the bud if rain fall on it and freeze. Protection also from cutting winds which destroy the foliage is needed. With such precautions and planted in loam, deep, but not too stiff, in a well-drained sunny border, and with an occasional dose of weak liquid manure, they will repay one for all the care given to them.

E. Aitchisonii.—This is a very fine species, nearly allied to E. robustus. It was introduced a few years ago from Karshátal, Afghanistan, where it grows on ridges of the hills nearly 12,000 ft. above sea-level, flowering in June. It is a rather fine species, producing dense spikes of pale reddish flowers. The robust and very striking stems vary from 3 to 5 ft. high.

E. aurantiacus.—A charming dwarf plant somewhat resembling E. Bungei, and perfectly hardy in gardens. It flowers in April, the numerous spikes of bright citron-yellow flowers giving quite a character to part of the Hariab district, where it is one of the commonest plants on rough stony ground. It is very interesting as the vegetable proper of the Hariab district, and is said to be the sole vegetable upon which the inhabitants depend for at least two months of the year. The leaves are simply cut from the root-stock, as close to the ground as possible, and cooked. It is extremely palatable, and Dr. Aitchison recommends its growth as an early spring vegetable.

E. Bungei.—A pretty dwarf species now plentiful in nurseries. The leaves, contemporary with the flowers, are narrow, linear, and about 1 ft. long. Flower-stem somewhat slender, 1 to 3 ft. long. Flowers bright yellow, the segments reflexing from above the base, and having a distinct green keel. The stamens are about twice as long as the perianth. Native of Persia, flowering in July.

E. himalaicus is a beautiful white-flowered species, introduced to cultivation by Mr. Gumbleton, and is one of the most lovely hardy plants in cultivation. In form and height it reminds one of E. robustus, but it starts into growth later, escaping spring frosts. The flower-stems are 4 to 8 ft. high, the dense raceme taking up quite 2 ft. of the upper portion, with flowers as large as a florin. It is one of the hardiest and best of the known species. It flowers in May and June, and is a native of the temperate Himalayas.

E. Olgæ is a comparatively dwarf form, received with E. Bungei from Herr Max Leichtlin, and one of the latest to flower. The flower-stem is nearly 4 ft. high, and is densely set with handsome lilac flowers as large as a five-shilling piece. It is certainly one of the handsomest and most conspicuous flowered species. It was introduced about eight years ago by Dr Regel. A native of Turkestan, flowering in June and July.

E. robustus, a lovely species, and one of the best known in gardens. It produces a huge flower-stem 6 to 10 ft. high, bearing on its summit a dense raceme of peach-shaded lilac flowers nearly 2 in. in diameter. It is perfectly hardy, and may often be seen forcing its shoots through frozen ground. It is one of the easiest to manage. Native of Turkestan, flowering in June.—D.

Known species.—They are Asiatic plants coming chiefly from Asia Minor, Persia, Afghanistan, India, and Turkestan. E. Aitchisoni, Afghan. Alberti, albo-citrinus, altaicus, angustifolius, anisopterus, Aucherionus, bachtiaricus, bucharicus, Bungei, cappadocicus, Capusi, Griffithii, himalaicus, inderiensis, Kaufmanni, Korolkowi, luteus, Olgæ, persicus, robustus, spectabilis, stenophyllus, Stocksii, Suworowi, tauricus, turkestanicus.

Erianthus Ravennæ.—A fine Grass from S. Europe, somewhat like the Pampas Grass in habit, but smaller in size, having violet-tinged leaves. The flowering stems grow from 5 to 6½ ft. high, but as it only flowers with us in a very warm season, it must be valued for its foliage alone. Its dense tufts are strongest with us in light or warm soil, in positions with a south aspect. It is poor on cold soils, and will probably not grow well north of London. It is fitted for association with such Grasses as Arundo conspicua. Division of the tufts in spring or autumn. E. strictus is another species, but is not so good as E. Ravennæ.

Erica (*Heath*).—Beautiful shrubs, of which the kinds that are wild in Europe are very precious for gardens. We should take more hints from our own wild plants and bring the hardy Heaths of Britain as an artistic element into the flower garden. Why we should have such things as the Alternanthera grown with care and cost in hothouses, and then put out in summer to make our flower gardens ridiculous, while neglecting such lovely hardy things as our own Heaths and their many pretty varieties, is a thing that would require some explaining. But very many people do not know how happy these Heaths are as garden plants, and how delightfully they mark the seasons, and for the most part at a time when people leave town. A singularly pretty Heath garden is that of Sir P. Currie at Hawley. In front of his house he has kept, instead of a lawn, a piece of the Heath land of the district almost in its natural state, save for a little levelling of old pits. In such places the native Heaths of Surrey and Hampshire sow themselves, and nothing can be more beautiful. Where, as in many country places, these Heaths abound, there is no occasion to cultivate them, although we cultivate nothing prettier; but certain varieties of these Heaths are charming, and deserve a place in the garden or wild garden. In places large enough for bold Heath gardens it would be charming to plant them, but a small place is often large enough for a few beds of hardy Heaths. Once established, they need very little attention. To some it may be necessary to state that most of our hardy Heaths break into delightful forms, white and various coloured. The common Heather has many charming varieties, also the Scotch Heath. These forms are quite as free as the wild sorts, and give delightful variety in a Heath garden, which need not by any means be a rocky or pretentious affair, but quite simple; for Heaths are best on the nearly level ground. Though they grow best, perhaps, in peat bogs and wastes, it would be a mistake to suppose that only such soils can grow Heaths well, because we see them in Sussex in soils quite unlike those on which they thrive in Hampshire, though certainly on heaths they seem to form their own soil by decay of the stems and leaves for many years. If rocky banks or large rock-gardens already exist, choice Heaths form often their very best adornment, but such things are by no means necessary. Some of the best and most successful beds we have seen were on the level ground, as in the late Sir William Beaumont's garden in Surrey. For a list of species and varieties we adopt that of Mr. Fraser's book on trees and shrubs.

E. ciliaris, indigenous to Portugal, to the south of England, and to some parts of Ireland, is a neat dwarf Heath 9 to 12 in. high, its pale-red flowers in racemes from June to July. It is one of the best of the dwarf hardy Heaths.

E. cinerea.—Abundant in many of the northern countries of Europe and all over Britain, about 1 ft. high, its flowers of reddish-purple, changing to blue, begin to expand early in June. Among its varieties are—alba, atro-purpurea, bicolor, coccinea, monstrosa, pallida, purpurea, rosea, and spicata.

E. herbacea, indigenous to a wide area in Central Europe and to some localities in North Wales, is one of the prettiest of our hardy Heaths, with lovely pale red blossoms from the beginning of March (and in some seasons much earlier) till the beginning of April; and as it may be clipped freely, it is valuable as an edging in

flower gardens. It grows about 1 ft. high. The var. carnea, according to some botanists, is the same species, differing only in having bright red or flesh-coloured flowers.

E. Mackiana.—Indigenous to the Continent, and found in Connemara. It has broad ovate leaves, silvery on the under surface, and is about 1 ft. high. The flowers are pale red, expanding in July and August, and it is remarkably showy.

E. mediterranea is so named from being abundant in the countries bordering the Mediterranean, and it is also found in several districts in Ireland; its flowers pale red, the anthers darker, and the blooms are usually in perfection in April. The vars. are—alba, carnea, glauca, nana, rubra, and stricta.

E. tetralix.—This beautiful species is wild in all northern Europe, abundant on the moors and heaths of Britain, and is 1 to 2 ft. high. It is readily distinguished by ciliated leaves in four whorls round the stem. The flowers, delicate pink, are in terminal racemes, and bloom from July to August. Among its varieties are—rubra and alba.

E. vagans.—This species is wild in the south of France, in some parts of Ireland, and is abundant on the moors of Cornwall; 6 in. to 2 ft. high, and forming a neat bush; the flowers pale purplish red, borne abundantly along the branches, and are in perfection in August and September. It is exceedingly showy, is invaluable for margins to clumps of the larger peat-soil shrubs, and forms a stout edging for flower gardens. The varieties are—alba, alba nana, carnea, and rubra.

E. vulgaris (*Calluna*).—This is the Heather of our moors. Its beautiful varieties should never be overlooked in a collection of hardy Heaths. They are all sports from the species, and have been found from time to time associated with it either wild or in gardens. The varieties are alba, Alporti, argentea, aurea, coccinea, decumbens, dumosa, flore-pleno, Hammondi, pumila, pygmæa, rigida, Searlei, and tomentosa.

Erigeron (*Fleabane*). — Michaelmas Daisy-like plants of dwarf growth, somewhat alike in general appearance, and having pink or purple flowers with yellow centres. They flourish in any garden soil, but one or two are best suited for the rock-garden. Of these, E. alpinum grandiflorum is the finest. It is similar to the alpine Aster, having large heads of purplish flowers in late summer, and remaining in beauty a long time. Suitable for the rock-garden and well-drained borders. Division or seed. E. Roylei, a Himalayan plant, is another good alpine, of very dwarf, tufted growth, having large blossoms of a bluish-purple, with yellow eye. By far the best of the taller kinds is E. (Stenactis) speciosus, a vigorous species, with erect stems, that grow about 2½ ft. high, and bear during June and July many large purplish-lilac Aster-like flowers, with conspicuous orange centres. E. macranthus, another showy species, is of a neat habit, and

Erigeron speciosus.

about 1 ft. high. It bears an abundance of large, purple, yellow-eyed blossoms in summer, and, like E. speciosus, will grow in any soil. E. mucronatus, known also as Vittadenia triloba, is a valuable border flower, neat and compact, and for several weeks in summer is a dense rounded mass of bloom about 9 in. high. The flowers are pink when first expanded, and afterwards change to white, and the plant therefore presents every intermediate shade. Other kinds

Erigeron multiradiatus.

in gardens are E. multiradiatus, glabellus, glaucus, bellidifolius, strigosus, and philadelphicus—the last two being the prettiest. All are easily increased by division in autumn or spring. The most effective and useful of the genus is E. speciosus, which is excellent for groups or borders.

Erinus alpinus (*Wall E.*)—A pretty alpine plant, with racemes of violet-purple flowers, abundant on dwarf tufts of leaves in early summer. In winter it perishes on the level ground in most gardens, but it is permanent when allowed to run wild on old walls or ruins, and it is easily established on old ruins by sowing seeds in mossy or earthy chinks. It is well suited for the rock-garden, where it grows in any position, and often flowers bravely on earthless mossy rocks and stones. E. hirsutus is a variety covered with down. There is a white variety. Pyrenees.

Eriobotrya japonica (*Loquat*). — A large-leaved shrub from Japan, but in our country tender, and only suitable for walls. Its large evergreen leaves are handsome at all seasons, and in warm districts it flowers freely, the blossoms being white but it does not fruit in the open air in England.

Eriogonum.—North American plants which, on the Rocky Mountains and in the alpine regions of California, are of much beauty, but are never good in cultivation, with the exception perhaps of E. umbellatum. From a dense tuft of leaves E. umbellatum throws up numerous stems, 6 to 8 in. high, on which golden-yellow blooms, in umbels 4 in. or more across, form a neat and conspicuous tuft. In light sandy soil of the rock-garden it has never failed to bloom profusely. The variety Sileri is much better than the type. Other species are E. compositum, flavum, racemosum, ursinum.

Eriophorum (*Cotton Grass*).—Sedge-like plants, whose heads of white cottony seeds make them interesting in the bog-garden or in wet places in grass. E. polystachyon is the best for a garden; it is plentiful in some marshy districts.

Eritrichium nanum (*Fairy Forget-me-not*).—An alpine gem, closely allied to the Forget-me-nots, which, however, it far excels in the intensity of the azure-blue of its blossoms. Though reputed to be difficult to cultivate, a fair amount of success may be ensured by planting it in broken limestone or sandstone, mixed with a small quantity of rich fibry loam and peat, in a spot in the rock-garden where it will be fully exposed and where the roots will be near masses of half-buried rock, to the sides of which they delight to cling. The chief enemy of this little plant, and indeed of all alpine plants with silky or cottony foliage, is moisture in winter, which soon causes it to damp off. In its native habitat it is covered with dry snow during that period. Some, therefore, recommend an overhanging ledge, but if such protection be not removed during summer, it causes too much shade and dryness. A better plan is to place two pieces of glass in a ridge over the plant, thus keeping it dry and allowing a free access of air, but these should be removed early in spring. Alps, at high elevations.—G.

Erodium (*Stork's-bill*).—Like the Geranium, but usually smaller and more southern in origin than the hardy Geranium. Suited for chalky banks or the rock-

garden ; some are suited for borders, while others may be naturalised in the Grass in warm soil. Among the best species are—

E. macradenium.—A charming dwarf Pyrenean plant, 6 to 10 in. high, with the blooms of French white delicately tinged with purple, and veined with purplish-rose ; the lower petals are larger than the others ; the two upper ones have each a dark spot, which at once distinguishes them from other Erodiums. This plant should be exposed to the hottest sun. The best position for it is a crevice where it is tightly placed between two rocks, and where the roots can penetrate dry, sandy, or stony soil to the depth of 3 ft. When grown in this way, it is extremely pretty ; the dryness of the situation keeps the leaves dwarf, they nestle to the rock, and the flowers come in great abundance during the summer months. The plant has an aromatic fragrance.

E. Manescavi is a vigorous herbaceous plant, and the most showy of the Erodiums. It grows 1 to 1½ ft. high, and throws up strong flower-stalks above the foliage, each with seven to fifteen showy purplish flowers, 1 to 1½ in. across. It is not fastidious as to soil or situation, but its best place is in dry, hard soil, fully exposed to the sun. If the soil be too rich, the plant bears so many leaves that the flowers are hidden. Seed, or careful division.

E. petræum (now **Moltkia petræa**). —This has three to five purplish-rose flowers on each stalk, which are 4 to 6 in. high. The leaves and flower-stalks are densely clothed with minute hairs. It thrives best among the dwarfer alpine plants, in warm positions, in deep sandy or gravelly soil.

E. Reichardi.—A miniature species 2 to 3 in. high when in flower. The small heart-shaped leaves lie close to the ground, and form little tufts from which arise slender stalks, each bearing a solitary white flower, marked with delicate pink veins. It often continues in flower, for many weeks. It should be grown in gritty peat mixed with a small portion of loam, like the Androsaces and Gentians.

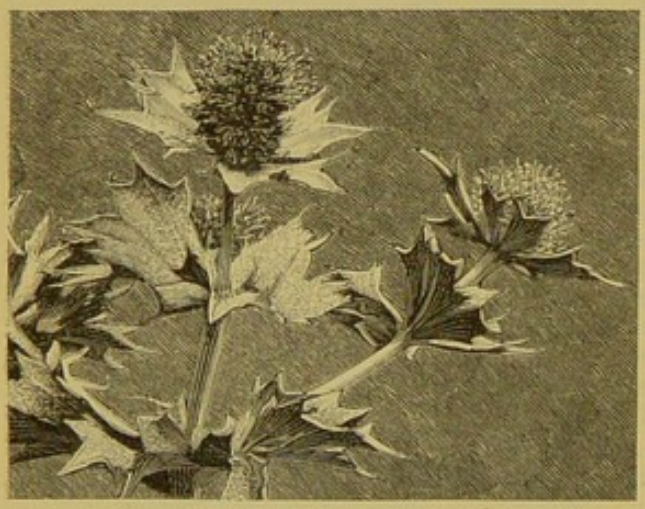
To the foregoing may be added : E. caruifolium, 6 to 10 in. high ; flowers, red, about ½ in. in diameter, and in umbels of nine or ten blossoms. E. alpinum, which resembles E. Manescavi, but is much dwarfer, growing 6 to 8 in. high, and flowering continuously from spring to autumn. E. strictum is a fine annual with deep azure-blue flowers from India. E. romanum, allied to the British E. cicutarium, but with larger flowers, growing 6 to 9 in. high ; flowers, purplish, appearing in spring and early summer. E. trichomanefolium, a very pretty dwarf kind, 4 to 6 in. high, with leaves so deeply cut as to resemble a Fern ; flowers, flesh-coloured, marked with darker veins. All the preceding, with the exception of E. Manescavi and E. hymenodes, are suited for the rock-garden or borders, in light sandy or calcareous loam. E. Manescavi should, perhaps, be confined to the border, as it is somewhat too tall and spreading for the rock-garden.

The Amethyst Sea Holly (E. amethystinum).

Erpetion (Viola).

Eryngium (*Sea Holly*).—Handsome plants belonging to the Umbellifers, but so unlike that class of plants in general appearance as to be often mistaken for Thistles. For the garden, whether the decoration of the border, or rock-garden, or the lawn, few plants

yield a greater charm from the size and colour of involucres and stems. The stems are so singularly beautiful with their vivid steel-blue tints, surmounted with an involucre even more brilliant, that the effect of good large groups is hardly excelled by that of any plants that live in our climate. The great diversity in the form of the leaves is very interesting, ranging from the great Pandanus-like foliage of E. pandanifolium to the very small thistle-like leaves of E. dichotomum. Those belonging to the Pandanus set, such as E. Lasseauxi, eburneum, bromeliæfolium, and others, are useful among fine-leaved plants; their leaves being mostly of a thick succulent nature, are not liable to be damaged by the cold nights in early autumn; indeed, in all but very damp places or heavy soils they continue effective as regards foliage all through the winter season. E. alpinum, Oliverianum, giganteum, and the finer herbaceous species are very useful for borders, and all are the more valuable for this purpose owing to the length of time they continue in bloom, and for the long time they retain their handsome blue tints. A good rich and well-drained soil suits most of the species; damp carries off more of the tender species during winter than cold. Protection is not needed, as the Sea Hollies will stand any exposure so long as the drainage is perfect. E. alpinum may be made an exception to the above directions, as in the south of England at any rate it prefers a shady spot in a good stiff soil. Much the same treatment will also answer in the case of E. Oliverianum.



The common Sea Holly (E. maritimum).

The only really safe way to increase these Sea Hollies is by means of seed. Some few sorts may be increased by division or root cuttings, but they take such a long time to recover strength, that a vigorous batch may be raised from seed in about the same time. Sow the seed in pans as soon as gathered, and place in a cold frame. The seeds will germinate in the spring, and if properly managed will be ready to plant out the following year. These plants often "sow themselves," and seedlings come up in all sorts of places.

The under-mentioned are a few of the best kinds :—

E. alpinum (*Alpine Sea Holly*).—This is found in the alpine pastures of Switzerland, and, when well grown, is certainly not surpassed in beauty by any plant in the genus. It does well in shady borders, developing a tint almost equal to that when the plant is fully exposed to sunshine. The involucres, as well as the stems, are of a beautiful blue, and its flower-stems averaging about 2 ft. high, appear during July and August. There is said to be a white variety.

E. amethystinum (*Amethyst Sea Holly*).—This has been confounded with the much more robust E. Oliverianum, although they have little in common. E. amethystinum rarely exceeds 1 ft. to 1½ ft. in height, is of a somewhat straggling habit, and has flower-heads and stems of the finest amethyst-blue. Apart from the great beauty of its flower-heads and stems, this plant is chiefly welcome on account of its pretty dwarf habit. It answers well for a first or second row in the border, and makes on the rock-garden charming little groups. It can be increased by division, and easily raised from seed. It flowers during July and August, and is a native of Dalmatia and Croatia.

E. giganteum (*Giant Sea Holly*).—This does well in almost all positions and varieties of soil. The large flower-heads are excellent for winter decoration; and although not highly coloured like those of many of the others, they make pretty bouquets arranged with Grasses. It is an excellent plant for grouping, and in large masses it forms a very picturesque object, growing from 3 ft. to 4 ft. high, with stout stems and deeply-lobed, spiny, glaucous leaves. The involucre, of eight to nine large, oval, spiny leaves, pale grey or glaucous, is very effective. Caucasian Alps and Armenia.

E. maritimum (*Common Sea Holly*).—

This plant is found growing along the coast in company with the Oyster plant (Mertensia maritima) and is a very pretty kind, requiring no special culture, and does well in a stiff, loamy soil. It is one of the most glaucous of the species, flowering from July to October, and grows from 6 inches to 1½ feet high.

E. Oliverianum (*Oliver's Sea Holly*).—This is of easy cultivation, and the abundance of its highly coloured flower-heads renders it very attractive in the flower border. It has often been, and is even yet, confounded with the Amethyst Sea Holly. E. Oliverianum grows 2 feet to 3 feet and often 4 feet in height. The ten

Eryngium Oliverianum.

to twelve bracts composing the involucre are longer than the head of flowers and have about half a dozen teeth on each side. In habit and general appearance it s more nearly allied to E. alpinum than to any of the other kinds It ripens seed freely and in this way it may be readily increased, and is a native of the Levant.

Other attractive kinds are E. Bourgati, campestre, cœruleum, planum, of which there is a very beautiful variety, dichotomum, triquetrum, creticum, glaciale, spina-album

THE PANDANUS GROUP.—To this group, chiefly natives of Mexico and Brazil, belong some of the extraordinary forms in this highly ornamental genus. Beginning with Serra, we have a large broad-leaved species with curious double spines ; Carrierei, said to be the finest of all, having a compact habit combined with large, beautiful leaves. E. bromeliæfolium is a charming plant, striking and distinct in habit and forming elegant Yucca-like tufts, with its graceful leaves surmounted with whitish flower-heads. E. pandanifolium is a noble plant, very effective when grown as an isolated plant on a lawn. E. Lasseauxi is nearly allied and quite hardy in the open air. E. eburneum, aquaticum, virginianum, Leavenworthi, and others are all worthy of attention for their fine foliage.—D. D.

Known species.—*E. cymosum*, Mexico. *Decaisneanum*, Brazil. *Deppeanum*, Mexico. *depressum*, Chili. *dichotomum*, Mediterr. *diffusum*, N. Amer. *dilatatum*, Mediterr. *discolor*, Arizona. *divaricatum*, Argentina. *dubium*. *Duriæanum*, Spain. *ebracteatum*, Brazil. *eburneum*, do. *echinatum*, do. *elegans*, do. *eriophorum*, do. *expansum*, Australia. *falcatum*, Syria. *flaccidum*, Argentina. *floribundum*, Brazil. *fluminense*, do. *fœtidum*, Florida. *foliosum*, Brazil. *galioides*, Portugal. *Ghiesbreghtii*, Mexico. *giganteum*, Armenia. *glaciale*, Spain. *Glaziovianum*, Brazil. *glomeratum*, As. Minor. *gracile*, Mexico. *gramineum*, do. *gruinum*. *Hænkei*, Mexico. *Harknessii*, Calif. *Heldreichii*, Syria. *hemisphæricum*, Brazil. *heterophyllum*, Mexico. *Hookeri*, N. America. *horminoides*, Mexico. *humifusum*, Chili. *humile*, Peru. *illicifolium*, Mediterr. *Junceum*, Brazil. *Kœhneanum*, do. *lacustre*, do. *læve*. *Lasseauxi*, Argentina. *Leavenworthi*, Mexico. *longifolium*, do. *longirameum*, do. *luzulæfolium*, Brazil. *macrocalyx*, Soongaria. *marginatum*, Brazil. *maritimum*, Europe. *mauritanicum*, Alger. *Mettaucri*, N. America. *microcephalum*, Dalmatia. *microcephalum*, Trop. America. *monocephalum*, Mexico. *nasturtiifolium*, N. America. *Nožanum*, Persia. *nudicaule*, Argentina. *nudum*, Chili. *oligodon*, Argentina. *Oliverianum*. *palmatum*, Servia. *Palmito*, Greece. *pandanifolium*, Brazil. *paniculatum*, Chili. *pectinatum*, Mexico. *pentanthum*. *petiolatum*, N. America. *Phyteumæ*, Mexico. *plantagineum*, Australia. *planum*, N. Asia. *Pohlianum*, Brazil. *polyrhizum*, Chili. *poterioides*, Argentina. *prealtum*, N. America. *pratense*, Chili. *Pristis*, Brazil. *prostratum*, N. America. *proteæflorum*, Mexico. *Pseudojunceum*, Chili. *pulchellum*, do. *pusillum*, S. Europe. *pyramidale*, Persia. *radiciflorum*, N. Granat. *ranunculoides*, Mexico. *Ravenellii*, do. *rigidum*, Europe. *rostratum*, Australia, Chili. *Sanguisorba*, Brazil. *sarcophyllum*, Juan Fernandez. *scaposum*, Mexico. *Schiedeanum*, Mexico. *scirpinum*, Brazil. *serbicum*, Servia. *Serra*, Brazil. *serratum*, Mexico. *spargaoides*, Chili. *Spinalba*, Europe. *stellatum*, S. America. *stenophyllum*, Brazil. *subacaule*, Mexico.' *tenue*, W. Mediterr. *ternatum*,

Crete. *thorœfolium*, As. Minor. *thyrsoideum*, Persia. *tricuspidatum*, Mediterr. *tripartitum*. *triquetrum*, N. Africa, Sicily. *tuberosum*, N. America. *unifultum*, Chili. *variifolium*, Morocco. *vesiculosum*, Australia. *virgatum*, N. America. *virginianum*, do. *viviparum*, W. France. *Wrightii*, Texas. *yuccæfolium*, N. America.

Erysimum.—Wall-flower-like perennials, biennials, and annuals, mostly of dwarf growth. Of the perennials the following are the finest:—

E. ochroleucum (*Alpine Wallflower*).—This handsome plant forms, under cultivation, neat rich green tufts, 6 to 12 in. high, and in spring is covered with beautiful sulphur-coloured flowers. The rock-garden is most congenial to it; but it does very well on good level ground, though it is apt to get naked about the base, and may perish on heavy soils during an unusually severe winter. It thrives best when rather frequently divided. Division and cuttings. A capital dwarf border plant on light soils. Alps and Pyrenees. Flowers in spring There are several varieties. = Cheiranthus alpinus.

E. pumilum (*Fairy Wallflower*).—A very small plant, rare in cultivation, resembling the alpine Wallflower in the size and colour of its flowers, but lacking its vigorous and rich green foliage. It is often only 1 in. high, and it bears very large flowers for its size. They appear above a few narrow sparsely toothed leaves which barely rise from the ground. High bare places in the Alps and Pyrenees. It requires an exposed spot of very sandy or gritty loam in the rock-garden, where it

Eryngium alpinum (Sea Holly).

must be surrounded by a few small stones to guard it from excessive drought and from accident, and must be associated with the most minute alpine plants. It is nearly related to the alpine Wallflower, E. ochroleucum, but is separated from it by its minuteness, and by its greyish-green leaves.

E. rhæticum (*Rhætian Wallflower*).—A pretty mountain flower which, though rare in cultivation, is a common alpine in Rhætia and the neighbouring districts, where in early summer its broad dense-tufted masses are aglow with pretty clear yellow blossoms. It is somewhat similar to the Dwarf Alpine Wallflower (E. pumilum) of the Swiss mountains. It also resembles the Lance-leaved Wallflower (E. lanceolatum), a common European plant with major and minor varieties, which are, however, less desirable than the kind under notice. E. canescens, a South European species with scentless yellow flowers, is also a neat alpine, and so is E. rupestre, which is exceptionally desirable for the rock-garden. All of them are easy to grow, and delight in gritty soil and a well-drained and sunny position on the rockery. Among the biennial and annual kinds the best is E. Perofskianum, 1 to 1½ ft. high, with dense racemes of orange-yellow flowers. For early flowering it should be sown in autumn, and again in March and April for later bloom. E. arkansanum and pachycarpum are similar to E. Perofskianum.

E. Barbarea (*Barbarea vulgaris*).

Erythræa (*Centaury*).—A small genus of rather pretty dwarf biennials belonging to the Gentian family. The native species, E. littoralis, common in some shore districts, is worth cultivating. It is 4 to 6 in. high, and bears an abundance of rich pink flowers, which last a considerable time in beauty, and will withstand full exposure to the sun, though partial shade is beneficial. The very beautiful E. diffusa is a similar species. It is a rapid grower, with a profusion of pink blossoms in summer.

E. Muhlenbergi is another beautiful plant. It is neat and about 8 in. high, putting out many slender branches. It bears many flowers, and the blossoms are 3½ in. across. They are of a deep pink, with a greenish-white star in the centre. Seeds should be sown in autumn, and grown under liberal treatment till the spring; the plants will then flower much earlier and produce finer flowers than spring-sown plants. They are excellent for the rock-garden and the margins of a loamy border, but the soil must be moist. On account of their duration or other peculiarities, they are of more botanical than garden importance.

Erythrina.—These beautiful trees or shrubs are pretty general through the tropics. Some attain great dimensions, while others are dwarf bushes with woody root-stocks. Many produce beautiful large Pea flowers, usually of a blood-red or scarlet colour, in terminal racemes. The varieties have proved very hardy and useful in the summer garden, flowering freely and showing considerable beauty of foliage. E. ornata, Marie Belanger, laurifolia, Crista-galli, profusa, Madame Belanger, ruberrima, and Hendersoni, have stood out with slight protection. The common old E. Crista-galli will thrive for years against a warm south wall in a light soil, if protected about the roots in winter, and when so grown, it is often very handsome in the warmer countries. How far E. herbacea will prove an efficient substitute for the older and better known species remains to be seen, but, having resisted a New York winter, it may be assumed to be hardy enough for England, and it deserves a trial. It is rather dwarfer than the old species, and has a woody root-stock, which under favourable conditions throws up in summer stems 2 to 4 ft. high. These stems are of two kinds, one bearing leaves only, the other bearing flowers with few leaves. The flowering stems have a raceme, 1 to 2 ft. long, of narrow flowers about 2 in. in length, the deep scarlet standard, erect in so many genera, being horizontal and folded over the wings and keel. The seeds are bright scarlet, and should be sown in heat as early as practicable, the seedlings being kept in a frame for the first winter. This species is a native of Texas, and is found as far north as Carolina, and as far west as Sonora.

Erythrochæte palmatifida (*Senecio japonicus*).

Erythronium (*Dog's-tooth Violet*).—Liliaceous bulbs, among the loveliest of our hardy flowers, though the old favourite Dens-canis is the only one commonly cultivated. The genus contains only about a dozen species and varieties. These belong to N. America, with the exception of

E. Dens-canis, a beautiful plant found in various parts of Europe. It has handsome oval leaves, with patches of reddish-brown. The rosy-purple or lilac flowers are borne singly on stems 4 to 6 in. high, and droop gracefully. One variety has

white flowers, one rose-coloured, and one flesh-coloured. E. longifolium has longer and narrower leaves and larger flowers, and the sorts enumerated in catalogues under the name of majus are apparently derived from this variety. E. Dens-canis thrives in moist sandy or peaty soil, when fully exposed to the sun. It is most valuable for the spring or rock-garden, or for a border of choice hardy bulbs, and, where it is sufficiently plentiful, for edgings to American plants in peat soil. The bulbs are white and oblong, resembling a dog's tooth, hence its name. It is increased by dividing the bulbs every two or three years, and replanting rather deeply. Central Europe. The varieties sibiricum, a robust plant from the Altaian Mountains, and japonicum, with violet-purple flowers, are not, so far as we are aware, yet in cultivation.

E. americanum (*Yellow Adder's-tongue*) is common in the woods and low copses of the Eastern States of N. America, where it flowers in May. Its pale green leaves are mottled, and commonly dotted with purple and white. Flowers 1 in. across, pale yellow, and spotted near the base; they appear on slender stalks 6 to 9 in. high. A variety (E. bracteatum) differs in having a bract developed, as E. grandiflorum sometimes has. It is very pretty, but, being a somewhat shy flowerer, is seldom seen in cultivation. The late Mr. M'Nab was very successful with it in the Edinburgh Botanic Garden, and writes in an early volume of *The Garden*: "This interesting plant formerly grew in the open border here, but its flowers were rarely seen. Some years ago I put a tuft of the bulbs in one of the stone compartments of the rock-garden, with a southern aspect, the soil being a mixture of peat and loam. As soon as the space became filled with roots, flowers were freely produced, and on the 20th of April it was covered with yellow blooms. In these confined spaces the bulbs are better matured than in open borders, where the ground is generally covered with small green leaves growing from unmatured bulbs, and there are few of the larger spotted leaves which generally accompany the flowers." The rich soil of our gardens probably develops growth at the expense of flower. In poor sandy soil, in copses, or in the wild garden, this little plant may bloom better.

E. giganteum.—This, the noblest of the genus, is considered a variety of E. grandiflorum. Its showy flowers of pure white have a ring of bright orange-red, and measure 3 in. in diameter. It is found in California at an elevation of six to ten thousand feet, and also in Vancouver's Island. It was called E. maximum by Douglas, and E. speciosum by Nuttall.

E. grandiflorum.—The only cultivated kind with more than one flower on a stem. It is extremely handsome when well grown. In a peat bed, with Lilies and other peat-loving plants, it is very fine, and produces as many as five flowers on a stem. The late Mr. M'Nab used to grow the larger American kinds as well as the European Dens-canis very successfully in grass. Writing of them in spring, he says, "Many Dog's-tooth Violets are in bloom on the northern grassy slopes of the rock-garden; they were thickly dibbled in, here and there, when the turf was first laid, and, being placed in all exposures, a longer flowering season has been obtained. In such places they do not multiply fast, as only single flowers proceeding from the two or three spotted leaves are produced. On grass banks with a southern aspect the leaves are all ripened off before the first grass cutting, which is not the case on grass slopes with a northern aspect."

I have planted them largely in grass, and find they thrive in every soil in that way, and are very early and pretty both in leaf and flower, scattered in groups and colonies in turf.

Little known or rarer kinds are E. revolutum, albidum, purpurascens, propullans, and Hartwegi.

Known species.—*E. albidum*, N. Amer. *americanum*, do. *Dens-canis*, Europe, N. Asia. *grandiflorum*, N. W. Amer. *Hartwegi*, N. W. Amer. *propullans*, do. *purpurascens*, Calif.

Escallonia.—The Escallonias in cultivation are often beautiful shrubs, unfortunately sometimes perishing in hard winters save in favoured districts. In mild places the common E. macrantha succeeds in the open, but, as a rule, it must be regarded as a wall shrub. Even in the mild districts it is cut down during severe winters, but it usually shoots up again strongly in the returning spring. There is a variety called sanguinea with deeper-coloured flowers. Somewhat similar to E. macrantha is E. rubra, but the foliage is less handsome and the flowers are paler. E. Philippiana is very beautiful and hardy, as it may be grown as a bush in the neighbourhood of London.

It is an Evergreen with small leaves, and bears a profusion of large panicles of small white flowers. It is a first-rate shrub, and one of the best of the Escallonias. E. pterocladon is very free-flowering, the small flowers being white and pink, while E. punctata has dark red flowers, somewhat similar to those of E. rubra. Another species, E. montevidensis, also known as E. floribunda, bears large loose clusters of white flowers, and there are varieties—usually seedling forms—known under different names, especially in seaside gardens. Among these, that called E. Ingrami is one of the best, being hardier than E. macrantha, though not so handsome. Escallonias are mostly natives of S. America, chiefly Chili, Brazil, and Peru.

Eschscholtzia (*Californian Poppy*).—Brilliant annuals, long and favourably known. The beautiful new forms recently seen are acquisitions; the rich reddish-orange of Mandarin and the unique form of double crocea are of real value, and they make, with crocea alba, and the orange aurantiaca, most attractive plants. To have these showy flowers in all their beauty, they should be sown in August and September for early summer bloom. They may be sown even later—and should then be allowed to bloom where they are sown. They get deeply and firmly rooted, and flower much longer than if sown in spring. They are very hardy, and snails and slugs do not molest them. There are some half a dozen kinds, well worth growing, viz. E. californica, orange, very strong; E. crocea, saffron colour; E. c. alba, white; E. c. Mandarin, orange and crimson, very fine; E. c. fl.-pl., double; E. c. rosea, and E. tenuifolia; and new forms are raised from time to time.

Known species.—Nearly all natives of California. E. Austinæ, californica, elegans, glyptosperma, mexicana, minutiflora, Parishii, peninsularis, rhombipetala.

Eucalyptus.—Large and handsome Australian trees and shrubs, of which a number of species grow to a great height. The leaves are thick and leathery, and vary much in shape. In the south of England and Ireland a few of the species live in the open air. About London some grow them for their aspect in the open air after a single year's growth, and in that case they should be put out about the middle of May. Some letters in the *Times*, by persons unaware of the results of planting the tree in this country, induced many to plant the common Gum tree, which perished with the first severe frost. Only in the more favoured districts have these trees any chance, and they never present the graceful and stately port which they show in countries that really suit them, such as parts of Italy and California. What the higher mountain species may do remains to be seen, and the common Gum tree is sometimes made fair use of in the London parks among the larger plants put out for summer.

Eucharidium.—Pretty hardy annuals of the Evening Primrose family, thriving under the same treatment as all annuals from California. They may be sown in autumn for early summer-flowering, or from March to June for late summer and autumn bloom. They flower about eight weeks after sowing, and remain in bloom a long time. Three species are cultivated—E. concinnum, about 9 in. high, with many rosy purple blooms; E. grandiflorum, larger rosy-purple flowers, streaked with white, which has a white variety (album), and a variety with pink flowers (roseum); and E. Breweri, an elegant new annual, more robust, and with red flowers of a deeper, richer colour than E. grandiflorum. These species are of secondary importance in the flower garden, but may occasionally be used as surface plants or in bold masses. Like many other annuals, they suffer in general estimation through being judged by spring-sown plants, with poor and short-lived bloom.

Eucnide bartonioides.—A half-hardy annual of the Loasa family, from Mexico. The stems are about 1 ft. high, and bear sulphur-yellow flowers, 1½ in. across, showy in August and September when several are expanded. Seeds should be sown in heated frames in early spring, but the seedlings should be very carefully transplanted to the open border in May, as they are then very liable to injury. = Microsperma.

Eucomis.—Cape bulbs, not very showy, though deserving of cultivation in the outdoor garden, on account of their broad handsome foliage, more or less spotted with purple at the base, from which rise tall cylindrical spikes of blossoms surmounted by a crown of leaves. Like many Cape plants, they are hardy on light and dry soils. There are four species, all of which are in cultivation. E. undulata has leaves 18 in. long, wavy at the margins, and profusely marked on the under surface with dark purple blotches which, in the variety striata, assume the

form of stripes. The flower spike is 2 to 4 ft. high. On the upper half are densely arranged, in a cylindrical manner, numerous greenish-white blossoms, with purplish centre, crowned by a tuft of narrow green leaves. E. punctata is the largest kind, having leaves about 3 ft. long. E. regia is dwarfer than either of the preceding. The raceme of flowers is about 1 ft. high, and the tuft of leaves at the top is larger than in other kinds. E. nana is the smallest. The spreading leaves lie horizontally, while in the others they are more erect. They thrive best in light sandy soil, with the roots protected by a covering during winter. The foot of a south wall suits them if they are associated with the larger hardy bulbs, but they are not the most effective or graceful of the Lily family.

Eucryphia pinnatifolia (*The Brush Bush*).—A distinct shrub, and probably hardy, though a native of South America. It belongs to the Rose family, but the flowers remind one in size and form of those of St. John's Wort, except that they are white, and the central tuft of stamens is very conspicuous. The flowers, borne plentifully, are very pretty, among foliage resembling that of some of the Roses.

It is one of the most beautiful shrubs of recent introduction, and valuable on account of producing its flowers about the end of the summer, when blooming shrubs are getting scarce. It is deciduous, somewhat upright, and has pinnate leaves, and large white flowers about 3 in. in diameter. It is of rather slow growth, but has withstood severe winters in the neighbourhood of London; and may therefore fairly be classed as hardy. It can only be satisfactorily propagated by layers, which will, to a certain extent, account for its scarcity. Till more plentiful, it should be placed in warm positions and in good free soil. Chili. There is another species in cultivation, E. cordifolia, but it is rarer.

Eulalia gracillima.—This Japanese Grass is less vigorous in growth than either of the better known kinds, the leaves being more narrow and more gracefully recurved. They are bright green in colour, with a comparatively broad stripe of white down the centre of each. So pronounced is this white stripe, that this form is sometimes called E. gracillima univittata. Plants of it in pots are pretty.

E. japonica.—A hardy and ornamental perennial Grass of robust growth, 6 to 7 ft. high. Established plants form clumps 17 to 18 ft. in circumference. The brownish-violet flower-panicles have at first erect branches, but as the flowers open, these branches curve over gracefully, and resemble a Prince of Wales' Feather. Each of the numerous flowers has at its base a tuft of long silky hairs, which contribute greatly to the feathery lightness of the whole. For isolated positions on lawns it is excellent; or it might be used in groups, or on the margin of the shrubbery. Even more valuable than the type are the two variegated forms, variegata, with leaves longitudinally striped with white and green; and zebrina, with distinct cross bars of yellow on the green, which render it singularly attractive. These variegated forms, particularly zebrina, are not quite so hardy as the type. Division or seed. Japan.

Euonymus (*Spindle Tree*).—All these have small flowers, with little beauty, but this defect is compensated for by their foliage, habit, and bright fruit which some of the sorts bear. They grow well in almost every variety of soil, but are most luxuriant in such as are rich in vegetable matter, and, as a rule, they prefer open sunny situations, particularly the evergreen sorts, and all thrive near the sea. The following are among the most distinct of the kinds at present in cultivation:—

E. europæus (*Common Spindle Tree*).—This is a native of England, and is a bushy treee, from 10 to 25 ft. high; the leaves are of a warm green colour, changing as they decay to a reddish tint. Its small greenish-white flowers expand in May, and are followed almost always by an abundant crop of fruit, in bright pink capsules, which, opening up in the autumn, reveal the orange-coloured sac which envelops the seeds, producing a beautiful effect. Of several varieties, the most interesting are the white fruited kind, which differs from the species in producing white instead of pink capsules; the variety with scarlet leaves; and nanus or pumilus, a neat little plant, very bushy, and one which never grows higher than about 2 ft. and is admirably suited for the rock-garden, or any situation where a dwarf plant is desirable.

E. latifolius (*Broad-leaved Spindle Tree*).—A species wild in the south of France and in some parts of Germany, and a tree of from 10 to 20 ft. high, the leaves shining green, larger than those of the common Euonymus; the flowers, which expand in June, are of a purplish-white;

the capsules large, and deep red, contrasting, as they open, most effectively with the bright orange sacs with which the seed is enveloped. It is quite hardy, and forms an ornamental tree, well fitted for a lawn.

slender branches covered with a smooth light green bark; the flowers open in June, succeeded by rough warted brilliant crimson capsules, which in its native habitats are so showy and abundant that it is named the Burning Bush. In this country

Eulalia japonica.

E. americanus (*American Spindle Tree*).—This is a small deciduous, or, in mild winters and sheltered situations, sub-evergeen shrub, of about 6 ft. in height, found wild over a wide area in Canada and the United States. It has an erect habit of growth, with numerous long

it is generally cultivated as a wall plant, and as such it is ornamental. It succeeds best on the shady side, and prefers a moist rather than a dry porous soil.

E. angustifolius (*Narrow-leaved Spindle Tree*).—A twiggy or sub-evergreen shrub about 4 ft. in height, with

long wiry branches, abundantly clothed with remarkably narrow oblong leaves, of a deep green colour in summer, changing in autumn to a dull red tint. The flowers are very small, of a greenish-white colour, followed by red fruit capsules. It is a very distinct and interesting shrub for a low wall, and has a pretty effect on raised banks, growing freely in shady sheltered aspects, and in damp heavy soils.

E. japonicus (*Japan Spindle Tree*).—An evergreen species 4 to 6 ft. in height, of bushy habit, the branches clothed with numerous leaves of a dark glossy green colour. Though hardy in sheltered districts, it seldom flowers in this country. Few evergreens thrive better near the sea; and either it or some of its varieties are frequently met with on the west and south coasts of England, and west coast of Scotland, forming handsome specimen shrubs on lawns and shrubberies. In the inland districts it suffers from frosts, and can only be depended upon on walls or in favoured situations. During recent years a number of varieties have been sent home from Japan; several of these, and particularly the variegated forms, are favourites.

All the varieties thrive best in warm sunny exposure, and in well-drained soils. The kind called argenteus variegatus has leaves clothed with silver; aureus variegatus, leaves margined with deep yellow; latifolius argenteus and latifolius aureus, leaves with white and yellow variegations respectively. E. radicans variegatus is a dwarf creeping variety, its leaves are variegated with white; it is hardy, and useful for planting as an edging. On rockeries or low walls it has a pretty effect; and as it forms roots similar to those of the Ivy, it requires little care to keep it to the wall or other support.—*The Garden.*

Eupatorium (*Thorough-wort*).—Coarse Composite plants, most of which are better suited for the wild garden than for borders, though two or three kinds are worth a place for supplying cut flowers in autumn. The most suitable are E. ageratoides, altissimum, and aromaticum, which are 3 to 5 ft. high, and bear a profusion of white blossoms in dense flat heads, E. cannabinum (Hemp Agrimony), E. perfoliatum, and E. purpureum (Trumpet-weed), which is a fine object in the rougher parts of a garden, being 12 ft. high, with stems terminated by huge clusters of purple flowers. All grow in any kind of soil.

Euphorbia (*Spurge*).—Plants of the Spurge order include few hardy species of value for the flower garden. The foliage of some, such as E. Cyparissia (Cypress Spurge) is elegant. In spring E. pilosa and amygdaloides are attractive by their yellow flowers when little else is in bloom, but they are scarcely worth growing in a general way. Some of the dwarf kinds, such as E. Myrsinites, portlandica, capitata, and triflora, are neat and distinct in habit and grow in any soil. There are a few variegated forms. The well-known Caper Spurge (E. Lathyris) is often seen in cottage gardens, and in habit is a distinct plant, with a certain beauty of foliage and habit. A few plants of it on a bank or rough place are not amiss.

Eurya latifolia variegata.—This fine half-hardy variegated shrub, grown in pots or tubs, is useful and ornamental for outdoor decoration during summer; it would also be useful intermixed with such things as Agapanthus for the adornment of steps, corridors, etc. It is best increased by means of cuttings. The cuttings should be taken off the plants in the greenhouse in March; then take well-drained pots—5-in. ones are best—and fill them with a compost of yellow loam and a little peat and leaf-soil, with a good admixture of sand sifted fine and pressed down rather firmly. In this insert the cuttings with a small peg or dibber, tightening them well in. A moderately warm manure bed, in which the pots can be plunged half-way up, is the best place in which to strike them. If the wood is about half-ripe, they generally emit roots in about eight weeks, when they may be potted off, replaced in the bed, and kept close for a few days; then they may be gradually hardened off to stand in a cold frame. Like most shrubby evergreens, the Eurya will stand hard pruning, and may therefore be kept compact by an annual cutting back, which should be done early in spring, when the buds soon start again and refurnish the plants with new foliage. As to soil, the Eurya will grow freely in either peat or loam, but the variegation comes out best with plants growing in the former, or a mixture of the two if plenty of sand be added, as when growing liquid manure can be given to assist in the full development of leaf. To strike cuttings, the best way is to take them off with a heel, and to put them in early in the autumn, standing them in a cold frame for the winter to callus; with a little artificial warmth in the spring they root at once, and start rapidly into growth. The plants can be wintered easily in a

cool greenhouse or conservatory, and when planted out in such a structure they are highly ornamental.

Eurybia (*Olearia*).

Eustylis (*Nemastylus*).

Eutoca (see *Phacelia*).

Evening Primrose (*Œnothera*).

Everlasting Flower (*Helichrysum*).

Everlasting Pea (*Lathyrus*).

Exochorda grandiflora (*Pearl Bush*).—One of the loveliest of hardy shrubs allied to the Spiræas, but with larger flowers. It is a graceful shrub, making when full grown a rounded bush of about 10 ft. high and as much through. It flowers about the middle of May, just after the foliage unfolds, and affords a charming contrast between tender green leaves and snow-white flowers as large as florins. It likes shelter, and grows best in warm loam. *Syn.*, Spiræa.

Exogonium Purga (*Jalap Plant*).—Of autumn-flowering hardy plants there is, perhaps, none more beautiful among climbing plants, and of its hardiness there can be little doubt. It has lived for years at Bitton, Gloucestershire, without any protection, and each year it has flowered well. It has also done well at Drayton-Beauchamp, Kew, Fulham, and in the Edinburgh Botanic Gardens. Mr. Ellacombe grows it in a sheltered corner, and provides a tall wire trellis with a spreading top for it to grow up. It does not flower in the lower parts, but the entire top and the pendent shoots become a mass of lovely bloom. If not checked by late spring frosts at Bitton, it comes into blossom early in September, and continues to flower till cut down by frost. Mr. Ellacombe states that if he were to plant another, he should place it under a south wall, near a Peach or Apricot tree, and let it wind its way through the branches. Little training would prevent it injuring the tree, and it would probably flower earlier, and perfect its seeds. It has roundish tubers of variable size, those of mature growth being about as large as an orange and of a dark colour. These are the true Jalap tubers. The plant gets its name from Xalapa, in Mexico, its native region, and is increased by division of tubers.

Fabiana imbricata.—A pretty shrub of the Potato family (Solanaceæ), but so much resembling a Heath, that it might well be mistaken for one. It is slender, with evergreen leaves, and in early summer every shoot is wreathed with small white trumpet-shaped flowers. A native of Chili, it is not perfectly hardy as a bush except in the southern counties.

Fair Maids of France (*Ranunculus*).

Farfugium grande.—A vigorous perennial, with fleshy stems 1 to 2 ft. high, and with broad leaves of light green variously streaked, spotted with yellow in one variety, and having white and rose in another. It does best in a half-shady position in free moist soil. During the heats of summer it requires frequent watering, and at the approach of winter it should be moved to the greenhouse, except in mild districts. In colder parts it is scarcely worth planting out, as it grows slowly; but where it thrives it is handsome in borders, or on the margins of beds. Multiplied by division in spring; the offsets being potted and kept in a frame until they are well rooted.

Feather Grass (*Stipa pennata*).

Feather Hyacinth (*Muscari*).

Felicia tenella.—A neat little half-hardy plant of the Starwort family. It has dwarf slender stems, terminated by flower-heads, the flowers being ½ in. across, and of pale violet-blue with yellow centre. It should be raised as a half-hardy annual, but as it becomes shrubby, it may be kept over the winter like half-hardy bedding plants. Flowers in light soil from July to September. Would form a graceful blue carpet to Gladioli, Tuberoses, standard Fuchsias, or other tall slender plants. Cape of Good Hope. *Syn.*, Aster tenellus.

Fenzlia dianthiflora.—A charming Californian annual, forming compact tufts, 1 to 4 in. high. Its many large flowers vary from purple and lilac to nearly white. It is perfectly hardy, and, like several Californian annuals, does best if sown in autumn. It thrives in any ordinary soil, but the warmer and more sheltered the situation the better. A lovely ground or carpet plant, if some slender bulbs or other taller plants are scattered through it. *Syn.*, Gilia dianthoides.

Ferdinanda eminens.—One of the finest "sub-tropical" plants, growing well in the southern counties when in rich moist soil. It is the better for shelter. Where the soil is rich, and humid, and the position warm, it is sometimes over 12 ft. high, having pairs of immense opposite leaves, and is a good companion to the Castor-oil plant. It requires to be planted out, when young, about the middle of May; it grows freely from cuttings; and greenhouse treatment will do in winter. It is better to keep a stock in pots through the summer, for

cuttings, though the old ones may be used.

Fern, Beech (*Polypodium phegopteris*).
,, **Broad Buckler** (*Asplenium dilatatum*).
,, **Climbing** (*Lygodium palmatum*).
,, **Filmy** (*Hymenophyllum*).
,, **Hard** (*Blechnum boreale*).
,, **Holly** (*Aspidium Lonchitis*).
,, **Lady** (*Athyrium*).
,, **Maidenhair** (*Adiantum*).
,, **Male** (*Aspidium Filix-mas*).
,, **Mountain** (*Aspidium Oreopteris*).
,, **Oak** (*Polypodium Dryopteris*).
,, **Ostrich** (*Struthiopteris*).
,, **Parsley** (*Allosurus crispus*).
,, **Royal** (*Osmunda regalis*).
,, **Scaly** (*Ceterach officinarum*).
,, **Sensitive** (*Onoclea sensibilis*).
,, **Shield** (*Aspidium*).

Ferraria.—Plants of the Iris order from the Cape of Good Hope. F. undulata is the only hardy species. It is a curious plant with flowers like the Tiger-flower (Tigridia) in shape, but small, of a dull plum colour, and wavy-edged. It requires a light sandy soil, on a warm sunny border, and if close to a south wall it is all the better. The bulbs require protection during winter or lifting in autumn, when they may be divided.

Ferula (*Giant Fennel*).—Among the finest umbelliferous plants that have so long remained unnoticed in our botanic gardens, their charm consisting in large tufts of the freshest green leaves in early spring. The leaf is apt to fade early in autumn, but this may be retarded by cutting out the flower-shoots the moment they appear, though these are not ugly, but on the contrary the plants are striking when in flower. Ferulas should be well planted at first, and it is only when established that their good effect is seen. Where bold spring flowers are naturalised or planted in colonies, a group of these fine-leaved plants will be valuable, with their fine plumes rising in early spring. They are among the true hardy plants of the northern world, never suffering from cold. Their fine forms in summer or autumn, when they throw up flowering-shoots to a height of 10 ft. or so, are remarkable enough; but their appearance when breaking up in spring charms us most. A good way is to place them singly or in small groups, just outside a shrubbery, or isolated on the Grass, so that their verdure may be seen in early spring. Deep free soil should be supplied before planting, if the soil be not good and deep. Ferulas are readily raised from seed, which as soon as gathered should be sown in a nursery bed in the open air. The plants, even when well established, do not bear division well, though with care they may be transplanted. One of the best known and most valuable is F. tingitana, which is elegant and vigorous. It takes several years to form strong plants, and the plants look like massive plumes of large filmy Ferns. F. communis is also a good species, and others, including F. glauca, neapolitana, Ferulago, and persica, may be added where variety is sought, but the first two are not surpassed. The flower-stems developed the second or third year from seed are 6 to 10 ft. high, are branched, and bear numbers of small inconspicuous flowers. S. Europe and N. Africa.

Festuca (*Fescue Grass*).—Annual and perennial Grasses, containing few species for the garden. A variety of Sheep's Fescue (F. ovina), named glauca, is a pretty dwarf hardy Grass, forming dense tufts of leaves of a glaucous hue or soft blue, and on this account sometimes called "blue" Grass. It makes good edgings, and when it is used for this purpose the flower-spikes should be cut away. F. ovina viridis is also a pretty edging plant, and, being of slow growth, does not require renewal for years.

Feverfew (*Pyrethrum Parthenium*).

Ficaria (*Pilewort*). — Plants of the Crowfoot family, much resembling some kinds of Buttercup: F. ranunculoides (Lesser Celandine) is a common British plant, 3 to 6 in. high, producing golden-yellow flowers in early spring. It is so common that it would not be mentioned but for its pretty double and white varieties. Moist borders, in any soil. A good plant for growing under trees. Division.

F. grandiflora.—A large-flowered kind, about twice the size of our own, the flowers being nearly 2 in. across. It is easily grown and showy, and could be naturalised. Southern Europe and Northern Africa.

Ficus elastica (*India-rubber Plant*).—This is not only in fair health in the open air in summer, but sometimes makes a good growth under our northern sun. It is best suited for select mixed groups, and in small gardens, for isolating among low-bedding plants. It will best enjoy stove treatment in winter. It should be put out at the end of May. In all cases it is best to use plants with single stems. The trailing F. repens and F. stipulata also thrive in the open air in summer, and

have a pretty effect, trailing up stems of trees in the sub-tropical garden. In mild districts they are hardy against walls or rocks. Cuttings.

Fire Bush (*Embothrium coccineum*).

Fire Pink (*Silene virginica*).

Flag, Common Water (*Iris pseud-acorus*).

Flag, Spanish (*Iris Xiphium*).

Flag, Sweet (*Acorus*).

Flame-flower (*Kniphofia*).

Flax (*Linum*).

Flax, New Zealand (*Phormium tenax*).

Floss-flower (*Ageratum*).

Flowering Ash (*Ornus europæa*).

Flowering Rush (*Butomus umbellatus*).

Fluggea (*Ophiopogon*).

Fly Orchis (*Ophrys muscifera*).

Fœniculum (*Fennel*).—The common Fennel is graceful, and were there not many other plants of much grace of foliage, it would be of value for its leaves. F. dulce is a nearly allied kind, and both grow in any soil or on any waste bank.

Forget-me-not (*Myosotis palustris*).

Forget-me-not, Creeping (*Omphalodes*).

Forget-me-not, Fairy (*Eritrichium*).

Forsythia (*Golden Bell*). — Very beautiful spring-flowering shrubs, especially F. suspensa, whose long, slender, wand-like shoots are studded for a considerable distance with bright golden blossoms. F. suspensa is certainly one of our finest shrubs, and should be found in any garden however small. It is at home under various conditions. Being of a rather loose rambling habit, it is well suited for training on a wall; indeed, few subjects are superior to it for a sunny spot, where the wood will thoroughly ripen, and a good display of spring bloom will be ensured. F. suspensa should not be employed as a wall plant in a shady position, as the yield of flowers will be meagre; nor where a close-fitting subject is required, as it is seen to the greatest advantage when the principal branches are secured to the wall till the allotted space is covered, and the shoots are afterwards allowed to grow at will, since by this mode of treatment the long slender branchlets dispose themselves in a very graceful manner, and the upper ones hang down for a long distance. A wall treated in this way is quite a mass of gold. If any pruning is required, it should be done as soon as the flowers are over, so that the young shoots may have as long a growing and ripening season as possible. As a rule, however, they need little pruning beyond the removal of weak or exhausted shoots. When rambling about in a semi-wild state, or when hanging over a bank or a cutting, this Forsythia is seen to very great advantage. It also forms a most ornamental specimen in the open if it is secured to a good stout stick when planted, and is afterwards allowed to grow at will; for the long slender shoots, which are produced in considerable numbers, will dispose themselves in a graceful manner, and in favourable situations many of them will root at the points, and will soon form quite a colony around the central plant. A large mass of Forsythia grown in this way is most striking. F. viridissima, another species, is quite a shrub. It needs a spot fully exposed to the sun, so that a good display of bloom may be ensured. A certain Forsythia was sent here from the Continent two or three years since under the name of F. intermedia, and was announced as a hybrid between F. suspensa and F. viridissima. Though at first very little disposed in its favour, I have recently seen it in a better light. Its general appearance is about midway between its alleged parents. Forsythias may be flowered under glass in the greenhouse or the conservatory during the early months of the year, and, if so treated, they will bloom in a very satisfactory manner. Owing to the time the blossoms expand when in the open ground, very little forcing is necessary to have them in bloom quite early. Fortunei and Sieboldi are names often used; but these represent only vigorous forms of F. suspensa. As the shoots of the rambling kinds root from the points almost as readily as a bramble, and cuttings strike freely, there are no obstacles in the way of their rapid propagation. The shrubby F. viridissima also strikes without difficulty from cuttings, though scarcely to the same extent as the others.

Fothergilla alnifolia.—A North American dwarf shrub, desirable on account of its flowering early in spring, its feathery tufts of fragrant white flowers appearing before the leaves, which resemble those of the common Alder. Suitable for a moist peat border or the low part of the rock-garden.

Foxglove (*Digitalis purpurea*).

Fragaria (*Strawberry*).—The Strawberry is much more useful in the fruit garden than in the flower garden, yet some kinds are pretty in the rock-garden. The common English Strawberry is very pretty on banks, and occasionally most useful on old mossy garden walls where

it establishes itself. One kind, F. monophylla, is a beautiful rock-garden plant, with large white flowers. The Indian strawberry, F. indica, is a pretty little trailer, bearing many red berries and flowering late. All are of the easiest culture in any not too wet soil, and of facile increase by division.

Fragrant Flowers. — Some sweet-smelling plants are lavish of fragrance, and give it spontaneously. Of these we have in the shrubbery, Lilacs, Mock Orange, Azaleas, Sweet Briars, double Gorse, various Brooms and Thorns, Acacias, and Honeysuckles; in the borders, Tulips, Hyacinths, and Daffodils, Triteleias, alpine Auriculas, Musk, double Rockets, Lupines (annual and perennial), Fraxinella, White Lily, Musk Mallow, Phloxes, Mignonette, and Sweet Peas, with several kinds of Scotch and other Briar Roses; for wilder parts, common Gorse, Broom, and Hawthorn, wood Hyacinths, Cowslips, Agrimony, Meadow Sweet, and Marsh Marigold. A delightful fragrance rises from a sunbaked bank of Heather in late summer, and who does not know the sweetness of a Clover field, and of a warm breeze perfumed with Pine trees? Better still, perhaps less commonly known, is the night-air of April, full of the sweet breath of the young Larch. All these are plants and trees that give off their sweetness bountifully, but the fragrance of many others can only be enjoyed by touching, or, at least, by closely approaching them. Of these the most important are Myrtle, Lavender, Rosemary, Balm of Gilead, Southernwood, Escallonia macrantha, Bay, Bog Myrtle and the fern-leaved Gale (Comptonia asplenifolia), Juniper, Thyme, Marjoram, and other sweet herbs. A good plan would be to plant these in a rough place with narrow walks or spaces of turf between good groups of each, so that one would brush against the living masses of sweetness, the turf being full of Thyme, and the free-smelling shrubs and trees being beyond.

The Gum Cistus in autumn gives off a pungent and agreeable smell, though its flowers have no scent, and in early winter the foliage of Violets and Woodruff and the dying Strawberry leaves are sweet good-byes of the garden year. There are many smaller treasures which we must either stoop to or gather if we are to enjoy their sweetness. Linnæa borealis, whose tiny twin-flowers smell like Almonds, the New Zealand Mayflower (Epigæa repens), Polygala Chamæbuxus, Almond-scented Pyrolas, the sweet-scented Orchis (Gymnadenia conopsea) like white Lilac blossom, and the Butterfly Orchis, fragrant in the evening; Iris graminea, whose flowers, hiding low among the grassy leaves, have exactly the smell of ripe plums. The Pond Flower (Aponogeton distachyon) is strongly perfumed. The Lily of the Valley need hardly be named. Of other sweet border flowers there are Chinese Pæonies, delicately Tulip-scented; Grape Hyacinths, the Musk Hyacinth, Snapdragons, Salvias, including the variegated-leaved Yuccas; the flowers of the white Plantain Lily, as sweet as those of the white Lily and more delicate, smell like those of the Crocus, Water Forget-me-not, and Pansy. The Rose family gives a whole scale of sweet notes. The wild Roses have a scent as tender as their colouring. The Burnet Rose and its descendants, the whole race of Scotch Briars, have a delicate smell quite peculiar among roses. It is distinct again in the Damask Rose and in the sweet old Provence; while in Hybrid Perpetuals we have at least three distinct types of perfume, and as many in the Teas, the most marked type among the latter being Gloire de Dijon. The scent differs again in China Roses, and again in the clustered climbing kinds. In Moss Roses the very peculiar and delightful smell seems to come mostly from the viscid matter on the mossy calyx and stalk. This is also the case with some of the garden Brambles, notably Rubus speciosus and with Fraxinella and Gum Cistus. Among sweet-smelling plants we must not omit those of a wholesome aromatic character, such as Wormwood, Chrysanthemum, Chamomile, Santolina, and Tansy.—G. J.

Francoa (*Maiden's Wreath*).—Chilian plants of the Saxifrage family, somewhat tender, and suitable for dry sheltered positions on warm borders or banks, preferring a light loam. They are good for cutting, as the long branching stems, 18 in. to 2 ft. high, bear numerous white or pink blossoms on stalks. The plants are raised from seed, and in spring furnish flowers for a long time. F. ramosa, bearing white or pink flowers, and having a short stem, differs from F. appendiculata, which is stemless, and has flowers deeper in colour than the others. F. sonchifolia has also a short stem, but its leaves are sessile and not stalked, and its flowers are rose-coloured. They are often grown as window plants, and are best as such where they do not thrive in the open air.

Frankenia lævis (*Sea Heath*).—A very small evergreen, with crowded leaves

like a Heath. Common in marshes by the sea in many parts of Europe and on the east coast of England. Best for the rock-garden, but mainly of botanical interest.

Fraxinella (*Dictamnus*).

Fremontia californica.—A handsome Californian shrub, but scarcely hardy enough for the open air without protection. There are few more beautiful wall shrubs. It has large bright yellow bowl-shaped flowers, 2 in. across, the deep green leaves being lobed. In favourable spots it reaches 10 or 12 ft. in height, and flowers in early summer. It succeeds best against a north, west, or east wall, a southern exposure being usually too hot and dry.

French Honeysuckle (*Hedysarum coronarium*).

French Willow (*Epilobium*).

Fringe Tree (*Chionanthus*).

Fritillaria (*Fritillary*).—Bulbs of the Lily family, several of which are valuable, some, such as the Crown Imperial, being stately, others such as F. recurva, being delicate and pretty, but most have dull-tinted curiously interesting flowers. They may be put to many uses: the Crown Imperial is a fine plant for the mixed border or the shrubbery, and, being vigorous, is able to take care of itself in the wild garden. Its early spring growth makes it valuable. The Snake's-head

Francoa ramosa (Maiden's Wreath).

(F. Meleagris) and others, such as F. latifolia, pyrenaica, together with the choicer kinds, are fitted for the bulb border and for grassy places. Only one or two require special treatment; all the others thrive in ordinary garden soil. They may all be readily increased by offsets from the old bulbs, which should be lifted every three or four years and planted n fresh soil—a process very beneficial to the plants. The lifting should be done in autumn, and the bulbs replanted without delay. The following

White Fritillary.

are among the most desirable for general cultivation:—

F. aurea, one of the prettiest of the genus, is quite hardy, is about 5 in. high, and has a stem of four to six thick, fleshy, deep green leaves, with a nodding flower, which is pale yellow spotted, or chequered with brown. Silesia.

F. Burnati, a handsome hardy plant about 9 in. high, with solitary drooping blossoms, 2 in. long, which are of a plum colour chequered with yellowish-green. Alps. Flowers with the Snowdrop, and is as easy to grow.

F. imperialis (*Crown Imperial*).—A showy and stately plant, from 3 to 4 ft. high, with stout bright green shoots, crested by large dense whorls of drooping bell-like flowers and a crown of foliage. There are several varieties, differing chiefly in the colour of the flowers. The principal are—lutea (yellow), rubra (red), double red and double yellow, rubra maxima (very large red flowers), Aurora (bronzy orange), sulphurine (large sulphur-yellow), Orange Crown (orange-red), Stagzwaard (a fasciated stem form, with very large deep red blossoms), and aurea marginata (gold-striped foliage); every lead being margined with a broad golden-yellow band, blending with the rest of the foliage. This plant thrives best in a rich deep loam, especially if the bulbs remain undisturbed for years. Its best place, perhaps, is in a group on the fringe of the shrubbery or a group of American plants. For artistic effects it is not so valuable as the common Snake's-head; and its odour is against it when gathered.

F. Karelini.—An interesting kind, 4 to 5 in. high, with two or three broad leaves clasping its stem, and having a terminal raceme of slightly-drooping bell-like flowers. These flowers, about 1 in. across, are of a pale purple, with darker veins, a few darker spots, and a distinct yellowish-green pit at the base of each reflexed segment. It is a native of Central Asia, and, flowering in late autumn or early winter, is valuable for a collection of winter-flowering outdoor plants. According to Dr. Regel it must be kept in dry sand until November, and should not grow or show bloom before spring. If planted in November, growth is retarded, and it does not bloom in spring, which it ought to do; while those flowering in autumn invariably dwindle away, and do not produce any new bulbs. It should be planted in light soil in well-drained borders with a warm exposure.

F. latifolia.—A most variable species as regards the colour of the flowers, which are larger than those of our native F. Meleagris. They are borne on stems about 1 ft. high, are pendulous, and vary in colour through various shades of purple, black, lilac, and yellow. The principal named varieties are—Black Knight, Cap-

tain Marryat, Caroline Chisholm, Cooper, Dandy, Jerome, Maria Goldsmith, Marianne, Mellina, Pharaoh, Rembrandt, Shakespeare, Van Speyk, each representing a different shade of colour. They grow freely in an open situation in any soil, and are excellent for naturalising. Caucasus.

F. Meleagris (*Snake's-head*) is an elegant native species, of which there are numerous varieties. It is 9 to 18 in. high, and in early summer bears a solitary drooping flower, beautifully tesselated with purple or purplish-maroon on a pale ground. The chief varieties are — the white (alba), which has scarcely any dark markings; nigra, a deep purplish-black; pallida, light purple; angustifolia, with long narrow leaves; major, with flowers larger than the type; præcox, which flowers about a week earlier than the other forms; flavida, yellowish; and the rare double variety. All forms of this beautiful plant may be used with excellent effect. It grows freely in grass not mown early, and is therefore admirable for the wild garden; its various forms are among the most beautiful inhabitants of the hardy bulb garden, and tufts of the chequered or white-flowered variety are among the most graceful plants in cottage gardens.

F. Moggridgei (*Golden Snake's-head*). —A beautiful plant with pendulous blossoms, 2 in. long, which are of fine golden-yellow, chequered with brownish-crimson on the inner surface of the bell. It may be seen on its native Alps, at an elevation of five to seven thousand feet, among the short stunted Grass, accompanied by alpine plants, and giving the slopes the appearance of a sheet of golden bloom. It is hardy, and flowers early in spring. It is a lovely flower for planting in the choice bulb portions of the rock-garden, and, when plentiful, for dotting in groups in Grass where it may escape the mower.

Crown Imperial (Fritillaria imperialis).

F. pudica is one of the most charming of hardy bulbs, and takes a place among yellow flowers similar to that of the Snowdrop among white ones. It is a native of the Rocky Mountains and the Sierra Nevada of California, where it grows in a dry barren soil. It is one of the principal spring ornaments of the flora, being nearly 6 in. high, and having bright golden-yellow flowers, graceful in form and

drooping like a Snowflake. It thrives in warm sunny borders of loamy soil.

F. recurva.—The showiest of the Fritillaries, its red colour being as bright as some Lilies, and mixed with bright yellow especially on the inside of the flower. It flowers early in May or towards the end of April. The bulbs consist of a slightly flattened tuberous stock, covered by articulated scales, somewhat widely placed, which at first sight resemble those of Lilium philadelphicum. A tuft of bright green linear leaves appears above the soil, and from this rises a slender purplish stem, 6 in. to 2½ ft. high, with several pendent Lily-like flowers. It is not robust, and has succeeded only under careful cultivation, growing best in fibry loam, on a warm sunny border, near a wall. In winter it is advisable to cover the bulbs with some protective material or with a hand-light. California.

F. Sewerzowi.—A singular-looking plant, growing from 1 to 1½ ft. high, having broad glaucous leaves and nodding flowers that are greenish outside and vinous-purple within. A native of the mountains of Turcomania, quite hardy in our climate. Propagated by bulblets or seed.

Many others are in cultivation, but the majority are unattractive, though some are useful for naturalising among Grass in the wild garden; the most suitable are—F. delphinensis, a robust plant with stems 1 ft. or more high, bearing brownish-purple flowers, more or less chequered with greenish-yellow; F. pyrenaica, a similar species, but more robust; F. liliacea, liliorhiza, lanceolata, lusitanica, pallidiflora, tulipifolia, ruthenica, and tristis, all with dull brownish-purple or greenish flowers.

Known species.—*F. acmopetala*, Syria. *alba*, N. Amer. *armena*, Armenia. *assyriaca*, Greece. *atropurpurea*, N. W. Amer. *biflora*, Calif. *bithynica*, Bithyn. *Boissieri*, Spain. *bucharica*, Bokhara. *camschatcensis*, E. As. *cirrhosa*, Himal. *conica*, Greece. *cornuta*. *Cornuti*. *crassifolia*, As. Min. *cuprea*, Mexico. *dagana*, Siberia. *dasyphylla*, Lycea. *Eduardi*, Bokhara. *Ehrharti*, Grec. Archip. *Elwesii*, Lycea. *Fleischeriana*, As. Min. *Forbesii*, Lycea. *Gardneriana*, Himal. *gibbosa*, Persia, Afghan. *græca*, Greece. *imperialis*, Persia, Himal. *involucrata*, Italy. *japonica*, Japan. *kurdica*, Kurdistan. *lanceolata*, N. W. Amer. *latifolia*, Caucas., Persia. *libanotica*, Syria. *liliacea*, Calif. *lusitanica*, Portugal. *lutea*, Caucas. *Meleagris*, Europe, Caucas. *meleagroides*, Siberia. *messanensis*, Mediterr. *minuta*, Kurdistan. *Munbyi*, Algeria. *obliqua*, Greece. *Olivieri*, Persia. *oranensis*, Algeria. *oxypetala*, Himal. *pallidiflora*, Siberia. *parviflora*, Calif. *persica*, Armenia. *Pinardi*, As. Min. *plantaginifolia*, East. *plurifolia*, Calif. *pontica*, Greece, As. Min. *præcox*, Europe and Australia. *Pryewalskii*, E. Asia. *pudica*, N. W. Amer. *pyrenaica*, Pyrenees. *racemosa*, do. *recurva*, N. W. Amer. *Reuteri*, Persia. *rhodocanakis*, Grec. Archip. *Roylei*, Himal. *ruthenica*, Caucas. *Schliemanni*, As. Min. *Sewerzowi*, Cent. Asia. *Sibthorpiana*, Greece. *tenella*, Europe, Caucas. *tennella*, Europe. *tubæformis*, Europe, Australia. *tulipifolia*, Caucas. *usuriensis*, Amoor. *verticillata*, Siberia. *Walujewi*, Turkestan.

Frog-bit (*Hydrocharis Morsus-ranæ*).

Fruiting Duckweed (*Nertera*).

Fuchsia.—This, a most beautiful ornament when well grown, is too seldom seen in our flower gardens. All round our coasts, and especially in the southern and western parts, several species are hardy, and are perhaps the most beautiful objects in gardens. In other districts Fuchsias are cut down by frost, but spring up again vigorously and, in fact, live the life of herbaceous plants; but in mild districts, and near the coast, they frequently escape being cut down for years, and become large and handsome bushes. No plants are more likely to improve the garden. Not showy, in mass of flower they are of the highest beauty; the drooping shoots of most kinds afford a grace that no garden should be without. Even in dwarf kinds, where this drooping tendency is not seen to such advantage, or, it may be, is seen to a disadvantage, the Fuchsia is very valuable; but its full beauty is seen when we use plants with rather tall stems or pyramids. In the milder districts, where it is a shrub, we see it to perfection; in others, the tall-stemmed or pyramidal plants have to be placed out in summer. The right way to manage Fuchsias put out for the summer only is to induce them, as far as possible, to produce all their growth in the open air; for if you start them, nurture them, and make them full of leaves and strong young growth in the spring, they will be disappointing; but if you keep them back and do not let them burst into leaf until put in the open air in May, they will go on and retain all the strength they gather, suspending graceful blossoms until the leaves desert the trees. They should then be taken up and put in a dry cave, cellar, or shed for the winter, and it would not be difficult to "keep them back" in spring. And even if they seem inclined to push forth before the time to put them in the flower garden there should be no difficulty in placing them in some quiet sheltered

nook, where they may receive more protection than in the flower garden proper, and yet have full opportunity to make growth in the open air—the great point to be attained. In many places refuse plants may be turned to good account in this way. Nothing is simpler than to make of these standards for the flower garden by cutting away the lower and middle side-shoots and leaving the head. All may be freely propagated from cuttings in spring or autumn. There are about a dozen more or less hardy kinds that succeed in the open air in the south and midland counties, and many more in warm seaside localities; in fact, there is not a Fuchsia in cultivation that will not thrive in the open air in summer; if used judiciously they give an air of grace afforded by no other plants. The following are among the hardiest kinds:—

F. coccinea.—A well-known bushy plant, graceful and beautiful in growth and bloom, readily adapting itself to any locality, unless the soil be of the wettest and coldest description, and even then a slight covering of coal ashes after the stems are cut down in autumn will protect the roots in winter. In favourable situations it is often 6 ft. high. From the axils of the leaves, which are a fine green, beautifully tinged or veined with red, the flowers, which before they fully open are not unlike crimson drops, are produced in profusion during the greater part of the summer. Chili.

F. conica.—A vigorous compact species 3 to 6 ft. high, but not such a free flowerer as some of the others. The flowers have scarlet sepals, and dark purple petals. Chili.

F. corallina.—A beautiful plant, taller and more slender than the others, and therefore specially suited for walls and houses. The flowers are large and of a showy red colour, and the plant is a vigorous grower and free bloomer.

F. discolor is a dwarf variety with numerous small scarlet flowers. It is the hardiest of all, not being injured by the winters in the milder parts of Scotland if treated as a herbaceous plant. F. pumila is similar, but more slender, and equally desirable.

F. globosa.—One of the best of the hardy Fuchsias. The flowers are globose in bud, and retain their shape for some time after they begin to expand, on account of the petals continuing to adhere at the tips. It is a profuse bloomer, and the flowers are richly coloured. It forms a sturdy and often a large shrub in seashore districts. There is no reason why it should not be grown in drier districts, even if cut down by frost every year, as it is always handsome.

F. gracilis.—A very distinct slender plant, with flowers on remarkably long slender stalks. The young shoots are a purplish-red, the calyx is a brighter scarlet, and the corolla has a greater infusion of red than other hardy kinds. In mild and moist districts it is nearly 7 ft. high, from 12 to 15 ft. in circumference,

Fuchsia pumila.

and is of rapid growth. In some winters it is not cut down by frost. There is a variety called multiflora, which is very free-flowering, and which has shorter flowers and of darker crimson. F. tenella is a seedling variety of F. gracilis. Chili.

F. Riccartoni.—One of the prettiest and hardiest sorts, growing well without protection even in parts of Scotland. It is compact and twiggy, and in summer

bears many bright red blossoms. A garden hybrid.

Besides these, other kinds are in cultivation, such as procumbens—a curious little New Zealand species—serratifolia, magellanica, thymifolia, and microphylla, and nearly all the hybrid kinds do out-of-doors in summer, and bloom well, though they may be cut down in winter. Among the most distinct and pretty are the dwarf and fragile kinds, such as F. microphylla, F. pumila, and several hardy hybrids of the globosa section, all of which seem to flourish unusually well near the sea, and to grow almost anywhere.

Mostly S. American plants. Chiefly from Brazil, Bolivia, Chili, Ecuador, Peru, New Grenada, and Venezuela, but some from Mexico, some—viz. Colensoi, Eucliandra, Kirkii, procumbens—from N. Zealand, and one, racemosa, from the Island of San Domingo.

The known species are :—

F. alpestris, ampliata, apetala, arborescens, argovacensis, bacillaris, boliviana, canescens, caracasana, chonotica, coccinea, Colensoi, confertifolia, cordifolia, corymbiflora, curviflora, decussata, denticulata, dependens, Eucliandra, excorticata, fulgens, globosa, Hartwegii, hirsuta, hirtello, insignis, integrifolia intermedia, Kirkii, Lenneana, longiflora, loxensis, macrantha, macropetala, macrostemma, macrostigma, membranacea, microphylla, miniata, minimiflora, minutiflora, mixta, montana, nigricans, Notarisii, ovalis, pariviflora, petiolaris, procumbens, pubescens, quinduensis, racemosa, rosea, salicifolia, scabriuscula, serratifolia, sessilifolia, simplicicaulis, spectabilis, spinosa, splendens, sylvatica, thymifolia, triphylla, umbrosa, venusta, verrucosa, virgata.

Fumaria (*Fumitory*).—Mostly annual plants of a weedy nature. The species of Corydalis are sometimes placed under this genus, especially in Continental gardens and nurseries.

Funkia (*Plantain Lily*).—Valuable Japanese plants of the Lily Order, of which there are about half-a-dozen species and numerous varieties. The different species are free-flowering herbaceous plants, with spikes of bell-shaped flowers, but the chief value is in the foliage. They are noble plants, most useful for many positions in the garden, while few lend such a fine effect as F. Sieboldi when finely developed. They are highly suitable for grouping, and few plants thrive better in open places in shrubberies. The bold striking foliage of some of the strongest plain-leaved section renders them very effective for edging large beds, while the kinds with variegated foliage, such as F. undulata variegata, make good groups, or are suitable for edgings. They are best seen in well-drained deep soil. All are easily multiplied by division in spring or autumn. The best are—

F. Fortunei.—This strong species has smaller and more leathery leaves than F. Sieboldi, and they are of a much more bluish or glaucous tint. The flowers are pure white or pale mauve.

F. grandiflora is 12 to 18 in. high, producing in August and September numerous large, handsome, pure white, sweet-scented flowers. In some places it is used for edging, but is best seen in tufts, in beds or borders, in a well-drained sandy loam. About Paris it is grown as a flower-garden plant, but with us it does not flower regularly unless in sunny spots and warm, well-drained, and very sandy loam. The young leaves are a favourite prey of slugs and snails. It is also known as F. subcordata.

F. lancifolia is a small species, with tufts of lance-shaped leaves, narrowing from the middle towards both ends. There are some interesting varieties, chief among which are the white-flowered variety (alba or speciosa as it is more commonly called), a beautiful plant, spathulata, and plantaginifolia, with long narrow leaves. There are some very pretty varieties with leaves of different variegation, all well worth growing; notably albo-marginata, with a narrow white line along the margin of the leaf; undulata variegata, in which the leaves are undulated on the margin and variegated on the greater part of the surface; and umvittata, with a broad white midrib to the leaf.

F. ovata has large tufts of broad, deep, shining green leaves. Flower-stems 12 or 18 in. high, terminating in a short raceme of lilac-blue flowers, which appear in late summer and autumn. One of the strongest species, and when in flower is very handsome. There is a variegated-leaved form.

F. Sieboldi is the most ornamental of the species. It is 18 in. to 3 ft. high, and has large glaucous leaves, somewhat heart-shaped, often over 1 ft. across. The flowers are in tall one-sided racemes well above the foliage, and are a creamy-lilac. There is an interesting variety with yellow-margined foliage. Admirable in tasteful hands for picturesque groups or massive edgings.

Furze, see Ulex.

Gagea.—Small plants of the Lily Order, with flowers somewhat like a Star of Bethlehem, but yellow, and not generally admired, but pretty in grassy places in

sandy soil. Europe, G. lutea being British.

Gaillardia.—Very important plants for the flower garden, including some of the showiest flowers, valuable for their long duration both on the plants and in a cut state. The genus numbers some half-a-dozen species from N. America, and many garden varieties. The numerous kinds now in gardens appear to fall under three species, but there is a strong family likeness throughout the series. The kinds are

G. aristata, a perennial, 1 to 1½ ft. high, with narrow leaves, sometimes deeply cut. The flowers are 1½ to 4 in. across, the ray florets having an outer zone of orange-yellow and an inner one of brownish-red, while the centre is deep bluish-purple. It is the commonest kind, and having been raised largely from seed, has many varieties, differing more or less widely from the type, with various names. G. picta somewhat resembles G. aristata, but has smaller flowers, and is a biennial. It is dwarfer, and its flowers are brighter. G. amblyodon is a beautiful Texan annual, introduced a few years ago. Its flowers are even smaller than those of G. picta, and are of a deep cinnabar red. On strong plants they are borne plentifully towards the close of the summer for several weeks. G. pulchella is the oldest form cultivated, and was introduced about a century ago. It is 1 to 1½ ft. high, and bears bright yellow and purplish-red flowers, 2 in. across. An annual. G. bicolor and pinnatifida are seldom seen in gardens, probably owing to their being somewhat tender. The garden varieties, as has been stated, are numerous, but the most distinct of those named are—

Plantain Lily (Funkia Sieboldi).

G. grandiflora, said to be a hybrid, presumably between G. picta and G. aristata. It is a beautiful and vigorous plant with large brightly-coloured flowers, which are only surpassed by its variety maxima. It is by far the finest of all.

G. hybrida is another garden cross, much resembling G. grandiflora; the variety splendens has brighter flowers. G. Telemachi, Drummondi, Loiselli, and Bosselari appear to be synonymous with some of the preceding, and G. Richardsoni scarcely differs from them.

All thrive in good friable garden soil,

but not on a cold stiff soil or on one that is too light or dry. Where possible they should be grown in bold groups, for they thrive better if so placed than as solitary plants in a parched border, and no plants have a finer effect in a bed by themselves. Where apt to die in winter, they may be used in mixed borders, if treated as half-hardy annuals; for if sown in a mild hotbed at the end of February or the beginning of March, they may be grown into good plants, and give a full display of their fine flower-heads as early as those that have withstood the winter in the borders. It is well to note that these in many soils are not nearly so hardy or enduring as many of the perennials we have from N. America, and therefore cannot in cold soils be depended on.

The culture of the perennial Gaillardia is not beset with difficulties, and the plant is seen best in bold groups, rather than small clumps here and there in the border. If established plants in pots are obtained in April and put out in the places they are to occupy about 2 ft. apart each way, a good bloom may be expected the same season if the soil is well dug and mixed with well-decayed manure. Mr W. Kelway, of Langport, Somerset, in a note to *The Garden* on January 27, 1887, mentions that a collection planted in this manner bore the drought of the last five years better than any other herbaceous perennial grown at Langport, and stood the winter so well that not 3 per cent. suffered. Some commend the Gaillardia for bedding, though it is seldom grown in this way, but a pretty effect is obtained when plants of one distinct variety, or shades of the same colour, are put about 1 ft. apart with the stems pegged down. The situation,

Gaillardia.

however, where the Gaillardias remain out winter after winter must be warm, the soil not too heavy, but light and dry. In very cold and wet seasons in midland counties the plants often succumb; but it is very easy in the autumn to strike cuttings, which may be taken off and treated similarly to the Pelargonium, or seeds raised in March, and the plants hardened off before putting out, will also give a quick return in the shape of flowers. Increased by cuttings in autumn or spring, and division in spring.

Known species.—*G. acaulis*, N. Amer. *amblyodon*, Texas. *aristata*, N. Amer. *arizonica*, Arizona. *comosa*, Mexico. *lanceolata*, N. Amer. *megapotavica*, Braz. *mexicana*, Mex. *odorata*, N. West Amer. *pinnatifida*, N. W. Amer. *pulchella*, N. Amer. *Koezli*, Calif. *simplex*, N. W. Amer. *spathulata*, N. W. Amer. *tontalensis*, Argent.

Galactites tomentosa.—A Composite, from the shores of the Mediterranean, 2 to 3 ft. high, with spiny foliage, blotched with white, and cottony-white on the under surface, the flower-heads lilac-purple. If sown as early as February, it blooms the first season, but stronger plants are got by sowing in autumn. It succeeds best in good loam, and is effective in small masses in the sub-tropical garden.

Galanthus (*Snowdrop*).—Always loved in English gardens. The old Snowdrop is now known to be only one member of a large family most of which have merits for garden culture. The Snowdrop never looks better than when naturalised amid tender herbage in old orchards and paddocks, on the margins of lawns, or beside woodland walks. Almost any soil suits the Snowdrop, but rich, drained, gravelly-bottomed soils are best, though in Nottinghamshire and Leicestershire it grows well on the clay soils of hedge-banks and old orchards. All the Snowdrops are hardy, and may be used in isolated masses on the Grass, or grouped on rock-gardens, or in the wild garden, where they may be associated with Anemone, early Crocuses, Winter Aconites, and early Iris, which bloom in January and February in mild winters. As cut flowers, Snowdrops are most attractive, since they may be grouped with sprays of Box or Fern, or associated in bouquets and wreaths with Orchids, Rose-buds, Forget-me-nots, and other cut flowers. To cull the flowers in bud is, however, essential to ensuring perfect beauty, as they can be carried better and open fresher in water than if cut from fully-expanded plants. Buds so gathered will remain beautiful for ten days or longer, while flowers cut after expansion will fade in about a week.

There are several species in cultivation, all bearing a strong resemblance. The common native, G. nivalis, has dwarf narrow leaves and small flowers. There are two varieties of this species—Scharloki and virescens. G. Scharloki has the outside tips of the outer petals green, and the upper portions white; it has, moreover, a two-leaved spathe. G. virescens has the tips of the outer petals white, but the whole of the upper portion is suffused with green. The Crimean Snowdrop, G. plicatus, has very broad leaves, with margins curiously turned down or deflected, and flowers larger than those of nivalis. G. Imperati is the most stately of the group, varying from 6 to 12 in. in height, the sepals being about 1 in. long. G. Elwesi, perhaps the finest, has a very globular flower, twice as broad as G. Imperati, and the green base of the inner segments shows between the outer ones. The leaves are also very glaucous, and can be distinguished at a glance from those of any other Snowdrop. G. Redoutei is a most distinct and robust kind, but is rare in gardens like G. latifolius and reflexus. Mr. Melville, of Dunrobin Castle, has raised interesting varieties of Snowdrops, which differ chiefly in time of flowering. They are G. Melvillei, proculiformis, serotinus (a late flowering kind), and præcox, which flowers about Christmas. A variety of G. nivalis, with yellowish flowers, is called lutescens.

The present very interesting and growing state of our knowledge of Snowdrops may best be gleaned from a paper read by Mr. Jas. Allen before the Royal Horticultural Society, of which the following is an abstract:—

Less than twenty years ago there was, practically, but one kind of Snowdrop grown in England, G. nivalis, in its single and double forms. G. plicatus was introduced soon after the Crimean war, but it was not often seen unless in botanic gardens. Early in the '70's G. Elwesi was introduced, and in 1875 Mr. Barr offered, under the name of G. Imperati, a very fine form which the late Mr. James Atkins, of Painswick, procured, "from somewhere in the kingdom of Naples." This is much finer than the G. Imperati offered by Messrs. Backhouse and others some two or three years later, and now generally grown under that name. I propose that the earlier form be called G. n. Atkinsi. Then G. latifolius (first

offered as G. Redoutei), a Snowdrop with the leaves of a Scilla, was followed later on by G. caucasicus, and finally by G. Fosteri. We have also discovered that a few forms of G. nivalis, from the mountains of Greece, hurry into flower in September or October instead of January, and some of their little cousins in Corfu try to do the same, but cannot get their wardrobes ready until a few weeks later.

In speaking of Snowdrops we must not forget that, besides the division into species and sub-species, we have the arrangements into classes, according to colours and other peculiarities. Consequently we hear of white Snowdrops and yellow Snowdrops, and also green Snowdrops.

G. IMPERATI.—I think no botanist would be able to say where nivalis ended and Imperati commenced. In the section to which G. nivalis and G. Imperati belong there are some most lovely Snowdrops, amongst which I would mention first Mr. Melville's Dunrobin form, now known as G. Melvillei major. G. n. Atkinsi is second to none in size, form, quality, and freedom in growth. It is the plant known to some as Imperati of Atkins, or true Imperati. A year or two since I selected from some imported roots of G. Imperati a lovely dwarf very late-flowering form, which I named Afterglow. This is the most beautiful of the late class.

G. PLICATUS is very distinct, and its best forms possess great beauty. The foremost place in this section belongs to G. p. maximus, found a few years since in a garden at Chapel, in Berwickshire, by Mr. W. B. Boyd, of Melrose. This wonderful variety, under favourable conditions, gives flowers the petals of which are fully 2 in. long. It is a very late bloomer and a good grower. In the same garden Mr. Boyd found another good variety, which he named G. p. Chapeli. This is not nearly so large, but it has very broad petals and is of fine form, and ranks with the best. G. plicatus usually flowers late, but I have a selected form, G. p. præcox, which flowers with the early varieties of G. nivalis. This is very distinct. Another selected form, G. p. Omega, flowers with the very latest.

G. ELWESI.—The best varieties of this are large and handsome, but still it is not a universal favourite. It wants the most sheltered spots in the garden, otherwise the wind is too much for the topheavy flowers, and their purity and beauty are soon gone. I am trying to get a race of finely-shaped flowers, with short sturdy stems to enable them to carry their heads erect. Many find G. Elwesi difficult to manage, but with me it grows very freely, especially in one bed of very light soil, where the seedlings are almost a nuisance.

G. LATIFOLIUS.—This is the most distinct of all Snowdrops, with its broad grass-green foliage and small pure white flowers, and it has a delicate beauty all its own, more especially just before the bud expands, when the two leaves curve so lovingly round the flower-stem. I have obtained roots of this species from many quarters, but there seems to be little or no variation in the flowers.

G. FOSTERI.—I understand that in the favoured spots of their native country the bulbs of G. Fosteri are as large as those of a good-sized Narcissus. This seems to be the most sportive of all the Galanthi as to size, form, and marking of the flowers. From the few bulbs I have bloomed, I have had flowers with petals of every imaginable shape, some showing points of great beauty, and others quite the reverse. We must be patient and weed out unsparingly, and then in a few years we shall be proud of G. Fosteri. The markings on the inner petals are very similar to those of G. Elwesi, but the foliage is quite different, being broad and somewhat blunt, and in shape and colour much like the leaves of Scilla sibirica. M. Max Leichtlin thinks very highly of G. Fosteri, and considers it to be the "king of Snowdrops."

G. ALLENI.—Mr. Barker thinks this is probably a hybrid between G. latifolius and G. caucasicus, as it has some of the features of each species. The flower is of much the same character as that of G. latifolius, but nearly twice as large, and the foliage corresponds in size with the blossoms. It is somewhat glaucous and of a much darker green than that of G. latifolius, but of exactly the same elegant form. G. Alleni is very hardy, robust, and free-flowering.

AUTUMNAL SNOWDROPS.—In Greece and the adjacent countries several Snowdrops have been found which flower in the autumn or early winter. They seem to belong to the nivalis section. One peculiarity I have noticed in them is that they have a glaucous line running down the centre of each leaf, and by this they can be at once distinguished from the spring-flowering forms of nivalis. So far as I can learn, all these Snowdrops grow on high ground, mostly on mountains. I understand that the Snowdrops on the

lower grounds do not flower until early in the year.

G. OLGÆ.—This autumnal-flowering Snowdrop was found on Mount Taygetus by Orphanides, the Greek botanist. From the descriptions given of it, G. Olgæ must have been a fine variety, and it is very unfortunate that it is lost to cultivation. M. Tanka, the Hungarian botanist, asserts that this and G. octobrensis are identical, but I do not think so ; and the difference between G. octobrensis and G. Rachelæ confirms my opinion.

G. OCTOBRENSIS.—Lord Walsingham, when travelling in Albania about the year 1875, collected some bulbs on one of the mountains and sent them to the late Rev. H. Harpur-Crewe. Amongst these was a bulb which proved to be a Snowdrop flowering in the autumn, usually in October. I am sorry to say that it is somewhat delicate and increases very slowly with me. In Mr. Boyd's garden at Melrose it seems quite at home, a single bulb having given five blooming roots the first year after planting.

G. RACHELÆ.—When travelling in Greece in 1886, Professor Mahaffy collected a quantity of bulbs and tubers on Mount Hymettus, which he sent home to Mr. F. W. Burbidge, who sent me the original bulb. G. Rachelæ is of the same type as G. octobrensis, but the flower is a little larger, and the leaves are quite a third broader, and it seems to have a stronger constitution than that variety. It also differs in being a week or ten days later in flowering.

G. CORCYRENSIS.—This usually flowers from the middle to the end of December, according to the mildness of the season. It is evidently a form of G. nivalis, small in size and delicate in constitution. Being the connecting link between the autumn and spring flowering kinds, it is valuable and well worth the extra care required in its cultivation. The late Mr. Harpur-Crewe received it from the English chaplain at Corfu.

G. ELSÆ.—Amongst some roots collected by Dr. Mahaffy on Mount Athos, in Greece, in April 1889 (?), were a few bulbs of a Snowdrop which pushed through the soil in October of that year. Mr. Burbidge noticed these, and kindly sent one of them to me. This opened its flower on the 17th December. It is a dwarf variety with small flowers of good form, but I fear it is not very robust or hardy, as the frost of last season injured the leaves, and it has not flowered this spring.

THE YELLOW SNOWDROPS form but a small class, two varieties only being known at present. It must not be supposed that the petals of the flower are yellow ; the name is given because of the rich yellow colour of the ovary, and the markings on the inner petals are also of that colour, instead of the usual green, and even the flower-stalks are more yellow than green. G. lutescens was found some fifteen years ago by Mr. Sanders, of Cambridge, in an old-fashioned garden in Northumberland. When Mr. Harpur-Crewe first saw it he thought it was the "long-looked-for G. reflexus," but further observation convinced him that it was not. This is a very beautiful and unique variety of small size and of delicate constitution, but the reward of success amply repays a little loving care and trouble. G. flavescens was discovered quite recently by Mr. W. B. Boyd, of Melrose, in a cottage garden, also in Northumberland, but in quite a different part of the county. This variety is rather larger than G. lutescens, and all the yellow points are brighter in colour with the exception of the flower-stem, which in my two plants seems rather paler. G. flavescens is a very beautiful variety, and will be a great favourite when it becomes known. It also has the recommendation of growing and increasing freely.

THE WHITE SNOWDROPS also consist, at present, of two varieties only. G. poculiformis was first brought into notice by Mr. D. Melville, who found it in the grounds at Dunrobin Castle. It has since been found in Wales by Mr. A. D. Webster, and I have also received bulbs of a very similar form from a lady near Ayr, in whose garden it grew with several other peculiar forms. When in character the inner petals are almost the same length as the outer ones, and the green markings are entirely absent, thus giving the flower an elegance and purity not found in any other Snowdrop. Unfortunately, a good many of the flowers come with some of the inner petals reverting more or less to the normal form, and in this state they are not beautiful. G. n. albus is smaller than most of this section, and is very distinct from Snowdrops in general, its peculiarity being that the usual green markings on the inner petals are replaced by small dots, which are scarcely observable at a short distance. The flower is generally of perfect shape, and is then very pretty. An occasional flower sports in the way of poculiformis. It grows freely, but increases slowly.

GREEN SNOWDROPS form quite a large

class, but none of the blossoms are entirely, or even mostly, green in colour. They come into this class in consequence of having more or less green on the outer petals, somewhat in the style of the Leucojum. G. Scharloki was so named in 1868 by Professor Caspary in honour of its discoverer, Herr Julius Scharlok, who found it in the valley of the Nahe, a tributary of the Rhine. This variety, in addition to large pale-green spots towards the tips of the outer petals, has the peculiarity of a twin or divided spathe, which curves down on the two sides much like a pair of wings. This variety grows and increases very freely. G. virescens is a very singular-looking Snowdrop, reminding one somewhat of an Ornithogalum. The outer petals are pale green, shading off to pure white at the edges, and especially at the tips; the inner petals are entirely green. At first I did not care much for this variety, but it has a quiet beauty which grows on me, and I should not now like to lose it. It is very late in flowering, coming in quite at the end of the season. I do not know its history, but I believe M. Max Leichtlin had his bulbs from the Vienna Botanic Gardens. G. Warei has green spots on the outer petals like G. Scharloki, but has not the divided spathe, and the markings on the interior petals are larger. Mr. Boyd, of Melrose, kindly sent me my root of this variety, and he obtained it from Mr. Ware under the name of G. Scharloki, and I imagine it must be a seedling from that kind. Mr. Ware is unable to account for the variation from the type. It is a strong-growing handsome plant. G. Fosteri Leopard is a great curiosity, having flowers of quite unusual shape, and at the tip of each outer petal a large dark-green spot, in the style of Leucojum vernum. M. Max Leichtlin kindly sent me ten collected bulbs of G. Fosteri in January 1890, and one of these flowered as described, and has kept true this season. G. Fosteri Spot is quite distinct from Leopard. It has long outer petals, somewhat pear-shaped, and at the tip of each is a small pale-green spot. The spots are not sufficiently prominent to give a decided character to the flower, but it is valuable as a variety.

RAISING SNOWDROPS FROM SEED.—The raising of seedling Snowdrops is not at all difficult. After the seed is gathered it should be kept in an airy place for a week or two to thoroughly ripen, and then it should be sown as soon as possible. I have not met with much success from sowings in the open ground, so I now always use boxes, and I find that brandy-cases are very suitable for the purpose, as they are strongly made of good wood, and are not so deep as most boxes of the size. I bore twenty-five three-quarter inch holes in the bottom, and then nail a 2-inch square strip of red deal about 3 in. from each end. This keeps the boxes off the ground, makes them handy to move, and prevents stagnation. I use ample drainage and free soil with plenty of grit in it to keep it sweet. The seed is sown in drills about a quarter of an inch deep, the drills filled up with silver sand, and then a quarter of an inch of sifted soil put over the whole. These boxes are placed about 2 ft. from a low north wall, and are never protected in any way. They require but little attention; of course, the weeds must be kept down, and a little fresh soil added after the second year. The Marchantia and Spergula are the greatest pests in this work. I usually let the seedlings remain in the boxes until some of them begin to flower, which generally occurs the fourth season. Galanthus seed comes up very irregularly, and when seedlings are removed from the boxes they will be found to vary from the size of a wheat-corn to that of blooming bulbs. Seed of G. lutescens does not germinate for several years as a rule. Last spring, in the same box, and from seed sown at the same time, I had G. Imperati in flower and G. lutescens making its first appearance. If Snowdrop seed is kept till the spring, it will not germinate until the following spring. The true quality and size of seedlings cannot be ascertained until the third or fourth year of flowering.

SOIL FOR SNOWDROPS.—With me G. nivalis grows freely in all soils and situations. G. plicatus is not very particular, but still some of its varieties require extra care, as they have an unpleasant way of disappearing. G. Elwesi does not do well in close retentive soil. G. latifolius and G. caucasicus, I believe, prefer gritty loam, and I should say that G. Fosteri would also like it. Mr. A. D. Webster tells me that peat has quite a magical effect on Snowdrops, but I have not tried it. My ideal soil for Snowdrops in general would be half good sweet yellow loam and almost half unsifted river-grit and a little leaf-mould. The situation I should choose would be a gently sloping bank, more or less shaded by trees whose roots were allowed to wander freely among the Snowdrops. I believe that all bulbs are healthier when planted

amongst active roots than in ordinary beds. When the bulbs are at rest it is very essential that the soil should be kept sweet by the activity of other roots. We too often lose sight of this fact. I think the autumnal-flowering Snowdrops should be treated as alpine plants. All my best Snowdrops are grown under trees, the soil being quite full of their roots. I do not use manure for them. The only drawback to my situation for these spring gems is the soiling of the flowers from the drippings of the trees. I should mention that the climate is so trying that I cannot grow such hardy plants as Primroses, Pinks, Daisies, etc. All these disappear after a season or two. I move most of my Snowdrops when in full flower, and do not find they are injured by it in any way. This is also the best time for moving Leucojum vernum. I have noticed that the more green colour there is in any Snowdrop the more freely it grows and the more rapidly it increases, while the absence of green, or the substitution of yellow for the green, makes the plant delicate and slow of increase.

Galatella (*Aster*).

Galax aphylla (*Wand Plant*).—One of the neatest little plants for the rock-garden; its white wand-like flowers must have suggested its common name; its round evergreen leaves are beautifully toothed and tinted, on slender stems 6 or 8 in. high. Of easy culture in moist peat or leaf-soil, in the bog-garden, or on the margins of beds of dwarf shrubs in peat. America.

Galega (*Goat's Rue*).—Graceful hardy plants of the Pea-flower Order, flourishing in any soil. On account of their free growth they are useful for the wild garden, and are very effective in groups. They are herbaceous perennials, growing from 2 to 5 ft. in height, according to position and soil. All give many flowers of varied hues. Seeds or division. The kinds are —G. officinalis, or Common Goat's Rue, a native of Southern Europe, and 3 to 5 ft. high, in summer bearing dense clusters of Pea-shaped blossoms of a pretty pink. There is a white variety (alba) useful for cut flowers. A variety called africana has longer racemes and blossoms of a purple tinge. G. orientalis is from the Caucasus, 3 to 4 ft. high, with bluish-purple flowers. G. persica is a later-flowering kind, from 2 to 4 ft. high, with white flowers in dense racemes on slender stalks. G. biloba has pretty bluish-lilac flowers, but though an old inhabitant of gardens, s now scarce.

Gale, Sweet (*Myrica*).

Galingale (*Cyperus longus*).

Galium (*Lady's Bedstraw*).—Of this very large family of plants some of our native kinds are of much beauty as we see them on grassy banks. They should be encouraged on banks or in grassy places not mown early.

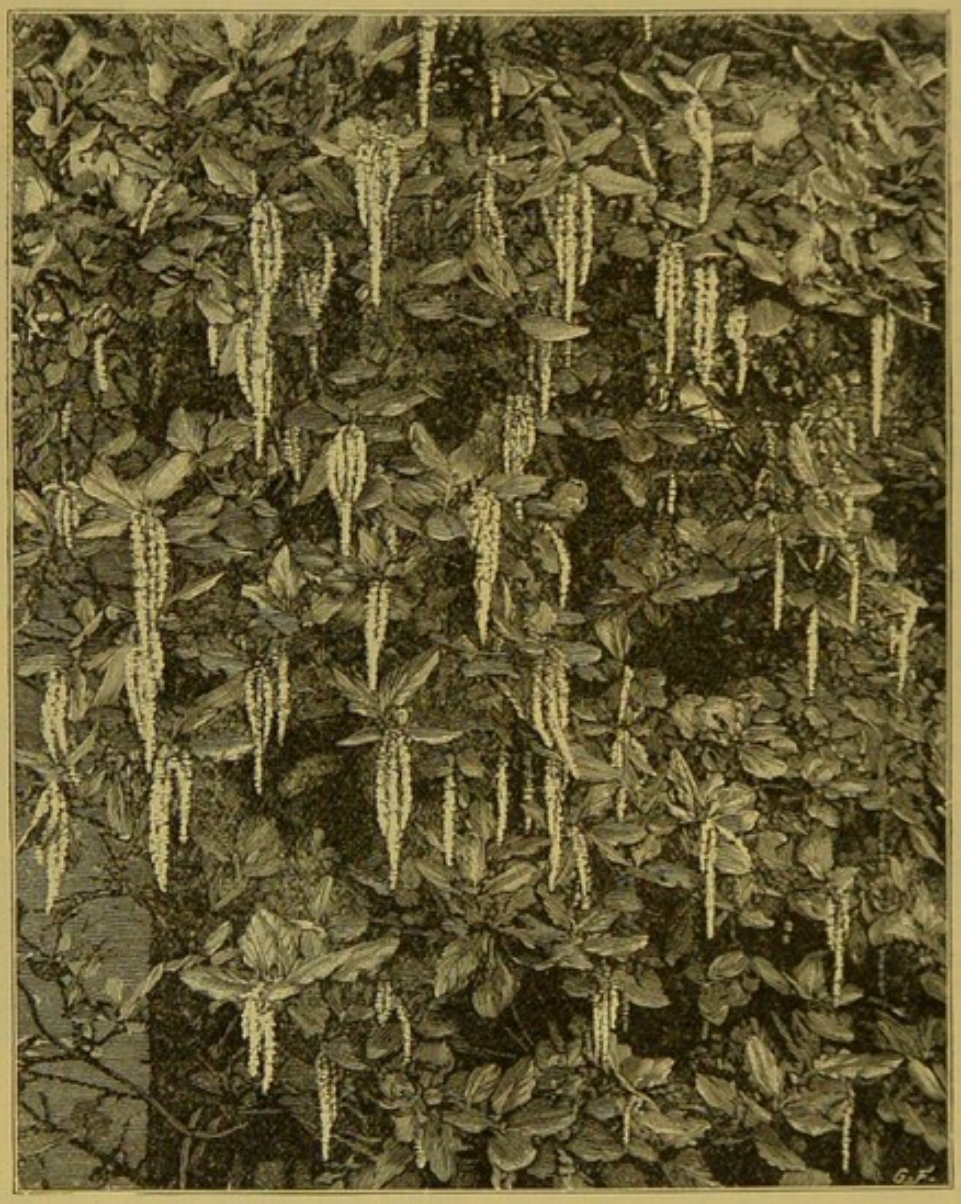
Galtonia candicans (*Cape Hyacinth*).—A noble bulb from the Cape, with spires of waxy, white bell-like blossoms, 1½ in. long, on stems 4 to 6 ft. high, in late summer and autumn. It is of easy culture, hardy in light soils, and valuable for bold groups in the mixed border, in the flower garden, or between choice shrubs and among hardy Fuchsias. Increased by offsets from the bulbs, or from seeds, which flower about the fourth year. The distinct habit of this plant makes it one of the most valuable. = Hyacinthus candicans.

The White Goat's Rue.

Gardoquia.—Most of these plants require greenhouse culture, and G. betonicoides is the best for the open air; it is 2 to 3 ft. high, has tubular flowers of bright rosy-magenta, and should be treated as a half-hardy annual. Labiatæ.

Garland-flower (*Daphne Cneorum*).

Garrya elliptica.—A fine Californian Evergreen, and beautiful winter-flowering shrub. In mild winters it begins to flower as early as December, and bears among handsome deep-green leaves gracefully-drooping tufts of pale-green catkins, which if cut with the twigs endure a long time in vases, and are welcome in winter. Though often grown on walls, it is hardy and makes a dense bush, 5 to 8 ft. high. In cold districts it is well to give it shelter, but in the south and west it does not require this. There are various other kinds of Garrya in cultivation, but G. elliptica is the best. There are male and female forms, the most elegant being the pollen-bearing or male plant.



Garrya elliptica.

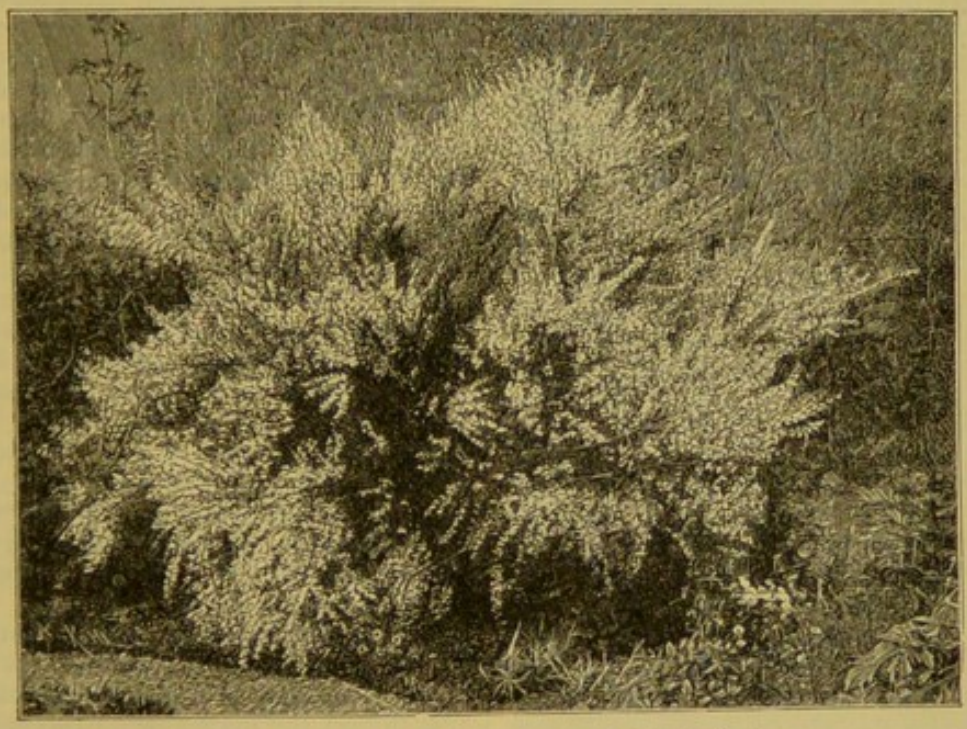
Gaultheria procumbens (*Partridge Berry*).—This neat little shrub is pretty, and the berries give it a charm in winter, when it is one of the brightest plants on the rock-garden. Its drooping white flowers are also pretty. A native of sandy places and cool damp woods from Canada to Virginia, and often found in the shade of evergreens, it does best in moist peat, and forms edgings to beds where the soil is of that nature, but it will also grow in loam. Easily increased by division or seeds. Suitable for the rock-garden, for the front margins of borders, and for edgings to beds of dwarf American plants, and it is best where well exposed. G. Shallon is too large for all but the rougher flanks of the rock-garden, being a vigorous shrub.

Gaura Lindheimeri.—A graceful perennial, 3 to 4½ ft. high, flowering in summer and autumn, on long slender spikes bearing numerous white and rose flowers. It thrives in borders, in sandy loam, and plants for the flower garden may be used with the larger bedding plants. Increased by division and seed. N. America.

Gazania.—Handsome and distinct dwarf plants; of much value, though only hardy enough for our summers. They are most useful on warm soils, and should always be placed in open sunny spots and among dwarf plants. They strike freely in a cold frame in August, but later require bottom-heat. Unless struck very early, spring-struck plants are almost worthless, so that it is best to put in the stock in August and let them stand in cutting-pots till potting-off time in spring. They will then come well into flower when put out in May; whereas, if they are topped for spring cuttings, both lots will be small and late. Short young tops should be used for cuttings, and may be inserted pretty thickly in the cutting-pots. When established, they must be just protected from frost, and kept in dry airy quarters. If kept warm, they grow too much, and are in spring poor lanky plants that can hardly be handled; but cool airy treatment keeps them short and sturdy. G. rigens is the best known. It has long deep-green leaves, silvery beneath, and bears flowers 2 in. across, which are of bright orange-yellow, with a dark centre. G. splendens is a fine variety, and there is also one with variegated leaves.

The known species (from S. Africa) are:—*G. arctotoides*, *arminioides*, *Burchellii*, *caespitosa*, *canescens*, *coronopifolia*, *heterochaeta*, *Jurineaefolia*, *Kraussii*, *Krebsiana*, *Lichtensteinii*, *linearifloba*, *longifolia*, *longiscapa*, *mucronata*, *multijuga*, *nivea*, *othonnites*, *oxyloba*, *Pavonia*, *pinnata*, *pygmaea*, *rigens*, *serrulata*, *subbipinnata*, *subulata*, *tenuifolia*, *uniflora*, *varians*.

Geissorrhiza.—Handsome Ixia-like bulbs; natives of the Cape. G. violacea has flowers of a rich scarlet, on slender stems about 1 ft. high. G. Hookeri has large white flowers, with purple centre. They require the same culture as Ixias.



The White Spanish Broom (Genista (Cytisus) alba).

Genista (*Rock Broom*).—Many of the Genistas are good garden plants; they thrive in almost any soil which is not too wet, and are readily raised from seeds.

G. ætnensis, a native of Sicily, is one of the best garden plants. In a young state the twigs are sparsely clothed with linear silky leaves, but when old no leaves are developed, and the green slender twigs perform the functions of leaves. An old tree—for this species attains a height of 12 ft. or more—is a beatiful sight in July or August when in full flower.

Like many other members of the Leguminosæ, it does not appear to be long-lived, but the plant is so easily raised and grows so quickly that it is well to have a few specimens in the shrubbery.

G. alba and **G. multiflora** are synonyms of Cytisus albus.

G. Andreana is a common garden name for Cytisus scoparius Andreanus, a beautiful coloured plate of which appeared in *The Garden* of August 27, 1892.

G. anglica (*Needle Furze*, or *Heather Whin*) is a prostrate spiny shrub, sometimes growing to a height of 2 ft., widely distributed throughout Western Europe, and in Britain occurring on moist moors from Ross southwards. The short leafy racemes of yellow flowers appear in May and June. It is also known under the names of G. minor and G. brutia.

G. aspalathoides, a native of South-western Europe, makes a densely-branched, compact, spiny bush from 1 ft. to 2 ft. in height. It flowers in July and August (the yellow blossoms are somewhat smaller than those of G. anglica), and is a good shrub for the rock-garden. Other names for it are Spartium aspalathoides and S. erinaceoides.

G. anxantica, found wild in the neighbourhood of Naples, is very nearly allied to our native Dyer's Greenweed (G. tinctoria). It is very dwarf in habit, and its racemes of golden-yellow flowers are produced in great profusion in late summer. A beautiful rock-garden plant.

G. ephedroides, a native of Sardinia, is a much-branched shrub, 2 ft. in height, bearing yellow flowers from June to August. The aspect of the plant much resembles that of Ephedra distachya.

G. germanica, a species widely distributed throughout Europe, makes a bright rock-garden shrub not more than a couple of feet in height. It flowers very freely during the summer and autumn months, and the stems are inclined to arch when 1 ft. or more high. Sometimes met with under the name of Scorpius spinosus.

G. hispanica, a native of South-western Europe, is a compact undershrub, evergreen from the colour of its shoots. It scarcely attains more than 1 ft. or 18 in. in height, and the crowded racemes of yellow flowers are borne at the tips of the spiny twigs from May onwards. I have seen this species under the names of G. villosa, Spartium hispanicum, and Ulex nanus (the last name was given to the plant in one of our largest nurseries).

G. monosperma, a native of Spain and Portugal, is a very beautiful white-flowered shrub or small tree. Unfortunately, it is not hardy (except against a wall) in the neighbourhood of London, and our summers are not hot enough to allow the plant to develop its beauty. Perhaps it might do in sheltered places on the south coast or in the Channel Islands, and the species is so strikingly handsome in a wild state that the experiment is well worth trying in the localities suggested.

G. pilosa, a widely distributed European species, is a dense, prostrate bush and a delightful rock-garden plant. In Britain it is rare and local, being confined to gravelly heaths in the south and south-west of England. It grows freely and flowers abundantly in May and June. Like the rest of the British species of the genus, it has bright yellow blossoms.

G. præcox is a garden name for Cytisus præcox, a beautiful hybrid between the white Spanish Broom (Cytisus albus) and C. purgans, a golden-flowered species.

G. radiata is a native of Central and Southern Europe, 3 ft. or 4 ft. in height, evergreen from the colour of its much-branched spiny twigs. The terminal heads of bright yellow flowers are produced throughout the summer months. It is quite hardy at any rate in the South of England. In some gardens it passes under the name of Genista hispanica, which rightly belongs to a widely different species, which has been already mentioned.

G. ramosissima.—A native of Southern Spain, and one of the best garden plants in the genus, growing about 3 ft. high, the slender twigs laden in July with bright yellow flowers. This also passes under the name of G. cinerea.

G. sagittalis is widely distributed throughout Europe. In habit it differs widely from any of the other species here mentioned, the leaves being replaced by a winged-jointed stem. It scarcely grows a foot high, and forms a mass of branches bearing racemes of yellow flowers in May and June.

G. tinctoria (*The Dyer's Greenweed*).—This species yields a yellow dye, hence the popular name. It is widely distributed throughout Europe, including Britain, and North and West Asia; it is also naturalised in some parts of North America. Occurring in a wild state in Britain, it rarely exceeds 18 in. in height, and is a spineless shrub bearing a profusion of bright yellow flowers from July until September. A double-flowered variety of this makes a pretty rock-plant.

G. tinctoria var. elatior is a tall-growing form from the Caucasus, which under cultivation frequently grows from 4 ft. to 5 ft. high, and bears huge paniculate

inflorescences. It is remarkably well off for names, as I have received plants from various sources named as follows, and have compared them carefully in a living state: G. dumetorum, G. elata, G. frutescens, G. italica, G. marginata, G. multibracteata, G. ovata, G. polygalæfolia, G. pubescens, G. sibirica, G. thyrsiflora, and G. virgata.

G. virgata.—A native of Madeira and one of the most beautiful species of the genus. At Kew there are many old plants from 6 ft. to 10 ft. high, and as much through, which in July are one mass of colour, every one of the slender branchlets terminating in a raceme of golden-yellow blossoms. These plants must be twenty or thirty years old, and must have passed through winters which injured many of our native shrubs and trees. Sometimes G. virgata flowers a second time in October, but never so profusely as in July. This species should be more generally planted in shrubberies than it now is.

Gentiana (*Gentian*).—Often charming and in gardens important plants, some of them difficult to cultivate, but others easily grown (on the rock-garden and in borders). The most precious are the perennial alpine kinds, which are such a beautiful feature on the mountains of Europe, and with care in our gardens spread into healthy tufts and flower as well as on the mountains. Of these plants there are two sections—the first, strong easily-grown kinds, suitable for borders; and the second, dwarfer kinds, which should be grown in the rock-garden, or in borders or beds of choice dwarf plants. The Willow Gentian, some of the American perennials, and those with herbaceous shoots generally grow freely in borders, in good moist soil. So does the Gentianella (G. acaulis). The dwarfer Gentians are represented most familiarly by the Vernal Gentian (G. verna).

G. acaulis (*Gentianella*).—An old inhabitant of English gardens, among the most beautiful of the Gentians, and easily cultivated, except on very dry soils. In some places edgings are made of it, and where it does well it should be used in every garden, as, when in flower, edgings of it are of great beauty, and, when not in flower, the masses of little leaves gathered into compact rosettes, form a good edging. It is at home on the rock-garden, where there are good masses of moist loam in which it can root. It is also good for forming carpets in the rock-garden or on raised borders. With us the flowers open in spring and in early summer, but on its native hills they open according to position, like the Vernal Gentian. G. alpina is a marked variety with small broad leaves, and there are several other varieties. Their colours vary from the deepest blue to white, and in one white flower the tips of the corolla are a rich blue. In all the forms except the white the throat of the corolla is spotted with blue on a greenish ground, and all have greenish marks on the outside. Alps and Pyrenees.

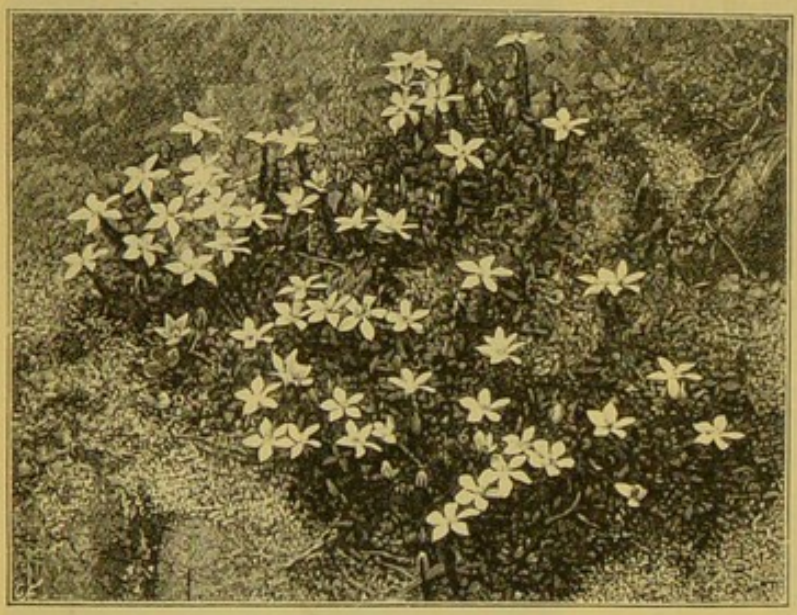
Gentiana affinis.

G. asclepiadea (*Willow Gentian*).—A good herbaceous kind; this gives no trouble, but dies down out of harm's way in winter. Well grown, it will spring up to 2 ft. and freely produce good-sized flowers of a purple-blue along nearly the whole stem in late summer and autumn. This Gentian will grow in open woods. It may therefore be naturalised, and its effect among the Grass in a wood is charming. There is a white form. Division. Europe.

G. bavarica (*Bavarian Gentian*).—In size this resembles the Vernal Gentian, but it has smaller Box-like leaves of

yellowish-green, and its tiny stems are thickly clothed with dense little tufts of foliage, from which arise flowers of lovely iridescent blue. While G. verna is found on dry ground, or on ground not overflowed by water, G. bavarica is in perfection in boggy spots, by some little rill. We must imitate these conditions if we desire to succeed, and a moist peat or bog bed, and with no coarse plants near, will enable us to grow this lovely plant. Alps.

G. septemfida (*Crested Gentian*).—A lovely plant, bearing on stems 6 to 12 in. high clusters of cylindrical flowers widening towards the mouth, and a beautiful blue-white inside, and greenish-brown outside, having between each of the larger segments one smaller and finely cut. In the variety cordifolia leaves



Gentiana verna.

are more cordate, but it grows about only half the height of the type, with a much neater habit. The dwarf form, again, seems to sub-divide itself when raised from seed, and I have got plenty of plants with very small leaves flowering at a height of only 3 in.—J. W. One of the most desirable species for the rock-garden, and thriving best in moist sandy peat. Division. Caucasus.

G. verna (*Vernal Gentian*).—One of the most beautiful of alpine flowers, thriving in deep sandy loam, with abundance of water during the warm and dry months, and perfect exposure to the sun. The absence of these conditions is a frequent cause of failure. It thrives wild in cool pastures and uplands, where it is rarely subjected to such drought as it is in a parched border. Grit or broken limestone may be mingled with the soil; if there be plenty of sand this is not essential; a few pieces half buried in the ground will tend to prevent evaporation and guard the plant till it has taken root. It is so dwarf, that if weeds be allowed to grow round it they soon injure it, and tall plants overshadow or overrun it. In moist districts it may be grown in a deep sandy loam, on the front edge of a border carefully surrounded by half-plunged stones. Well-rooted plants should be secured to begin with, as failure often occurs from imperfectly-rooted, half-dead plants. It is abundant in mountain pastures on the Alps, in Asia, and also in Britain.

There are other Gentians in cultivation, such as G. caucasica, adscendens pneumonanthe, cruciata, affinis, algida, arvernensis, crinita, and Andrewsi. Most Gentians may be raised from seed, but it is slow work.

Gentianella (*Gentiana acaulis*).

Geranium (*Cranesbill*).—The hardy Geraniums are usually stout perennials and natives of the fields and woods of Europe and Britain, though some are dainty alpine flowers. The handsomest of them is probably G. armenum. It is sometimes 3 ft. in height, flowering in midsummer abundantly, and sometimes till late in autumn to a less degree. Its flowers are large and handsome. It requires only ordinary garden soil, and is well suited for the mixed border, or for grouping with the finer perennials in beds or on the margins of shrubberies. Some other kinds are showy, and the best of these are: the dwarf G. sanguineum; its beautiful Lancashire variety, with rose-coloured blossoms finely marked with dark lines; G. pratense, a tall kind, with large purple flowers; and its pure white variety. There is also an intermediate form with white and purple flowers. The Caucasian species, G. gymnocaulon and ibericum, are beautiful, with their rich purple blossoms, 2 in. across, delicately pencilled with black. G. platypetalum, striatum, ibericum, and Lamberti are suited for shrubbery borders, and most of them are free and vigorous enough

for naturalisation. G. Endressi, a tall kind with rose-coloured blossoms, is also very attractive. All the above-mentioned Geraniums are hardy, easily cultivated, and grow in ordinary soil. The pretty rock-garden kinds, G. cinereum and G. argenteum, are charming alpine plants, and, unlike stout perennials, they must be associated with very dwarf rock-plants. All the Geraniums are increased by seed, and with the exception perhaps of the G. cinereum, and G. argenteum, all are freely multiplied by division.

Gerbera Jamesoni.—A fine hardy plant in southern counties, but too tender for northerly places. It is a native of the Transvaal, the leathery dark-green leaves arranged in a rosette, and the flower head glowing scarlet. Where it cannot be grown in the border, it should be placed in pots in the greenhouse, in which it succeeds well. At Kew the plant is grown in a mixture of loam, peat, and sand, and is watered as one would water a Cineraria. It is kept in a sunny, airy greenhouse all the year round.

Geum (*Avens*).

G. montanum.—Is one of the best of the dwarf yellow-flowered kinds for the rock-garden. It is indeed essentially a rock-plant, and very beautiful when well established in early spring. It has a compact habit, the leaves lying close on the ground, the erect stems of solitary clear yellow flowers being abundant. It likes plenty of moisture. G. reptans is also a pretty rock-plant, differing from G. montanum in its finely cut leaves, large flowers, and in producing stolons, which are absent in G. montanum. There is a variety, however, of the latter, which is by far the most ornamental plant of the European kinds. It is of a very vigorous habit, with large, fine leaves, and bears freely deep yellow flowers on each stem. This form was cultivated in the Liverpool Botanic Garden over twenty years, and is said to be of garden origin.

G. chiloense.—A double-flowered form of this was figured in *The Garden*, December 21st, 1878, under the name of G. coccineum fl.-pl., an erroneous name, under which it is known in many gardens. A very large-flowered variety, under the name of G. chiloense grandiflorum, was figured in the *Botanical Register*, vol. xvi., t. 1348. This I think is one of the best single-flowered forms in the genus, and does not seem to have altered much since the above-mentioned plate was drawn. At t. 1088 of the same work another plant is figured as G. coccineum, but this does not at all agree with the original figure in Sibthorp's *Flora Græca*, t. 485, and may be taken to represent as nearly as possible the typical G. chiloense. A native of Chiloe, introduced to cultivation somewhere about 1826.

G. chiloense var. grandiflorum (syn., *coccineum grandiflorum*) is a magnificent border plant, its dazzling scarlet flowers and bold habit making it a favourite with all who love brilliant patches in their mixed borders. The double-flowered form of this, however, seems to be a more general favourite, the blooms lasting longer, though I think they lack the elegance of those of the simpler form. They begin to expand soon after May and continue until October.

G. chiloense var. miniatum.—This plant, figured in *The Garden* in 1890, is said to have originated in the nursery of Robert Parker at Tooting, and was named by him G. miniatum. Another plant known as the Altrincham variety, or G. hybridum, was raised about the same time, but unless in the flowers being brighter, I see no difference. But there can be no question as to the value of this plant, its robust constitution standing it in good stead in almost every kind of soil, and enabling it to be propagated with the greatest facility by cutting the tufts in pieces. It flowers from April until the end of July, and when doing well often attains a height of from 2 ft. to 3 ft.

G. coccineum is a rare and entirely different plant. A native of Mount Olympus.—D. K.

Gilia.—Hardy annuals, 1 to 2 ft. high, and bearing for a long time a succession of blossoms either blue, white, lavender, or rose-coloured. Seed may be sown in autumn for spring-blooming, and in April for summer and autumn blooming. Gilias should be grown in masses and the soil should be light and enriched with decomposed manure; they are useful for small bouquets or vases, and last for a long time in water. The best are G. achilleæfolia major (blue), G. a. alba (white), G. capitata (lavender), G. tricolor (white and purple), G. rosea splendens (rose), G. nivalis (white), G. liniflora, and G. laciniata. A mixed packet of seed will give a fine variety of colours. They may occasionally be made graceful use of as carpet plants, or used effectively among annuals.

Gillenia trifoliata.—A Spiræa-like plant with numerous erect slender stems, about 2. ft. high, and branching in the upper part into a loose panicle of white flowers. Distinct and graceful, is of value for the garden growing in peat or free loamy soil, and may be given a place in

the shrubbery, or in the wild garden. North America. Division.

G. stipulacea.—This is a rather taller plant and not quite so compact in habit, but it is graceful, and no more charming plant could be introduced to parts of the garden where there chances to be an extra amount of moisture and a little shade from mid-day sun.

Mr. J. Wood says: "It makes more distinct offsets, so that in the case of plants a few years old you may take the rooted offsets with a fair amount of fibre, and they make good plants the first year. The Gillenias have a distinct and delicate beauty all their own, and are pre-eminently suited for growing in semi-boggy places interspersed with such subjects as the Bog Lilies, Irises, Bamboos, and other similar strong growers."

Gladiolus "Rosy Gem."

Gilliflower.—A term applied to the Carnation in Shakespeare's time, and belonging originally to that flower, or to one of its groups or races; but given to stocks in later days. In the West of England it is applied to the Wallflower.

Gladiolus.—Beautiful bulbs, for the most part natives of the Cape. Every species introduced is of ornamental value, is easily grown, and is suitable for many garden uses. The chief charm of the Gladiolus is derived from the beautiful hybrid varieties now in cultivation. G. gandavensis and brenchleyensis are the principal kinds from which these hybrids come, and are by far the most important class, though the earlier-flowering kinds (descendants of G. ramosus, Colvillei, trimaculatus, and others) are valuable for early summer-flowering. The gandavensis section suffers from cold autumn rains, and the bulbs must be lifted in autumn.

In growing Gladioli it is necessary to prepare soil where they will be most effective. They are happy in clumps between Dahlias, Phloxes, Roses, and subjects of a somewhat similar character, and are very effective in clumps alternating with Tritomas, and also when associated with masses of Cannas; while they are suitable for intermixing with American plants, whose dark foliage shows off rich flowers to good advantage. The position should be marked out in the autumn or winter, and a few spadefuls of manure should be dug in. As a rule, the space of each clump should be 18 in. in diameter, and the soil should be turned up to a depth of 18 to 24 in. March and April are the best months for planting, as Gladioli planted then are at their best during August and the early part of September. A succession of planting is desirable to secure a late bloom. Those who desire their gardens to be beautiful late in the autumn should not fail to employ the Gladiolus largely, as it is the handsomest of late-blooming garden plants, and its spikes are seen to great advantage about the time of heavy autumn rains. When spikes of extra fine bloom are required it is necessary to give special treatment, and an open situation is of the utmost importance. A deep loamy soil, not too heavy, is the most suitable for spikes for exhibition, but very satisfactory results even may be obtained by deep digging and liberal manuring in soils of an uncongenial character. Early in autumn the soil should be liberally

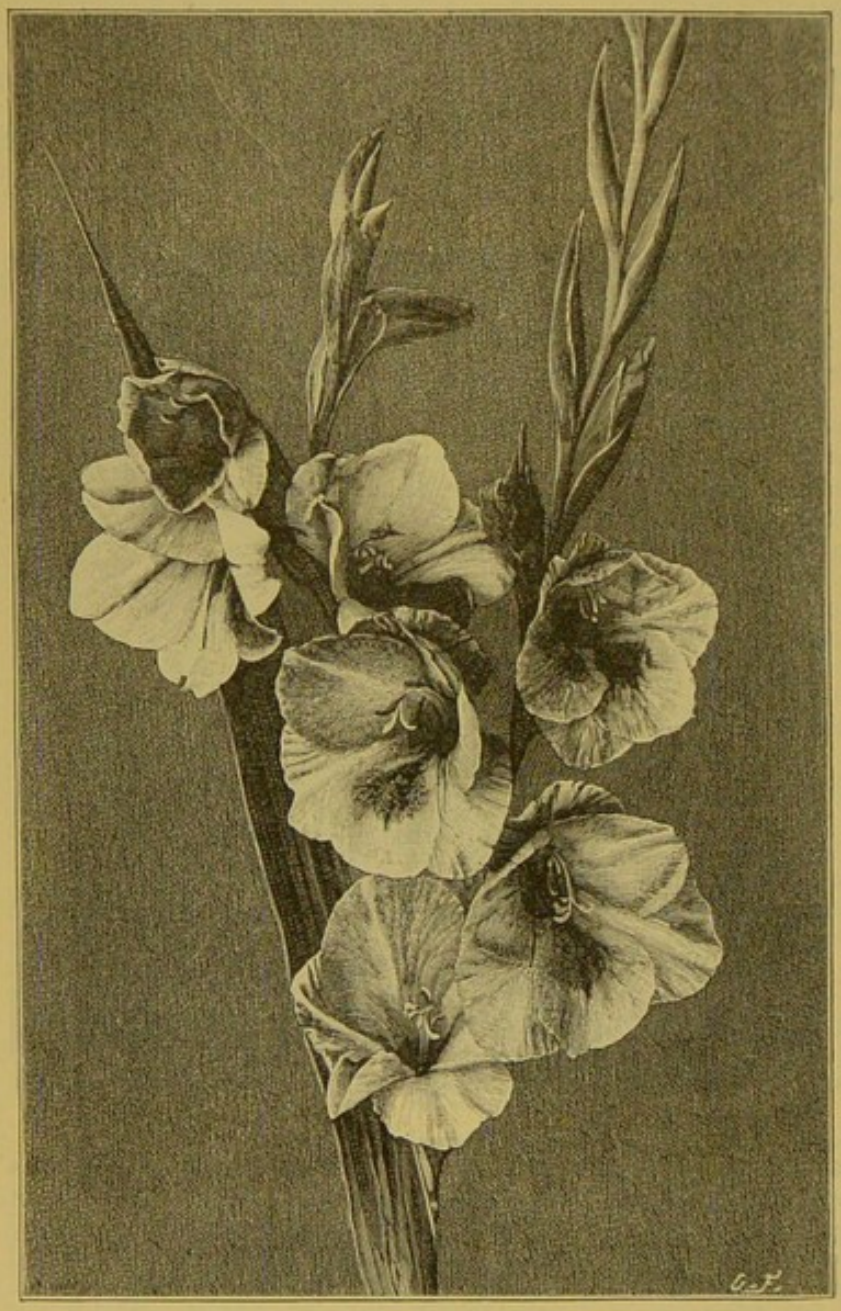
dressed with manure from an old hotbed. After it is spread regularly over the surface, trench the soil up to a depth of 2 ft., and leave the surface as rough as possible, so as to expose a large body of it to winter frost and rain ; this is of special importance in the case of heavy soils, which should be thoroughly pulverised by the weather. If this is done, the soil will be fit for working in spring, and a pricking over with the fork will reduce it to a fine tilth, and will admit of the bulbs being planted, even in wet seasons, without unnecessary delay. Planting should commence in March, and be continued until June, at intervals of a fortnight. By this means will be obtained a succession of bloom, from the earliest moment at which the show varieties may be had in flower until the end of the season. The beds should be 4 ft. in width, with rows 18 in. apart. They will then admit of a row down the centre, and one on each side, these outside rows being 6 in. from the edge of the bed. As soon as the plants have made sufficient progress to require support, stout stakes should be put to them. The top of the stake must not be higher than the first bloom, and the stem should have one tie only, a strong one of bast. After staking, the bed should be covered with partly-decayed manure, to a uniform depth of 2 to 3 in. This dressing materially assists during hot weather in keeping the soil cool and moist about the roots. As soon as the plants show bloom, liquid manure promotes full development of the flowers. For exhibition the spikes should be cut when about two thirds of the blooms are expanded, as the lower flowers are generally finer than those towards the top.

To ensure a given number of spikes at a particular date, a number of different sorts should be planted. For example, instead of six to twelve bulbs of a sort, it is preferable to plant one to three, and to increase the number of sorts ; and, in purchasing a hundred bulbs, to select fifty to seventy varieties. For decoration it is also better to have a large number of sorts, because of the greater variety of colour they afford. The improvements of the last few years have been so rapid, that many sorts which a few years ago occupied a foremost position are now surpassed, and for exhibition purposes are comparatively worthless. Most large nurseries and seed houses supply the finest exhibition bulbs, as well as bulbs for ordinary planting.

EARLY-FLOWERING KINDS.—During the past few years these beautiful flowers have rapidly become popular on account of their great value for cutting. They have been obtained by hybridising several South African species, particularly G. ramosus (the branching kinds which are a distinct group), G. trimaculatus, G. blandus, G. venustus, and G. Colvillei forming what is known as the nanus section. Of G. ramosus a great number of varieties are dwarfer in habit, more graceful in appearance, earlier in flower, than those of G. gandavensis, and almost as variable in colour ; they are, moreover, much hardier, and beds of them may be left unprotected during winter, so as to afford

Gladiolus the Bride.

early flowers for cutting, for, unless the weather is very severe, these beds never require any covering. This remark applies only to bulbs established in the ground, for fresh bulbs are as tender as other Gladioli, and must be protected from frost. Amateurs often make a mistake in this matter. Many plants are hardy only after they are well established. The nanus section has a great many varieties of almost every shade of colour, 1 to 2 ft. high, and invariably having the three characteristic blotches of G. trimaculatus on the lower segments of the flower. G. Colvillei is one of the prettiest and hardiest of all, and is most valuable for cutting, particularly the white variety, which has many beautiful white flowers in early summer. The time of flowering depends upon the time of planting, but the dwarf sections are the earliest. If the varieties of G. ramosus are planted at the same time as the dwarfs, the dwarfs are in flower a fortnight before the others.



Hybrid Gladiolus (Lemoine's).

These early-flowering kinds are of simple culture, and succeed best in well-drained raised beds of good loamy soil, in a sunny position. Some varieties, such as Colvillei are safe if undisturbed, but some persons prefer to take the bulbs up and thoroughly dry them, and then to plant them again about November; in which case they will flower early in June. If the bulbs remain in the ground through the winter, care must be taken to protect them in severe cold. Propagation may be effected rapidly by seeds and offsets. By seeds, flowering bulbs are produced the second season, and can be left in the ground during the winter, provided the soil is light and dry and the bulbs are protected from frost. These Gladioli are extremely useful for pot culture, and, by gentle forcing, can be had in flower at mid-winter, and, for securing bloom between the flowering of the forced plants and of the plants in the open beds, they may be grown in cold frames. For this purpose a bed of loam, leaf-mould, and sand in nearly equal proportions should be made up in October. It should be about 1 ft. deep and well drained, and in it the bulbs may be planted thickly 4 in. in depth. The lights should then be replaced, and air left on always, except during severe frosts. No water

should be given until the leaves appear (which will be about February, or earlier if the season be mild), and then only enough to keep the soil moist. The lights should be removed during mild weather, and altogether in April. During the latter part of May and in June plenty of bloom may be cut for decoration. Besides those named, the following are some of the best kinds: The Bride, Grootvoorst, Rubens, Maori Chief, The Fairy, Elvira, Rembrandt, Philip Miller, Beatrice, Baron von Humboldt, Sir Walter Raleigh, and Rose Distinctive.

Another interesting race of hybrids has lately been obtained between G. gandavensis and G. purpureo-auratus, a Cape species, with yellow and purple flowers. These hybrids have large flowers of a creamy-white and a deep purplish-crimson. The named kinds are G. hybridus Frœbeli, G. h. Lemoinei, and Marie Lemoine. Although by no means so showy as many others, they are most graceful and distinct in port, and in the shape and colour of their flowers. In deep sandy soil they attain a height of nearly 5 ft., and the gradual development of the flowers renders them effective for at least five weeks after the first and lowermost blossom. As graceful plants they well deserve culture, being hardier than many home-raised hybrids; but a warm deep soil and a sheltered position near the foot of a south or west wall are the most congenial to their strong growth.

A few of the true species almost equal the hybrids in beauty. One of the finest is G. Saundersi, about 2 ft. high, with large flowers of a brilliant scarlet and a conspicuous pure white centre. It is not often grown, though hardy and of very easy culture, and only requiring a sunny position in a light rich soil. G. purpureo-auratus is another good species, though not so showy. Its flowers are of a creamy-white, heavily blotched with vinous-purple on the lower division. Also a native of the Cape.

The European Gladioli are pretty plants for the mixed border. There is a strong similarity among them, all of them being from 1 to 1½ ft. high, and bearing rather small rosy-purple flowers. The best-known are G. byzantinus, communis, segetus, illyricus, neglectus, serotinus. They like warm dry soil and a sunny situation. They are of particular interest from their free and hardy habit, which makes them as easy to grow as native plants. They are admirable for the wild garden as they thrive in copses, open warm woods, in snug spots in broken hedgerow banks, and on fringes of shrubbery in the garden.

DISEASE.—This is frequently, if not always, accompanied by some condition of the fungus known as Copper-web, the Rhizoctonia crocorum of De Candolle, which is known in France under the name of Tacon. The fungus attacks also the Narcissus, the Crocus, Asparagus, Potatoes, and other bulbs, roots, etc. A good deal of attention was paid to it in 1876, when Mr. G. W. Smith detected in abundance the curious fungus named by him Urocystis Gladioli. The Urocystis and Rhizoctonia are probably two conditions of the same thing, the Rhizoctonia being possibly the spawn and the Urocystis the fruit. The latter Urocystis is capable of remaining in a resting state for a year or more, and is frequently found in the decayed red-brown portions of the diseased corm. No attempts have been made in the direction of a cure, as far as we know. The disease is confined to certain localities and to certain gardens, and is unknown in some districts.

Gladwin (*Iris fœtidissima*).

Glaucium (*Horned Poppy*).—Plants of the Poppy family, mostly biennials. G. luteum is quite hardy and has handsome silver foliage, almost as white as the silvery Centaurea. The leaves are much more deeply cut, and, planted close, are effective either in masses or lines. To ensure strong plants for winter borders or beds, seed should be sown about May, as the plant is a biennial. When in bloom it makes a striking border plant, the flowers being large and orange-red. G. Fischeri is a handsome plant; its snow-white woolly foliage is very telling, and its blossom is an unusual flame colour. G. corniculatum is similar, but not so handsome. Both require the same treatment as G. luteum.

Glechoma hederacea (*Ground Ivy*).—A small British creeper, almost too common to deserve notice here; but it has one or two finely-variegated varieties worthy of a place on the edges of raised borders or in beds of plants with variegated leaves.

Globe Flower (*Trollius*).

Globe Thistle (*Echinops*).

Globularia. — Interesting and dwarf alpine plants, good on the rock-garden in light and peaty soils. G. Alypum is among the best; it inhabits dry rocks. Other kinds are G. cordifolia, G. nana, G. nudicaulis, and G. trichosantha.

Glossocomia ovata. — A rare little

perennial of the Bell-flower family, with showy blue flowers, rare and difficult to cultivate. North India.

Glycyrrhiza (*Liquorice*).—Coarse plants of the Pea family, with pinnate leaves and bluish flowers. G. glabra yields the liquorice of commerce, and is an easily-grown perennial.

Gnaphalium.—Composites, usually with downy foliage, but of little value, except that G. lanatum, a silvery-foliaged plant, 1 ft. high, is suitable for edgings. G. lanatum is very easily propagated by division in spring, and is whitest and most compact when on dry poor soils. It bears pegging down, and should never be allowed to bloom. It is somewhat tender, and requires to be propagated annually. (See Antennaria.)

Goat's Rue (*Galega*).

Godetia (*Œnothera*).

Golden Club (*Orontium*).

Golden Drop (*Onosma tauricum*).

Golden Rod (*Solidago*).

Golden Saxifrage (*Chrysosplenium*).

Goldfussia isophylla.—A correspondent writes: "We always grow a few, not so much for the sake of the pale blue tubular flowers, which are produced in the dull winter months, as because when the plant is put out in summer its leaves become a shining black, and, being narrow and numerous, give it a prettier appearance than Perilla and the usual funereal plants with dark leaves that one sees."

Goldilocks (*Linosyris vulgaris*).

Gold Thread (*Coptis trifoliata*).

Goodyera pubescens (*Rattlesnake Plantain*).—A beautiful little Orchid, with leaves close to the ground, delicately veined with silver; hardy, distinct, and charming, though its flowers are not showy. It has long been grown in botanic and choice collections, thriving in a shady position, such as may be found in a good rock-garden, in moist peaty soil, with here and there a soft sandstone for its roots to run among. Eastern United States. G. repens and Menziesi are less desirable and much rarer.

Gordonia (*Loblolly Bay*).—The two Gordonias in cultivation, G. pubescens and G. lasianthus, are beautiful shrubs, old garden plants, introduced during the last century, but too rare in gardens, owing to difficulty of propagation. The genus is allied to the Camellia. G. pubescens is of Camellia-like growth, 6 ft. high, and bears in late summer beautiful flowers, 3 in. across, pure white, with a centre tuft of yellow stamens. G. lasianthus is taller and more robust, and has larger and more fragrant flowers. Both are natives of the swamps near the coast of the southern States of North America, and therefore are not among the hardiest shrubs, but they may do with us in very favoured places. I have only seen them in flower near Philadelphia.

Gourd (*Cucurbita*).

Grammanthes gentianoides.—A pretty half-hardy annual, and a capital plant for the dry parts of a rock-garden, about 2 in. high, forming a dense tuft, with fleshy leaves about ½ in. long, with many flowers, about ⅔ in. across: orange when first expanded, with a distinct V-shaped mark at the base of each petal, but finally assuming a deep red. G. gentianoides is sometimes used with good effect in the flower-garden, and succeeds in dry warm soil. Seeds should be sown in heat in February and March, and the seedlings planted out in May. Stonecrop family. Cape of Good Hope.

Grape Hyacinth (*Muscari*).

Grass of Parnassus (*Parnassia palustris*).

Great Reed (*Arundo Donax*).

Grevillea.—Australian shrubs, generally grown in the greenhouse, but a few are quite hardy enough for wall culture; and G. sulphurea, the hardiest in cultivation, lives against walls about London. Its pale yellow flowers, of curious shape, as in all Grevilleas, come throughout the summer. G. rosmarinifolia is another hardy kind with Rosemary-like leaves and clusters of red flowers. The Grevilleas do best against a warm wall in a sheltered situation.

Grindelia.—Yellow-flowered, North American Composites of little garden value. G. grandiflora grows 3 or 4 ft. high, and G. squarrosa is dwarfer; both are hardy, and succeed in any soil, flowering from July till late in autumn.

Ground Laurel (*Epigæa repens*).

Ground Nut (*Apios tuberosa*).

Ground Pine (*Lycopodium dendroideum*).

Guernsey Lily (*Nerine sarniensis*).

Gunnera (*Prickly Rhubarb*).—South American plants remarkable for large and handsome foliage, somewhat resembling that of gigantic Rhubarb. There are two kinds in cultivation—G. scabra and G. manicata. Both are handsome, especially the former, with leaves sometimes 6 ft. across. Both deserve a place in any garden, for no plants in cultivation are so stately as well-grown plants of

these. They are hardy if slightly protected during the severest cold, for instance by a layer of dry leaves placed among the stems, and having their own leaves bent down upon them. In spring these dry leaves should be removed, and the tender growth slightly protected by a piece of canvas-shading or by an ordinary mat. In mild winters this precaution is scarcely necessary, especially in the south and other favoured localities. The Gunnera should be planted apart, and not as a rule in the "flower-garden proper." It cannot have too much sun or warmth, but makes little progress if its huge leaves are torn by storms. Where there is any diversity of surface it will be easy to select a spot well open to the sun and yet sheltered by shrubs and clumps. A large hole, about 6 by 4 ft. deep, should be dug out, a good layer of drainage material put at the bottom, and the hole filled with a rich compost of loam and manure. In summer the plants ought to have plenty of water, and a ridge of turf should be placed round them, to compel the water to sink down about their roots. They should also have a mulching of well-rotted manure early in every spring. They thrive on the margins of ponds or lakes where their roots can penetrate the moist soil, and if judiciously placed in such a position, they have a fine effect. Though the two kinds G. scabra and G. manicata greatly resemble each other, they have well-marked characteristics. The leaves of G. manicata are more kidney-shaped and attain a much larger size, often measuring 4 to 6 ft. across. The spikes of fruit are also much longer, and the secondary spikes are long and flexuose, whereas in G. scabra they are short and stiff. Propagated by seed or division of established plants.

G. manicata.—Writing from Trelissick, Truro, Mr. W. Sangwin says: "It never attains the extraordinary dimensions it is capable of, unless planted in deep rich soil with its toes absolutely in the water by the side of a pond or stream. The engraving does not give a good idea of its vast size, for the plant is growing in a pit and in a very difficult position for photographing. It covers a space fully 30 ft. across, and consists of from twenty-five to thirty leaves, some of them over 9 ft. in diameter, upon clear stems 8 ft. high. The crowns are as large as a man's body, of a delicate pink colour. Flower-spikes are produced freely, which should be cut as soon as seen, or they will check the growth of the leaves. When they die down in autumn, the leaves should be placed loosely over the crowns, with their stems on top to prevent them being blown away by the wind. Protected in this way the plants have stood the winter with a thermometer ranging on several occasions below zero. It grows freely from seed, but it can be divided as easily as Rhubarb. The individual flowers are very minute, more curious than beautiful, the chief attraction being in the truly magnificent leaves."

Gunnera scabra.

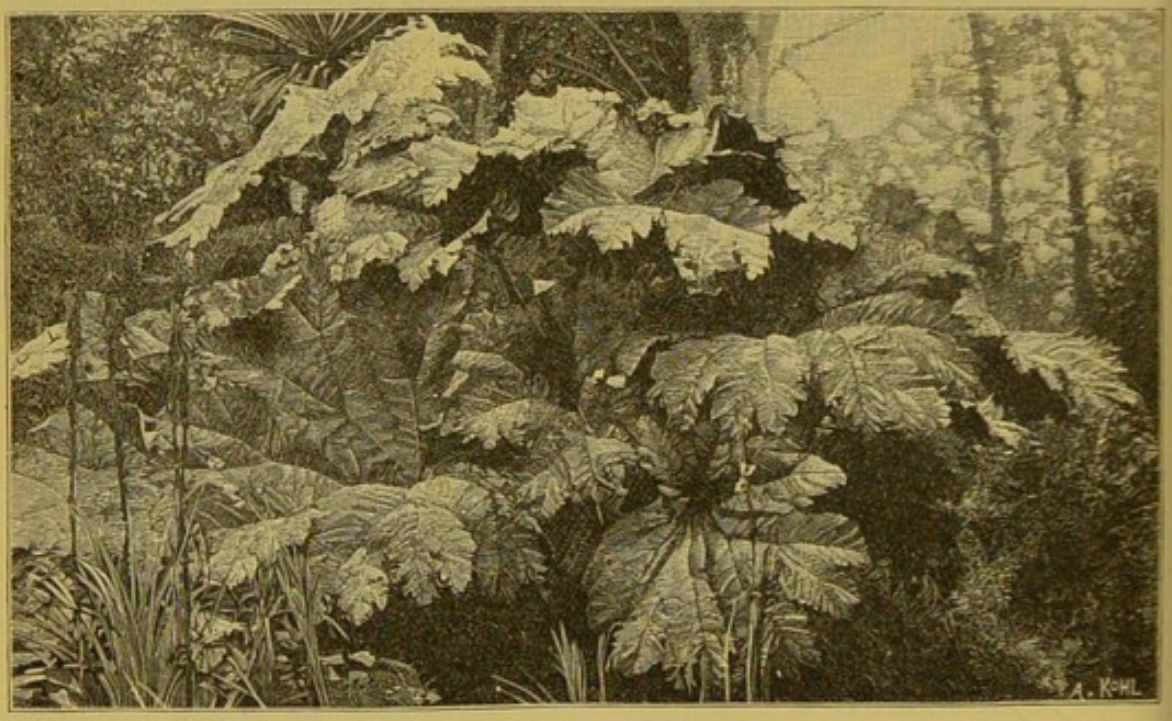
Mr. Burbidge, writing from the College gardens at Dublin, says: "It seems to be fairly settled at last that the largest simple-leaved plant in our gardens to-day is G. manicata, which has wrested the palm from the Victorian Water Lily. A

few days ago I saw the gigantic Gunnera —a tuft about 30 ft. in diameter—in the rock-garden at Narrow Water, Co. Down, the largest leaf out of the twenty-five or more which it bears having a blade 9 ft. 6 in. across, and standing fully 10 ft. in height. When well grown, no hardy foliage plant can compare in size of plant or in leaf dimensions with this stately inhabitant of deep valleys and gullies full of rich alluvial earth and decayed leaves in Southern Brazil. G. scabra, a nearly allied species, seems to have a still more southern distribution, being found in Chili and on the outlying islands, including Juan Fernandez, or Robinson Crusoe's Island, while travellers tell us that it extends still further south on the mainland into the colder regions of Patagonia.

"As a genus, Gunnera consists of some ten or twelve species distributed over the South American, Malayan, and Australasian regions. They exist in the more sheltered valleys of the Andes, as far north as the Gulf of Mexico, and some are found as far south as New Zealand, but the finest kinds, so far as at present known, for garden uses are G. manicata and G. scabra. Of the latter I grow two distinct forms, the one having spreading leaves with green venation, while the other variety has longer foot-stalks or petioles, with more erect or cupped leaf-blades and bright red veins.

"In general appearance these plants remind a careless observer of ordinary Rhubarb much magnified, but the stout prickly petioles, often 6 ft. or even more in height, and the spiky, club-like inflorescences and leaves at once distinguish these plants from all others.

"To see these plants at their best they should be grown quite near to the margin of a pond or stream, or in a swampy spot, and in the deepest and richest of soil. Even then their most ample dimensions are only reached after a copious addition of cow manure top-dressings, or by deluging the ground around the leaves with liquid manure."



Gunnera manicata at Narrow Water Park. Engraved from a photograph sent by Mr. F. W. Burbidge.

The known species are: *G. Berteroi*, Chili. *bracteata*, do. *brephogea*, N. Granada. *chilensis*, Chili. *commutata*, do. *cordifolia*, Tasman. *densiflora*, N. Zeal. *glabra*, J. Fernand. *Hamiltoni*, N. Zeal. *insignis*, Chili. *lobata*, Magellans. *macrophylla*, Java. *magellanica*, Magellans. *manicata*, Brazil. *monoica*, N. Zeal. *peltata*, J. Fernand. *perpensa*, E. Africa. *petaloides*, Sandwich Isles. *prorepens*, N. Zeal. *strigosa*, do.

Gymnadenia conopsea. — A sweet-scented native Orchid, 6 in. to nearly 2 ft. high. Flowers pale purple, in a dense tapering spike, 1 to 4 in. long in summer. It is suitable for grassy places, and for drier parts of the bog-bed; worth growing for its fragrance

only. Increased by separation of the root knobs.

Gymnothrix latifolia.—A fine perennial Grass from Monte Video, not hardy enough to show its true character in the open air. Mr. Ellacombe, however, tells us that it is valuable in the West of England on account of its rich green foliage and excellent habit. Mr. Gumbleton, writing from Cork, says it does not do well with him, and does not flower.

Gynerium argenteum (*Pampas Grass*).—This noble Grass, 4 to 14 ft. high, according to soil or district, is most precious for our gardens, but in many districts suffers from our severe winters, and we seldom now see the fine plants of it that were not uncommon soon after its introduction. There is reason to believe that some varieties are better in habit than others, and flower earlier. In such cases it would be better to patiently divide them than to trust to seedlings. There are a number of varieties, some of a delicate rosy colour, one variegated, and several dwarf and neat. It is not enough to place the plant in out-of-the-way spots, but the landscape, so to say, of every garden and pleasure-ground should be influenced by it. It should be planted far more extensively than at present, and given very deep and good soil. The soils of many gardens are insufficient to give it the highest vigour, and no plant better repays a thorough preparation, especially since one preparation suffices for many years. If convenient, give it a somewhat sheltered position in the flower-garden, so as to prevent as much as possible that ceaseless searing away of the foliage which occurs wherever it is much exposed to the breeze ; and because, when backed with shrubs, its bright silvery plumes are less liable to be injured. We rarely see such fine specimens as in quiet nooks where it is sheltered by the surrounding vegetation. It should be planted about the beginning of April, mulched with rotten manure, and watered copiously in hot dry weather. G. jubatum is very well spoken of, but as yet has not been tried much except in favoured spots. The leaves resemble those of G. argenteum, but are of deeper green, and droop elegantly at the extremities. From the centre of the tuft, and exceeding it by 2 or 3 ft., arise numerous stems, each bearing an immense loose panicle of long filamentous silvery flowers, of a rosy tint with silvery sheen. It is a native of Ecuador, and is earlier in bloom than G. argenteum. The sexes are borne on separate plants in all the species, and the plumes of male flowers are neither so handsome nor so durable as the plumes of female flowers.

Gypsophila.—Plants of the Stitchwort family, the larger kinds usually very elegant, and bearing myriads of tiny white blossoms on slender spreading panicles. Of these the best is G. paniculata, which forms a dense compact bush, 3 ft. or more high, the numerous flowers small white, on thread-like stalks on much-branched stems, with the light, airy effect of certain Grasses, and very useful for cutting. G. paniculata thrives in any soil, and is suitable for borders and for naturalisation in woods or banks. G. fastigiata, perfoliata, altissima Steveni, are very similar. G. prostrata is a pretty species for the rock-garden or the mixed border. It grows in spreading masses, and from midsummer to September has loose graceful panicles of small white or pink flowers, on slender stems. G. cerastioides is about 2 in. high, and has a spreading habit ; the leaves are about 1½ in. long, and small clusters of blossoms, ½ in. across, white with violet streaks. It is from Northern India, and quite unlike any of the group now in our gardens, being dwarfer and having larger flowers. It is a rapid grower, and in good soil and an open position on the rock-garden soon spreads into a broad tuft. Division, seeds, or cuttings in spring.

Habenaria (*Rein Orchis*).—Terrestrial Orchids from N. America, 1 to 2 ft. high, some of which were inconspicuous, while others, including those named below, are pretty and interesting. For out-door culture, a partially-shaded spot should be prepared with about equal parts of leaf-mould or peat and sand, and well mulched with leaves, grass, or other material, to keep it moist, and to protect the roots from the heat of the sun. H. blephariglottis bears in July spikes of white flowers beautifully fringed. H. ciliaris is the handsomest species. The flowers are bright orange-yellow with a conspicuous fringe, and appear from July to September. H. fimbriata has a long spike of lilac-purple flowers beautifully fringed. H. psycodes produces spikes 4 to 10 in. long of very handsome and fragrant purple flowers. They are charming plants for the bog-garden, or for a quiet nook with moist peaty soil.

Haberlea rhodopensis.—A pretty little rock-plant resembling a Gloxinia in miniature. It forms dense tufts of small rosettes of leaves, which somewhat resemble those of the Pyrenean Ramondia

(R. pyrenaica), every rosette bearing in spring one to five slender flower-stalks, each with two to four blossoms nearly 1 in. long, of a bluish-lilac colour with a yellowish throat. Messrs. Frœbel, of Zurich, who grow it well, write of it: "We have treated this plant in the same manner as the Pyrenean Ramondia, *i.e.* we have planted it on the north side of the rock-garden; so that the sun never directly reaches it. We grow it in fibrous peat, and fix the plants, if possible, in the fissures of the rock-garden, so that its rosettes hang in an oblique position, just as they do in their native country. It succeeds well in this way; but if no rock-garden be at hand, it may be grown equally well on the north side of a Rhododendron bed. We have it thus situated quite close to a stone edging—a way in which we also grow the Ramondia,—and the Haberlea flowers profusely every year in May and June. The plant is very hardy, having withstood our often very hard winters, without any protection." It is a native of the Balkan Mountains, where it is found among moss and leaves on damp, shady, steep declivities at high elevations.

Hablitzia tamnoides.—A hardy, climbing, herbaceous plant, producing clusters of greenish-yellow flowers in the greatest profusion. When tied to a strong stake or trellis it reaches a height of 8 or 10 ft., and has a graceful appearance. It continues in flower throughout the summer and the greater part of the autumn, but requires a good soil, plenty of moisture in summer, and freedom from stagnant water in winter. It forms a good subject for open situations in the wild garden, for the rock-garden or root-work, or for clothing the stems of naked trunks of trees.

Habranthus pratensis.—A brilliant bulb of the Amaryllis family, hardy, at least in the southern and eastern parts of the country. It has stout and erect flower-stems, about 1 ft. high, and the brightest scarlet flowers, feathered here and there at the base with yellow. The variety fulgens is the finest form. It blooms freely in the open border of the Rev. Mr. Nelson's garden at Aldborough, in Norfolk, flowering at the end of May or beginning of June. It grows very freely in strong loam improved by the addition of a little leaf-mould and sand. Its propagation is too easy, for in many soils it is said to split up into offsets instead of growing to a flowering size. At Aldborough it made numerous offsets. A choice plant for the select bulb-garden or rock-garden. Chili. H. Andersoni is much inferior.

Hairbell.—The name applied to the slender Campanulas, principally our native C. rotundifolia. It is also spelled "Harebell," and though there seems no authority for either spelling, "Hairbell," appears to us the more appropriate.

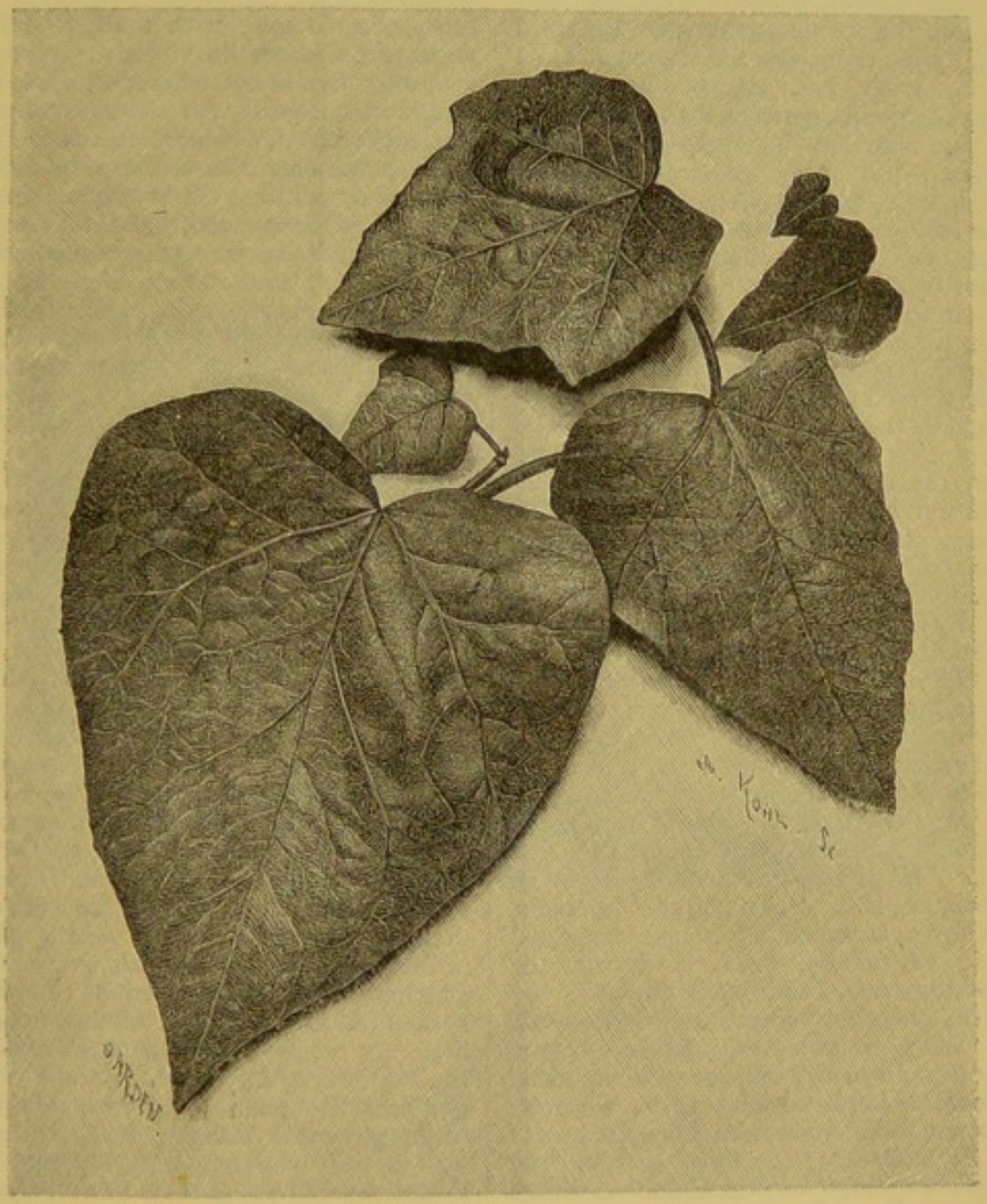
Halesia (*Snowdrop Tree*).—Beautiful North American trees, hardy in this country. The commonest is H. tetraptera, one of the prettiest of flowering trees. It grows in England from 20 to 30 ft. high, has a rounded head, with sharply-toothed leaves, in May bearing many pure white blossoms, in form like the Snowdrop, hence its popular name. It is of moderately rapid growth, and flourishes in any good garden soil, and as it grows naturally by river banks, it enjoys a moist, but not waterlogged soil. In some parts it ripens its seed in abundance. A similar species, distinguished in having but two wings to the seed-vessel (tetraptera having four), is H. diptera, of smaller growth, and not such a suitable tree for this climate; neither is H. parviflora, which, like the others, has small bell-like flowers. As a lawn tree, or planted near the margin of a lake or stream, H. tetraptera is very beautiful.

Halimondendron argenteum.—A small shrub belonging to the Pea family, with elegant leaves, silky and whitish, the flowers purplish in early summer: a native of Asiatic Russia, it is hardy, and grows from 5 to 6 ft. high, but sometimes is grafted on to the tall stems of the Laburnum.

Hamamelis (*Witch Hazel*).—Hardy shrubs with singular blossoms flowering in winter. They have a peculiar value as ornamental shrubs, and one species at least is worth planting in all good gardens. This is H. arborea, or Tree Witch Hazel, though in this country it does not rise generally above 8 ft. high. In January, and sometimes before, its leafless branches are covered with flowers, which have twisted, bright yellow petals and crimson calyces, so that a well-flowered plant is very pretty. It is a hardy Japanese shrub, and thrives in most kinds of soil, but must have an open situation. Another Japanese species is H. japonica, a smaller and dwarfer plant than H. arborea, and bearing flowers of a lighter yellow colour, while that called H. Zuccariniana is very similar to it. Of less value perhaps is the American Witch Hazel, which has small yellowish flowers in winter, and sometimes in autumn. Though not so showy when in flower as

the Japanese species, it is a pretty shrub, and, like the others, thrives in any soil.

Hard Fern (*Blechnum boreale*).
Hare's-tail Grass (*Lagurus ovatus*).
Harpalium rigidum (*Helianthus*).
Hart's-tongue (*Scolopendrium*).
Hawkweed (*Hieracium*).
Hawthorn (*Cratægus*).



Large-leaved Ivy, one of many fine forms.

Hawthorn, Japanese (*Rhaphiolepis*).
Hazel Witch (*Hamamelis*).
Heart's-ease (*Viola tricolor*).
Heath (*Erica*).
Heath, St. Dabeoc's (*Dabœcia*).
Heath, Sea (*Frankenia*).

Hedera Helix (*Ivy*).—The most beautiful evergreen climber of our northern and temperate world is a noble garden plant that may be used in many ways. The common Ivy of the woods is familiar to all, but its many beautiful varieties are not so common as this. All are not of the same vigorous habit, as will easily be seen by cultivating a collection; but the rich self green-leaved kinds are usually as free and as hardy as the wild plant. Although there are many varieties, there are only two accepted species—the Australian, that is confined to the continent of Australia; and Hedera Helix, which is found wild in the British Isles, and spreads over Europe, reaching into N. Africa and Central Asia. It is under

our English Ivy that the large number of forms in cultivation are classed. Although there are only two species, we can classify the Ivies in several groups, after the variation in the leaves. If we want Ivies in their fullest beauty, it is necessary to pay some attention to position, soil, and training. This applies to all kinds, but especially to the more delicate varieties. Ordinary garden soil will grow the Ivy well, and the strong growers, as Emerald Gem, Rægneriana, algeriensis, canariensis or the Irish Ivy, sagittæfolia, lucida, palmata, gracilis, dentata, digitata, pedata, and angularis, will need no special position; but in the case of kinds like madeirensis variegata, a showy form, some little care is needed. It is better to plant these kinds as edgings to a bed of shrubs or permit them to clamber over a root-stump, arbour, or form a pyramid of them, where they will be less exposed to the full force of wind than if they were stiffly trained on walls. Cuttings may be struck in the latter part of the summer, and quickly root if put in a shady border where the soil is fairly good. It is sometimes well to cut the plants down to the ground after the first year, as often the shoots are very weak; but this severe pruning induces a stronger growth later on. As regards the best time to plant, the spring months are the most suitable; but the Ivy may be planted any time if it is in a pot, and during the first summer, if the weather is hot, give plenty of water. In the case of variegated sorts, it is advisable to plant in a poor soil, so as to bring out the variegation. A word should be said for Tree Ivies, which make fine bushes in the garden, and may be associated with other shrubs in beds. Healthy plants make dense rounded heads of foliage, relieved during the blooming season with many flowers. By far the most important Ivies, however, are the green-leaved forms,—many, various, and nearly all beautiful in form. Whatever kinds among these we may prefer, a fuller and more graceful use of the Ivy in or near the flower-garden and its surroundings is desirable. As much more use is made of the Ivy in French flower-gardens than in our own, the following, from the *Parks and Gardens of Paris*, may be worth quoting here:—

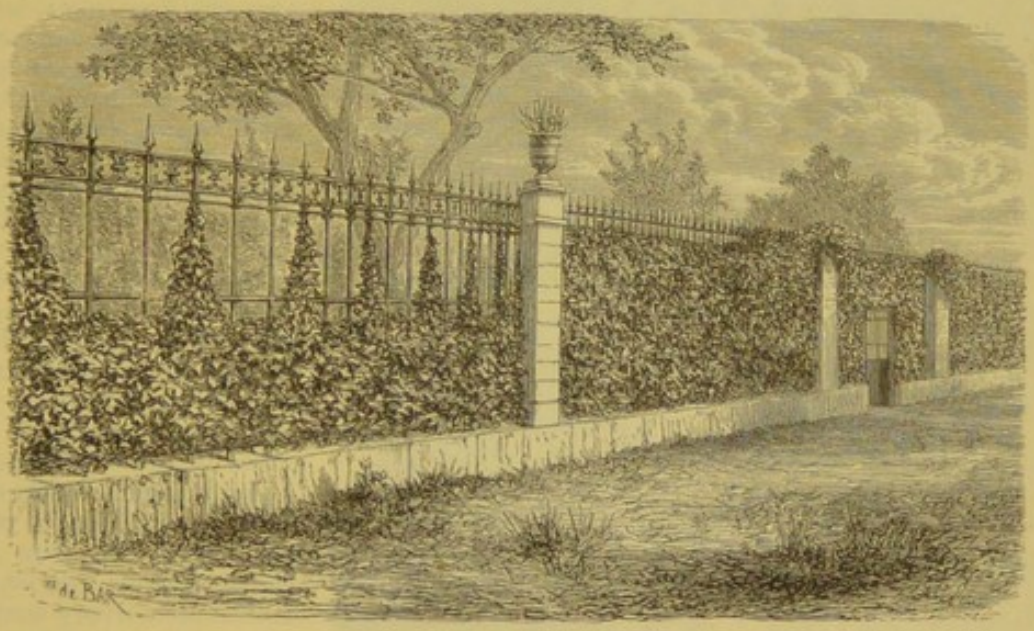
"It would be difficult to give any adequate idea of the charms Ivy imparts to many surfaces that would otherwise be hard and bare. In any city or town, where the air is not much polluted by smoke, the same effects may be easily produced. In cold districts, where evergreens are liable to suffer, it is all the more desirable to make good use of the best of all evergreen climbers for northern countries. To rob the monotonous garden-railings of their nakedness, the French use it most extensively, so that even in the dead of winter it is refreshing to walk along by them. Instead of the inmates of the house gazing from the windows into the street swarming with dust, or splashing with mud, a wall of verdure encloses the garden; privacy is secured; the effect of any flowers contained in the garden is heightened; and lastly, the heavier clouds of dust are kept out in summer, for so well are the railings covered by planting the Ivy rather thickly, and giving it some rich light soil to grow in, that a dense screen is soon formed. Ivy-edgings also make excellent margins to beds on grass-lawns. In this case one would have thought the turf sufficient, and so it is, if the subjects fill the bed properly and come flush to the margin; but, with the bare earth more conspicuous than the bedding-plants, as is so often the case early in the summer, the belt of fresh Ivy, rising as it does several inches above the level of the earth, effects great improvement. Near at hand this is not so evident, but when a little way off, the nakedness of the earth is hidden by the Ivy, and the flowers peep above it. The best kind for this purpose is the Irish Ivy, but where many edgings are made, it would be very desirable to produce some variety by using other healthy green-leaved kinds; and the variegated ones, too, should be attractive, though no charm of theirs can ever equal the unmatched verdure of the green Ivies in early summer. It should be observed that an Ivy-band of the width of an ordinary edging is not at all so desirable as when its sheet of green is allowed to spread out to a breadth of more than a foot. In nearly every courtyard in Paris the Ivy is tastefully used. Scarlet Pelargoniums are seen to great advantage when grown in boxes placed against a wall densely covered with Ivy, and with it also planted along their front edges so as to hang down and cover the face of the boxes. In the garden of the Paris Exhibition of 1867, a pretty circular bower was shown perfectly covered with Ivy, the whole springing from a large tub. Such a bower could readily be made on a roof, or on a wide balcony.

"Where there are tall bare walls near a house, they are quickly covered with a close tapestry of Ivy. If the margin of the grass around some clump of shrubs

or flower-beds looks bare, some young plants of Ivy will soon make a wide and graceful edging which will look well throughout the year with slight attention. When Ivy is planted thickly and kept neatly to a breadth of from 12 to 20 in., it forms a dense carpet of leaves on the ground. The effect of Ivy-bands outside masses of gay flowers is excellent, forming as they do a graceful setting for the flower-borders. In some geometrical gardens panels are edged with stone. These Ivy-edgings associate well with such stone borderings, while they may be used with advantage in any style of garden. A garden pleases in direct proportion to the variety and life that are in it; and all bands and circles of stone, all unchangeable geometrical patterns, are as much improved by being fringed here and there with Ivy and the like, as are the rocks on a river's bank.

"In the Square St. Jacques there is an example of the way in which the small-leaved Ivy may be used for covering the trunks of trees; the effect being more lace-like than that of the ordinary kinds. It would be well to plant a variety of the green-leaved kinds at the foot of trees. It is not, however, advisable to cover very young trees in this way, as it is apt to interfere with their growth. With regard to growing Ivy on trees, Mr. George Berry of Longleat wrote—

"'In almost every park, however small, there are some few trees—old trees that are of no value, and that have matured their growth—that may be given up to Ivy by those who wish to grow it in this manner. It may also be allowed freedom on any inferior undergrowing trees that have been overtopped by better ones, of which there are generally too many on nearly every property, particularly where judicious thinning has been neglected until too late to be of any benefit. In natural copses, when not grown for profit, Ivy forms an ornamental feature, especially on the Birch, to whose white bark and brown airy twigs the Ivy offers a charming contrast. Lovers of creeper-clad trees should, however, take care not to allow young trees or any fine ornamental sorts to be taken possession of by Ivy. It is an indisputable fact that when Ivy is permitted to cling to and cover growing young trees, it prevents development of the stem; while its tightly-laced and interwoven mass of dense plaits also excludes light, air, and moisture. The foliage, too, gradually diminishes, and when Ivy has established itself on young trees, the result is often premature death.'



Ivy in wreaths and sheets on railings of suburban gardens.

"Ivy may be grown and used in a dwelling-house, especially in making living screens for rooms. This is usually done by planting it in narrow boxes and training it up wirework trellises. The boxes being portable, a screen may be formed in a few minutes in any part of a room. Sometimes, however, it is permanently planted, and it is not unfrequently used to embellish glass partitions between large apartments.

"When used as a screen, Ivy may often

be combined with other creepers so as to produce a variety of pretty effects. A happy combination of Wistaria above and Ivy below in the same railing often occurs, and the contrast of colour between the delicate lilac blossoms and light green leaves of the Wistaria and the deep glossy green of the Ivy is charming. Ivy also forms an admirable frame for windows in situations where little else will grow. A deep box, filled with rich light soil, suits these Ivies best.

Pyramid of large-leaved Ivy, 7 ft. high.

"The Ivy used by the City of Paris for ornamenting the flower-beds in the squares, the trunks of trees, etc., is grown at the nurseries in the Bois de Boulogne. Towards the end of the summer the propagation of the Ivy by means of cuttings is carried on. Three or four leaves are left on each cutting, and they are planted very thickly in lines in a half-shady position. When they have taken root sufficiently, which generally takes place in the following spring, they are transplanted into pots of 4 or 5 in. in diameter. Afterwards stakes are fixed along the rows of pots, and from these are stretched lines of thin galvanised wire; to this slender but firm trellis of from 3 to 5 ft. high the plants are trained during the growing season. At the end of the second or third year they are strong enough to be employed to cover railings, and for many similar purposes. The nurserymen in the suburbs of Paris generally propagate them by layers, which are often rooted in pots. If a wide belt of Ivy is desired, the young plants may be arranged in two or three rows, as the French do when making the excellent Ivy edgings which are here described. In any case, after the plants are inserted the shoots must be neatly pegged down all in one direction.

"The reason why Ivy edgings when seen in England look so poor as compared with those in Paris, is that we allow them to grow uncontrolled, and they get overgrown, wild, and entangled, whereas the French keep them down to the desired size by pinching or cutting the little shoots well in, two or even three times every summer, after the edging has once attained size and health. The abundant supply of established plants in small pots obtainable in the markets enables them to lay down these edgings so as to look well almost from the first day."

Hedychium Gardnerianum.—This, though usually grown in the greenhouse, will flower out-of-doors, and live through an ordinary winter without much protection. It should be planted out in May, so as to make its summer growth where it is to stand, as then its roots penetrate deep and become established before the top dies off in autumn. It thrives best in a loose sandy loam, enriched with manure. While the plant is making its growth a mulching should be given, and in dry weather an occasional watering of

liquid manure. It is excellent for choice groups in the sub-tropical garden, in warm sheltered spots. A heap of cinders or half-rotten leaves laid over the crowns in winter will ensure their safety; or the roots may be lifted in autumn and wintered in any dry place with Dahlias and Cannas. It is increased by dividing the roots in spring, but each piece must have a young crown attached.

Hedysarum (*French Honeysuckle*).—Plants of the Pea order, mostly weedy, only a few perennials being ornamental. H. coronarium, a showy plant, 3 or 4 ft. high, bearing in summer dense spikes of red flowers. It grows in any ordinary soil, but is not a perennial, though it usually sows itself where it is established. There is a white variety. Among the dwarfer kinds the two following are desirable: H. obscurum, a brilliant and compact perennial; 6 to 12 in. high, with racemes of showy purple flowers. It is suitable for the rock-garden, for borders, and for naturalisation amongst vegetation not more than 1 ft. high, chiefly on banks and slopes in sandy loam, and is increased by division or seed. H. Mackenzii is said to be the handsomest of the genus. It grows about 2 ft. high, and has long racemes of from seven to thirty rather large rosy-purple Pea-like flowers. It is perfectly hardy in any situation, and flowers in June and July. It is rather too tall for the rock-garden, and is more suited for the mixed border.

Heimia salicifolia.—A pretty half-hardy shrub from Mexico, from 3 to 5 ft. high, and useful for planting against a dwarf wall unsuitable for tall climbers. It has narrow Willow-like leaves, and bears in late summer an abundance of small yellow flowers.

Helenium (*Sneeze-weed*). — Vigorous Composites from North America, flowering in autumn, and thriving in any soil, and, where rightly used, excellent plants. There are two or three species, the most useful being H. autumnale, about 6 ft. high, bearing yellow flower-heads. The varieties grandiceps and pumilum are very distinct: grandiceps being of gigantic growth with a fasciated head of bloom, which makes it very showy; pumilum being much dwarfer and better than the type. H. atropurpureum grows 3 or 4 ft. high, and has reddish-brown flower-heads. H. Hoopesi is desirable, as it flowers in early summer, but is a rather coarse grower, with large yellow flowers. The first-mentioned species and its varieties are excellent border plants, and, though vigorous, remain long in bloom. They are very useful for cutting, as they remain a long time fresh.

Helianthemum (*Sun Rose*).—Though strictly shrubby plants for the most part, these dwarf evergreens possess so much the aspect of rock-plants, that they cannot well be separated from them. There are few more brilliant sights than masses of them when in full beauty, and they are of the easiest possible culture, dwarf and compact, bearing in great profusion flowers with fine diversity of colour. The common Sun Rose (H. vulgare) is variable in colour, and from it have sprung the many varieties enumerated in trade lists; indeed, we need only this species to represent, for garden purposes, the variation in all the dwarf shrubby species of the family. The colours range from white and yellow to deep crimson. There are also double-flowered kinds and one with variegated foliage. Other pretty, dwarf, shrubby species, similar to H. vulgare, are H. rosmarinifolium, pilosum, and croceum. There is also a herbaceous perennial species, H. Tuberaria (Truffle Sun Rose), which in aspect differs completely from the shrubby species, and is second to none in beauty. It grows 6 to 12 in. high, with flowers 2 in. across resembling a single yellow Rose, with dark centre, and drooping when in bud. It is suited for warm ledges on the rock-garden in well-drained sandy or calcareous soil. When sufficiently plentiful it should be used in the mixed border. It is propagated by either seed or division. When a full collection is required there are other species introduced, but the above fairly represent the beauty of the family.

Helianthus (*Sunflower*)—PERENNIAL SUNFLOWERS.—Usually stout, vigorous, and showy plants, typical of the coarse yellow Composites abounding in North America, of which not a few have found their way into English gardens. All the perennials are vigorous growers, and generally attain a great height, being most precious for the autumnal garden when well placed. Sunflowers may be cultivated with the greatest ease; they are gross feeders, and the richer the soil the better the result. It is true that not a few of this genus are coarse and weedy, unfitted for the flower-garden, but a good many, some of which are not yet in general cultivation, could be utilised with striking effect in the best-kept flower-garden; and for mixed borders, etc., they are valuable. The Sunflowers, like the Michaelmas Daisies, could ill be spared from the autumn garden, where, when most

other hardy perennials are beginning to show the sere and yellow leaf, they are generally at their best and in their greatest numbers. Although the flowers are somewhat restricted in their range of colouring, the plants vary considerably in their seasons of blooming, in habit, and also in the positions in which the most may be made of them. From their robust growth, the majority of them are essentially suitable for borders where plenty of scope may be had, and where attention may be given to the proper grouping of the different species and varieties. Some few of the species which may not be considered showy enough for the flower border proper could be planted in the woods, in isolated beds or among shrubs, where their particular and characteristic habits could be seen to advantage.

Double Perennial Sunflower.

It would hardly be policy to grow the whole genus in any one garden unless shrubberies abound on a large scale. H. multiflorus and its varieties, H. rigidus and its varieties, H. decapetalus, and a few others are essentially border plants, where, when doing well and in full flower, they form a feature of no mean beauty. H. lætiflorus, H. orgyalis, H. lævigatus, and H. divaricatus would make handsome groups in open shrubberies, and giganteus, doronicoides, grosse-serratus and others might with advantage be relegated to the wood, where, in open exposed positions, they would form interesting groups. They increase so rapidly as a whole that it will be needless to say anything about propagation, which may be done in autumn or spring with good results. Other species not mentioned, but which may be of interest to many, are H. angustifolius, Maximiliani, mollis, and occidentalis, the two last being early-flowering species rare in gardens.

H. DECAPETALUS is one of the most charming species in the whole genus as a background to mixed borders or as a feature in open shrubberies. It forms large, bushy, well-balanced plants 4 to 6 ft. in height, with strong, much-branched stems, rough on the upper half and usually quite smooth on the lower. The leaves are broadly oval, pointed and thin in texture; flowers 2 to 3 in. in diameter, of a rich sulphur-yellow, produced in great abundance, and very showy. It is found plentifully on the banks of streams in Canada and Georgia.

H. GIGANTEUS is a very tall, elegant plant. The stems often exceed 10 to 12 ft.

high, the leaves narrow, tapering to both ends; the flowers deep yellow, 2 to 3 in. in diameter. It is one of the latest to flower, and has been found variable under cultivation, giving rise to several garden names. Moist ground, Canada and Louisiana.

H. LÆTIFLORUS is a handsome species, very little known in gardens, although the name was freely used for forms of H. rigidus. It is, as a rule, rather later in flowering than the H. rigidus forms, and unfortunately in cold wet seasons or early winters does not bear good flowers. It is a much taller and stronger plant than H. rigidus, the flowers, 4 to 5 in. across, of a bright yellow with yellow disc. The leaves are thin, entire, or coarsely toothed, and the bracts of the involucre always acute, a very distinctive character in this genus. The roots are somewhat similar to those of H. rigidus, perhaps larger, and they certainly travel further. It is a native of prairies and barrens, Illinois, Wisconsin.

H. MULTIFLORUS.—The late Dr. Asa Gray always considered this plant a garden variety of H. decapetalus. There is strong evidence, however, of its being a hybrid, the parents of which it would be difficult now to ascertain with accuracy. It is so very distinct from all the other species so well known in gardens under its present name, and such a good all-round plant, that it well deserves specific rank. It rarely exceeds 3 to 5 ft. in height, producing numerous large fine rich yellow flowers, remaining a considerable time in good form. The var. maximus has larger flowers with more pointed rays, and the varieties plenus and Soleil d'Or are both very desirable double-flowered forms. All the varieties of H. multiflorus should find a place in collections however small.

H. ORGYALIS, though a small-flowered plant, is yet one of the best of the genus for the picturesque garden in southern counties. It is one of the late-flowering species, and is often damaged by early frosts. It grows from 6 to 10 ft. high, having numerous linear leaves and bunches of deep golden yellow flowers. It should be grown in sheltered spots, otherwise it requires a great deal of staking. It is a native of dry plains of Nebraska and Texas.

H. RIGIDUS.—This distinct, though variable species is perhaps the best known of all the perennial Sunflowers. It is still found labelled Harpalium rigidum in some gardens, and is often confounded with H. missuricus and H. atro-rubens, the latter of which, so far as I know, is not now in cultivation. Typical H. rigidus is figured in the *Botanical Register*, t. 508, and *Botanical Magazine*, t. 2668, as H. atro-rubens. H. rigidus grows from 4 to 5 ft. in height, with a rough hispid stem, the upper leaves always alternate, distinctly three-nerved and veined. The lower ones are opposite, broader, thinner, often serrated, and rarely pointed. All the leaves narrow to a winged petiole, and are easily distinguished from those of any other species. The flowers, bright yellow and very showy, are produced very freely. It is a native of the plains and prairies of Georgia and Texas. The varieties of this species, most of which have undoubtedly originated in gardens, are superior to the type as garden plants.

H. grandiflorus, semi-plenus, elegans, and æstivus are all worth a place in the flower border. All should, however, be grouped by themselves, as they form underground tubers, which spread a considerable distance from the parent plant in the course of a year. Some of these varieties have been tried at Kew and elsewhere grouped singly in beds, and are always much admired in the autumn months when the members of this genus are so much in evidence.—D. D.

ANNUAL SUNFLOWERS.—All the larger kinds are noble plants, requiring plenty of space, a sheltered position, and a good background. They are all easily raised from seed, which may be sown in pans in early March or in the open air in April where they are intended to flower, and thinned out to from a foot to a yard apart according to the vigour of the plant. The regulation row of Sunflowers along a choice mixed border often ruins its effect, but there are various ways of arranging the annual Sunflowers with excellent effect—among large beds of fine-leaved plants being one of them.

H. ANNUUS (*Common Sunflower*).—Although often regarded only as a cottagers' flower, the annual Sunflower is one of the noblest plants we have, and one of the most effective for various positions. In order to dispense with support, it should be planted in a sheltered place, as among tall shrubs. Here it assumes a dense branching tree-like habit, and often produces flowers each over a foot in diameter. It requires a strong rich soil, to which may be added a quantity of old cow manure just before planting. There are many varieties in gardens, the most notable being one called californicus, a more robust and darker-flowered form. Macrocarpus, lenticularis, and ovatus, are synonyms or slight varieties of the culti-

vated annual Sunflower; sulphureus, multiflorus, globosus, grandiflorus, and fistulosus are garden variations. The sulphur-coloured variety is charming, and less strong in growth than the richer yellow forms. North America. H. argophyllus, little more than a variety of H. annuus, is a charming plant from Texas, for the back of mixed borders, open borders, and in thin shrubberies. The whole plant is white, being covered with soft and silky wool, the flowers large with very broad ray florets. H. Dammanni and H. D. var. sulphureus are said to be garden hybrids between H. argophyllus and H. annuus. H. cucumerifolius, the miniature Sunflower, is a good annual, growing from 2 to 3 ft. high, usually with purple mottling on the stems, the leaves thin, and bright apple-green. The stems are much branched, and when allowed plenty of room the plants form perfect symmetrical specimens. The flowers are yellow, about 3 in. in diameter, nicely set off with the almost black disc. Sandy soil in woods from Texas westwards.

H. EXILIS.—A very slender species, rarely more than a couple of feet in height, with lance-shaped leaves and yellow flowers about 2 in. in diameter. N. California.

H. PETIOLARIS.—A fine kind rarely seen in gardens, though from its neat habit and profusion of flowers it should be a welcome addition to the mixed border. It grows about a yard high,

Sunflowers in vases.

loosely branched, the stem as well as the leaves being covered with stiff hairs; flowers yellow, 3 to 4 in. in diameter. The variety canescens is covered with white pubescence. Texas.

H. SCABERRIMUS.—A very distinct plant with large deep yellow flowers, stout branching stems, and broad, oval, coarsely-toothed leaves. California.—D.

Helichrysum (*Everlasting Flower*).—Composites, mostly natives of the Cape of Good Hope, of which a few are culivated.

The most important garden plants are H. macranthum and H. bracteatum. They are generally treated as annuals, and, unless exceptionally well managed by being sown early under glass, they commence flowering so late that the best period for laying on the brightest colours is lost, and early frosts find them just approaching their best. They are particularly suited for background plants on dry borders. If they are sown in pans or boxes where they can be slightly protected during winter, and are planted out early in April, they have a chance of producing a good crop of flowers for drying. The colours vary from deep crimson to yellow and white. The hardy perennials are not important, and seldom succeed. H. orientale, which furnishes the Immortelle of the French, flowers poorly except in very hot seasons. None of the other hardy kinds are worth growing, except perhaps H. arenarium, which has bright golden-yellow flowers.

Heliophila. — Small and charming Cruciferous annuals. H. araboides is a pretty blue annual, of which occasional use might be made, being dwarf, and free in growth and flower. Another kind is H. pilosa.

Heliopsis.—Stout yellow Composites not of essential value considering the good plants of the same order now in cultivation. There are several kinds.

Heliotrope, Winter (*Tussilago*).

Heliotropium (*Cherry Pie*).—A great favourite for flower gardens on account of its delicate fragrance. For the flower garden spring-struck plants are the best. It is a good plan to lift a few plants from the beds in September, winter them in a warm greenhouse, and in spring to put them in a warm place, where they will soon produce plenty of cuttings. These cuttings may be struck on slight heat like Verbenas, potted on, made to grow rapidly, so as to be fit to plant out at the end of May when danger of frost is past. Heliotropes may be raised from seed and flowered the same year—in fact, treated as annuals. Sown early—in February or the beginning of March—they become sturdy little plants before planting time. When bedded out they should be placed in good dry soil. The following are good varieties, and new varieties are raised from time to time: Anna Turrell, General Garfield, Roi des Noirs, Triomphe de Liège, and the old H. peruvianum, which many like from its associations if for no other reason. Heliotropes, though quiet in colour, are charming flower-garden plants, either when grown for their own sakes as simple masses or when associated with tall plants which grow above them.

Helipterum Sanfordi.—A dwarf, branched, pretty yellow half-hardy annual Composite, but the short life of the spring-raised everlasting annuals leads to a poor result in our climate.

Helleborus (*Christmas Rose*).—One of the most valuable classes of hardy perennials we have, as they flower in the open

Heliotrope.

air when there is little else in bloom. They appear in succession from October till April, beginning with the Christmas Rose (H. niger), and ending with the handsome crimson kinds. The old white Christmas Rose is well known and much admired, but the handsome kinds with coloured flowers have, hitherto, not been much known. Recently too there have appeared some really beautiful hybrids, which add a great deal of beauty to our winter and spring garden, for their flowers withstand the winter, and their verdure and the vigorous growth of their leaves distinguish them throughout the year.

The Hellebores, besides being excellent border flowers, are suited for naturalising. There are a few kinds—those with inconspicuous flowers, but handsome foliage—whose only place is the wild garden, such

as the native H. fœtidus, H. lividus, viridus, and H. Bocconi, which have elegant foliage when well developed in a shady place in rich soil, like that usually found in woods. The Hellebores may be classed in three groups, according to the colour of the flowers—those with white flowers, those with red, and those with green, which last will get little place in the garden. The white-flowered group is the most important, as it contains the beautiful old Christmas Rose.

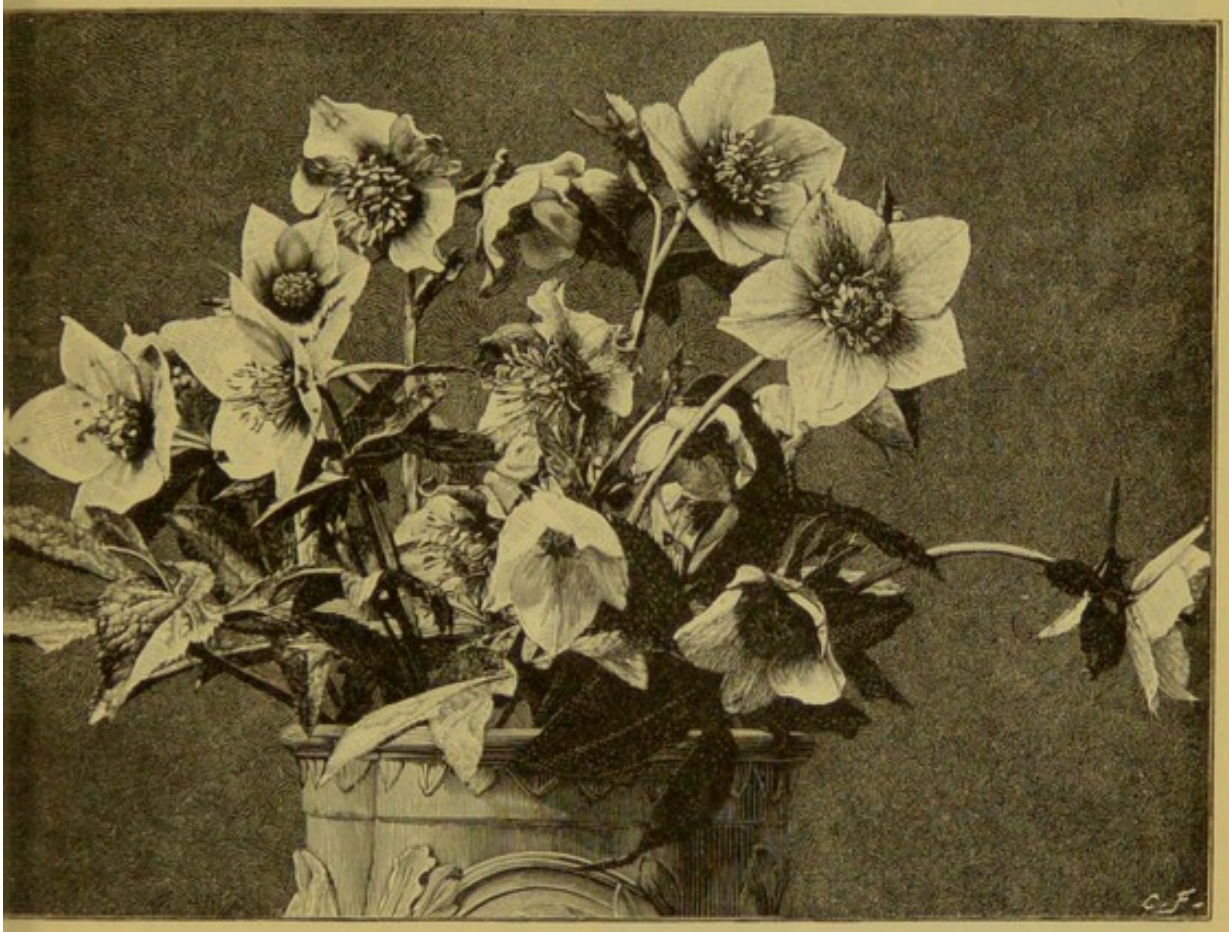
Christmas Rose.

H. niger is a well-known kind, scarcely needing description. It may be recognised at once by its pale green smooth leathery leaves, divided into seven or nine segments, 3 to 6 in. long and 1 to 2 in. broad. The flowers, which are usually borne singly on stems 6 in. long, are about 3 in. across, and vary from a waxy-white to a delicate blush tint. The variety minor is smaller in every part, and is also known as H. angustifolius. H. altifolius, though sometimes considered a variety of H. niger, is a distinct kind, and much larger than H. niger. It has leaf-stalks over 1 ft. long, and blossoms 3 to 5 in. across which are borne on branching stems, each stem bearing from two to seven flowers, which have a stronger tendency to assume a rosy hue than the ordinary kind. Another characteristic is that the leaf and flower stems are beautifully mottled with purple and green, while in H. niger they are of a pale green. H. altifolius also flowers much earlier—in some seasons in the

beginning of October. It has been known a long time under the names of H. niger var. major, maximus, giganteus, and grandiflorus.

Other white kinds are H. olympicus—a tall slender species with cup-shaped blossoms that appear in early spring and vary from pure white to greenish-white. H. guttatus is like it, but has the inside of the blossoms spotted with purple. There are several forms; in some the markings assume the form of small dots, in others of thin streaks. It is one of the parents of the many beautiful hybrids.

obtained by crossing it with H. guttatus, the result being a form with large spreading flowers lighter than in H. colchicus, and profusely marked with dark carmine streaks. Another hybrid between this and H. altifolius resulted in a form with larger flowers of a lighter purple. H. atro-rubens has leaves much thinner and flowers much smaller than H. colchicus, the latter dull purple on the outside and greenish-purple within. It is a native of Hungary, and is common in gardens, but is often confused with H. abchasicus, a taller and more slender plant, the flower-



Helleborus orientalis.

The finest of the red or crimson kinds is H. colchicus, which is larger than any other, and may be readily recognised by thick dark green leaves, with five to seven broad and coarsely-toothed divisions, the veins of which are raised on the under sides, and are of a dark purple when young. The blossoms, borne on forked stems rising considerably above the foliage, are dark purple. Under good cultivation the leaves attain the length of 1½ and 2 ft., forming fine specimens, and flowers are produced from the end of January to the end of March. A fine hybrid has been

stems of which are longer, and the blossoms nodding and smaller. H. abchasicus is much superior to atro-rubens, the colour of the blossoms—a deep ruby-crimson—making them very attractive. Other fine varieties of the red-flowered group are Gretchen Heinemann, James Atkins, and Apotheker Bogren, all worthy of culture. Other reddish kinds, such as H. purpurascens and H. cupreus, are not worth growing.

All the kinds will thrive in ordinary garden soil, but for the choicer kinds a prepared soil is preferable. This should

consist of equal parts of good fibry loam and well-decomposed manure, half fibry peat and half coarse sand. Thorough drainage should always be given, as stagnant moisture is very injurious. A moist and sheltered situation, where they will obtain partial shade, such as the margins of shrubberies, is best, but care should be taken to keep the roots of shrubs from exhausting the border. In the flowering season a thin mulching of moss or similar material should be placed on

Yellow Day Lily (Hemerocallis flava).

the soil round the plants, as this prevents the blossoms from being spattered by heavy rains, etc. Any one beginning to grow these useful plants should give the soil a good preparation. If well trenched and manured, they will not require replanting for at least seven years; but a top-dressing of well-decayed manure and a little liquid manure might be given during the growing season when the plants are making their foliage, as upon the size and substance of the leaves will depend the size of the flowers. The common white Christmas Rose is a favourite pot-plant, and if required for potting its foliage should be protected from injury; when the blooming season is over it should be protected by a frame until genial weather permits it to be plunged in the open air. Hardy subjects like the Christmas Rose frequently suffer when removed from under glass, for although hardy enough to withstand our severest winters when continuously exposed, their growth, when made under more exciting circumstances, will not withstand sudden variations of temperature. For this reason it is advisable to keep them in as cool a position as possible when in flower, so that the growth of young foliage may not be excited before its natural season.

Propagation may be effected by division or by seeds, which, in favourable seasons, are plentiful; as soon as thoroughly ripened they should be sown in pans under glass, for they soon lose their vitality. As soon as the seedlings are large enough they should be pricked off thickly into a shady border, in a light rich soil; the second year they should be transplanted to their permanent place, and in the third season most of them will bloom. In division the clumps must be well-established, with root-stocks large enough to cut up. The divided plants, if placed in a bed of good light soil, and undisturbed, will be good flowering plants in a couple of years, but four years are required to bring a Christmas Rose to perfection. By July the Hellebore is in its strongest vigour, and lifting and dividing the plants should then be carried out.

Helonias bullata.—A distinct and handsome bog perennial, 12 to 16 in. high, having handsome purplish-rose flowers in an oval spike. It is suitable for the bog-garden or for moist ground near a rivulet. In fine sandy and very moist soil it thrives as a border plant. N. America. *Syn.*, H. latifolia.

Hemerocallis (*Day Lily*).—The Day Lilies, though not numbering many distinct species, are varied both in habit and flower, and are very useful in the mixed border and in groups by the water-side. Few plants surpass a strong well-flowered clump of Hemerocallis fulva, as we have seen it mixed with a group of male Fern near a brook. The leaves of this Day Lily were overhanging the banks of the stream, intermingled with the Fern fronds, while the flower-heads, tall and straight,

were towering upwards. If the ground is well broken up and some lasting manure supplied at planting time, they may be left undisturbed for years. The forms of H. disticha, both single and double, are also useful for clumps by water, or intermixed with other robust or bold-foliaged plants; indeed, there seems no reason why all the Day Lilies could not be treated in this picturesque way, the trouble entailed being small, and that chiefly at planting time only. For cutting, H. flava, minor, and Dumortieri are useful, the flowers lasting a few days and the buds opening well in water. The fragrance of these flowers is delightful, they are readily increased by division, and grow with such rapidity that in the course of a few years they may be increased to almost any extent.

Hemerocallis fulva (Day Lily).

The following are the species as they are now recognised, with the principal varieties :—

H. DUMORTIERI (Dumortier's Day Lily).—This valuable kind is the first to flower of all the Day Lilies. Coming as it does from Japan and W. Siberia, it proves hardy in the open air. It does not require protection during winter, and we have never known it fail to bear freely its charming and fragrant flowers. The blooms are short-lived, but the reserves are so numerous as to keep up the succession for a long time. This Day Lily dwindles in vigour of the plants and size of the flowers if allowed to remain too long in one place. If the plants are examined, the centres will be found to be matted together, the stronger shoots appearing on the outside. If the whole plant is divided and replanted it will amply repay the trouble by increased vigour and flowers. It is closely allied to H. minor, also known as H. graminea, but it is a much stronger plant, however, with leaves twice as broad, the flower-stems short, and the divisions of the perianth divided almost or entirely to their base. The leaves are about five or six to a growth, about 18 in. long and half an inch broad, bright green above and pale but not glaucous on the under surface; flower-stem 1 to 2 ft. in height, bearing a corymb of large orange-yellow flowers. H. rutilans and Sieboldi of gardens belong to the same species.

H. FLAVA (the yellow Day Lily).—Few plants can be grown with so little trouble in the border, and give such a valuable return as this one. The flowers large and in such quantities, emitting such an agreeable fragrance, as to earn the name of *yellow* Tuberose. The length of time the flowers last enhances its value as a border plant. It is hardy, and though not so robust in habit as H. fulva, it increases rapidly, and where the soil is good might be naturalised. On banks the beautiful light green curving leaves hang gracefully, surmounted by bunches of large yellow heads of flower in June and July. Europe and N. Asia. H. Thunbergi and japonica are forms of this species.

H. FULVA (copper-coloured Day Lily) is a much larger plant than H. flava, and more suitable for extensive planting in semi-wild or rough parts of the garden. It is variable under cultivation, and the numerous forms now grown, many without names, are all worthy of attention. H. disticha is a well-known garden variety of this species, notable for the fan-like form of its growths. The flower-stem is forked near the summit, and carries two or three heads of flowers, six to eight blooms on each, of a brown-orange colour. There is also a double-flowered variety of this. H. Kwanso is a variety with variegated or striated leaves. It is a handsome plant for edgings or for the rock-garden. Of this there is also a double-flowered form. H. f. var. angustifolia, narrow-leaved; longituba, crocea, natives of China, flowering in July and August, belong to this section.

H. MIDDENDORFIANA is from Amurland, in appearance resembling H. Dumortieri; the leaves are, however, broader, the flowers about the same size, closer, and paler in colour, and with a distinct cylindrical tube half an inch or so long. It is of easy cultivation.

H. MINOR, also known in many gardens under the highly characteristic name of H. graminea, from its Grass-like foliage, was formerly classed by the older botanists as a variety of H. flava, though now considered distinct. It is the smallest, though not the least showy, and, like flava, sweetly scented, the flowers lasting two or three days. It makes a handsome plant for a rocky bank, and even when flowers are absent the pretty Grass-like leaves are welcome. It flowers during June and July. It is also known under the names graminifolia and pumila. Siberia.

H. AURANTIACA MAJOR.—This is the name given by Mr. Baker of Kew to a new and handsome kind from Japan, and of which a coloured plate was given in *The Garden*, November 23, 1895. It is certainly one of the finest new hardy plants of recent years, and reminds one of H. fulva (*syn.*, H. disticha). The new kind has bold leafage, a glaucous tinge overlying the deep green body colour; the flowers are rich apricot in colour, open out widely, and of great substance.

Hemiphragma heterophylla.—A dwarf trailer of the Figwort family, with slender creeping stems of inconspicuous flowers, succeeded by bright red berries about the size of small Peas. It is rather tender, and requires a sheltered and well-drained spot in the rock-garden. Himalayas.

Heracleum (*Giant Parsnip*).—Umbelliferous perennials, mostly of gigantic growth, having huge spreading leaves and tall flower-stems, with umbelled clusters of small white flowers 1 ft. or more across. Though well-developed plants of the large kinds have a fine effect when isolated in a position not too obstructive, they are generally suitable only for the rougher parts of pleasure-grounds, the banks of rivers or lakes, and other places where they can grow freely and well, and can show their stately growth to advantage. The finest are H. giganteum, lanatum, sibiricum, eminens, Wilhelmsi, and pubescens, all of which, when in flower, are 5 to 10 ft. high. All are increased by seed.

Herniaria.—Dwarf perennial trailers, forming a dense turfy mass, green throughout the year. There are two or three species, but the most important is H. glabra, which has been largely used as a carpeting plant on account of its dwarf compact growth. It rarely requires clipping, and is always a deep green, even in a hot and dry season.

Hesperaloe yuccæfolia.—A North American Liliaceous plant with Yucca-like leaves, and a flower-spike upwards of 4 ft. in height, furnished thickly on the upper half with orange-red flowers nearly 1 in. in length. Its hardiness has not been tested, but little is known of its requirements under cultivation.

Hesperis matronalis (*Rocket*).—A popular old garden plant, and among the most desirable of hardy flowers. It bears showy, varied, and fragrant flower-spikes. The original single-flowered kind grows 1 to 3 ft. high, and has pinkish flowers, but the double kinds are much more valued. There are two distinct forms of the double white Rocket, as well as of the

double purple Rocket in cultivation. One is a tall white, turning to a pale flesh colour with age; the other is the old white variety, of dwarfer growth, with smaller and more compact flowers. It is met with in the north, but is little known in the south, where it does not flourish so well as the common variety. There is the old purple double Rocket and a free-growing dwarf form known as Compactness, which has also larger and darker flowers. Rockets require care in cultivating, and will soon be lost if left to themselves. They should be divided at least every second year and transplanted, for they seem to tire of the soil and to require more change than most perennials. If the young shoots are formed into cuttings when they are about 3 in. long, they strike very freely in the open ground, and the spikes of bloom on the remaining stems are all the finer when some of the others have been removed. When shaded from the sun for about three weeks with a few Laurel branches, the cuttings do better than when covered with a pot or box, as has been advised. They like a rich soil, rather moist, and are all the better for repeated applications of liquid manure if the soil is not as deep and good as it should be. Double Rockets really belong to the garden plants requiring annual attention, and they therefore cannot well be used as true perennials. It is always worth while having a bed of them in the reserve garden in case the plants should be lost or neglected in the borders. We have seen them best grown where there was a yearly transfer of plants from the reserve garden to the mixed border, and the groups look very well. The single Rocket is easily naturalised, and is a showy plant in woods or shrubberies.

H. tristis (*Night-scented Stock*).—A quaint plant with dull-coloured flowers, sweet-scented at night. It is rather tender, and requires a light warm soil and a sheltered position.

Hesperochiron pumilus.—A pretty Californian dwarf rock-plant. It is stemless, with leaves on slender stalks, in a rosulate tuft. The bell-shaped flowers, ½ in. across, are of white, varying to a purplish tinge. It grows in marshy ground, and in damp places in the Rocky Mountains and Northern Utah, and is apparently quite hardy, as it thrives in ordinary soil in well-drained parts of the rock-garden. H. californicus is a species of somewhat the same type.

Hesperocordon lacteum.—A Californian bulb, now placed with the Brodiæas. H. lilacinum is a variety.

Heuchera (*Alum Root*).—At first sight obscure if interesting plants, I have found them excellent in effect of new and good colours, when grouped. Some are precious in winter from the pretty claret colour showing well throughout that season. Some are excellent as leaves for cutting to go with cut flowers or fruit instead of vine leaves. I tried them in large groups among shrubs at Gravetye, and found them very useful for covering the ground between newly-set shrubs: quite hardy and of the simplest culture.

The Heucheras are nearly all natives of a climate as cold as our own, and therefore they are better able to withstand our worst winters. The more common kinds, such as H. americana and H. Richardsoni, may be used with effect for massing in the wild garden, and for edging evergreen shrubberies few plants will be found more suitable. For the rougher part of rock-gardens, too, they are useful, and grow well in ordinary soil.

H. AMERICANA.—This is the most common kind. It is very useful for massing under trees or in shady places, to which indeed it may be said to be partial. The leaves are seven-lobed, of a beautiful green colour, which gets deeper towards the winter season. The flower-stems are generally about 1 ft. high, dividing towards the top into loose panicles, on which are borne the dull purplish flowers. June and July.

H. MICRANTHA has much the same habit as the above. It is pretty generally distributed under the name of rubescens, from which, however, it is different. It grows from 1 to 2 ft. in height, and the flowers, which are borne in loose panicles and of a bright purplish colour, though small, are numerous and attractive; the leaves are round, and from 2 to 4 in. in diameter. N. California.

H. RICHARDSONI.—As a fine-leaved plant this claims a first place, and on that account it has lately become popular under the name of Satin-leaf. It is a handsome plant for any open place, where it forms graceful masses that are as pretty in winter as in summer. It grows from 1 ft. to 18 in. high, and the flowers, which are borne in loose panicles and of a pale brownish colour, are large and hairy on both sides. N. America, flowering in June and July.

H. MENZIESI.—This is a distinct plant, and a companion for H. americana, being easily distinguished from the others, inasmuch as it has leafy stems. It grows about 2 ft. high; leaves large, and deeply serrated; and the flowers, which are

without petals, are curious. It comes from the north-west coast of America, and flowers in July. A variety of it, nearly quite devoid of hairs, is also in cultivation.

H. PUBESCENS.—This is a pretty species, being covered all over with a soft powdery down; the flowers, in clustered panicles, are large and of a pale red colour, intermixed with a yellowish tint. It grows about 1 ft. in height, and flowers from May to July.

H. SANGUINEA is perhaps the most beautiful of all. It grows in the ordinary border, without special care. When seen in masses it has a charming effect, having a neat bushy habit, numerous loose and graceful flower-spikes about 1 ft. in height, and covered with red blossoms. The leaves circular, five to seven-lobed, of a light green colour and slightly hairy. The anthers are darker than the flowers, which enhances their beauty. It is a native of the Porphey Mountains of Llanos, and flowers in July and August. Division.

The only others worth mentioning are H. glabra and longipetala, the latter with white flowers.—D. K.

Hibiscus (*Rose Mallow*).—Shrubby and herbaceous perennials and annuals. They are numerous in hothouses, but few are suited for the flower-garden. The splendid hardy Rose Mallows of the woods and swamps of N. America will live with us, but our climate is not warm enough for them, though it would be well to try tufts of them in warm sunny places in the southern parts of England, in deep, moist soil. They have splendid crimson or rosy

Venice Mallow (Hibiscus Trionum).

flowers, as large as saucers, and are from 4 to 7 ft. high. The finest are H. Moscheutos, H. palustris, H. grandiflorus, and H. coccineus. They seldom bloom in the open air in England, as they flower late in the season. There are two or three annual kinds, the finest being H. Manihot, which forms handsome pyramids 4 to 6 ft. high, the flowers being 3 or 4 in. across, and pale yellow with a dark centre. H. Manihot should be treated as a half-hardy annual, sown in heat in February, and in May planted out in good deep soil. H. africanus is a hardy annual with showy pale yellow flowers that only open in fine weather. In light soil it usually sows itself. H. Trionum appears to be extremely variable, and has long been cultivated in gardens. It is widely scattered over all the warm regions of the Old World, and is usually described as a common sub-tropical weed, found plentifully in cultivated fields in Afghanistan. It is found in several places in China, and is a very common weed in waste garden ground and rich damp soil throughout the Cape Colony, and has given rise to almost innumerable varieties, a few of which are so distinct as to have at one time been considered species. The great objection to the type is the short-lived flowers, which Gerard says open at eight in the morning and close at nine, and which supposed fact gave rise to the curious appellations, "Flower of an hour," "Good night at noon," or "Good night at nine."

In a fine form, figured in *The Garden*, this objection is quite done away with, the flowers opening in the morning, and, on bright days, remaining so until late in the afternoon. Individual flowers do not last very long, but there is a succession on a well-grown plant, and these are large and beautiful. It is quite as hardy as the one usually grown, seeds as freely, and much more striking, especially in bold clumps. Simply scatter the seeds in the open on the spots where they are intended to grow, thinning, where too close together, to 6 in. or 1 ft. apart, and leaving the sun, etc., to do the rest. It will even sow itself, the seeds coming up in plenty the following spring if the winter has not been too severe, but sowings should be made at different times to ensure bloom all through the summer and autumn.

H. Syriacus (*Syrian Mallow, Rose of Sharon*).—A beautiful shrub, bearing large showy blossoms in late summer and in autumn, when shrubberies would otherwise be flowerless. It is a very old favourite, and in strong moist soils it rises 6 and even 10 ft. high, and as much through. It is a miserable shrub on poor dry soils, but attains perfection in deep ground fairly rich and always moist. The typical form has bluish-purple flowers with crimson centres, but now there are forms representing every tint from pure white (totus albus) to crimson and purple, while the blooms of one sort (Celeste) are almost pure blue. There are also double flowers of varied colours. The best kinds, single and double, are Totus albus, Celeste, Violet Clair, Leopoldi, bicolor, roseus plenus, Pompon Rouge, carneo-plenus, Duc de Brabant, albus plenus, puniceus plenus, and anemonæflorus. A few bushes nicely grouped on a lawn with one or two taller trees or shrubs make a pretty feature, and under the partial shade of trees the effect of the flowering bushes is more striking in autumn. The old name for this shrub is Althæa frutex, by which it is now also known.

Hieracium (*Hawkweed*).—A very extensive genus of Composites, consisting chiefly of perennial herbs with yellow flowers. The best for the garden is H. aurantiacum, which is distinct among plants of a similar character on account of its deep orange-red colour. It is a vigorous grower, 1 or 1½ ft. high, and soon forms a spreading mass. W. Europe. Some of the yellow alpine and other kinds are valuable in botanical collections, and some of them are beautiful, but the prevalence of yellow flowers of the same order makes them less important.

H. aurantiacum (*Orange Hawkweed*).—The flowers are of a deep orange-red, a distinct shade of colour among herbaceous perennials. The plant is of extremely easy culture, and will when once planted take care of itself, spreading freely, and quickly forming dense patches of its hairy leaves. It usually grows from 1½ to 2 ft. high under cultivation, and when seen in a large group flowering in full sun is very effective. The flowers are produced in a corymb from eight to ten, the plant keeping up a continuous display for weeks in succession. It is well adapted for naturalising and for high and dry chinks in the rock-garden. When once established in any garden there is little fear of losing it, as it seeds and spreads freely. It is a native from Scandinavia to the Pyrenees, and to some extent naturalised in Scotland and the north of England.

H. Pilosella (*Mouse-ear Hawkweed*).—In this the flower-heads are pale yellow or lemon-coloured, frequently tinged and sometimes striped with either red or

purple on the outside. The leaves are entire, oblong, or lanceolate, sometimes stalked, and densely clothed with cottony down beneath. This is well suited for walls and old ruins. Abundant through North and West Asia, and in the British Isles.

H. villosum (*Shaggy Alpine Hawkweed*).—This plant appears to be the largest, and certainly the showiest, of the yellow-flowered members of this genus. The flowers are large, fully 2 in. across, and of a bright golden-yellow hue. In the specimens I have seen the plants were less than 1 ft. high. Withering, however, in his *British Botany*, vol. iii., refers thus to this species: "Root-leaves variable in size, the smaller ones on very long leaf-stalks, stem-leaves heart-shaped. The whole plant woolly, and when cultivated rising to the height of 4 ft." The abundant, long, shaggy hairs which cover the plant, and the large, handsome blossoms with which the stems terminate, render this one of the most worthy and distinct of this genus. It is apparently a true mountaineer, having been found among wet rocks on Ben Nevis, in Scotland. The plant is by no means common under cultivation in English gardens, though the reason is not clear, seeing it is readily obtainable from seed.—E. J.

Hippocrepis comosa (*Horse-shoe Vetch*).—A small prostrate British evergreen herb about 6 in. high. Its yellow flowers, of which 5 to 8 are borne together in a crown, resemble those of the Common Bird's-foot Trefoil, but are paler and rather smaller. It grows freely in any exposed part of the rock-garden and borders, in any soil. Seed and division.

Hippophæ rhamnoides (*Sea Buckthorn*).—A beautiful seashore native shrub, developing its full beauty in the rich soils of inland gardens, though it is happy in any soil but hungry clay and peat. The best position for it is a rather damp spot near a running stream, where the subsoil is always moist. It forms, when wild, a straggling bush, which, when the shrub is sheltered, rises 8 or 10 ft. high. In gardens it grows taller. The Sea Buckthorn has silvery-looking Willow-like leaves and bears a profusion of orange berries.

Hippuris (*Mare's-tail*).—A British water-weed, worth growing with the Equisetums and the like by ponds where the growth near is not too rank.

Holbœllia latifolia.—A beautiful evergreen climbing shrub from the Himalayas, hardy against walls in the southern and the warm districts. The foliage is thick with three or five leaflets of a deep shining green. The flowers are a deliciously fragrant dull purplish green, but it does not bloom so freely out of doors as in a cool conservatory. As it is of tall growth, it must be planted against a high wall, such as that of a house or stable. It is known also as Stauntonia latifolia. The variety angustifolia has smaller and more numerous leaflets.

Holcus.—British Grasses, of which one, H. mollis, affords a pretty variegated-leaved form for lines and edgings, retaining its markings very well.

Hop (*Humulus*).

Hordeum.—Grasses, of which the Barley is the most familiar type, few of ornamental value except H. jubatum (Squirrel-tail Grass), which has long feathery spikes. It grows in any soil in open places, is easily raised as an annual, and is one of the most distinct dwarfer Grasses. Sow in autumn or spring.

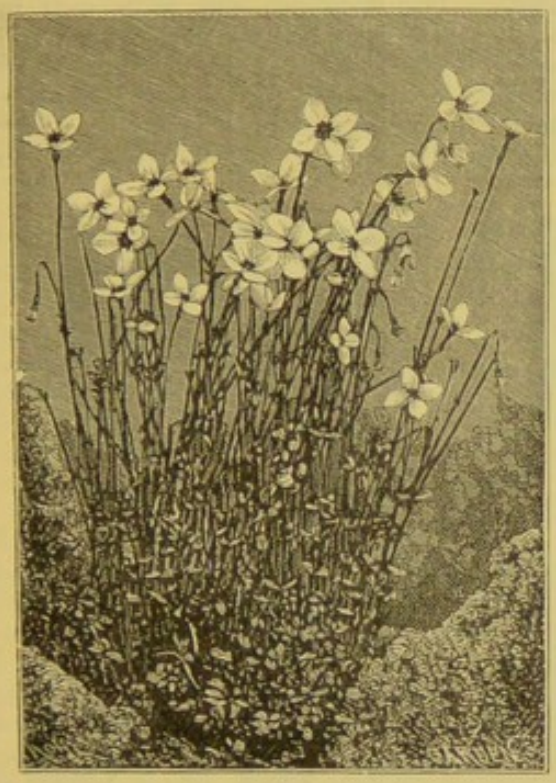
Horminum pyrenaicum.—A Pyrenean plant, forming dense tufts of foliage, and having spikes about 9 in. high of purplish-blue flowers, which appear in July or August. It is quite hardy.

Hoteia japonica.—A fine tufted herbaceous plant 1 ft. to 16 in. high, with silvery-white flowers early in summer in a panicled cluster. In a rich soil it is excellent for a shady border. Strong clumps planted in autumn will flower in the following spring. Where there are forced plants to spare they may be planted out when they have done blooming, but will not make much show in the following season. Much used indoors, is seldom good in the open garden, partly because it does badly in heavy and poor soils. Where it thrives and flowers well it would be a graceful aid in the varied flower-garden. Increased by division in autumn. Japan. *Syns.*, Spiræa japonica, Astilbe barbata.

Hottonia palustris (*Water Violet*).—A pretty British water-plant, which, however, thrives better on soft mud-banks than when submerged. The deep-cut leaves form a dwarf deep-green tuft over the mud, and from this tuft arise stems bearing at intervals whorls of handsome pale lilac or pink flowers. As water and bog may be associated with the rock-garden, this plant may with advantage be grown at its margin in the water or on a bank of wet soil. It grows from 9 in. to 2 ft. high, flowers in early summer, and is abundant in many parts of England.

House Leek (*Sempervivum*).

Houstonia cærulea (*Bluets*).—A very pretty little American plant, forming small, dense cushion-like tufts, and from late spring to autumn bearing crowds of tiny slender stems, about 3 in. high. The flowers are pale blue, changing to white. There is also a white variety. It succeeds best in peaty or sandy soil, in sheltered shady nooks on well-drained parts of the rock-garden. As it sometimes perishes in winter, it is advisable to keep reserve plants in pots. Propagated by careful division in spring, or by seed. H. serpyllifolia is not so good.



Houstonia cærulea.

Houttynia.—Remarkable plants allied to Saururus, and the only hardy representatives of the natural order Piperaceæ. They are graceful as well as curious plants, and are suited for the bog-garden, where in a rich peaty soil they thrive. They are hardy in the south.

H. CALIFORNICA.—This plant is also known in gardens as Anemiopsis californica ; it is now, however, placed under Houttynia. It was first found by Nuttall in Upper California, and later by Douglas, who sent specimens home. It is perennial, on long stalks. The flower-stem very hairy, and bearing numerous small inconspicuous flowers on oval cone. This is surrounded by six large bracts, the inner three spotted with red, the others white. It is a useful plant for the bog-garden, easily managed, and flowers from June to August.

H. CORDATA is a perennial, with a creeping root, the stems 1 to 2 ft. high, the bracts resembling a corolla, and formed of four large pure white spreading leaves from the base of the cone of flowers. Thunberg found this curious plant in Japan growing in great abundance in ditches by the wayside. It is also found in Nepaul and Cochin China, where Loureiro found it only growing in gardens.

H. CHINENSIS, which was first named Gymnotheca chinensis by Decaisne, is a native of China, and appears to be a good plant, but we have not seen it in cultivation.—D.

Humea elegans.—A very graceful half-hardy biennial, 3 to 8 ft. high, having large leaves with a strong balsamic odour, and forming, when in flower, an elegant feathery pyramid of reddish-brown blossoms. It is highly ornamental as a back line to a long border, as a single specimen to let into the lawn, as the centre of a bed or vase, or in masses with other elegant foliage plants. Excellent effects may be obtained by combining it in masses or groups with other good plants. For cutting, its light feathery sprays are useful. The proper time to sow seed is July or August, as plants do not bloom the first year, and, if raised before those months, get too large to winter conveniently, often becoming leafless below, and the nakedness of stem detracts from their beauty. To prevent this, they should be well fed during winter with weak liquid manure, and be shifted into larger pots early in spring. Rich soil should be used, as they can only be kept healthy by good feeding. When planting them out in beds, which may be done by the first week in June, put under each a spadeful of rotten manure and mix it up with the soil. As the plants, when large, hold a good deal of wind, they must be securely staked to prevent their being damaged. Compositæ. Australia.

Humulus Lupulus (*Common Hop*).—This well-known vigorous twining perennial is admirable for bowers, especially when vegetation that disappears in winter is desired ; and is also valuable when allowed to run wild in almost any soil, among shrubs or hedgerows. A slender plant climbing up an Apple or other fruit tree, near the mixed border, looks well. Division.

Hunnemannia fumariæfolia.—An erect perennial, 2 to 3 ft. high, with glau-

cous foliage, like some of the Fumitories. Its flowers are large and showy, of a rich orange, and in form are like Eschscholtzia californica. They continue long in perfection. Being a native of Mexico, it is rather tender, and not satisfactory for open-air culture. Papaveraceæ.

Huntsman's-horn (*Sarracenia*).

Hutchinsia alpina. — A neat little plant, with shining leaves and white flowers, in clusters about 1 in. high, which is quite free in sandy soil, and easily increased by division or seeds. In an open spot, either in the rock-garden or in good free border soil, it becomes a mass of white flowers. Its proper home is the rock-garden, though in borders of dwarf and choice hardy plants it may be grown with success. Central and S. Europe. Cruciferæ.

Hyacinths.

Hyacinth, Cape (*Galtonia*).
,, **Feather** (*Muscari*).
,, **Grape** (*Muscari*).
,, **Musk** (*Muscari*).

Hyacinthus (*Hyacinth*).—The familiar garden Hyacinth is not generally included among hardy plants, though it is perfectly hardy, and, when treated as it should be, is most important. The parent of all the varieties is H. orientalis ; this is as hardy as a Daffodil, and its varieties are scarcely less hardy. Hyacinths in the open air are generally the refuse, as it were, of the forced bulbs of preceding years, but even these create a good display in suitable positions. To have a fine bloom of Hyacinths in the open air, however, it is essential that the bulbs should be good and sound, and due regard paid to assortment of colour, as tints massed by themselves are far more effective than a confusion of various colours. Now that bulbs may be obtained cheap there is no difficulty. The hyacinth will grow well in any good garden soil, but a light rich soil suits it best, and the bed should be effectually drained, for though the plant loves moisture, it cannot stand in a bog during the winter. It is advisable to plant early and deep. If a rich effect is required, the bulbs should be 6 in. apart, but a good effect may be produced by planting them 9 in. or even more apart. The time of blooming may to some extent be influenced by the time and manner of planting, but no rules can be given to suit particular cases. Late planting and deep planting both tend to defer the bloom, but make no great difference, and as a rule late bloom is to be preferred, being less liable to injury from frost. The shallowest planting should ensure a depth of 3 in. of earth above the crown of the bulb, but, generally speaking, they will flower better, be a few days later, and form stronger bulbs after

flowering, if there is fully 6 in. of earth over the crowns. No protection is better than dry litter, but a thin coat of half-rotten manure spread over the bed is safer if severe frosts are likely to come at any time before the growth has fairly pushed through. The bulbs need no further attention until the flower-stems are much advanced, unless very severe weather intervenes, when a mat or some oiled calico should be thrown over them. Waterproof calico is also useful in very wet weather, as too much water, especially when iced by February frosts and March winds, is by no means good for Hyacinths, which will thrive all the better for a waterproof covering. Hyacinths in the open air seldom require artificial watering, the natural moisture of the soil and the strength of the manure mixed with it being sufficient. When grown in beds they do not require sticks or ties; simply proper planting. After blooming, the bulbs, if intended to flower again, must be left undisturbed until the leaves wither or die. The bulbs should then be taken up, dried in a stack for a week or two, and finally placed in the sun for a few hours, the dry leaves being pulled off. Offsets should also be removed from the bulbs, and stored in dry sand or earth till the next planting time. Some take up the bulbs every year, but we have seen handsome beds that were not disturbed for several years. Offsets, carefully cultivated in rich light soil for two or three years, will produce many flowering bulbs, but, as a rule, imported ones are stronger. However carefully cultivated in England, they seldom flower again so well as in the first season, but it is a mistake to throw them away, as many people do. Selections for bedding in distinct colours of red, yellow, white, blue, or mixed are to be bought cheap.

H. AZUREUS.—Amongst the many beautiful hardy bulbs of the hyacinth class in cultivation at the present time, none can be compared with Hyacinthus azureus. It is perfectly hardy and amenable to ordinary culture, and is one of the earliest as well as the most charming of our early spring flowers. Indeed, one of its chief charms lies in the fact of its producing its numerous dense heads of pretty azure blooms long before we have ceased to expect falls of snow. Many a time have I gone in quest of flowers when the ground was white with its winter covering and have only been able to obtain flowers of this and some Snowdrops and Crocuses. In the case of a dwarf bulb of this kind flowering so early a handlight or bell-glass is simply placed over the clump on the approach of a storm, taking the cover off when all danger is past. The flowers stand any amount of frost without injury, and it is only the chance of their being broken with snow that renders a covering necessary. H. azureus is one of those half-way types that one finds so often in the Lily order. It has the habit, appearance, and many of the characters of a Muscari, with the campanulate flowers of a Hyacinth. It was first brought to the Vienna Botanic Garden by Kotschy in 1856, and it was some years after before it was in cultivation in England. The bulb is whitish, round, an inch or so in diameter, producing in great abundance stolons or bulbils from the base; the leaves, in number from six to eight to a bulb, are broad, strap-shaped, glaucous, and deeply channelled; the flower-heads dense, conical, upper flowers sky-blue, campanulate, the lower deep azure blue, and larger than those of the ordinary Grape Hyacinth. It is an excellent plant for the rock-garden, and even in situations where it gets densely shaded by overhanging plants; during the summer and autumn months we have had it in the greatest perfection.

Hyacinthus amethystinus.

H. AMETHYSTINUS, though nearly related to H. azureus, is quite different, and flowers a month later and at a time when there is a dearth of flowers of this description in the hardy bulb-garden. It

is one of the very old plants, and although cultivated by Miller as early as 1759, it was until recently a scarce plant. The great mistake with a bulb like this is to have two or three or even a dozen in a clump. Instead of the dozen it should be grown by the hundred, and no prettier sight can well be imagined than a large sheet of this graceful Hyacinth, with its loose racemes of vivid amethyst flowers. Its pleasing flowers are produced in May and June, when there is little chance of their being disfigured by frosts. Spain and Italy.—D. K.

H. candicans (*Galtonia*).

Hydrangea. — Handsome flowering shrubs, some well known in gardens, others neglected. In warm districts and on good warm soils it would be well worth while to grow many of the rarer and finer forms of the common Hydrangea, which always flowers best in seashore districts where its shoots are not cut down by frost or by the knife every winter.

H. HORTENSIA.—The common Hydrangea (H. Hortensia), from China, may be grown well out-of-doors, but is not always satisfactory in the midlands and the north, being liable to injury in winter. It likes a sheltered yet sunny spot and good soil. In order to get good heads of bloom, the Hydrangea must be pruned so as to induce the growth of strong shoots. In favoured spots it reaches a height of 6 ft., and as much through, making a beautiful object on a lawn or in the shrubbery margin. From time to time, and especially in recent years, other forms have been introduced and described, some of them as distinct species. Dr. Maximowicz, who has had opportunities of studying them in European and Japanese gardens, and also in a wild state, arranges the following forms under H. Hortensia :—

(*a*) H. HORTENSIA ACUMINATA.—A much-branched shrub, 2 to 5 ft. high ; flowers blue. It sports according to locality, and Maximowicz enumerates four such sports, viz.: In open places and in a rich soil it is stouter, with erect thick branches, large, broad, firm leaves, and larger flowers with somewhat fleshy sepals ; under cultivation it becomes more showy, passing into H. Belzonii. In woods and on the shady banks of rivers it grows taller with slender stems, pointed leaves, and much smaller flowers. In a very fertile soil, a stout plant with toothed sepals in the barren flowers, which are commonly of a blue colour. This is the true H. Buergeri of Siebold and Zuccarini's *Flora Japonica*, and the H. japonica cœrulescens of Regel. Sometimes it produces white or rose-coloured flowers, and then it is the H. roseo-alba, as figured in the *Flore des Serres*. These variations are all beautiful, but perhaps not constant.

(*b*) H. HORTENSIA JAPONICA.—This is the H. japonica of Siebold and Zuccarini's *Flora Japonica*, and the H. japonica macrosepala of Regel's *Gartenflora*. It is exactly like acuminata, save that the flowers are tinged with red, and the sepals of the barren flowers are elegantly toothed.

(*c*) H. HORTENSIA BELZONII.—A short stout plant, with beautiful flowers, the inner sterile ones being of an indigo-blue, and the enlarged sterile ones white, or only slightly tinged with blue, and having entire sepals. There is a sport of this in which the leaves are elegantly variegated with white. This was raised by Messrs. Rovelli, of Pallanza.

(*d*) H. HORTENSIA OTAKSA.—This has all the flowers sterile and enlarged. A very handsome variety with rich dark green leaves nearly as broad as long, and large hemispherical heads of pale pink or flesh-coloured flowers, very fine when well grown.

(*e*) H. HORTENSIA COMMUNIS.—This is the old variety with rose-pink flowers, commonly cultivated in European gardens. It differs from the last in being perfectly glabrous in its longer, less-rounded leaves, and in its deeper-coloured flowers.

(*f*) H. HORTENSIA AZISIA.—This is not in cultivation, but it differs remarkably from all of the preceding varieties in the sterile flowers, which have a very long, slender calyx tube.

(*g*) H. HORTENSIA STELLATA.—The chief character of this variety is in the flowers, which are all sterile and double. The variety in cultivation has pink flowers, but they are described as being either pale blue or rose, finally changing to a greenish colour, and distinctly net-veined.

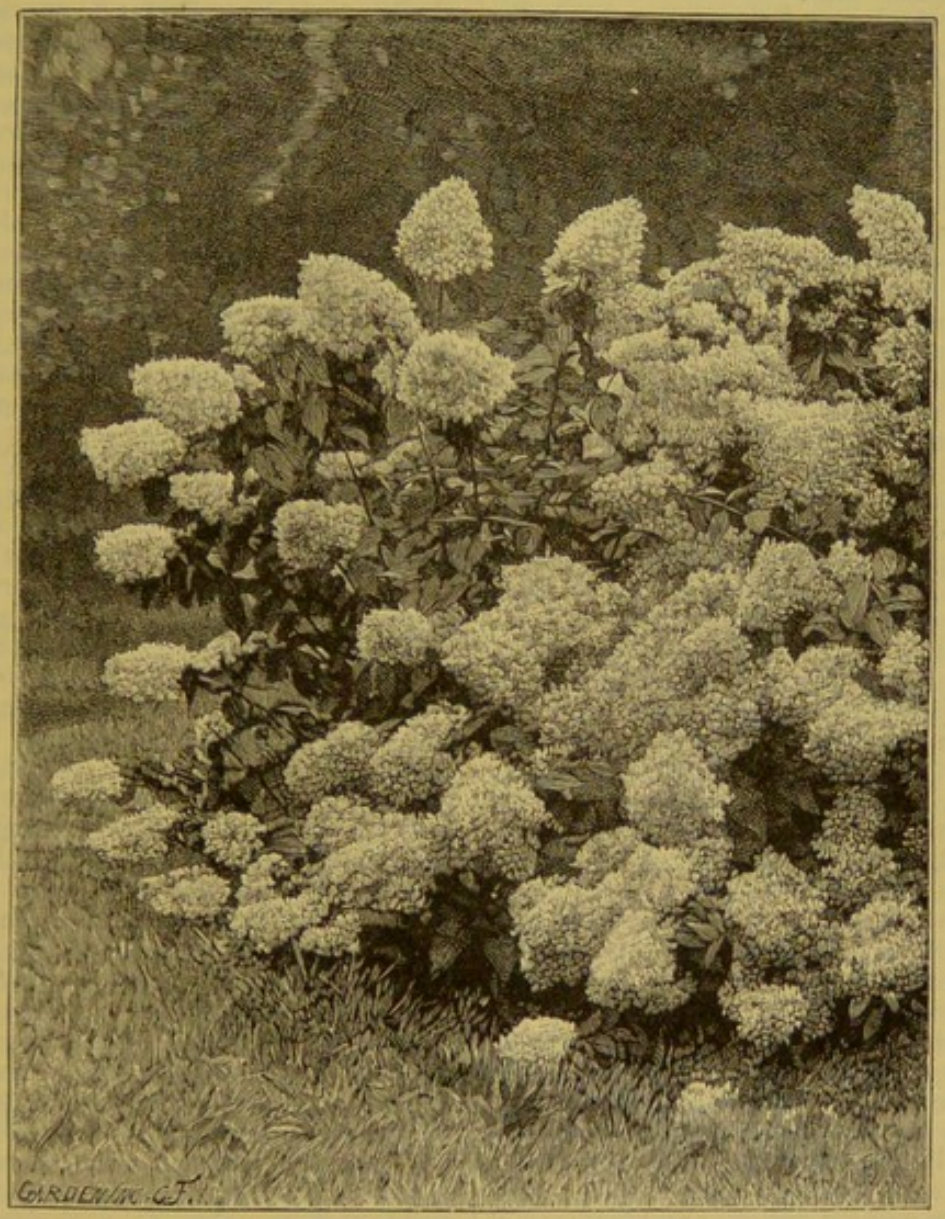
The white variety Thomas Hogg is a very fine one, now widely cultivated. Most of the above-named deserve the attention of all who have soil and climate suited to these shrubs.

H. PANICULATA (*Plumed Hydrangea*).—A shrub or small tree. According to Maximowicz, the only Japanese Hydrangea which becomes a tree. It grows as much as 25 ft. high, with a dense rounded head and a straight trunk 6 in. in diameter. But it more commonly forms a shrub a few feet high,

bearing enormous panicles of flower. With the exception of H. Hortensia, it is the commonest species in Japan, growing throughout that country both in the mountains and the plains, being more abundant in the northern parts, and it is said to vary very much. It is commonly cultivated by the Japanese. The massive clusters of pure white blossoms, terminating every shoot in autumn, are very beautiful, and there are few finer autumn effects than a well-flowered mass of this shrub. It must have a good soil, and be well mulched with manure in winter. To encourage the new growth the old and useless shoots must be cut away. It is from 3 to 4 ft. high, and spreads its branches gracefully and widely on all sides. The clusters are often 1 ft. long and half as much in diameter, but to get such flowers we must cultivate well and prune the shrubs hard down in winter.

H. HIRTA (*Nettle-leaved H.*)—A dwarf shrub, 3 or 4 ft. high, with slender hairy branches and Nettle-like leaves. The leaves and branches become nearly or quite glabrous with age. This, although not a showy species, seems to be a pretty, compact dwarf shrub, with numerous clusters of white flowers. A native of the mountains of Japan.

H. VIRENS (*Changing H.*)—This is a remarkable and elegant shrub, varying in height from 2 to 6 ft. The branches, straight, slender, and polished, bearing small, thin, deeply-toothed leaves, 2 to 3 in. long, yellowish-green above, and



The Plumed Hydrangea.

pale beneath, with small clusters of flowers, some of which are sterile. Altogether this is a pretty little shrub, and it is somewhat surprising that it has not been introduced, as it is common in the neighbourhood of Nagasaki, in Japan.

H. CHINENSIS (*Fortune's H.*)—Near the last, but of more robust habit, with leaves 3 to 5 in. long, and with cymes of flowers much larger. It differs from H. virens in the leaves being green on both sides, and in the enlarged sepals being nearly equal in size, much thicker, in fact almost fleshy in substance, and remaining on the branches until the fruit of the fertile flowers is ripe. This species was collected by Mr. Fortune in N. China.

H. THUNBERGI.—A small shrub with slender branches, small leaves, and small cymes of flowers. A few only of the outermost ones are sterile, and these are not more than ½ in. in diameter. According to the *Gardeners' Chronicle*, Messrs. Cripps, of Tunbridge Wells, flowered this species in June 1870. They describe it as hardy, though not so showy as some of the varieties of H. paniculata and H. Hortensia. The sterile flowers are of a delicate Peach-blossom colour. It is a native of the mountains of Sikok and Nippon, Japan.

H. QUERCIFOLIA (*Oak-leaved H.*)—This is a fine distinct kind, and though not showy like the popular kinds, it is an excellent shrub, and one I have noticed growing with fine vigour in sea-shore gardens. The leaves have a good deep colour in the autumn, and the flowers are beautiful, while old plants have a picturesque habit.

The whole family is in want of looking up by some enthusiastic admirers who have good soil and other favourable conditions. Although there is a large range of land in Great Britain in which Hydrangeas seem happy, there are other inland and cold districts in which they make poor growth, or are cut down so frequently that experiments come to little. I made a trial myself on a cool hill-side in Sussex without getting any bloom or a healthy growth ; but on the other hand we see, especially in the South of England and Ireland, beautiful results in warm valleys and on sandy and alluvial soils even from the use of one kind, so that I have often thought that any one who should take up the Hydrangeas in earnest, and grow them and group them well, might have some very interesting results.

Hydrocharis Morsus-ranæ (*Frog-bit*).—A pretty native water-plant, having floating leaves and attractive yellow flowers, and well worth introducing in artificial water. It may often be gathered from ponds or streams in spring, when it floats after being submerged in winter.

Hydrocotyle (*Pennywort*).—Small creepers, usually with round leaves and inconspicuous flowers. There are several kinds grown, but their only use is as a surface growth to the bog-garden. The most desirable are H. moschata and microphylla, two New Zealand species, and nitidula, though all of these are somewhat tender. The common H. vulgaris is rather too rank. Umbelliferæ.

Hymenophyllum (*Filmy Fern*).—Although these Filmy Ferns are hardy and beautiful, yet the conditions for their success are such that in a general sense they cannot be used with effect in the open air. Still, as two kinds are abundant in certain hilly districts, in moist, shady, or rocky situations, there is no reason why they should not be inmates of the garden, at least in hilly districts or in some places in the west or in the north.

Hymenoxys californica.—A hardy annual Composite, about 6 in. high, with a compact tufted habit, and bearing in summer a profusion of bright yellow Daisy-like blossoms. Sow in autumn in light dry soil for early flowering, and in spring for later bloom. = Shortia.

Hyoscyamus (*Henbane*).—Plants of the Nightshade family, of no garden alue. (H. physaloides = Nicandra.)

Hypericum (*St. John's Wort*).—Often handsome plants, for the most part shrubs and under-shrubs, but including a few herbaceous perennials and annuals. The Rose of Sharon (H. calycinum) is probably the most familiar, but there are other shrubby species of some beauty. Some of the perennials are good border and rock-garden plants, and the best of these is H. olympicum, one of the largest flowered kinds, though not more than 1 ft. high. It is known by its very glaucous foliage and erect single stems, with bright yellow flowers about 2 in. across. It forms handsome specimens that flower early, and its value as a choice border plant can scarcely be over-rated. It may be propagated easily by cuttings, which should be put in when the shoots are fully ripened, so that the young plants may become well established before winter. H. elodes is a pretty native plant suitable for the banks of pools and lakes. H. nummularium and humifusum, both dwarf trailers, are also desirable for the rock-garden. Owing to their dwarf compact growth, several of the shrubby species are well suited for the rock-garden.

Of these, the best are H. ægyptiacum, balearicum, empetrifolium, Coris, patulum, uralum, and oblongifolium. The last three are larger than the others, but as they droop they have a good effect among the boulders of a large rock-garden, or on banks. H. Hookerianum, triflorum, aureum, orientale are among the kinds having some beauty, but the species from warmer countries than ours are apt to disappear after hard winters. H. Moserianum is a handsome hybrid kind raised in France and well worth a place.

Hypolepis millefolium (*New Zealand Bracken*).—A very elegant New Zealand Fern, with a stout and wide-spreading rhizome, from which arise erect light green fronds, 1 to 1½ ft. high, very finely cut. There can be no doubt about its hardiness, as it has flourished for two or three years in a Surrey garden, and it is also quite hardy and vigorous in Mr. F. Lubbock's garden in Kent. It requires a sheltered nook and peaty soil.

Hypoxis.—Low-growing tender plants, mostly natives of South Africa. They have grassy foliage and yellow flowers, and are sometimes planted out in summer in the light sandy soil of warm borders.

Ianthe bugulifolia. — An interesting plant resembling a Mullein, having a rosette of leaves, from which springs an erect flower-spike, 8 to 12 in. high, thickly set with curiously-coloured blossoms of chocolate-brown and yellow. It is hardy, but not a true perennial, and it is therefore advisable to raise seedlings yearly in frames, and afterwards to transfer them to the border or rock-garden. Turkey. Scrophulariaceæ. = Celsia.

Iberidella rotundifolia. — A dwarf evergreen plant, with leathery leaves, olive-green, 3 to 6 in. high, flowering in early summer, the blossoms rosy-lilac, sweet, and numerous in racemes. Suitable for the rock-garden, succeeding best in gritty loam in deep fissures; being tap-rooted, it is not readily increased by division, but is easily raised by seed sown in small pots in a cold frame. European Alps. Cruciferæ. = Thlaspi rotundifolium.

Iberis (*Candytuft*). — Valuable hardy perennials and annuals, the perennials somewhat shrubby and evergreen, and precious as rock-garden, border, and margining plants :—

I. corifolia.—A dwarf kind 3 or 4 in. high, and covered with small white blooms early in May. Few alpine plants are more worthy of general culture either in the rock-garden or the mixed border—for the front of which it is well suited. It is probably a small variety of I. sempervirens, but is distinct and true to its character. Easily propagated by seeds or cuttings, and thriving in any soil. Sicily.

I. correæfolia is known by its large leaves, its compact heads of large white flowers, by flowering later than other common white kinds, and both the flowers and the corymb are larger and denser than in the other species. It is an invaluable hardy plant, and useful in coming into beauty about the end of May when the other kinds are fading. It is excellent for the rock-garden, the mixed border, and the spring-garden, and is well suited for the margins of choice shrubberies, and may be used as an edging to beds. Said to be a hybrid. Increased by cuttings, not coming true from seed.

I. gibraltarica, a beautiful plant, larger in all its parts than the other kinds, with flowers of delicate lilac in low close heads, in spring and early summer. It is a pretty species, but does not rival the best white border kinds. Its hardiness is doubtful, and it should, therefore, be planted on sunny spots in the rock-garden or on banks in light soil, and wintered in frames. Increased by cuttings, as it rarely produces seeds in our climate. Spain.

I. jucunda, distinct, growing about 2½ in. high, the leaves small, the flowers, in small clusters, of a pleasing flesh colour and prettily veined with rose in early summer. It does not possess the vigour of the common evergreen Iberises, but it is valuable as a rock-plant, and is fitted for association with dwarf alpine flowers on warm and sunny parts of the rock-garden in well-drained sandy loam, = Æthionema.

I. petræa, a pretty alpine species, 3 in. high, with a flat cluster of pure white flowers, relieved in the centre by a tinge of red, thriving among the rock-plants. Many cultivators cannot succeed with it, but it thrives in a well-drained position, with plenty of moisture.

I. semperflorens.—A shrubby plant, with large dense corymbs of white flowers, and not suited for border culture, but hardy enough to stand our winters when grown at the foot of a south wall or in a very sunny corner of the rock-garden. Under those favourable conditions it forms a pretty evergreen bush in bloom nearly all the year. Sicily and other Mediterranean islands.

I. sempervirens.—The common rock or perennial Candytuft, and as often seen as the yellow Alyssum and the white Arabis. Half-shrubby, dwarf, spreading, evergreen, and perfectly hardy, it escapes

where many plants are destroyed by cold; and in April and May its neat tufts of dark green change into masses of snowy white. Where a very dwarf evergreen edging is required for a shrubbery, or for beds of shrubs, it is one of the best plants known, as on any soil it quickly forms a spreading mass almost as low as the lawn-grass. Like all its relatives, it should be exposed to the full sun rather than shaded. Readily increased by seeds or cuttings. Its common garden name is I. saxatilis. I. Garrexiana is not sufficiently distinct to be worthy of cultivation; in fact, it and several other Iberises prove, when grown side by side, to be very slight varieties of I. sempervirens; it, however, seeds more abundantly, and is less spreading. I. superba, another variety, is of good bushy habit, and bears many large dense heads of pure white flowers.

I. Tenoreana is a dwarf species, with white flowers, changing to purple. As the commonly-cultivated kinds are pure white, I. Tenoreana will be more valuable from its purplish tone as well as its neat habit. It has not, however, the perfect hardiness of the white kinds, being very apt to perish on heavy soils in winter; but on light sandy soils and in well-drained positions on the rock-garden it is pretty. Where no rock-garden exists it should be placed on raised beds or banks, and is easily raised from seed; it should be treated as a biennial. S. Italy.

I. umbellata (*Annual Candytuft*).—This and its ally (I. coronaria) are the hardy annual Candytufts. They are varied in colour, and are among the most beautiful of annual flowers. They may be sown at all seasons, but, as in the case of most other hardy annuals, the finest flowers are from autumn-sown plants, which flower from May to July. They like a rich soil and plenty of room to flower freely. There are a great number of varieties, differing both in growth and colour. What are known as the dwarf or nana strain are neat and dwarf in growth, are abundant bloomers and showy. I. umbellata nana rosea and alba are two of the most distinct, being about 9 in. high; the dark crimson, carmine, lilac, and purple sorts, about 1 ft. high, are also fine. The Rocket Candytuft (I. coronaria) in good soil grows 12 to 16 in. high, with pure white flowers in long dense heads, and there is a dwarf variety of it (pumila), 4 to 6 in. high, forming spreading tufts 1 ft. or more across. The Giant Snowflake is also an excellent variety. These Rocket Candytufts require the same treatment as the common varieties.

Iberis gibraltarica.

Ice-plant (*Mesembryanthemum*).

Ilex (*Holly*). — Beautiful evergreen shrubs of northern temperate countries,

of which the most precious is our own native Holly, *Ilex Aquifolium*. It would be difficult to exaggerate the value of this plant, whether as an evergreen tree, as the best of all fence-shelters for our fields, or as a lovely ornament of our gardens; whether grown naturally or clipped as it must be to form fences; embracing also in its numerous varieties the most enduring of variegated shrubs known,—variegation in most other things being mere disease, whereas in the Holly it is quite consistent with health and beauty. No other shrub known to us may be so often used with good effect near the house and garden, and it will be clear, therefore, how much one should consider the common Holly in all its forms and ways. Valuable as many varieties are, probably none are quite so good as seedlings of the common kind. Good seedling plants are the easiest to transplant and establish. The art of grafting—most delusive as well as most curious of arts—should be carefully guarded against as regards Hollies. Hitherto the way has been to graft the many variegated kinds on the common Holly, and although we often see good results in that way, it is by far the safer plan to insist on the variegated and curious kinds being raised from layers or cuttings. Nurserymen are very apt, having large quantities of stocks of common things, to graft indiscriminately; and though time seems at first to be gained by it, it is dead against the cultivator in the end in almost every case. It will perhaps take a long time to recognise the immense superiority of own-root plants, but if purchasers inquire for and insist upon getting them, it will very much hasten progress. My own experience is that old plants grafted are extremely difficult to move with safety, and, generally, Hollies and other trees are best not moved when old. It is an expensive and troublesome business, and often a failure. Young healthy bushes, seedling or layer, will in a few years beat old grafted trees,—that at least is my experience. Very often old specimens from the nursery live for a number of years, but their appearance is deplorable, whereas healthy well-grown young plants, from 3 to 5 ft. high, when transplanted in May, are often beautiful from the first. No doubt healthy seedling plants might be transplanted at various times, but experience has proved that there is a distinct gain in transplanting Hollies in May; and if we transplant them carefully at that time we shall probably see good healthy growth the same year.

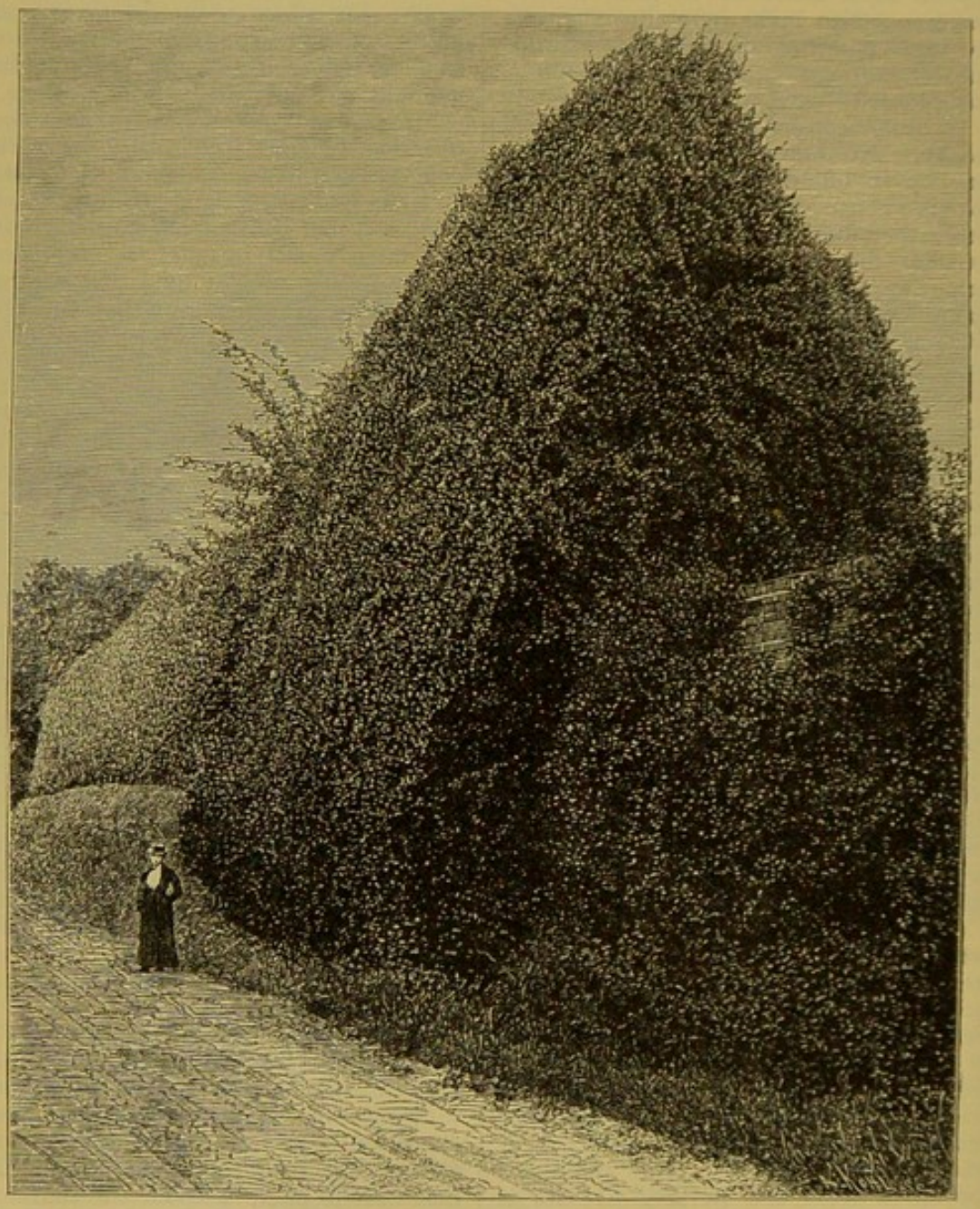
As regards the uses of the Holly, they are so many in the garden that it is difficult even to generalise them. As shelter in bold groups, dividing lines, hedges, beautiful effects of fruit in autumn, masses of evergreen foliage, bright glistening colour from variegated kinds; elegant groups of the most beautiful varieties,—every kind of delightful use may be found for them in gardens.

Mr. Shirley Hibberd, who was a very keen observer of the Holly, wrote as follows concerning it in the *Gardeners' Magazine*:

"The Holly will thrive in any ordinarily good soil that is free from stagnant water. We have found it make a surprisingly strong growth on clay land that had been improved by cultivation; but the finest Hollies usually occur on deep, fertile, sandy soils, and in districts where the yearly rainfall exceeds 25 in. It is accounted a slow-growing tree, and as compared with many trees that are less beautiful it is so, but its reputed slowness should never be allowed to stand in the way of its adoption where a substantial fence or noble undergrowth is wanted, and a reasonable time can be allowed for the trees to become established. From observations continued through a period of nearly thirty years, we have arrived at the conclusion that the average growth may be reckoned at 6 in. per annum. In a cool showery summer a hedge that has not been cut or interfered with will increase in height as much as 18 in., but in a dry hot season the increase will be scarcely appreciable, the growth of the most vigorous shoots amounting to only 2 or 3 in. It is certainly the finest tree we possess for a protective fence, whether to give a fine finish to the boundaries of a property or to screen off keen winds or exclude trespassers.

"HOLLY HEDGES.—Holly hedges are not only the most compact, impenetrable, and the handsomest of live hedges, but they may be safely employed under the shade of large trees, where Thorn and other hedge trees might not thrive. The best time to plant is about the middle of August, and thence to the end of September. The months of April and May are also suitable. To ensure a rapid formation of a good hedge, plant a double row of strong nursery trees, 3 to 4 ft. high, cutting back any side branches that interfere with close planting. When the planting is finished, spread a mulch of half-rotten manure 2 or 3 in. thick over the roots. They should not be touched with knife or

shears for at least three years, for every leaf removed will check the growth. The subsequent management will consist chiefly in cutting to line in the month of April, and the less severely this is done the better, unless severe primness is required, in which case the shears must be put into the hands of a man who may be trusted. It is far better, however, to rough prune with the knife. It is right to add, because it might not occur to the owner of a property, that noble Holly hedges may be secured by leaving the trees to grow entirely unchecked and without any pruning whatever. An instance of this has become familiar to the inhabitants of Hornsey, in the property known as 'Quaker's Folly.' In this case Holly hedges had been planted to prepare the land for building on, and, being for many years entirely neglected, they grew into gigantic and magnificent walls of the richest deep green verdure, solid to the ground line, very regular in general both as to height and breadth, but delightfully varied with undulations and bosses, chequering the surface with alternations of light and shade.



Holly Hedge at Bagshot.

"SELECTION OF VARIETIES.—In the selection of Hollies it will be well to bear in mind that the variety known as Scotica answers best of any plant near the sea. The variety known as Hodgins's is the most free in growth in a town garden, being less affected by smoke than most others. The most fruitful varieties are catalogued as fœmina, glabra, madeirensis, balearica, lutea, and flava. The most distinct and beautiful of the variegated kinds are Golden Queen, Silver Queen, Painted Lady, Broad-leaved Silver, Gold Milkmaid, Watereriana, and Argentea marginata. The following classification of Hollies in relation to their several characters will be useful :—

"MALE-FLOWERING HOLLIES.—Ciliata, Heterophylla, Latispina, Laurifolia, Tortuosa, Gold Tortuosa, Beetii, Cookii, Gold Cookii, Cornuta, Doningtonensis, Ferox, Ferox fol. arg., Ferox aurea, Foxii, Furcata, Ovata, Picta marginata, Golden Queen, Longifolia aurea, Longifolia argentea, Watereriana, Gold Few-spined, Silver Queen, Shepherdii.

"FEMALE-FLOWERING HOLLIES.—Angustifolia, Angustifolia aurea pendula, Angustifolia medio picta pendula, Balearica, Broad leaf, Dark shoot, Fisherii, Flavo fructo aurea, Fœmina, Golden Milkmaid, Glabra, Handsworthiana, Silver Handsworthiana, Heterophylla, Hodginsii, Latifolia argentea, Latifolia aurea, Lutea, Madame Briot, Madeirensis, Madeirensis nigrescens, Madeirensis variegata, Myrtifolia, Milkmaid, red berry ; Milkmaid, yellow berry ; Moonlight, Perry's weeping, Picta aurea, Platyphylla, Scotica, Watereriana, Weeping.

"HERMAPHRODITE-FLOWERING HOLLIES. — Shepherdii, Smithiana, Silver Queen, Heterophylla, Hodginsii, Laurifolia, Handsworthiana, Lutea, Flava, Scotica, Balearica, Rotundifolia."

By far the best of all known Hollies is our native Holly, but there are other Japanese and American kinds worth growing, such as Ilex crenata, and the fine I. latifolia. This, however requires our most temperate districts to thrive.

Illicium floridanum.—An interesting half-hardy evergreen shrub from the Southern States of N. America, bearing fragrant flowers of a deep red, like those of the Carolina Allspice. I. religiosum, also known as I. anisatum, from China and Japan, with pale yellow flowers, is also interesting, if not worthy of general culture. It may be grown against walls in warm localities.

Impatiens (*Balsam*).—The species of Impatiens that thrive in the open air are all annual and hardy, and sow themselves freely where they get a chance. The best are—the common I. glandulifera, which attains a height of 4 to 6 ft., and bears numerous flowers, varying in colour from white to rose. It will soon take possession of the shrubbery if not checked ; and it is seen to advantage in cottage gardens. I. longicornu is beautiful, and has the same habit as glandulifera, but the lower part of its helmet-shaped flowers is bright yellow, marked by tranverse lines of dark brown ; while the upper part is rose colour. I. Roylei is much dwarfer than the preceding, and has blossoms of a deep rose. I. cristata has light rose-coloured blossoms.

I. balsamina (*Garden Balsam*) may be grown in the open air, and makes a pretty display in warm places. The plants should be raised in a frame and transplanted. Soil which is too rich should be avoided ; but soil manured for a previous crop, and which has been well pulverised by forking, gives the finest flowers and a less sappy growth. Colours and markings in any good and valued strain include the following, and probably a few others, as some sorts sport continually : Pure white, buff-white, rosy-white, lavender-white, pale mauve, peach, pink, carmine, scarlet-cerise, crimson, violet, purple, purple-white blotch, scarlet-white blotch and others.

Incarvillea. — Interesting shrubby plants, hardy only in southern counties. There are few kinds. I. Delavayi has lately come from China, and has proved hardy, Mr. Thompson, of Ipswich, writing that it has been a year or more in the open border, having stood the full brunt of a zero temperature. The flowers are in corymbs, lengthening into racemes, and like those of Bignonia grandiflora, twelve or thirteen to a raceme, and delicate rose or rose-pink in colour, the throat yellow streaked with purple. Where it is not happy out-of-doors it is worth growing in the greenhouse. I. Olgæ was introduced earlier from Turkestan and has purple flowers ; it grows from 3 to 4½ ft. high.

Imperata sacchariflora.—A Grass, from the Amoor, bearing silvery plumes, but it is scarcely fitted for our flower gardens.

Indigofera Gerardiana.—A pretty plant which may be grown as a bush or against a wall, which it clothes gracefully with feathery leaves, towards the close of summer, bearing small Pea-like bright pink blooms. In cold districts it may be well to give it protection in cold winters if not against a wall, and the only attention it requires is close pruning in early winter. The kinds known as I. floribunda I.

coronillæfolia, and by other names, are either synonymous with I. Gerardiana or varieties of it. I. decora, from China, is sometimes grown against a wall in warm parts, but is much less hardy than I. Gerardiana, which comes from the Himalayas.

Inula.—Perennial Composites, few of which are important for the garden. I. Helenium (Elecampane), a vigorous British plant, 3 or 4 ft. high, with a stout stem, large leaves, and yellow flowers, is well suited for planting with other large-leaved plants, or in isolated specimens on rough slopes or wild places, in good soil. I. Oculus Christi grows 1½ to 2 ft. high, and bears orange flowers in summer. I. salicina, montana, and glandulosa are similar, the last being the finest. Easily propagated by division or seed.

Inula glandulosa.

Ionopsidium acaule (*Violet Cress*).—A charming little Portuguese annual about 2 in. high, whose dense tufts of violet flowers spring up freely where plants of it have existed the previous season. Its peculiar beauty makes it useful for various purposes. On the rock-garden, associated with even the choicest of alpine plants, it holds its own as regards beauty, and never overruns its neighbours, and it is particularly suitable for sowing near pathways or rugged steps, growing freely in such places ; indeed it would even flourish on a hard gravel walk. It flowers a couple of months after sowing, and often produces a second crop of blossoms in the autumn. Portugal and Morocco. Cruciferæ.

Ipomæa (*Morning Glory*).—Beautiful, slender, twining plants of the Convolvulus family, for the most part tropical. A few succeed in the open air when treated as half-hardy annuals. The most popular of these is—

I. purpurea, or Convolvulus major as it is called, which is too well known to need description, as it is one of the oldest cultivated plants. Its varieties are numerous ; there are white, rose, and deep violet varieties, while Burridgei is crimson, Dicksoni deep blue, and tricolor striped with red, white and blue. A mixed packet of seed would contain most of these. This beautiful though common plant deserves much attention, as its uses are various. It may be used for the open border, for festooning branches, for covering arbours, trellises, and the like, or for rambling over shrubs, growing freely in any good ordinary garden soil. Seeds should be sown in heat in early spring, and the seedlings transplanted in May as soon as large enough. In some localities seed may be sown at once in the open border, but as a rule plants raised under glass succeed best. It is known also as Pharbitis hispida. Tropical America and Asia.

I. hederacea (*Ivy-leaved Morning Glory*) is somewhat similar to the common Morning Glory (I. purpurea), but has lobed leaves like Ivy. Its flowers, too, are smaller, of a deep blue striped with red. The varieties grandiflora (light-blue), superba (light-blue, bordered with white), and atroviolacea (dark-violet and white) are all worth cultivating, and so are the Japanese variety, Huberi, and its variegated-leaved form. The Ivy-leaved Morning Glory is somewhat hardier than I. purpurea, and seeds may be sown in the open border in April, in light rich soil, where it will flower from July to September. It is also known as I. Nil.—North America. Other kinds of Ipomæas for open-air culture are I. rubrocœrulea, a half-hardy annual, and I. leptophylla, a hardy perennial from North America, but neither is so pretty as those mentioned above.

Ipomopsis.—Graceful biennials from California, thriving in light, dry, and warm soils in the milder districts. There are three kinds ; each forms a tuft of finely-

cut feathery foliage, and has slender flower spikes from 2 to 3 ft. high thickly set with flowers that open in succession. In I. elegans the flowers are scarlet and thickly spotted, and in I. superba they are much the same, while in the rosea variety they are a deep pink. The seeds should be sown in spring in pots in the open border in ordinary soil. During the first year the plants make growth, and early the following summer they flower. If planted out to stand the winter it is advisable to give a little protection. Other kinds mentioned in catalogues belong to Gilia, of which Ipomopsis is really a synonym. On light soils early autumn-sowing should be tried. These plants are very seldom well grown.

Iresine.—Dwarf half-hardy plants, remarkable for their foliage, and much used in the flower garden with other tender plants in summer. There are two types, from which have sprung several varieties. I. Herbsti grows from 1 to 2 ft. high, and has crimson stems and rich carmine-veined foliage, the brilliancy of which continues until late in autumn, and is more effective in wet than in hot dry seasons. It requires a moist rich soil, and is readily increased by cuttings taken in September and wintered in a greenhouse. In early spring the plants should be repotted, and grown on in heat, and fresh cuttings taken in March and April will make them fit to put out in May. I. brilliantissima and Wallisi are two varieties possessing more brightness of colour in their foliage. Lindeni is quite distinct from the foregoing, having more pointed leaves, which are of a deep blood-red. It is compact and graceful, and bears pinching back and pegging down to any height. It makes a good edging plant, and requires the same treatment as I. Herbsti. Amarantaceæ.

Iris (*Flag*).—One of the most beautiful of all known flowers, numerous in kind and wonderfully varied in beauty. By some, Irises have been compared to Orchids, and those who delight in singular and beautiful colour, and to whom greenhouses and hothouses are denied, may find a substitute for Orchids in Irises. The genus is represented in our gardens by species for the most part hardy and possessing a considerable diversity of habit and colour, varying in height from a few inches to 6 ft. They may be conveniently divided into two classes—those with bulbous roots, which are now called Xiphions, and those (the greatest number) with creeping stems. In treating of culture it is well to consider these separately.

Ionopsidium acaule.

The bulbous kinds should have a warm and sheltered situation, such as the protection of a south wall, and succeed in almost any light garden soil, but prefer one that is friable, and sandy, not too poor, but enriched with rotten leaf-mould and manure. Sun they must have, and the shelter must be without shade. They need an autumn drought to ripen, and a dry soil in winter to preserve the bulbs and keep them at rest, but in spring, when the leaves are pushing up, they love moderate rain. These observations apply to the Spanish and English Irises as well as the rarer bulbous kinds. The great point is not to meddle with the bulbs as long as the plants are doing well, and, when the soil is exhausted and it is necessary to transplant, the bulbs should not be allowed to become dry or shrivelled. It is advisable to place a thin layer of

Cocoa-nut fibre refuse or some similar material for protection during severe weather, and to prevent the flowers from being bespattered by mud during heavy rain. Some kinds produce seeds very freely in some seasons, which should be carefully collected, and when well ripened sown at once. This will be found a ready way of increasing the stock, as they will make strong flowering bulbs in about three years.

Most of the non-bulbous Irises like rich soil, the coarser and stronger forms relishing even rank manure, but to the more delicate ones this is almost poison; and all indeed thrive the better if the manure is given in a decayed state. If it is well rotted they can hardly have too much of it. As regards moisture, they vary a good deal. The common I. Pseudacorus and many of the spuria group thrive best in the damp, others, again, hate the damp—at least in winter—and stand considerable drought in summer. The condition that suits most is comparative dryness in winter and an abundance of water in summer. Unfortunately, this is the reverse of what they generally get, and they also vary a good deal as to the nature of the soil they like best, some preferring a deep, somewhat stiff, but rich loam, and their long thong-like roots reach down an amazing distance, while others prefer a lighter, looser soil, proportionately richer in vegetable matter. Like a good many other plants, the flowering season of the "Flags" is not long enough to please everybody; but, if cultivated where they are not in the way when out of flower, this is not a drawback. The more vigorous kinds are suited for planting among large shrubs, which ought to be wider apart than they generally are in shrubberies; and may be enjoyed in tufts near water, in isolated groups on the Grass, and also on mixed borders and beds. In the smallest gardens, where there is not space to plant them in these various ways, one of the best ways would be to establish healthy tufts in the fringes of the shrubbery. Another good way is to place them here and there in carpets of low evergreens, above which their flowers would be seen in early summer. Tufts of the finest kinds look very beautiful here and there among dwarf Roses. The flowering season of the Iris extends over the greater part of the year. The following selection of kinds for our gardens is arranged in alphabetical order for convenience of reference.

I. acutiloba. A Cushion or "Oncocyclus" Iris, a native of the Caucasus, still rare in cultivation. The slender, narrow leaves are curved over, the tip bent to the ground. The flowers probably vary greatly in colour, but are of quaint beauty.

I. alata (*Scorpion Iris*).—A beautiful bulbous kind with fine large blossoms, the ground colour delicate lilac-blue, with showy blotches of bright yellow, copiously spotted with a darker hue. The foliage, which appears with the flowers, much resembles that of a Leek. I. alata generally commences to bloom in October, and, if the weather is not too severe, flowers also about Christmas time. It is easy to grow, requiring a warm, dry, sunny border; the bulbs should be planted in autumn in ordinary garden soil. The greatest drawback to its culture is that the flowers are spoilt by soil-splashings during heavy rains, which may be prevented if the bulbs are planted among Stonecrop, or Mossy Rockfoil, on sheltered banks. The beauty of the flowers may also be much preserved if a hand-light is placed over them during severe cold, snow, or wet. There are several varieties differing either in size or colour of the flower.

I. asiatica (*Asiatic Flag*).—This has been found in Asia Minor, and spreads from there to Turkestan. The plant does not grow to the size and dimensions which a clump of I. germanica soon attains when left alone for a couple of years, but the handsome flowers are much larger, the lip especially being very long and broad; its colour is a very fine pale purplish-blue, the standards a little paler than the falls. This class of Irises is not difficult to grow, being sufficiently hardy to withstand any cold, although sometimes when there is any fresh manure around the roots or when the soil is too moist the rhizomes are apt to rot off suddenly.

I. atro-purpurea.—This Iris may be considered as coming within the iberica group, as the foliage is not unlike that kind, and the stem, though always of some length, never rises very high. The flower is somewhat small, and for the most part of deep purple colouring. The plant varies somewhat, one variety being called "Odysseus."

I. aurea (*Golden Flag*).—This is a fine Iris, a native of the Himalayas, with golden-yellow flowers of great beauty. This kind does best in moist positions, and resembles I. Monnieri, the chief difference being in the plaited or crumpled margins of the falls of the flowers. It is a tall stately kind, hardy in the coldest soils, and one of the best perennial flowers we have. It does well among shrubs, and groups of it so placed are very handsome. There is

no uncertainty about its culture, and it is increased easily by division of the root-stock and by seed if need be.

I. Bakeriana.—This is one of the most beautiful of the bulbous early spring flowering Irises. It comes from Armenia, and the flowers which smell like violets remind one strongly of those of the netted Iris (I. reticulata). The colouring varies, the yellow streak on the fall, which is conspicuous in some of the forms, being almost entirely absent in others ; the size

Iris asiatica.

and number of the violet spots and the breadth of the rich violet edging as well as the size and brilliancy of their tints vary in individual flowers. The varieties do not, however, seem at present to differ enough to warrant special names. It blooms quite early in the year, and is delightful in pots. Its near ally is I. reticulata, if it be not a variety of that species, but it differs in colouring, and has no ridge or crest on the fall.

I. Barnumæ. This Iris, a native of the hills of Kurdistan, belongs to the iberica group. The flower is smaller than that of that Flag, and both falls and standards are vinous red-purple marked with darker veins, the standard being lighter in colour than the fall and its veins more conspicuous. The horizontal style is of a brownish-yellow colour marked with red-purple spots or splashes, and bears somewhat triangular crests with finely serrated edges. There is a yellow variety described by Prof. Foster as "an exceedingly charming plant," and it has the additional virtue of being deliciously fragrant, the odour not being unlike the Lily of the Valley.

I. biflora.—A handsome Flag, 9 to 15 in. high, bearing large violet flowers on stout stems. Similar to it are I. subbiflora and I. nudicaulis, which is one of the best of the dwarf Flags, from 4 to 10 in. high ; its flowers large, of a rich violet-blue, four to seven on a stem in early summer. It has the vigour of the German Iris and the dwarfness of the Crimean Iris, but is much sturdier, and is suited for the margin of the herbaceous border and for the rock-garden.

I. Bismarckiana.—This "Cushion" Iris, found in Lebanon, is little known as yet, but it is described as having a flower as large as I. susiana, with gray falls and sky-blue standards.

I. caucasica (*Caucasian Iris*).—This charming kind is hardy in the open air, producing its pale greenish-white flowers in February and March. It has been confounded with a plant known as I. orchioides, which has golden-yellow flowers.

I. chamæiris (*Early Blue Flag*) is a dwarf Flag, similar to pumila in growth, and with deep blue flowers. This is an excellent kind to mass together, and there are several varieties. I. olbiensis is synonymous.

I. cristata (*Dwarf-crested Iris*) is a charming dwarf Flag, with, as a rule in spring, flowers of a delicate blue and richly marked, but they appear at other seasons, especially in autumn. It is a delicate plant, 4 to 6 in. high, with broad leaves, and throws out long slender rhizomes, wholly above ground. The way to manage it is to plant it among stones, with little or no soil—this a warm sandy loam or peaty earth.

I. Danfordiæ.—This handsome early bulbous Iris was first described as Xiphion Danfordiæ, then as Iris Danfordiæ (Boissier), and lastly as I. Bornmülleri, by which it is known in many gardens. It comes from the Cilician

Taurus, and most nearly resembles I. persica in general habit; the flowers being bright-orange with brown spots, and the three inner segments are almost entirely absent, taking the form of mere tiny

Iris cristata.

threads or filaments. The three outer ones are of good size and substance with a faint beard down the claw. In the locality where it occurs, it was found in full flower near to the melting snow. It is perfectly hardy and a charming species for the rockery.

I. ensata (*Sword-leaved Flag*).—A rare species from temperate Asia, with purplish-lilac flowers, the falls enriched with yellow and veined at the base. It blooms in summer, and has several synonyms as I. fragrans, I. longispatha, and I. Pallasi. A variety called oxypetala has blue and lilac flowers.

I. filifolia, though closely allied to the Spanish Irises, differs in its funnel-shaped flowers, of a reddish-purple, with a large golden blotch on the fall. It was first discovered in sandy calcareous rocks on the Sierra Bermeja. The leaves are very narrow, the flowers one, rarely two to a stalk, of a distinct violet-purple, and each from 2 in. to 3 in. in diameter. I. filifolia var. intermedia, or latifolia, is a Tangerian Iris of great beauty, and of recent introduction, with deep-purple velvety flowers. I. filifolia, which has been largely distributed as I. tingitana, requires protection, and should be grown in a cold frame if possible. In mild winters it will do in the open, but its flowering is uncertain.

I. florentina (*Florentine Flag*).—This species, called white Flower-de-luce, or Flower-de-luce of Florence, by the old writers, is certainly one of the finest white-flowered Flags. Its large delicate flowers last a considerable time for an Iris, and are nearly 6 in. deep, faintly tinged with blue, the falls veined with yellow, and green at the base, with an orange-yellow beard, whilst the broad leaves are rich dark-green. A native of Southern Europe, flowering during May and June. The variety albicans is almost pure white, with the other characters of the above, and flavescens is nearly allied.

I. fœtidissima (*Gladwin*).—A British plant, 1½ to 2 ft. high, with lead-coloured or bluish, and rarely yellow flowers. A variety with variegated leaves forms a pleasing border-plant, and is an excellent house-plant. The common green form is worth growing in semi-wild places as its brilliant coral-red seeds, which are plentifully produced in autumn in gaping capsules, are effective. Seeds, scattered in semi-wild places, will soon spring into plants, and the plant may also be increased by division. It is happiest in groups in the roughest part of the pleasure-grounds.

I. Fontanesi.—This is one of the bulbous Irises, a native of Oran, in Western Algiers, with deep lilac-purple flowers. It has not yet, we believe, been introduced to cultivation.

I. germanica (*Common German Flag*).—This is common in gardens, and is one of the few plants that succeed well in London. I. nepalensis is a charming form from India, with flowers from 5 in. to 6 in. long, the standards rich dark violet-purple, the falls intense violet, striped white and purple at the base, with yellow and reddish markings. It flowers during May and June, and may be increased quickly. As in the case of I. pallida, there are several garden forms, few, however, of value, unless it be one called De Bergi, which has intense violet-purple (almost black) flowers. The German Flags flourish in ordinary garden, dry gravelly soil, or sandy banks, for which they are well suited. A good selection of varieties of the German Iris, all splendid garden flowers, would be composed of Atro-purpurea, rich purple; Aurea, golden-yellow; Bridesmaid, pale-lavender and white; Calypso, pale-blue, with white and lilac veins; Celeste, rich lavender, with

orange beard ; Gracchus, very dwarf and free, the standards lemon and falls pale-yellow ; Mme. Chereau, white standards and falls with edging and feathering of violet ; Queen of May, a beautiful variety, the standards rose-lilac, the falls of the same colour, with veins of yellow ; Rigolette, golden-yellow, falls deep crimson ; and Victorine, the standards white, with purplish-blue blotches, the falls violet-purple with white reticulation.

I. Gatesi.—This is a remarkably handsome Flag from Armenia, and very near to susiana, but the rhizome is more compact, and the foliage smaller, shorter, and narrower, and of a darker green than in susiana. The stem is taller, 1½ ft. or even 2 ft., and the flower when well grown larger than that of susiana. The prevailing colour of the specimens so far cultivated is, when the flower is seen at a distance, a soft delicate gray, brought about by very thin clear veins and minute dots or points of purple on a creamy-white ground, the dots being predominant on the fall and the veins on the standard. The ripe capsule is as much as 5 in. in length.

I. Histrio.—This beautiful bulbous Iris, when peeping through the ground in winter or early spring, reminds one of I. reticulata, but it is rather taller, and its sweetly-scented flowers are broader and more conspicuously spotted or blotched, the colour being rich bluish-purple, flushed towards the base of the petals with rose-pink, whilst the markings are of the deepest purple, relieved by a crest of gold. It succeeds under the same treatment as I. reticulata, and though a native of Mount Lebanon, is perfectly hardy, but during severe frosts cover the bulbs with a thin protective material, such as Cocoa-nut fibre refuse.

I. Histrioides.—One of the most charming of the spring flowering bulbous Irises, requiring the same treatment as I. reticulata, but has a better constitution than this species or any of its varieties. So far, though it has only been in cultivation a few years, it has proved of easy culture. The flowers are larger than those of any of the group, the falls mottled with white and rich lilac both on the claw and on the broad rounded blade. It is a native of Eastern Anatolia, and blooms in early March.

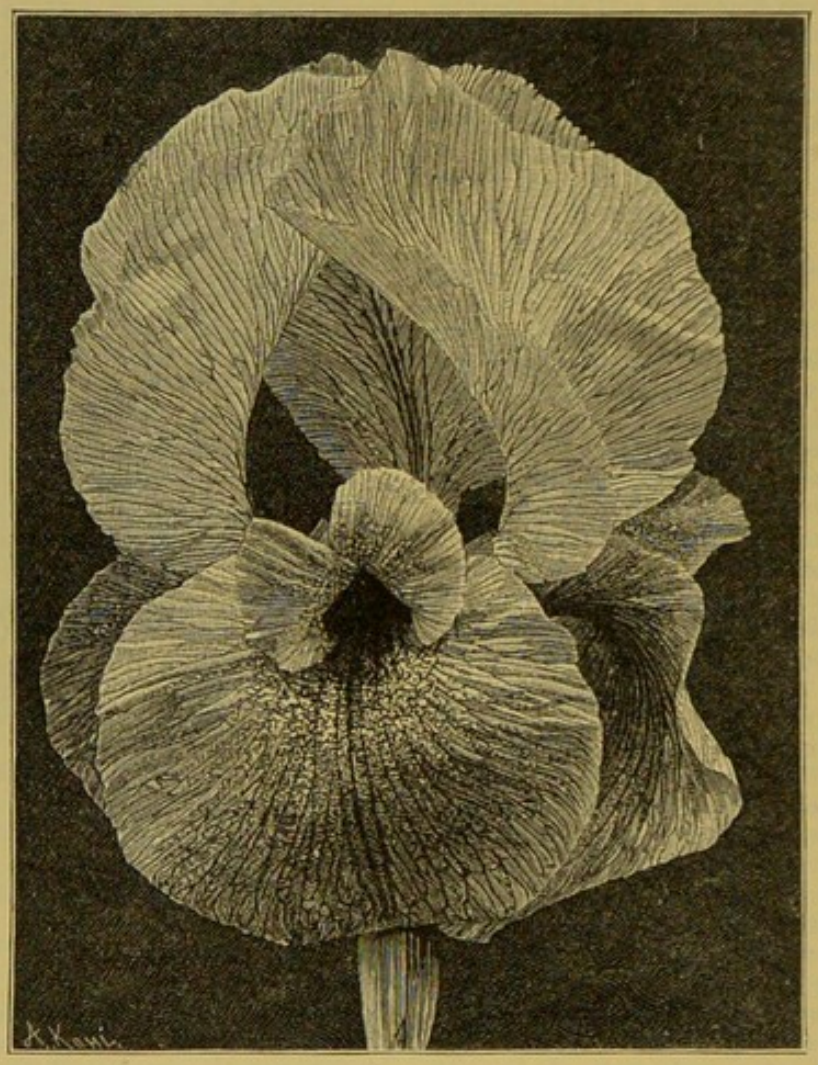
I. iberica (*Iberian Flag*).—One of the most singular and handsome of the Cushion (Oncocyclus) Irises. The flowers are large, the standards white, pencilled and spotted with purple or violet, while the falls are veined with dark purple or purple-black on a yellowish ground, with a conspicuous dark blotch in the centre. This is the colour of the commonest form, but there are several, and one, ochracea, is very distinct. I. iberica is perfectly hardy and thrives best in a rich fibrous loam, where it can send its long roots deep into the soil. The rhizome does not require to be planted deep, but only just below the surface as in most cases the roots perish when planted deeply, whilst during the winter comparative dryness is important. Coarse river sand should be used, the rhizome being planted completely in it, and by this means it is kept rather dry during the winter and great assistance is given to the plant in summer, as the young shoots can easily force their way through. This Iris can be easily multiplied by division of the

Iris fœtidissima (Gladwin).

rhizome, is admirably suited for the rock-garden, or for the select border, and, when better known, it will find a place in every garden. It flowers in spring, and though the blossoms are of somewhat short duration, their extreme beauty atones for this drawback.

I. juncea (*Rush-leaved Flag*) is the loveliest of the bulbous Irises, graceful in habit and with bright golden-yellow flowers of a delightful fragrance, whilst it can be grown almost as easily as the English Irises. It requires a light, rich deep soil, and will be all the better if planted where it can be kept fairly dry during winter. A native of Spain, North Africa, &c.

I. Kæmpferi (*Japanese Flag*).—The many varieties in cultivation under this name have sprung from I. lævigata and I. setosa, and form a fine race of garden plants, whilst every year many beautiful sorts are added, chiefly from Japan, though many seedlings have been raised in this country. The flowers are variable in size and colour, some measuring as much as 9 and 10 in. across. The varieties of I. setosa differ from those of I. lævigata in having broader and less-drooping petals, and the three inner petals are often of the same size as the outer, so that the flower is symmetrical. I. Kæmpferi will grow in almost any soil, but is best in a good loam, with peat added to it, though this is not so much for nourishment as to retain moisture during the hot and dry summer months, for this Flag likes moisture, and its numerous roots will often go 2 ft. deep in search of it. It dislikes shade, preferring a warm sunny position, being especially happy when planted by the margin of a lake, pond, or stream. Two-year-old seedling plants of it bloom in June and July, and amongst them will be found an endless variety of colours from white to the richest plum, the deep blues being very rich. The mottled flowers are objectionable, and unfortunately these are common, but they are poor in effect, nothing like so handsome as the self-coloured kinds, nor do we care about the more double varieties. In these the natural grace and fine outline of the flower are lost. When transplanted this moisture-loving Flag does not bloom well until the second season after planting. Propagated by division or seeds, which should be sown as soon as gathered either in pots or in the open ground; they will vegetate in the following spring.



Iris Gatesi.

I. Kolpakowskiana.—A close ally of I. reticulata and introduced from Turkestan, is perfectly hardy in the open air,

flowering about the same time, and effective in groups. The chief difference from the netted Iris is in the bulb and leaves, which are narrow, linear, deeply channelled on the inner face, with a central band or rib like a Crocus leaf, and pale-green without the glaucous tint usual to this group. The falls are deep violet-purple, with a beardless bright yellow keel from which are purplish branchings, whilst the standards are pale self-lilac with creamy anthers.

I. Korolkowi.—This is a native of Central Asia, the root resembling that of the Cushion Iris, but is less fleshy. The leaves are tall, narrow, and upright, the scape, which is about 1 ft. or so high, bearing two large flowers of delicate shades of gray and brown, and beautifully veined. The plant should be grown in the same way as the "Cushion" Irises.

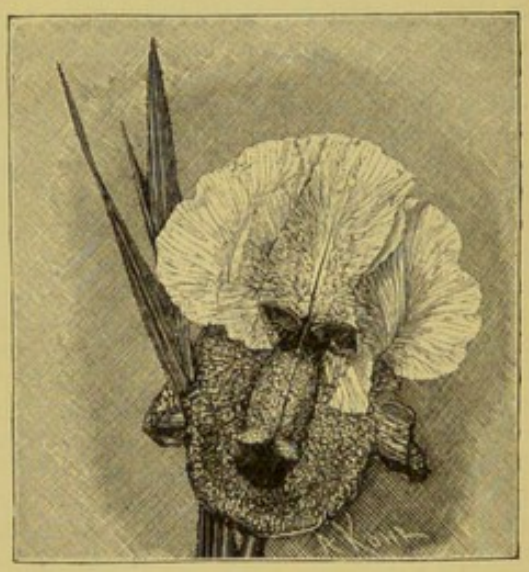
I. lacustris (*Dwarf Lake Iris*).—A dainty, quite hardy Iris, with beautiful sky-blue flowers in spring and again in the autumn. It belongs to the rhizomatose group, is free both in growth and bloom, and succeeds in full sun and in sandy soil.

I. Lorteti.—This Iris comes from South Lebanon. In general features it is near to I. Sari, but its wonderful colouring makes it, perhaps, the most beautiful Iris in the world. "In a plant flowered by myself this summer (1893)," writes Prof. Foster, "the falls showed a creamy-yellow ground marked with crimson spots, concentrated at the centre into a dark crimson signal, while the standards were nearly pure white, marked with very thin violet veins, hardly visible at a distance. I learn that the plants imported by M. Max Leichtlin show considerable variation in colour; apparently, however, the 'note' of the plant is a peculiarly charming combination of crimson spots and blue or violet veins on a white or creamy-yellow ground.

"I imagine that, when well grown, the flower will be found on the whole rather smaller than that of a well-grown I. susiana. When the plant is well grown, the foliage seems to be larger, longer, and broader than even that of I. susiana."

I. lupina (*Wolf's Ear Iris*).—This is from Armenia and Central Asia Minor, and resembles both I. susiana and I. iberica. The rhizome is compact and the foliage, though somewhat variable, is dwarf like that of I. iberica, and 3 in. or so in length. The flower, borne on a stem varying from 1 in. to 6 in. or even more in length, differs in form from both I. susiana and I. iberica in that the fall is distinctly lance-shaped, whilst the colouring consists of irregular brownish-red veins on a yellow or greenish-yellow ground, the red of the veins often merging into purple. The claw of the standard is furnished with quite numerous hairs. Though the colour is always the result of a contrast between a yellowish ground and a red-brown, more or less purplish veining and mottling, the exact result varies much in different plants. In its native home it is called "Wolf's-ear" to which indeed an opening bud presents no small likeness. Hence Prof. Foster called it I. lupina.

I. Mariæ, which belongs to the iberica group, was discovered on the confines of Egypt and Palestine. The rhizome is compact, rather slender, the foliage being not unlike that of iberica, but narrower. The flowers, on a stem of about 6 in. high, are somewhat smaller than I. iberica, of a



Iris iberica.

uniform lilac colour, though marked with veins, but the uniformity is broken by a conspicuous "signal" patch of deep purple on the fall. The standard is larger and more rounded than the fall, whilst the claw of the latter is beset by numerous deep purple hairs, which, scattered at the sides, are crowded together along the middle line more after the fashion of the beard of an ordinary bearded Flag.

I. Meda is a native of Persia, and has a small, slender, and compact rhizome. The leaves are narrower than I. iberica, and for the most part erect, the stem being about 6 in. in length, more or less, but seems to vary a good deal. The fall, which spreads horizontally, is narrow and pointed, the blade being sharply curled back on itself. The standard is rather larger than the fall, and the style, which

lies close down on the claw of the fall, is narrow, ending in two small triangular crests.

I. missouriensis (*Missouri Flag*).—This was found in the Rocky Mountains, and is a good kind, graceful, and with delicate purplish-blue flowers, which are valuable to cut in the month of May. It grows well in a border of good soil, and is not seen as often as one might expect in gardens.

I. Monnieri.—A noble Flag, distinct from any other in cultivation, the leaves being dark-green, and the flower-stem nearly 4ft. high, whilst the outer divisions of the flowers, which are very fragrant, are recurved, and of a rich golden-yellow, margined with white. It is by no means common, and blooms later than most of the other species, in most seasons even after the varieties of Kæmpfer's Flag. It is a native of Crete, and succeeds best in rather moist soil, whilst increased easily by division or seed.

I. Monspur is a seedling, raised by Prof. Foster, between I. Monnieri and I. spuria, and is a very beautiful plant. The variety Notha differs from I. spuria in being altogether larger, considerably more rigid both in stem and leaves, and with a much longer spathe valve. This plant is said to be found in the salt marshes of Siberia. When grown well, by no means difficult in ordinary garden soil, it is most effective in full flower. Some of the varieties, such as stenogyna, sub-barbata, &c., have been bandied about between I. spuria and the nearly allied I. Guldenstaedtiana, but the simpler way is to call them all varieties of I. spuria.

I. neglecta is amongst the commonest Flags in cultivation, and one of the tallest growing species, having given rise to numerous garden varieties. Its flowers rarely measure more than 2½ in. across, the standards being of a pale blue, with darker shading, and the much reflexed falls are of a deep blue, veined with purplish-red; the crest or beard is bright yellow, and very striking.

I. ochroleuca (*Yellow-banded Flag*).—There are few handsomer or more stately Flags than this. It is an old plant in our gardens, but never seems to have become common. The foliage is slender, about 4 ft. long, and comes up in a most graceful twist. The spikes usually bear four or five flowers, white or nearly so, with large yellow blotch on the fall, and some reach nearly 6 ft. in height, strong clumps producing four or five. It does not seem particular as to moisture in the soil, and few Flags will thrive better or give more satisfactory results in the ordinary mixed border, where its large flowers and luxuriant foliage present a fine appearance. There is a variety called gigantea

Iris ochroleuca.

which has larger and finer flowers, but differs in no other way. I. Kerneriana differs only in its smaller flowers and much narrower leaves.

I. pallida (*Great Purple Flag*).—This

is a variety of the common German Flag and one of the stateliest and most beautiful of the genus. When in full vigour, the spikes will reach 4 ft. in height, with a succession of from eight to twelve of its large pale-mauve or purple flowers, scented like the elder. It is known also as the Turkey Flag, and there are forms of it such as the Dalmatian and also Mandraliscæ, which have deep blue flowers. It is a fine border-plant, and charming in large groups.

I. paradoxa.—This is a singular Cushion or "Oncocyclus" Iris, a native of West Persia and the Caucasus, and fitly called "paradoxical." The fall is reduced to a narrow strap half an inch or less in width, but the standard is large, erect, and while the small fall is stout and firm, almost leathery, is delicate and flimsy in texture. The ground colour of the claw is a rich crimson or deep pink, but beneath the claw and for some little distance in front of it the crimson hue is all but entirely hid by numerous short dark-purple, almost black, hairs, so thickly set as to imitate velvet very closely indeed. This velvet area, at some distance in front of the end of the style, comes abruptly and squarely to an end, being marked off by a cross bar of rich crimson devoid of hairs. The small portion of the fall in front of this bar is of a creamy-white, traversed by radiating thick dark-purple veins, which are so closely set as to leave little of the ground visible. The plant varies much in size and colour, and the total effect of the flower is very striking and beautiful.

I. persica (*Persian Iris*).—This is one of the most charming of the early kinds, and deserves a place wherever the soil is warm and dry. Its flowers, produced from a tuft of bright green leaves that just peep over the soil, are white, suffused with pale Prussian blue, and blotched with velvety purple. It comes from Persia, and is therefore somewhat tender, but in warm sheltered spots, in light sandy soil, succeeds well enough, and flowers in winter and spring, according to the weather. = Xiphion persicum.

I. Pseud-acorus (*Common Water Flag*).—Common as is this Flag, every one who has grown it fairly will admit its beauty. Whoever has in his garden a pond or a ditch, or even a thoroughly damp spot, ought to plant this Flag largely, and few things are more beautiful than a great clump with its tall leaves starting up from the side of a pool, and clusters of golden flowers gleaming in a midsummer sun. Three things it loves—a rich soil, plenty of water, and sunlight. It is cruel to place it, as is sometimes done, in some dank, dark hole, where the sun's beams never reach it; and it is disappointing to plant it in a dry and stony spot, where summer is to it one long thirst. But put it where its roots can run at will in rich black mud, and

Iris pallida.

let its head raise itself to the full light of a summer sky, and it will be a golden glory throughout the long days of June.[1]

I. pumila (*Dwarf Flag*).—The best of the dwarf Flags, for to it we owe the many lovely varieties that create such a rich display of bloom in spring. It grows from 4 to 8 in. high, and has deep violet flowers, unusually large for its size. All the varieties flower profusely, but to be appreciated they should be planted in large masses or in broad lines. There are several named varieties, the most attractive being the

Iris paradoxa.

sky-blue (cœrulea), which in early spring forms sheets of bright colour.

I. reticulata (*Netted Iris*).—One of the most beautiful of hardy flowers. While the snow is still on the ground—in January, or even earlier—its leaves begin to shoot, and while these are only a few inches high, the bud opens to the pale wintry sun a beauty of violet and gold. After the flower has faded, the erect narrow leaves grow apace, attaining a height of 1 ft. or more, and, as in the Crocus, the ripened ovary is in due time thrust upwards from the soil. This little treasure is indeed the Iris companion of the Crocus, and those who have seen large clumps of it growing in some sheltered but sunny spot in the bright and gusty days of February or March, may well wish that its netted bulbs were as plentiful as Crocus corms. The species come from some parts of the Caucasus and from Palestine, and there are several varieties. Krelagei may be recognised by flowers of a purple or plum colour, with the yellow marking less vivid, and the whole flower is smaller, also less fragrant, in fact is almost wholly without scent. It is common in the Caucasus, the Transcaucasus, and Persia.

Krelagei however invariably flowers ten or fourteen days earlier. An exquisite gem is I. r. cyanea which is very bright in colour, a slaty blue, and dwarf. Sophonensis, with red-purple flowers and a bold crest, is a native of Asia Minor, and blooms in early February. I. r. purpurea, a small variety with deep purple flowers, is pleasing. Concerning the culture of I. reticulata very little need be said. It is absolutely hardy, and may be planted wherever the Crocus is found. A sunny sheltered spot is, however, advisable, that its tall narrow leaves may, after flowering, be protected from the wind. Sandy soil will do, but it is not particular in this respect. Sometimes, however, it refuses to grow, and in damp places the bulbs rot in summer. Since the flowers come before the leaves grow tall it makes a good pot plant, and a well-grown clump is a charming addition to the Christmas table. Some care, however, is needed to make it bloom more than one year in pots, and those who cannot afford the requisite attention should harden off the pot-plant when it has flowered and plant it in the open, seeking a fresh supply for the next winter from some old clump, or from bought bulbs. Unfortunately I. reticulata refuses to grow at all in some localities through disease. Although this disease may be somewhat retarded by lifting and careful storing it is very difficult to eradicate, and in wet seasons carries the bulbs off by the thousand.

I. Robinsoniana (*Wedding-flower*).—This is the giant of the whole Iris family. It is found wild only in an island off the east coast of Australia, and is not quite hardy. In 1888, a specimen in the garden of Mr. Dorrien-Smith at Tresco in the Scilly Isles, produced a flower-spike 5 ft. high, bearing about sixty flowers. A very fine specimen flowered in the Succulent House at Kew in 1891, and produced altogether 457 flowers. Each flower measures 4 in. across with broad spreading outer segments, the inner ones smaller, all

[1] There is a variegated-leaved variety I. p. fol. var. with the foliage broadly margined with yellow

of them pure snow-white with a horseshoe-shaped blotch of golden-yellow at the base of the three large segments, whilst they are also fragrant.

I. Rosenbachiana.—This is a charming bulbous Iris, and found on the mountains of East Buchara, Turkestan, at an elevation of 6,000 ft. to 7,000 ft., we are told, in two varieties, both growing together, the flowers of one form being blue, those of the other of a fine violet, whilst the bulbs of both the varieties are small, with thin tunics, never reticulated, as in the netted Iris. The three to five leaves are pointed, and at the time of flowering are short, but, as the season advances, increase in length. The flowers are on long tubes,

Iris persica.

the falls oval, blunt at the forepart, the inner broader than usual.

I. ruthenica (*Russian Iris*).—One of the smallest Irises with flowers, about 2 in. across and of a bright lilac-purple with a white lip, and on stems about 1 in. above the surface, nestling snugly among the bright green slender foliage. It blooms nearly every month, though mostly in the autumn, but the flowers are hidden among the foliage, and ordinary observers are unaware of its being in blossom. It is of easy culture in an open situation.

I. sambucina (*Elder-scented Flag*) is, perhaps, the most distinct of the Germanica group, so far as flowers go. It grows from 2 ft. to 3 ft., rarely more, and bears its rather dull-coloured flowers at the end of May and June.

I. Sari. This derives its name from the river Sar, in Cilicia, in the neighbourhood of which it was found. It comes near to I. susiana, having a compact rhizome, relatively large foliage, a fairly tall (a foot or less in height) stem and large flowers; indeed the var. lurida, which Prof. Foster mentions as the only one he has seen in cultivation, is often mistaken by a casual observer for I. susiana. On first opening the flower has a general dark gray appearance not unlike I. susiana, but as it grows older the purple hue becomes more predominant, and when the flower begins to wither becomes very marked, at least in the standards.

I. setosa (*Bristle-pointed Iris*) is a rare Iris reminding one of I. sibirica. It comes from Siberia extending into Japan, and has lilac-coloured flowers. I. brachycuspis is a synonym.

I. sibirica (*Siberian Flag*).—A slender plant, 2 to 3 ft. high, with narrow grassy leaves and in summer somewhat small showy blue flowers, beautifully veined with white and violet. There are several varieties, the white variety, also called I. flexuosa, being pretty, and so is I. acuta, but the double-flowered form is not. The finest variety is I. orientalis, having larger flowers of a deeper colour, with a different veining, and the falls especially broad and expanding. It derives its name from the bright scarlet or crimson tinge of the spathe sheaths, which gives the bud a remarkable beauty, even before the flower has opened. Melpomene and nigrescens are also beautiful varieties in the way of orientalis, but finer than the species. The Siberian Iris thrives best in rich damp soil, especially orientalis and some of the other large-flowered varieties; but to flower well must have plenty of sunshine, as it will not show its real beauty in dampness begotten of shade, for when thoroughly established it will bear an amount of drought which would be fatal to it when newly planted. In planting secure good ground to start with, for it has a great objection to being moved, and transplantation will in most cases prevent the bloom of the succeeding summer; moreover its real beauty does not become apparent till it has grown into a good-sized tuft. Place it, then, in thoroughly good soil, with appropriate surroundings, so that its head of flowers may be seen above dwarfer plants, and standing out against still taller foliage, then let it alone. It is capital for naturalising, for though most happy under the conditions indicated, it will grow and thrive in almost any soil, even in poor clays.

I. sindjarensis.—This is an interesting species with the habit and general character of I. caucasica, but has bluish flowers and a distinct crest. It flowers however at a time when no other Iris except I. reticulata is in bloom, and possesses a certain distinctive charm.

I. squalens.—This Flag, though not so striking as many of the Germanica group to which it belongs, is still useful as a variety, and thrives well in ordinary soil. The flower-stalks are generally three-branched, each with two or three flowers; the standards are purplish-red on the upper part and yellow near the base, while the falls are of a deep violet-purple, with a purple beard.

Iris reticulata.

I. spuria.—Not an attractive plant, though in some forms like spuria major, and also in the Algerian variety known as Reichenbachi, the colouring is bright and handsome, especially in masses; but the mixture of blue or purple and yellow which they offer is not pleasing, and there is a certain stiffness and want of elegance in their outlines. The smaller flowers of such varieties, as desertorum, with paler flowers, narrow falls, and, in some cases, marked fragrance, and the white Güldenstädti, are pretty. The grass-leaved Flag, (I. graminea) is of no great value as a border-plant, as the flowers are too much hidden by the over-topping leaves, and are themselves, singly, of no great beauty. Nevertheless, their mixed blue and purple tints render them of value as cut blooms; and they can then be made to harmonise with other flowers.

I. susiana (*Mourning Iris*).—One of the most singular of all the flowers of temperate and northern climes, from 1½ to 2½ ft. high; the flowers, produced in early summer, are very large and densely spotted and striped with dark purple on a gray ground. It should be grown in sunny nooks in the rock-garden, or on sheltered banks or borders, but always in light, warm, and thoroughly-drained soil. We have seen it flowering well in a border in the Archbishop of Canterbury's garden near Broadstairs. It is perfectly hardy in some parts of the country; but a dry bottom and a free soil are essential. In cold districts or on heavy soil a hand-light would be desirable in winter. Asia Minor and Persia. Division.

I. tectorum (*Wall Flag*) is a charming species, its blossoms large and of a bright purple, beautifully mottled with darker shade. Being a native of Japan, it is somewhat tender, but in a sunny warm situation will flower abundantly, and show off the strongly-crested blue and dark-blue blotched flowers to advantage. A rich soil, much sun, and some dampness are the best conditions for it. In Japan it grows on the top of straw-covered house-roofs, feeding on the decomposing straw, and is exposed to sun and weather all the year round.

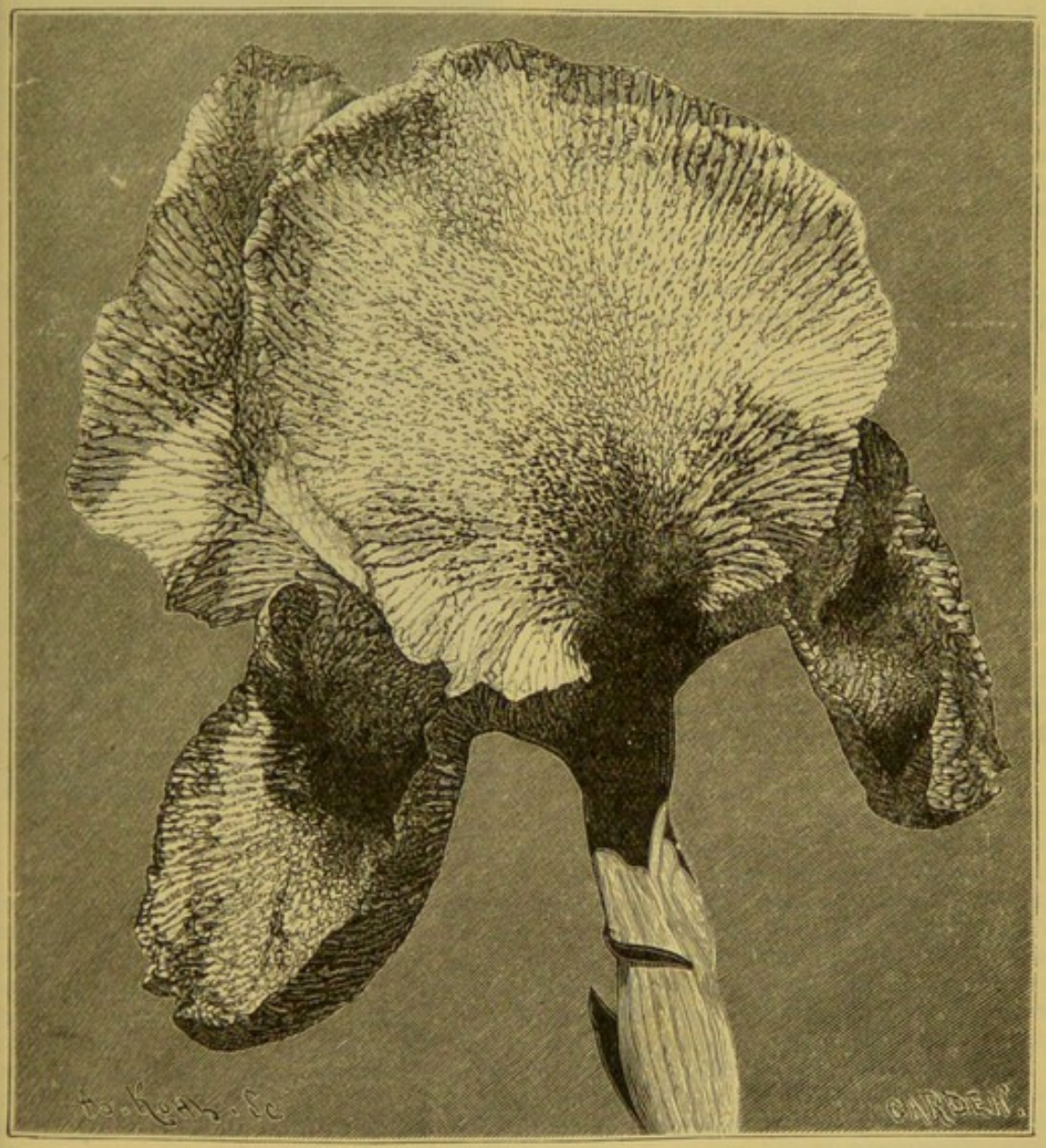
I. tingitana (*Tangier Iris*), though one of the most beautiful and delicate of our bulbous Irises, is still comparatively rare. It was first discovered long ago in the neighbourhood of Tangiers, but only comparatively recently has it been known in a living state. Besides differing from all the other Irises in its longer tube, the growing bulbs shoot in spring instead of autumn, as do those of the Xiphion group, whilst the leaves are shorter and the limb of the flower much larger. I. tingitana is certainly more difficult to keep in good condition than its older and better-known allies, the Spanish and English Irises. It is more susceptible to the baneful effects of our wet winters and seems to require the protection of a cold frame. A good way is to plant the bulbs close to a south wall, but it should not really be planted in the open at all unless it can have the shelter of a coping or some other contrivance that will answer the same purpose.

I. tridentata (*Labrador Flag*).—The falls of this are large, highly-coloured, and beautiful in form and markings. It blooms

freely, is a strong grower, and spreads rapidly. The closely-allied I. setosa from Asia is less beautiful. I. tenax, also a North American form, is a close neighbour of I. sibirica. Allied to tenax is the Californian form I. longipetala ; a showy plant, with long and straggling falls, light violet or lavender colour. North America.

I. tuberosa (*Snake's-head*).—This is an interesting if quiet-coloured kind, 12 or 13 in. high, the flowers small, brownish-green marked with yellow, and a purplish-brown tinge on the upper part. There are usually two tubers. It is not showy enough for every garden, but where admired it may be naturalised in light soil. S. Europe.

I. unguicularis (*Algerian Winter Iris*).—A beautiful plant, flowering in mid-winter, its flowers hidden in grassy foliage. When mixed with even the most delicate flowers of the stove or Orchid-house, its silky sky-blue fragrant flowers possess a charm and softness equalled by scarcely any other flower of the same colour. Although the plant is hardy, its flowers are so delicate that it should have protection from heavy rains unless the position is well sheltered. It is perhaps best known as I. stylosa. There are several varieties in catalogues, speciosa being one of the best, this having larger flowers of a deep blue colour. Alba has white flowers. They all require very light warm soil on well-drained or raised borders in sheltered gardens. Division.



Iris susiana.

I. variegata is a handsome Flag of the Germanica group, 1 to 2 ft. high, with large, slightly fragrant flowers, having bright yellow standards and claret-red falls beautifully veined. Similar in aspect is I. aphylla, with deep lilac falls and white standards veined with purple, whilst there are numerous varieties, the colours of which are varied and beautiful. I. lurida and its varieties also come under this group.

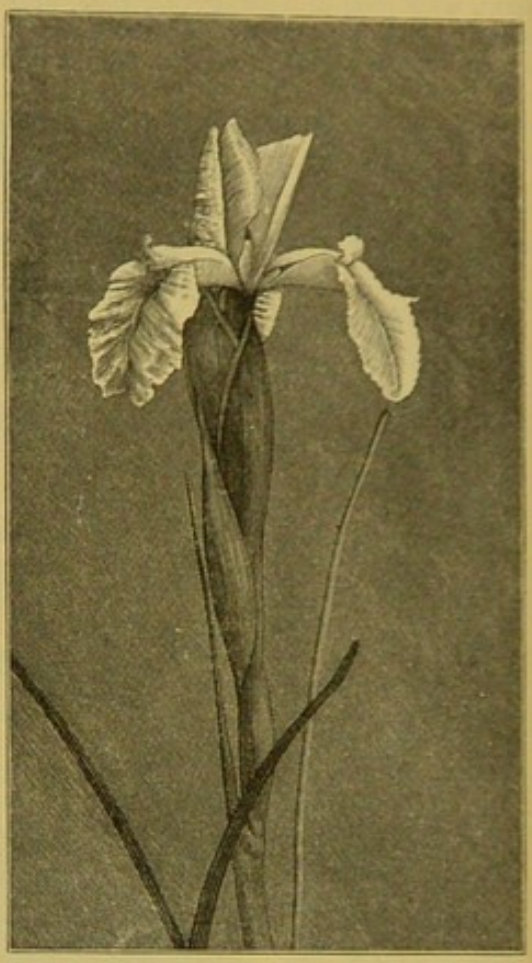
I. Vartani.—This species was introduced by Prof. Foster, of Cambridge, under the impression, we believe, that they were bulbs of I. Histrio. Prof. Foster says it differs from I. Histrio in the bulbs being more pointed and of a longer, more slender oval form, the falls having a very narrow crested claw. There are other minor differences, sufficient to distinguish it from all other bulbous Irises known to us. The standards are narrow, brownish-yellow, marked with deeper lines; falls yellow, and greenish with lilac lines. It flowers early and comes from Palestine.

I. verna (*Vernal Iris*).—This has deep green foliage in the old state, but is of a glaucous green when young. This difference in the foliage is all the more noticeable because it is a truly evergreen species, and when the flowers are pushing, the differing foliage tints add to the effect of the plant. Its habit is dense and rigid, and the stature of the plant not more than 6 in. when in its greatest vigour. The fine clear blue, sweetly-scented flowers are freely produced, just clearing the sheathing foliage, but showing fairly well at the top of it. It enjoys a boggy position, but with a clear exposure to sunshine.

I. virginica.—A vigorous but not a first-rate garden plant, spreading rapidly in somewhat moist rich soil. The flowers vary considerably in colour. More highly coloured is the very closely-allied I. versicolor; but this lacks elegance. Many seedlings, both of virginica and versicolor, are in cultivation, and they thrive in any moist soil. N. America.

I. xiphioides (*English Iris*).—This is a beautiful flower, and the many garden varieties are amongst the finest things we have in early summer.

The English Iris got its popular name in a rather curious way, being sent from its Pyrenean home, where its distribution is limited, to Bristol traders, thence to Holland. The Dutch, supposing it to be a native of our shores, called it the English Iris, a name so firmly established that one does not want it suppressed in favour possibly of some ugly substitute. This splendid flower was one of the earliest bulbs introduced, and is seen in many gardens; not so many, however, as one might expect, considering the splendour of the flowers, the rich luxuriant leafage, and comparatively easy culture of the bulb. The flowers are



"The English Iris."

quite distinct in aspect from those of the Spanish Iris and appear a fortnight or so later. The numerous leaves form quite a tuft, the lower ones being channelled, linear, and upwards of a foot long, with proportionate breadth, the flowers rising from this wealth of leafage on sturdy stems from 1 ft. to 2 ft. high. They are broad and display a delightful diversity of colour, from deepest purple to pure white. One of the finest we have seen is Leon Tolstoi, the flowers large and superb in colour, a warm plum shade, each segment like a piece of velvet, and unique arranged in a bold way in a jug or bowl. Another beautiful kind is Mont Blanc, which has white flowers, a fine kind to plant singly to get cut bloom. A few more beautiful forms are Grande Celeste, the standards of a soft azure colour and the falls sky-blue; King of

the Blues, rich purple-violet ; La Charmante, lavender, blue, and white; and Vainqueur, lavender, with feathering of violet. There are, of course, many other varieties in which one gets flowers splashed and mottled with various colours. These are not so fine as the bold self kinds, and raisers should think less of them, rather giving us self colours, which are always more effective both in the garden and when gathered for the house. There is a curious variety called Thunderbolt, which is of a dusky dull colour. It seems to have been well known to Parkinson in the old days and is said to be a hybrid between the English Iris and I. filifolia, but of this nothing very definite is known. It rarely seeds in cultivation and is grown chiefly out of curiosity.

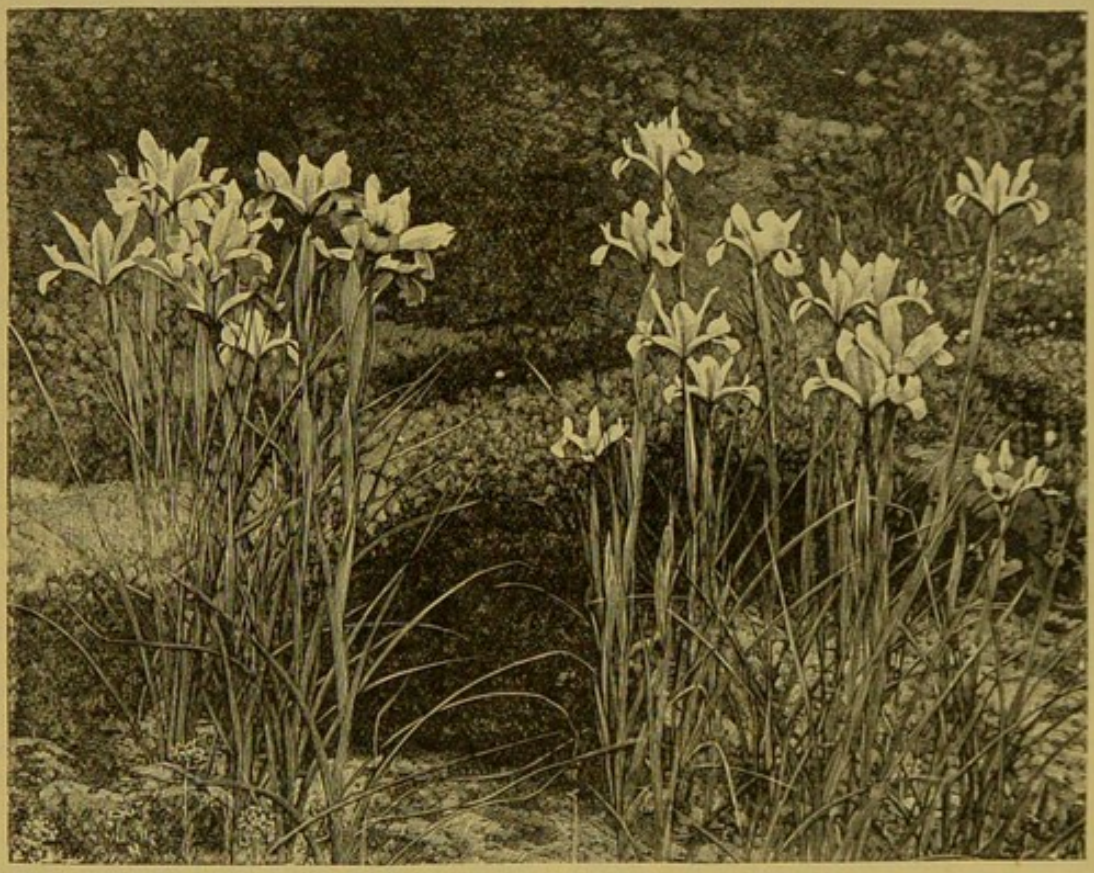
The old idea of cultivating the English and Spanish Irises as we do Squills and Meadow Saffrons has long since exploded. They require frequent lifting, and the better they are stored and drier the greater will be the success. Our summers are too cold and wet to leave such bulbs in the ground, and covering over with glass frames is not nearly so effective as lifting. Another bad practice is early planting ; and they should never be planted before late autumn or even mid-winter. They should be encouraged, however, to make root growth, and this will be greatly facilitated by a covering of leaves or loose Pine branches in hard, frosty weather. Too early planting causes the foliage of the Spanish Iris to brown and wither at flowering time, and this may be to a great extent avoided by planting in the latter end of September or October instead of in August. These Irises are less subject to disease than, for instance, the forms of I. reticulata.

Dr. Wallace, of Colchester, writes as follows :—"The English Irises are easily cultivated and well worthy of a place in all gardens. Flowering at the end of June and during July, they come in when most of the other Irises are over, and a bed of their large flowers is beautiful for several weeks, their strong spikes mostly carrying two or more flowers, in all shades of white, blue, and reddish-purple, some splashed and streaked, others with clear decided colours, formidable rivals to the Iris Kæmpferi, which they closely resemble in shape and pose of flower, but of dwarfer habit. I find them quite hardy here at Colchester planted out in light soil, with plenty of sand round the bulbs. They increase rapidly, and are best taken up and divided about every two years, at the beginning of August when the bulbs are at rest. Starting again into growth early, they should not be planted after the middle of November, otherwise success will be less certain."

I. xiphium (*Spanish Iris*).—A very beautiful flower, and an old inhabitant of gardens. This Iris begins growth early, and having attained a few inches in height remains stationary during the winter, regardless of even biting frosts, but in the spring the tall narrow leaves grow apace, and late in May or in June a stalk, almost wholly ensheathed by clasping leaves and spathe valves, bears one or two beautiful flowers. The bulb which produces offsets in great abundance, is much smaller than that of the Pyrenean Iris, and its coat is not nearly so thick and rough. The plant having for many generations been in the hands of the Dutch florists, many seedlings have been raised, and much variety of colouring gained. The prevailing colours are blue, with various shades of purple or violet, yellow, and white. The blue tints of the cultivated seedlings seem to be derived from the typical Spanish plant ; the yellow hues may be traced to the Portugal variety, sometimes known as I. lusitanica. The Portuguese plants are for the most part yellow, and generally have more funnel-shaped flowers, while the Spanish plants are generally blue and have more spreading flowers ; but the distinction is not absolute, and the cultivated varieties are mixed both in colour and form. I. sordida is simply a form of the Portuguese variety, in which the yellow is blotched with purple or violet.

The Spanish Iris must not be waterlogged in autumn and winter, preferring a loose, friable, sandy soil, which, however, should not be too poor, for it repays feeding with thoroughly rotten leaf-mould or manure. Sun it must have, but as its slender stalks suffer from winds it should have shelter without shade. It needs an autumn drought to ripen its bulbs, and a winter dryness to keep it at rest ; but in spring, when it is rapidly pushing its slender leaves and shoots, it loves any rain that is not excessive. The golden rule of not meddling over-much applies distinctly to the Spanish Iris, as the new roots begin to shoot out almost before the old stalk has withered, and the bulb must not be kept out of the ground. Plant, then, the Spanish Iris in clumps on some rich, loose, friable plot, where their bright colour may be shown to advantage, and let them stay there year after year until the dwindling foliage tells you that they have exhausted their soil ; but it will be some time before that comes to pass.

HYBRID CUSHION (*Oncocyclus*) IRISES.—For the several notes on this group and the following particulars about crossing them we are indebted to Prof. Michael Foster, of Shelford, Cambridge, who dealt exhaustively with this interesting class in *The Garden*, February 18th, 1893. "From the frequent occurrence of seed-pods on imported rhizomes, I am led to infer that in its native home an Oncocyclus Iris goes to seed freely; and further, from the condition of imported roots, strengthened by the behaviour of the plants cultivated in this country, I am also inclined to say that I am more sure of getting seed from an Oncocyclus Iris than from almost any of the ordinary bearded Irises. They cross readily with each other, and hybrids may be without any great difficulty obtained between them and the ordinary bearded Irises. M. Max Leichtlin, for instance, has produced several hybrids. I myself, too, have reared many hybrids, and possess many in various stages of development." The two following kinds, I. Ibparad and I. Agatha, were raised by Mr. C. G. van Tubergen, junr., who says, of the first named that it originated from crossing



Spanish Iris (I. xiphium).

believe that the life of an individual rhizome is not a very long one, and that the race is largely continued by seeding. Here in this country plants left to themselves do not seed freely. But this is due not to the coldness of our climate, but to the absence of the proper fertilising insects. Our bees, accustomed to more sober flowers, appear frightened at the strange aspect of an Oncocyclus Iris; at least I have never, so far as I remember, seen one of these Irises visited by a bee or other insect. On the other hand, if the flower be artificially fertilised, it goes to seed with great readiness. I think I may

I. iberica with a beautiful variety of I. paradoxa. In size the flowers are intermediate between those of the two parents, but they surpass them both in colour and handsome form. The standards are of a warm vinous lilac-purple, with numerous dark veins, the central portion of the lip being of a beautiful velvety black, and marked with a reddish stripe. The remaining portion of the lip is gray with stripes of dark brown. I. Agatha is a beautiful hybrid. The stems attain a height of 2 ft., and it at once shows it parentage to the Korolkowi group by its producing two flowers in succession on each scape. The flowers

are large, the standards of a very pale lilac colour, covered with a network of purple veins ; the lip 2 in. broad, the body colour of a silvery-gray and the central portion of a dark purplish-maroon, with very conspicuous radiating veins of the same colour, the whole flower presenting a highly-refined appearance.

Isopyrum thalictroides.—A graceful little plant allied to the Meadow Rues, but shaped, and of a pale blue, continuing a long time, even till cut off by frosts. If preserved in a frame during winter, after the manner of bedding Lobelias, it is perennial, and may be propagated in spring by cuttings. New Holland. Lobeliaceæ.

Itea virginica.—A little North American shrub, dwarf and deciduous. In autumn it produces clusters of small white flowers. Suitable for a damp spot at the

Iris Ibparad and I. Agatha.

with prettier white flowers, valuable for its Maiden-hair Fern-like foliage. It is well suited for the rock-garden, and for the front edge of the mixed border, is hardy, and easy to grow on any soil. Division or seed. Europe. Ranunculaceæ.

Isotoma axillaris.—A showy half-hardy plant, resembling some of the dwarfer Lobelias, its growth dense and compact, the flowers ½ in. across, star-

foot of a rocky bank in an alpine garden.

Ithuriel's Spear (*Triteleia laxa*).

Ivy (*Hedera*).

Ivy Hairbell (*Wahlenbergia*).

Ivy Toadflax (*Linaria Cymbalaria*).

Ixia.—Charming South African bulbs, slender and elegant in growth, and brilliant in flower. They are not grown much because some are tender and require glass protection. For culture

outdoors, choose a light loamy soil, thoroughly drained, and with a due south aspect; if backed by a wall or a greenhouse so much the better. Plant from September to January, 3 to 4 in. deep, and 1 to 3 in. apart. As the early plantings make foliage during the autumn, it is necessary to give protection during severe frost, and this may be best accomplished by hooping the beds over and covering when necessary with mats; or if tiffany is used it may be allowed to remain till the danger of severe frosts has ceased. The December and January plantings require no protection in winter, but as they will flower later in the summer than the early plantings, an aspect where the sun's rays are somewhat broken will prolong the blooming period. On stiff soil, or on soils that lie rather wet in winter, the beds should be raised, and the bulbs should be surrounded with sand, care being taken that they are planted 1 or 2 in. above the level of the path; and, where protection cannot conveniently be given, planting should not take place till December or January. A large number of varieties are in cultivation, and the chief species from which they appear to be derived are I. crateroides, patens, maculata, fusco-citrina, ochroleuca, columellaris, speciosa, and viridiflora, which last is of a beautiful sea-green, a colour quite unique among cultivated plants, and in no case to be omitted. A collection of varieties might include the following: Achievement, Amanda, aurantiaca, Cleopatra, Conqueror, Duchess of Edinburgh, Gracchus, Hercules, Hypatia, Isabelle, Lady of the Lake, Lesbia, Loela, Miralba, Nosegay, Pallas, Pearl, Princess Alexandra, Sunbeam, Surprise, Titian, and Vulcan.

Ixiolirion (*Ixia Lily*).—Beautiful plants of the Lily Order somewhat resembling each other, and about 1 to 1½ ft. high, with grassy foliage, and bearing large trumpet-shaped flowers in a loose elegant manner. I. Pallasi has flowers of the deepest shade, and I. tataricum of the palest, the intermediate shades being I. montanum and I. Ledebouri. Such beautiful hardy plants are deserving of a place in the most select collection, and the flowers last long on the plants. They should be treated like the rarer bulbs, such as Calochorti, Habranthi, and Zephyranthes, for though they may be hardy, it is not advisable to plant out such rare bulbs in ordinary borders. They should be grown in an open and dry position—in a sunny border, for example, which is all the better with a wall at the back, so as to catch all the sun-heat possible in early spring, when the bulbs are pushing up their young leaves. The border should be well drained, and a bed of light, rich loamy soil, about 1 ft. in depth, placed upon the drainage. When the young growth appears, place a common hand-light over the plants—even two panes of glass will be beneficial—and if similar protection is afforded at the latter part of summer, it will tend to keep the soil dry and warm, and so ripen the bulbs. A handful of dry sharp sand placed in a layer under and around the bulbs is conducive to the formation of roots. Western Asia.

Jaborosa integrifolia.—An interesting dwarf perennial, allied to the Mandrake, growing 9 to 12 in. high, with broad ample leaves, and large white tubular flowers about 2 in. long, fragrant and handsome. A native of Buenos Ayres, it is somewhat tender, only succeeds in light warm soils in sheltered situations, and is best close to the foot of a south wall in good loamy soil. Here it makes a good plant, sometimes spreading so rapidly as to become a weed. Division of the long creeping stems. Solanaceæ.

Jacobea (*Senecio elegans*).

Jacob's-ladder (*Polemonium cæruleum*).

Jalap-plant (*Exogonium*).

Jamesia americana.—A dwarf shrub from the Rocky Mountains, 2 to 3 ft. high, with deciduous leaves, and in summer many clusters of white flowers, which, with the whitish foliage, give the plant a pretty appearance. It is hardy, of easy culture, and fitted for association with flowering shrubs of a medium size.

Japan Pear (*Pyrus japonica*).

Jasione (*Sheep's Scabious*).—Dwarf perennials and annuals of the Bell-flower family. J. humilis is a creeping tufted plant, about 6 in. high, bearing small heads of pretty blue flowers in July and August. Though a native of the high Pyrenees, it often succumbs to the damp and frosts of our climate, and it therefore requires a dry well-drained part of the rock-garden, and should have a little protection in winter during severe cold and wet. J. perennis is taller, often above 1 ft. high, with dense heads of bright blue flowers, from June to August; it is a rock-garden plant, stronger than the preceding, thriving in good light loam, and a native of the mountains of Central and South Europe. These perennial kinds may be propagated best from seed as they do not divide well. J. montana

is a neat, hardy annual with small, pretty bright blue flower-heads in summer. Seed in autumn or spring. A native plant.

Jasmine (*Jasminum*).—Among the most precious of shrubs for the flower garden, the common hardy Jasmines are so well known that little need be said about them, but there are a few others equally important that deserve attention. The bright yellow J. revolutum from India is too little known, it being quite hardy enough for wall culture in all parts; and it has evergreen foliage, which adds to its value. It flowers profusely, and its golden bloom amidst the deep green foliage is welcome in summer and autumn. It is a common plant in some tree nurseries, but is seldom sold. Another hardy evergreen shrub, J. fruticans, has yellow flowers, and may be grown as a bush, or supported by a tree-stump. It comes from South Europe, as does J. humile, also with yellow flowers, and is quite hardy. The Chinese J. floridum, with yellow flowers in summer, is of less value, but worth growing in a collection. The common white J. officinale should be planted in every garden against a wall, or used for trailing over tree-stumps or arbours. It is one of the most important of all climbing shrubs on account of its extreme hardiness and its vigorous and rapid growth in almost any soil or situation. There are several beautiful varieties of it, the best being J. affine, with flowers larger and more numerous than those of the ordinary kind. There is a variegated-leaved kind, not of much importance, and another with golden foliage which is pretty, and there is a rare double-flowered form. J. officinale is an Evergreen, except in cold exposed localities. The winter Jasmine, J. nudiflorum, is another charming shrub for every garden. Though its flowers wreathe the leafless twigs, they are so bright and cheerful in winter that a space should always be found for it against the house walls.

Jasminum nudiflorum.

Jeffersonia diphylla (*Twin-leaf*).—An interesting dwarf plant, allied to the Bloodroot, from 6 to 10 in. high, the flowers white, about 1 in. across, in early spring. It is a good plant for peaty and somewhat shady spots on the rock-garden, and for the margins of beds of dwarf American plants. Seed should be sown in sandy soil as soon as gathered, but careful division of the root in winter is the best way to increase the plant. A native of rich shady woods in N. America.

Jerusalem Sage (*Phlomis*).

Jessamine (*Jasminum*).

Jew's Mallow (*Kerria*).

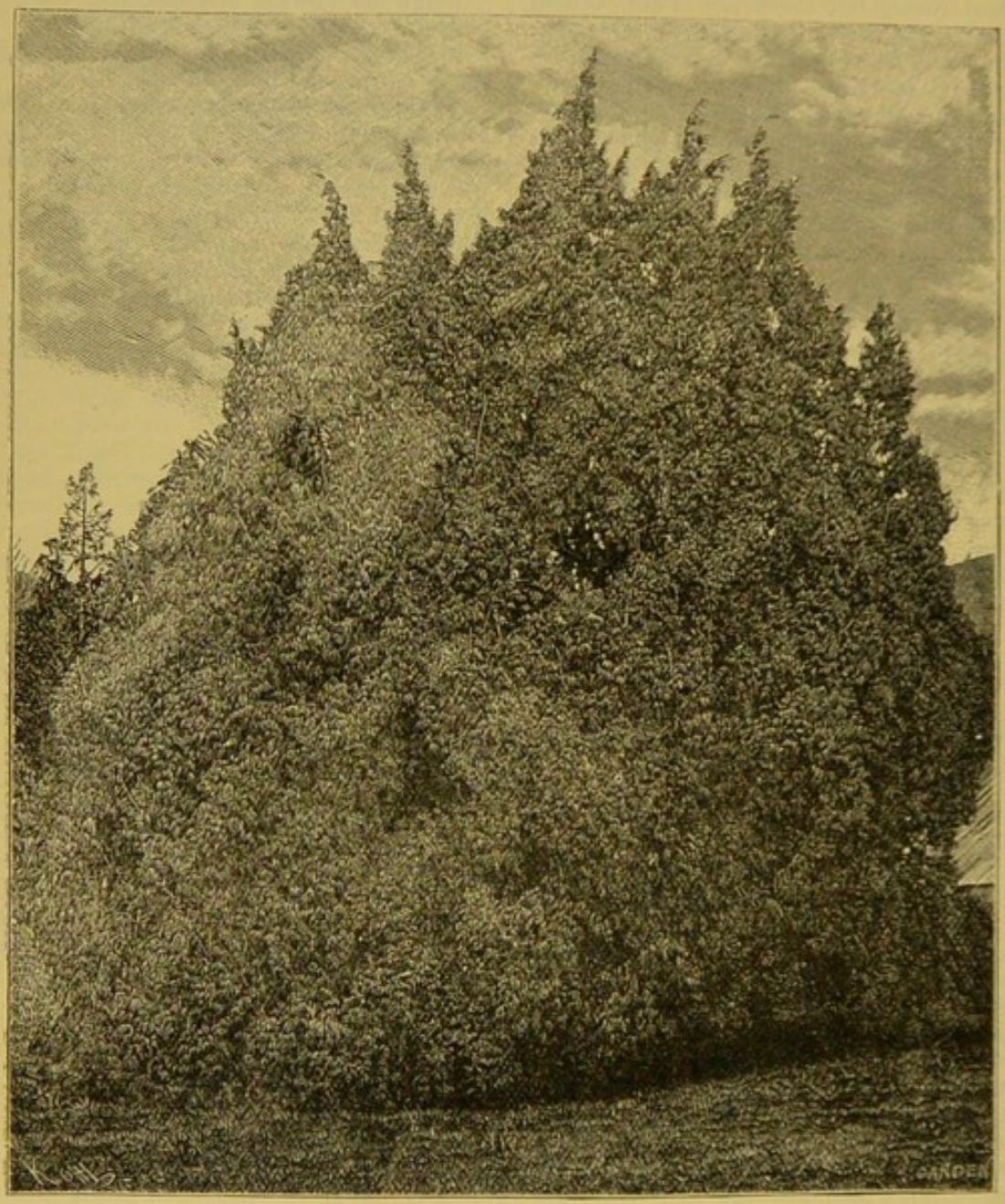
Jew's Mallow, White (*Rhodotypus*).

Jonquil (*Narcissus Jonquilla*).

Jubæa spectabilis. — A handsome nearly hardy S. American palm, with a smooth stem, which sometimes attains a height of nearly 40 ft., and spreading pinnate leaves, of a full deep green colour, from 6 to 12 ft. long, the leaflets from 1 to 1½ ft. long, and about 1 in. wide, springing in pairs from nearly the same spot. The leaf-stalks are very thick at the base, where they are enclosed in a dense mass of rough brown fibres, which grow upon their lower edges. This palm exists in the open air throughout the

winter, near London, but not in such a condition as to encourage many to try it in this way. Grown in tubs in the conservatory in winter, and placed in the open air in summer, it will be useful for association with the hardier palms.

by division of the tufts. J. zebrinus is apparently a form of the common Rush (J. communis). The long round leaves are barred with bands of yellow and green, and it is a striking plant, as its rigid habit and singular markings stand out in bold relief.



Juniperus recurva at Castlewellan.

Judas Tree (*Cercis*).

Juncus (*Rush*).—Water or marsh plants, generally with long round leaves. J. effusus spiralis is a very singular plant, whose spreading tufts of leaves, instead of growing straight, are twisted in a cork-screw form. It is worth cultivating on the margins of water. It is easily multiplied

June Berry (*Amelanchier*).

Juniperus (*Juniper*).—Often graceful members of the great coniferous family, but frequently more shrubby than tree-like, and therefore more fitted for the pleasure-ground and as background plants for the flower garden than for woodland or forest planting, though some kinds

are trees, as the Red "Cedar" (J. virginiana). The dwarf Savin, rightly placed and grown, throws a mass of very pretty evergreen growth over banks and places that invite a low growth, or that too rare quality in gardens—a little repose!

J. communis (*The Common Juniper*) is chiefly found growing in England on sandy or chalky soils or on open downs, while in Scotland, its native home is amongst the granite or trap on hill and mountain sides. It is, with us, usually low and small, seldom much larger than the furze. The Dwarf Juniper is a variety of the common Juniper, seldom found over a foot in height, but more commonly half that size. It is of a low dense habit of growth, and soon spreads to a great width. The Irish Juniper is a distinct variety, and of some value in landscape gardening. The growth is close and erect, as in the Irish Yew, and the foliage of a silvery-gray tint. It succeeds best on rather damp soils.

J. recurva (*Weeping Indian Juniper*) succeeds well in Britain. At Brynmeirig, near the Penrhyn slate quarries, there is a number of these gracefully-drooping plants, which for size are perhaps not excelled in Britain. The soil is loam and peat resting on shaly slate rock. The situation is shady and with a northern aspect, which, by the bye, seems to suit not only this species but the male form (J. recurva densa) as well.

J. chinensis (*The Winter-flowering Juniper*).—This is certainly the most ornamental; indeed, in this respect it is perhaps not excelled by any evergreen shrub. During winter or in early spring, when covered with its yellow male flowers, this shrub is beautiful; it is hardy and of the easiest culture, succeeding well on loamy soil, and several varieties are in cultivation.

J. thurifera (*Frankincense Juniper*).—In this we have another distinct tree, in its native country attaining a height of 40 ft. As a lawn specimen it is invaluable, and from its dense conical shape associates well with trees of the same race, and is very hardy.

J. virginiana (*The Red Cedar*).—It is of the easiest culture and seems to succeed in almost any situation, though attaining greatest perfection when planted near the sea-coast. It is a native of North America, where it becomes a tree, with a bright red aromatic wood, the value of which is well known from its use in cabinet work and the manufacture of pencils. J. argentea, or glauca, is a variety of the Red Cedar, and, from its peculiar whitish-silvery appearance, is useful for contrast.

J. drupacea (*Plum-fruited Juniper*) is a native of Syria and Asia Minor, on the mountains there attaining a height of some 15 ft. It thrives best on good well-drained soil, and is unsuitable for planting on peat. It has a close, narrow conical habit of growth, clothed with sharp-pointed leaves arranged in six distinct rows along the branch, which are of a light grassy-green colour. This Juniper makes a handsome specimen for a lawn.

J. suecica (*Swedish Juniper*), a native of Denmark, Norway, and other parts of Northern Europe, is very hardy in this country, and makes excellent covert. It has a compact, upright habit of growth, and the branches are well clothed with leaves which are rather longer and of a brighter green colour than those of our native species.

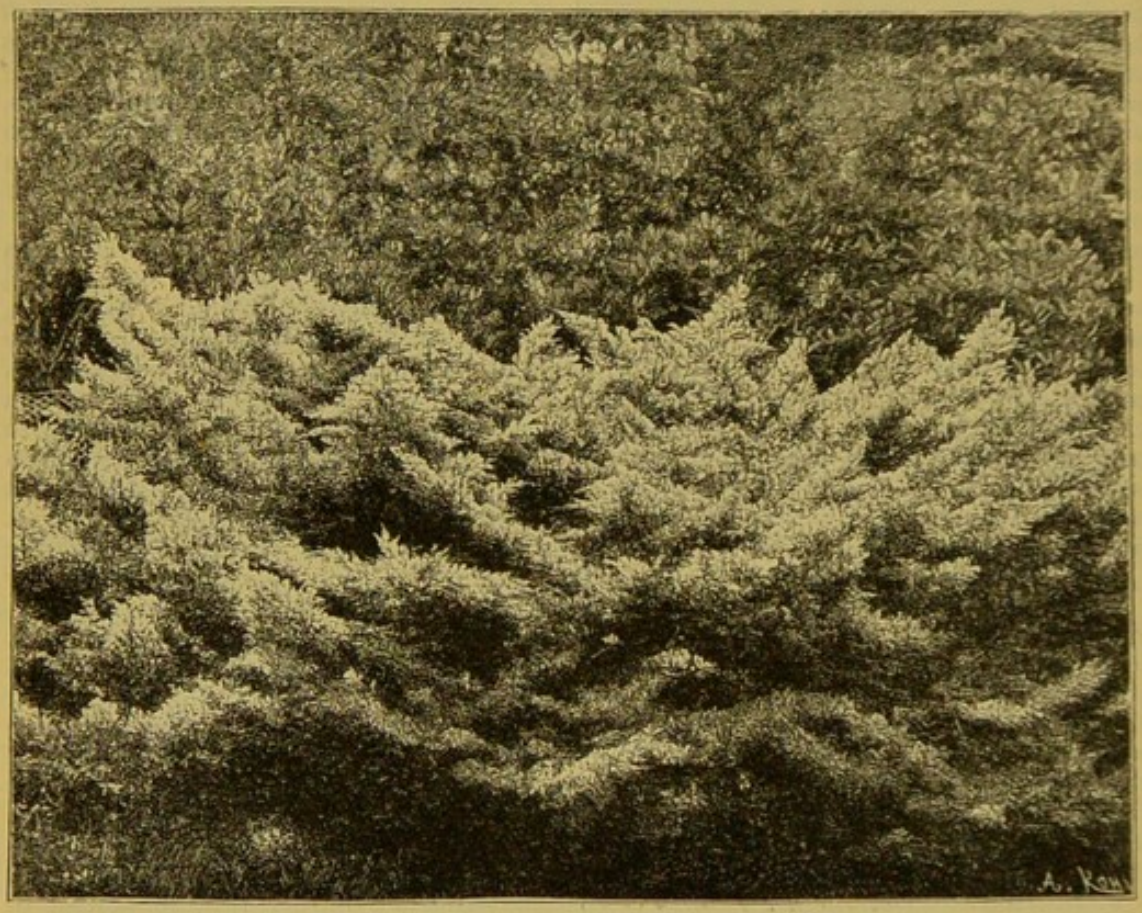
J. Sabina (*The Savin*).—Few evergreen Shrubs are more beautiful and useful than the common Savin and its forms, but particularly that known popularly as the Tamarix-leaved (J. tamariscifolia). For carpeting the ground, planting on dry banks where little else save the Furze could grow, along the margins of shrubberies, the Savins are amongst the best of dwarf-growing coniferous shrubs. A pretty combination is afforded in the interesting garden at Goddendene, near Bromley, by the free use of the Tamarix-leaved Juniper with herbaceous plants, fine broad masses breaking up the beds here and there, an unusual charm to that class of gardening. But to see this same Juniper used as a lawn plant instead of Grass is remarkably strange, and yet that it can be so used, every one who has been privileged to see that velvety lawn has frankly admitted. The plants were inserted when hardly 1 ft. in spread of shoots, and at about 15 in. apart, the dwarfest in a nursery border being chosen. Great care and attention was necessary for the first three years, so that all upward shoots were either cut off entirely, or, where a bare space occurred near at hand, were pegged firmly down. A heavy roller was passed over the ground twice a week, pruning and pegging were regularly attended to, and now the lawn is as level as could well be desired and can be walked across with perfect ease.

Growing alone as a garden or lawn shrub the Savin is a plant of the greatest interest, the fine habit of growth and peculiar blue-gray of the shoots being so

handsome and the plant so hardy in our severest winters.—A. D. W.

Jussiæa natans.—A curious aquatic plant bearing large yellow blossoms a few inches above the water. It is valuable for still water, such as a pool or small lake, and is hardy. Onagraceæ.

Kalmia (*Mountain Laurel*).—The Kalmias are among the most beautiful of North American shrubs, evergreen in foliage and charming in flower. The broad-leaved Kalmia latifolia is the finest, as it is also the commonest in gardens. Like the Rhododendron and Azalea, it must be grown in a moist peaty soil, or one light or sandy. It will not thrive in stiff or chalky soils. Its lovely clusters of pink wax-like flowers open about the end of June, when the bloom of the Rhododendron and Azalea is on the wane, and last for a fortnight or longer. The broad foliage makes it almost as valuable an evergreen shrub as the Rhododendron. There are varieties of the common kind having, in some cases, larger flowers, and in others, flowers of a deeper colour, the finest being maxima, which is much superior in size of flower and richness of tint. The Myrtle-leaved Kalmia (K. myrtifolia) seems to be only a variety of K. latifolia, with smaller Myrtle-like foliage. The growth is dwarf and compact, and the flowers are almost as large as those of K. latifolia. The other species of Kalmia, though very beautiful, are of less value, because they are smaller, more delicate, and less showy, but in peat-soil gardens they should be grown. K. angustifolia grows about 1½ ft. high, and bears in early June dense clusters of rosy-pink flowers. K. glauca and K. hirsuta are also pretty shrubs, K. glauca flowering in early summer, and K. hirsuta in August.



Juniperus Sabina (the Savin).

Kaulfussia amelloides.—A pretty dwarf hardy annual, with Daisy-like flowers, of a deep purple, but with white, rose, scarlet, and violet varieties, which are named in catalogues alba, rosea, kermesina, and atro-violacea. It forms a compact tuft, suitable for groups or masses, if sown in the open in April, flowering in June, and there is not much advantage in sowing it earlier. It makes a pretty ground or "carpet" plant with taller

plants here and there through it. Cape of Good Hope. Compositæ. *Syn.*, Amellus annuus.

Kernera saxatilis.—A neat little plant very like the dwarf Scurvy Grass (Cochlearia), forming a compact tuft of foliage, and in early summer becoming a mass of tiny white blooms. In the rock-garden it grows in any soil in an open position, and is attractive in spring. Seeds. Europe. Cruciferæ.

Kerria japonica (*Jew's Mallow*).—The double variety of this Japanese shrub is an old favourite in cottage gardens, where it is most commonly seen. The large bright yellow rosette flowers are much more showy than those of the single kind, which is rare. Though usually planted against walls, the Kerria is hardy, and may be grown as a bush except in the coldest parts. The variegated-leaved form of the single variety is more delicate than the double form, or the green-leaved single form.

Kitaibelia vitifolia.—A coarse plant, 4 to 6 ft. high or more, with vine-like foliage. It bears in summer large white blooms from the upper parts of the stems. The plant is not refined or showy enough for border culture, but is suited for growing among shrubs. Seed or division. Malvaceæ. Hungary.

Kleinia repens.—A dwarf succulent plant, with cylindrical leaves of a bluish glaucous gray, used for geometrical beds in summer, but not hardy. Division in early spring in heat, followed by potting and by planting out in light dry soil in May.

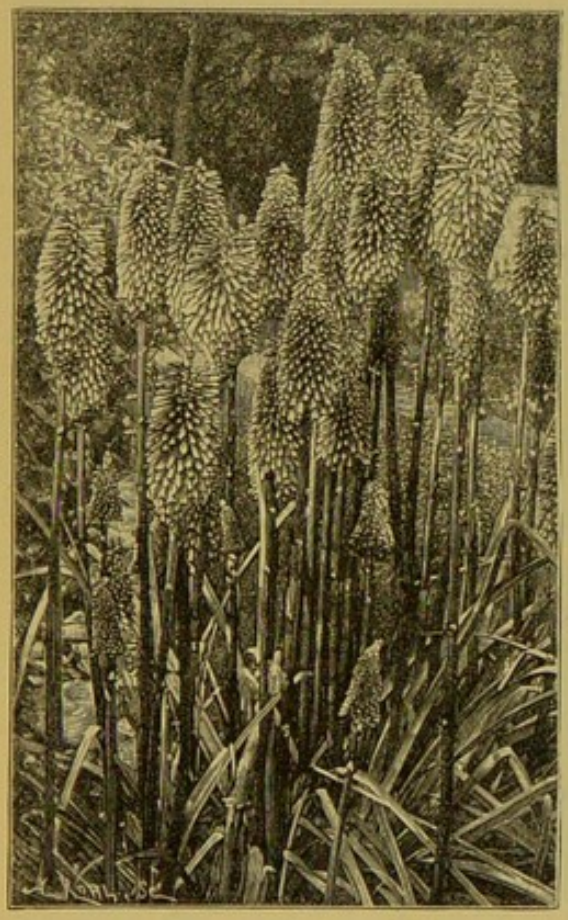
Knautia (*Scabiosa*).

Kniphofia (*Torch Lily or Flame Flower*).—Handsome and very distinct plants which are prevented by severe winters from becoming very popular. The genus, as understood by botanists, is restricted to the mountains of Abyssinia and the Cape, with the exception of one species found by Speke and Grant near the Equator, and one or two kinds indigenous to the mountains of Madagascar. There are twenty or thirty species, and none of the six found in Abyssinia is identical with any sort found at the Cape. The Kniphofias, and especially the forms of K. Uvaria, are among the most striking of autumn flowers. Large irregular groups in open spots give a brilliant effect in autumn, and they require no attention beyond an occasional top-dressing of rich soil or well-rotted manure. During the late winters many kinds have perished from frost, but these dangers may be averted by a covering of dry leaves or ashes in late autumn. The stemless kinds are easily propagated by division and by seed when produced in favourable seasons; but not the stemmed or caulescent kinds. However, those who wish to increase their stock of the stemmed kinds need not fear to behead them; in fact, this is the only way in which K. caulescens can be propagated, as, otherwise, it seldom develops offshoots. When so treated it will throw up a large number of shoots, which, if allowed to remain until a few roots are produced, may be taken off and kept in a close frame for a time, and then potted in a sandy compost. K. sarmentosa is the easiest to increase, as it throws out underground shoots, which may be taken off at any time. K. Quartiniana develops small shoots almost at right angles with the base of the stem, and if these be taken off and treated as cuttings they will strike freely. The following are amongst the best of the kinds in cultivation:—

K. aloides (*Flame Flower or Torch Lily*), or Tritoma Uvaria as it is still called in many gardens, is perhaps the oldest, and is certainly one of the very best of its family. It is the Flame Flower of cottage gardens, and is one of the noblest and most brilliant of Lily-worts: an excellent border-plant, it is suitable for all soils, and while few plants are better for picturesque grouping in the pleasure-ground, in the shrubbery, with a fairly open space and with deep rich soil, it forms handsome groups. It begins to flower in late summer and lasts for many weeks in perfection, and nearly 70 per cent. of the garden varieties are traceable to it. K. pumila is a pretty dwarf form. The variety præcox flowers much earlier than K. aloides, from the middle to the end of May; its leaves are broader than those of the type, and are not glaucous, while the raceme is shorter, the stem being about half as long as the leaves. The variety nobilis, which very much resembles grandis, if indeed it is not the same kind, is a robust and noble plant, its leaves more distinctly serrated than those of grandis, its flowering stem 5 to 8 ft. in height, with flowers varying from scarlet to orange-scarlet; the anthers are prominent. It blooms throughout August. The variety serotina is interesting from blooming a month or so after all the other Kniphofias are over; its flowers greenish-yellow, occasionally tinged with red. The variety Saundersi has bright green leaves and very rich orange-scarlet flowers; the variety longiscapa has very long flower-heads, and is a most desirable form; the variety maxima globosa has globose heads of yellow and red flowers; and the variety

glaucescens has large flower-spikes, the flowers being vermilion-scarlet shading to orange. It is a free-flowering plant, and is one of the best for heavy rich soil.

K. Burchelli, introduced by Mr. Burchell from the Cape, is a distinct and beautiful plant with a purple-spotted stem and bright green leaves, firm in texture, 2 to 3 ft. long, which taper gradually to the apex. It flowers soon after midsummer, and just between præcox and the other forms of K. aloides. The flower-heads are moderately dense, and the flowers are



Kniphofia grandis.

bright red, excepting those at the lower end of the head, which are bright yellow, the style protruding, the stamens being included in the tube. A useful and distinct plant, suited for dry banks and borders.

K. carnosa is a beautiful plant, forming low spreading leaf-rosettes, from the midst of which a number of flower-stalks rise to the height of 1 ft., with cylindrical flower-spikes about 3 by 1½ in.; the smallness of the flowers is compensated for by their glowing apricot colour, enhanced by bright yellow anthers. The flowers open first on the top side in September. Abyssinia.

K. caulescens and K. Northiæ differ from all other cultivated kinds in their caulescent habit. K. caulescens differs from all the forms of aloides in being smaller, and in having very glaucous leaves, short heads, and smaller and less curved flowers. The stem, at 5 or 6 in. from the ground, can just be spanned by both hands; the scape is about 4½ ft. high, with a dense head of flower 6 in. in length of a reddish-salmon colour in its earlier stages, but in the fully-expanded flower it gradually becomes white, faintly tinged with greenish-yellow, producing an effective contrast. The glaucous blue-gray foliage is pretty. Though less brilliant than most of the species, it is one of the hardiest, and is distinct and robust. It is a very striking plant for the bold rock-garden, and it does well and flowers freely on dry slopes in light warm soils, and in open sunny positions. It should have a little protection in severe cold. Suckers or offsets taken off in early autumn root freely in sand in a cold frame.

K. comosa seems to be closely allied to K. pumila, and has a peculiar appearance with its long protruding style and anthers. It is much dwarfer than K. aloides, its leaves are much narrower, while its flowers are smaller and its bright green leaves are in dense rosettes, narrow, very pointed, and almost three-cornered. The bright yellow flowers droop in a dense oblong head, the stamen and style being about twice the length of the flower tube. K. comosa is a showy plant, flowering in September, but is rather tender.

K. foliosa may be said to be the counterpart of K. caulescens, but it has more distinct stems. It is one of the most robust of all the Kniphofias, and is easily distinguished by its broadish leaves and its protruding stamens. The leaves form a dense tuft on the top of a stem 1 to 3 ft. high and are 3 or 4 in. broad at the base, tapering to a long point: flowers in a dense oblong head nearly 1 ft. long, bright yellow or tinged red, appearing in late autumn. Cape. = K. Quartiniana.

K. Leichtlini is a native of Abyssinia, and requires winter protection even in the South of England. Its spreading bright green leaves form a dense tuft; they are 2 to 4 ft. long, three-cornered, with entire margins, the flower-stems 2 to 4 ft. high, the flower-head about 6 in. long, the drooping flowers of a dull vermilion-red and yellow. The variety disticha, which is quite distinct from the type, is more robust, its leaves broader, and flower-tube shorter; two or three heads of bright deep yellow

flowers are borne on the same stem in August. Some have suggested that it is a hybrid between K. Leichtlini and K. comosa.

K. Macowani.—This differs from most Kniphofias in having the segments of its corolla reflexed, and in being of dwarf habit, 12 to 18 in. high, the narrow grassy leaves 1 to 2 ft. long, the flower-heads small, the flowers of a bright orange-red. It is hardy, and is suitable for rock-gardens. Rigidissima and maroccana are garden synonyms. The variety longiflora has much longer flowers. K. corallina is a robust hybrid. It is exactly intermediate between K. Macowani and K. aloides, and is a very pretty plant.

K. Northiæ.—This is most nearly allied to K. caulescens, but its leaves are much broader, are not keeled, and are serrulate on the margins. The dense flower-heads are about 1 ft. long, the flowers being pale yellow, but the upper ones are tinged with red towards the tips. S. Africa.

K. Rooperi is nearly allied to K. aloides, but is an early, or summer, flowering plant, while the stamens are included in the tube; the flowers are paler and less curved, and the leaves are broad and very glaucous. K. Rooperi is a native of Caffraria, and requires a little protection during severe winters. It has a fine bold effect when in full flower, the flower-heads, 6 in. to 1 ft. long, being crowded with bright orange-red flowers, which get yellowish with age.

The plant usually but wrongly called Rooperi flowers in November and December, and is a variety of K. aloides.

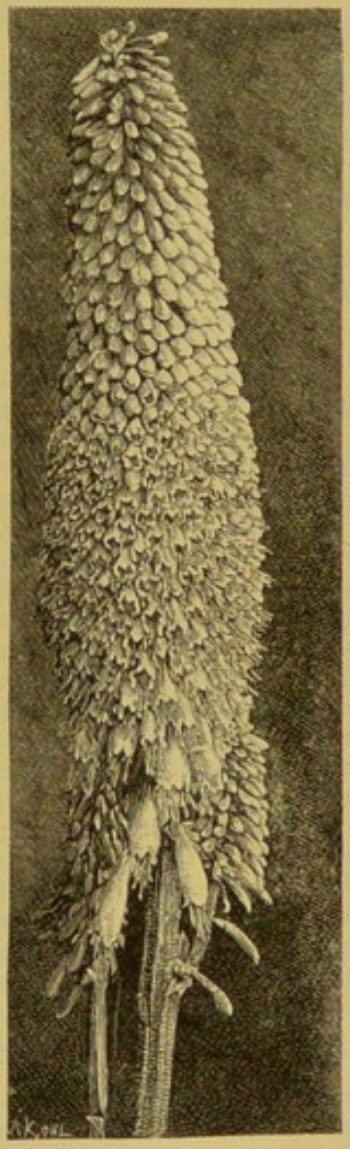
K. sarmentosa is distinguished from K. aloides by its smaller glaucous leaves, the cylindrical flower-heads from 6 in. to 1 ft. long, the flowers red in the upper half, and yellow, or yellow tinged red in the lower. It is perfectly hardy. There is a good hybrid between K. sarmentosa and K. aloides. Cape.

K. triangularis, at first sight, reminds one of K. Macowani, especially as regards the flower-spike, which is about the same size and of a similar tint. The foliage, however, is broader and longer, and in this respect it resembles K. Uvaria. It is desirable because it is earlier in flower than most varieties, and also because it is a free grower.

K. Uvaria (*= K. aloides*).

Other species not noticed in detail are K. pumila, pallidiflora, pauciflora, natalensis, Kirki, Tysoni, modesta, Granti.—D. K.

HYBRIDS AND VARIETIES.—As we are getting to know the value of the Flame Flowers, many beautiful hybrids have been raised. We are indebted to Max Leichtlin for quite a group of them. Others have given us beautiful forms, such as the varieties John Waterer, Otto Mann, Max Leichtlin, and others, but all these owe their origin to red-flowered species, and do not much depart from the typical forms. Since the introduction, however, of yellow-flowered species, a new field was opened to the hybridiser.



Kniphofia Obelisk.

The predominating colour in these new hybrids is yellow, in all shades varying through orange to a crimson-scarlet. In habit the plants vary quite as much as in the colour and form of the flower-spikes. Of some, whose parentage to K. Leichtlini must be very near, the foliage is narrow and deciduous, and the spikes not more than 3 ft. high. Other varieties have massive foliage some 3 in. or 4 in. broad,

the spikes attaining a height of 7 ft. The variety Obelisk is robust, with broad leafage and spikes some 5 ft. in height. The colour of the spikes is a pure golden-yellow, and strong spikes often produce two or three additional spikelets.

Other beautiful forms are Triumph, a very fine hybrid; Star of Baden-Baden, straw-yellow, the spikes more than 7 ft. high; Ophir, orange-yellow, very free-flowering; Lachesis, very hardy and rapid in growth, the flower deep yellow, turning to straw colour. Turning from the yellow varieties we have Leda, a beautiful and early-flowering form, about 4 ft. high, the flowers coral-red with an orange tinge. Matador seems to have nobilis for one of its parents; the spikes are large, broad, and the colour a deep red. Van Tubergen, jun., of Haarlem, finds that in his deeply dug, rich sandy soil where water can never be stagnant, all the above Kniphofias safely pass the winter outside if superfluous water is warded off. This gathers in the central parts of the plants, and may prove disastrous when suddenly sharp frosts occur.

There are now fifty or sixty varieties of these brilliant Torch Lilies, in place of the few known, say twenty years ago, but had we only the old Kniphofia (Tritoma) Uvaria, it is a plant capable of yielding very fine effects as planted in quantity either alone or grouped along with other suitable vegetation. All the hardy kinds grow well in deep well-drained loam and are readily increased by division or by seeds, which some varieties bear freely in mild localities. Once well planted in bold groups, Kniphofias form the most effective masses of colour, and their effect is visible at long distances, so that they are plants of much value to the landscape gardener who may use them on lawns, or wood margins, on banks, and near water, either alone or along with other vigorous plants, such as Spiræas, Pampas Grass, Arundo, or the Giant Polygonum sachalinense and P. Sieboldi. A bold group of these flowers backed or partly surrounded by hardy Bamboos, is a sight in October not readily to be forgotten. K. Obelisk is the splendid Kniphofia, of which an illustration is given in the accompanying woodcut.

Knotweed (*Polygonum*).

Kochia scoparia.—A curious and seldom-grown annual of the Goose-foot family, forming a neat pointed bush, from 3 to 5 ft. high, the flowers insignificant. The graceful habit of the plant makes it valuable, placed either singly or in groups, especially from July to September, the time of its full development. It should be sown in April, in a hot-bed, and afterwards planted out in beds or borders. S. Europe.

Kœlreuteria paniculata.—A small tree, beautiful when in flower; the long-divided leaves elegant throughout summer, in autumn die off a rich yellow; the yellow flowers form large clusters over the spreading mass of foliage. The Kœlreuteria is picturesque, valuable for groups, is a native of China, hardy, and thrives in any good soil.

Koniga (*Alyssum*).

Labrador Tea (*Ledum*).

Laburnum.—There are many named Laburnums, and of these the finest are the following: Waterer's Laburnum with spikes, 1 ft. or more long, and the colour the brightest yellow, of excellent habit and free-flowering. Parkesi has also

Laburnum.

very long racemes, and may be identified by flowers of a deeper yellow; Carlieri and grandiflorum have good flowers, while quercifolium, bullatum, and others have peculiar leaves. The drooping variety (pendulum) is a graceful tree, with weeping branches. L. serotinum comes into bloom later than the ordinary kinds, and autumnale is said to flower in autumn. There are twenty other sorts enumerated in catalogues. As with other very showy-flowered trees, considerable taste and judgment are required to plant the Laburnum effectively. Instead of dotting it about in a meaningless way, distinct groups should be planted in widely-separated spots, or, at least, where from any given point one cannot see the tree

repeated more than once. It is best not to plant large specimens, for few trees are so difficult to transplant when large. The Scotch Laburnum, a most valuable kind, usually flowers when the others are past. It may be recognised by its broader and deeper green leaves, and by the rich yellow of the racemes, which are also longer than those of the ordinary sort. There are several named varieties of the Scotch Laburnum, among them being a drooping kind, pendulum, and fragrans. L. Adami has long been a puzzle to botanists, who even now cannot account for its peculiar character. It is supposed that it originated by grafting the purple-flowered Cytisus purpureus upon the common Laburnum, a graft hybrid being the result. The same tree, and even the same branch, bears racemes of both yellow and purple flowers, and sometimes the colour is a dull purple, like yellow mixed with purple. Old trees of these are singularly quaint and not without beauty.

Lactuca (*Lettuce*).—Composite plants, oftener seen in the kitchen than in the flower garden. There are one or two blue-flowered perennial kinds, which are not without beauty for quiet coloured borders.

Lady Fern (*Asplenium Filix-fœmina*).

Lady's Bedstraw (*Galium*).

Lady's Fingers (*Anthyllis*).

Lady's Slipper (*Cypripedium Calceolus*).

Lagurus ovatus (*Hare's-tail Grass*).—A pretty annual Grass, about 1 ft. high, with hare's-tail-like plumes, useful for bouquets. It should be sown in pots in August, wintered in frames, and divided and transplanted in spring, or sown in open ground in April. It flowers from July to September, and it is pretty in the flower garden in large patches as a relief to showy-flowering things.

Lamarckia aurea.—A small hardy annual Grass, with silky plumes, becoming golden as they mature. It is suitable for bouquets, and may be dried for winter use. Seeds should be sown in spring or autumn, in the open border in light soil. *Syn.*, Chrysurus cynosuroides.

Lamium (*Dead Nettle*).—In this genus there are a few plants occasionally worth a place in poor dry soils, where little else will grow—such as are found on dry banks or beneath trees. L. garganicum, from 1 to 1½ ft. high, has in summer whorls of purplish blossoms. L. Orvala is taller and has deep red flowers in early summer. L. maculatum, a native plant, has leaves blotched with silvery-white. Of this species the variety aureum is one of the best golden-leaved plants for edgings. I does not withstand the full exposure that suits the yellow Feverfew, but in sandy or moist soils its peculiar tint is unequalled by any other hardy plant, and its blooms are pretty. It does not require to be constantly trimmed like the Feverfew. It is known also as L. striatum aureum.

Lantana.—S. American plants, usually grown in greenhouses, and also in the summer garden. The Verbena-like heads of bloom are rich and varied in colour, and range from crimson, through scarlet, orange, and yellow, to white, the colours varying in the same head. They flower freely for about nine months, and are easy to grow, requiring the protection of the greenhouse during winter after being lifted in autumn. Propagated in spring by cuttings or seeds, the plants being grown in rich light soil till planted out in a warm position. There are many sorts grown, and a selection should include Phosphore, Don Calmet, Distinction, Eclat, Victoire, La Neige, Feu Follet, Pluie d'Or, Ver Luisant, Ne Plus Ultra, Eldorado, and Heroine. Like many dwarf half-hardy plants, they have various uses in the flower garden, and may be trained as standards. The pretty L. Sellowi is a good dwarf plant; but the odour of the plants is unpleasant, and they are not likely to be much used. West Indies. Verbenaceæ.

Lardizabala biternata.—A handsome evergreen climber from Chili, hardy enough for walls in the south and coast districts; the foliage a deep green, the leaflets thick. Along the south coast it makes a beautiful wall-covering, reaching a height of 20 ft. or more, but its inconspicuous purple flowers are seldom borne in the open air. It should be planted in light or well-drained soil.

Larkspur (*Delphinium*).

Lasthenia glabrata.—A pretty hardy annual, from 9 in. to 1½ ft. high, with many rich orange-yellow blossoms. It should be sown in autumn or early summer, or in spring for later bloom. Like other annuals, it looks best in broad tufts, but care must be taken that the plants are properly thinned. The autumn-sown plants come in with the Iberis, Wallflowers, and early Phloxes. L. californica is a variety. California. Compositæ.

Lastrea.—See Aspidium and Nephrodium.

Lathyrus (*Everlasting Pea*).—Hardy annual and perennial plants, several of them very beautiful for the garden. The perennial kinds of Peas are valuable, as they are of such free growth and last long in bloom. The kinds worth growing are not numerous, yet sufficient to keep up

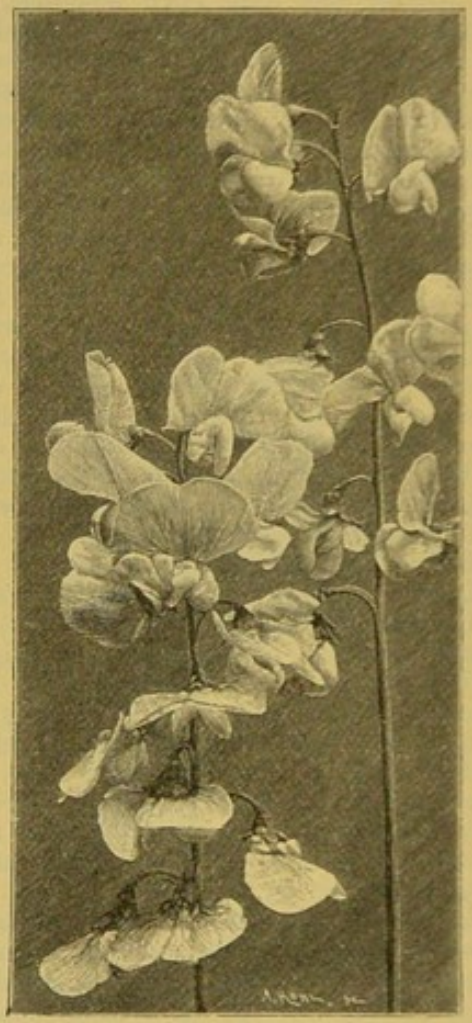
an unbroken display from May till October. They have long fleshy roots, which, when once established, will go on for years without giving further trouble or needing attention. Near a low wall or trellis they succeed admirably, and climbing gracefully drape such surfaces with veils of foliage and blossom. Upon banks, raised borders, or on the bold rock-garden few things are prettier, and they never look better than when scrambling over the face of a rock, flowering as they go. The way to spoil them is to attempt to tie and train them in a stiff or formal way. They may be used with good effect in mixed borders, and they are valuable for cutting from. The best varieties are pretty if allowed to grow through beds of medium-sized shrubs, and there are few effects in gardens prettier than that of the best white varieties when allowed to trail and bloom on a grassy place untrained in any way; a few tufts so placed are charming and live for many years. Most of the species ripen seed freely, and all may be divided either in autumn or spring.

L. latifolius (*Everlasting Pea*).—One of the hardiest and most easily cultivated of plants, thriving almost anywhere, even in courtyards amongst flags. There are good white varieties and some striped with deeper coloured flowers than the old kind. All are peculiarly suited for rough places, and will scramble over bushes. Staking, tying, and training only spoil them. An old tree-stump, or the side of a trellis or summer-house, is where they delight to grow undisturbed, but there are many uses for this fine plant and its forms in the flower-garden, and in rich hedge-banks it would be easy to naturalise.

In warm seasons these Peas ripen seed in the south and on warm soil, and advantage should be taken of increasing the stock in this way. Generally, however, little if any seed is borne.

L. grandiflorus (*Two-flowered Everlasting Pea*) is a very handsome plant for the early summer garden, succeeding anywhere, and, as the name implies, is the largest-flowered species, the blooms being as large as those of a Sweet Pea. It is at its best in June and early July, the flowers usually borne in pairs, of a rosy-purple colour, the stems in good soil reaching 6 ft. It is one of the hardiest of the genus, and from its neat and free-flowering habit a very useful border-plant, common in cottage gardens. It has not so far varied in colour as the Everlasting Pea, but it may do so yet, and varieties of it would be welcome.

L. rotundifolius (*Persian Everlasting Pea*).—This pretty Everlasting Pea is also known under the name of L. Drummondi, but there is no necessity for this name, as it only leads to confusion. This is a very old species, but it is not so common as the larger kinds, though good from its earliness and freedom of flowering. It grows about 5 ft. high, the leaves are nearly round, the flowers in large clusters, bright rose-pink,



The White Everlasting Pea (Lathyrus latifolius albus).

about an inch in diameter, and open in early June. It is of easy culture, and increased by division. Asia Minor and Persia.

L. Sibthorpi (*Early Everlasting Pea*).—This is valuable because it is so early, being at its best in May and June. It does not grow very tall, rarely more than 2 or 3 ft., but it bears many fine spikes of delicate flowers of a beautiful purplish-red colour. In Mr. Thompson's garden at Ipswich there is a fine bed of this pretty

and somewhat rare species. The plants are all in a large nursery bed, and are supported with a few branched stakes, upon which the flowers cluster in rich masses. It has been in cultivation at Oxford Botanic Garden for many years, and is said to have been introduced by Sibthorp. It flowers a month earlier than L. rotundifolius, and may be increased by division or seed, but is not so vigorous in ordinary conditions as the commoner Everlasting Peas, and should until plentiful be planted in warm borders.

L. tuberosus (*Tuber Pea*) is a pretty low-growing kind, with flowers of a bright dark pink. It is found in many of our cornfields, and is cultivated in Holland for the tuberous roots, which are said to be edible. The tubers are about 2 in. long, broadest at the root end and tapering to the apex. It will be found a useful plant for the flower border, it being a true perennial, of neat habit, and very free-flowering. It climbs like other Peas, but also grows in little tendril-bound heaps without any further effort at going higher, and then the matted herbage soon becomes densely studded over with the rose-coloured flowers in small clusters of five to seven each. It will thus be seen that this free and long-flowering Pea is suited for draping bold rocks. Europe and W. Asia, naturalised in England.

L. magellanicus (*Lord Anson's Pea*) is the most beautiful of blue-flowered Peas. In many gardens a particularly bright form of L. sativus will be found under the name of Lord Anson's Pea, which is a true perennial, almost evergreen, the stem and leaves being covered with a bluish bloom. It grows from 3 to 5 ft. high; the flowers, many in a bunch, are of medium size, violet-blue with darker veins, opening in June and continuing until the end of July. This species is said to have been originally introduced by the cook of H.M. ship *Centurion*, commanded by Lord Anson, in 1744, and was cultivated by Philip Miller in the Botanic Garden at Chelsea. In the Fulham Nurseries it stood the winter against a wall. It is a maritime species, and a little salt may help its growth under cultivation. It ripens seed freely, and may also be increased by division. Straits of Magellan, and probably not quite hardy unless planted near a wall or house.

L. maritimus (*Beach Pea*).—This is a very interesting native plant, inhabiting the sea-shore, and not so vigorous as the preceding kinds. It is, however, pretty and worth a place on open parts of the rock-garden, in gravelly or gritty soil. The stems are prostrate, 18 in. to 3 ft. long, sea-green in colour; flowers in summer, purple fading to blue. N. Europe, America, and Asia.

L. odoratus (*Sweet Pea*).—Perhaps the most precious annual plant grown. There are many ways in which it may be prettily used in a garden. A common method is to sow little patches in borders, the seed being generally that of mixed varieties, and, by placing some stakes against them, to secure pillars of flower. Where it can be done, a hedge of Sweet Peas is an attractive sight, and sometimes Sweet Peas can be used to hide an unsightly place during the summer. Many people grow a hedge of Sweet Peas in order to yield a supply of cut flowers, but it is useless to grow the Sweet Pea except in good soil. Some sow in late autumn; this is not always satisfactory, though, when it succeeds, the result is good. By sowing indoors in pots or boxes about the middle of February, and gradually hardening off the young plants when they are 1 in. high, Sweet Peas may be made to acquire a sturdiness and toughness which, when they are planted out in good well-manured soil in April, conduces to rapid growth and to immunity from birds and slugs, which would otherwise attack the tender shoots the moment they appeared above the ground. The soil should be well trenched, and plenty of good stable manure should be worked in; and after the plants have been rather thickly dibbled in, supports of hazel stakes or netting should be placed round them. Then, with a little attention during dry weather and the regular removal of incipient pods, they yield abundance of beautiful and fragrant flowers all through the summer and autumn. When getting past their best, they should be cut down level with the tops of the sticks, and the result will be that from the bottom to the top a new growth will spring up, and there will be an abundance of bloom until the end of October. There are now many fine varieties of the Sweet Pea, varying chiefly in colour.

Mr. Eckford, of Wem, Salop, now so well known for the many varieties of Sweet Peas he has raised, in writing to me as to their good cultivation, says: "I do not like the Celery-trench fashion. If the ground is in a tolerably good state of cultivation, that is, has been fairly well dug, simply put on a fair coat of stable manure and dig deep, leaving it rough. In the beginning of March when the soil is in good condition, thoroughly break with a fork, which will be sufficient

preparation for the seed. To obtain the best results, clumps of two or three plants at 1 yard or 2 yards apart are better than continuous rows. In staking put three or four bushy stakes thus : : round the clump, but well away from the plants, which should have a few smaller sticks to lead them up to the taller ones. Round the whole put a string or bit of wire to keep them together, so that when the plants have grown up a sort of cone may be formed. The sticks should be if possible 8 or 10 ft. high, as planted in this way the Peas will, if mulched with half-spent manure or any kind of refuse to protect the roots from hot sun, grow very strong and tall, and if the flowers are cut close every morning, so that no seed can form, they will continue to bloom till the frost puts an end to them. Should the weather prove dry, a soaking of weak manure water two or three times during the season would be beneficial. Should they from excessive growth get untidy, take the hedge-shears and clip them over neatly ; they will in a few days throw out fresh growths and a profusion of flowers. If this way of growing Sweet Peas is adopted, it is a good plan to put the seed singly into small pots, and when the seedlings are strong enough to plant them out ; in doing so make the ground very firm about them—they delight in firm ground. If the weather be dry tread well in."

Sweet Peas do admirably in Scotland. Mr. Brotherston thus writes concerning his mode of treatment at Tynninghame : Mr. Eckford (the raiser of many charming varieties of Sweet Peas) was here a few weeks ago, and he confessed to be unable to grow them so fine. He said that he had never previously seen the flowers of his own Peas grown to so large a size or so fine in colour. Grow the plants singly, allowing each plenty of room. If you are able to get plenty of good loam, allow each plant one and a half barrowfuls, and of leaf-soil half a barrowful, incorporating these with the top spit of the garden soil Heavy dressings of manure produce rank growth when the plants are young. I prefer to add manure as a surface dressing ; my favourite manures for this purpose being soot, pigeon manure, superphosphate of lime and sulphate of ammonia. Peat litter, which has passed through a stable, is also good. Manure water will of course be also beneficial. For training on, nothing is more satisfactory than a dead Spruce Fir for each plant. Pinching is important, as it not only keeps the plant within bounds, but all through the season it causes the formation of young flowering growths. Seeding is so fatal to the production of bloom, and exhausts the energies of the plant so rapidly and immediately, that in hot weather I should not hesitate to remove every flower and opening bud rather than risk leaving them to form seed-pods. A position little exposed to continuous sunshine will be advantageous. I would make a late sowing about the middle of June, or perhaps even later, always, however, allowing each plant plenty of room. Some sorts are less given to form seed-pods than others. Captain of the Blues and Cardinal produce seed the most freely here. Orange Prince, Countess of Radnor, Mrs. Sankey, and Blanche Burpee are shy to set.

OTHER ANNUAL PEAS.—Though none of the other annual kinds of Lathyrus rival the Sweet Pea, there are several pretty ones. Of these the Tangier Pea (L. tingitanus) grows about 3 ft. high, and has small dark red-purple flowers ; the Chickling Vetch (L. sativus) has flowers varying from pure white to deep purple. The variety azureus is a remarkably elegant dwarf kind with many clear blue flowers ; L. s. coloratus has flowers, white, purple, and blue ; L. Gorgoni, about 2 ft. high, pale salmon-coloured flowers ; L. articulatus, Clymenum, and calcaratus are other pretty kinds for borders.

Laurel, Alexandrian (*Ruscus*).
,, **Common** (*Cerasus*).
,, **Ground** (*Epigæa*).
,, **Mountain** (*Kalmia*).
,, **Poet's** (*Laurus nobilis*).
Laurestinus (*Viburnum*).

Laurus nobilis (*Poet's Laurel*).—Generally known as Sweet Bay, but to which its true name Laurel should be kept, for it is the true Poet's Laurel, the vigorous Cherry Laurel having wrongly taken the name. Perhaps there is no evergreen shrub we oftener see in cottage and other little gardens. In England it is hardy over large areas, if it suffers occasionally, especially on cold soils, where the ripening of the shoots is not completed. Gardeners in the larger places rather neglect it, and seldom plant it in groups and colonies, as they might well do on dry banks. The plant is interesting in every way for its associations as well as for its beauty. There are several slight varieties, in addition to the common form. It requires some care in transplanting or it will be a long time rooting well. Warm and sheltered places are best for it, if possible on sandy or free

soil ; and it might be planted in different aspects with advantage.

Lavatera (*Tree Mallow*).—For the most part vigorous and somewhat coarse annuals, biennials, and perennials, few of great value in the garden. The most useful is L. trimestris, a beautiful South European annual, from 2 to 3 ft. high, bearing in summer large pale rose or white blossoms, thriving in rich and light soil. It may be sown in the open border in autumn or early spring. Among the taller kinds the best is L. arborea, which has the look of a small tree, in the southern counties sometimes 10 ft. high. The stem branches into a broad, compact, roundish, and very leafy head. In rich well-drained beds it would be a worthy companion for the Ricinus and the Cannas. It is most at home on dry soils, but during the summer months it does on all kinds of soil. A biennial, it should be raised from seed annually. L. cashmeriana, unguiculata, thuringiaca, sylvestris, and others of a similar character are not worth growing except in the wild garden, or naturalised.

Lavender-Cotton (*Santolina*).

Lavender, Sea (*Statice*).

Lavendula (*Lavender*).—The common Lavender, one of the most grateful in odour and pretty in effect of all garden plants. It succeeds best in an open sunny position, in light soil. The white-flowered variety is as sweet as the blue, and flowers at the same time. Though a bush, the Lavender has been for centuries associated with our old garden-flowers. For low hedges, as dividing lines in or around ground devoted to nursery beds of hardy flowers, and many other purposes, it is admirable, and for dry banks and warm slopes. L. lanata, dentata, and Stœchas may also be seen in botanic gardens. S. Europe.

Leavenworthia aurea.—A pretty cruciferous annual of very dwarf habit, forming a neat rosette-like tuft, from which arise numerous stalks 4 to 5 in. high, each bearing a single flower about ½ in. across, with white petals stained at the base with deep yellow. Occasionally, when strongly grown, a short stem is thrown up, bearing the flowers on long pedicels. It blooms in May and June, and should be treated as a half-hardy annual. Arkansas.

Ledum (*Labrador Tea*).—The best of the few species of Ledum grown in gardens is L. latifolium, which represents the genus well. Its usual height is under 2 ft., but sometimes it reaches 3 ft. ; it is dense and compact, and has small leaves, of a rusty brown beneath. During the latter part of May it bears clusters of white flowers. It is a very old garden plant, and was brought from North America more than a century ago. The Canadian form of it (canadense) is found in some gardens, but does not differ materially from the type. A form called globosum is finer, as the flower-clusters are larger and more globular. L. palustre is commoner than L. latifolium, but being smaller in every part is not so good ; it is

Ledum.

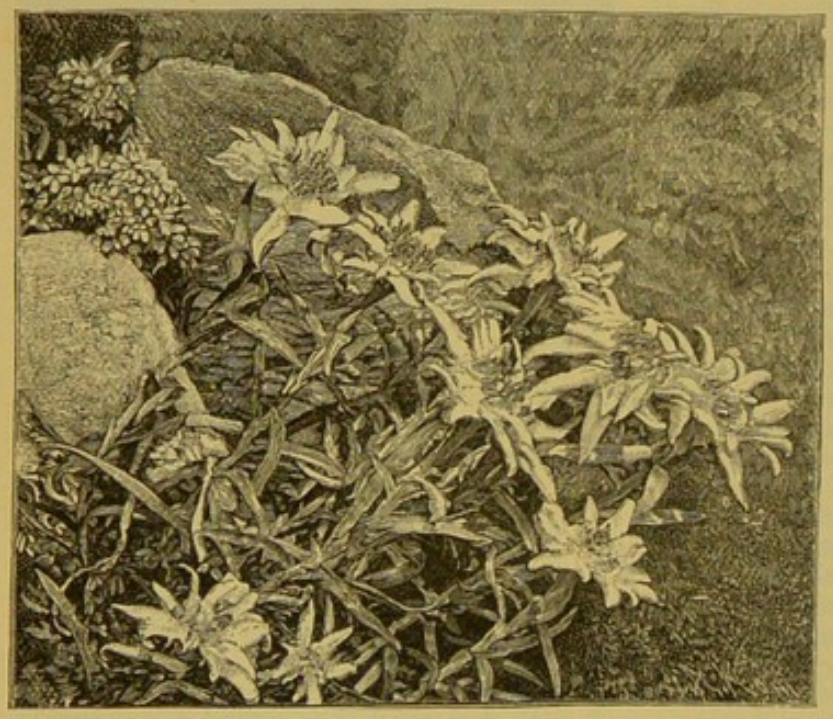
dwarf and spreading, and its flowers are white. The Ledums thrive best in a peaty soil or sandy loam, and are usually included in a collection of so-called American plants. They are charming grouped in the bog-garden, fully exposed if possible. North Europe and America.

Leiophyllum buxifolium (*Sand Myrtle*).—A neat, pretty, and tiny shrub, forming compact bushes 4 to 6 in. high, with evergreen leaves resembling those of the Box. The small white flowers are borne in dense clusters in early summer, the unopened buds being of a delicate pink hue, and it is suited for grouping with diminutive shrubs, such as the Partridge Berry, Daphne Cneorum, the small Andromedas, and with Willows like S. reticulata and serpyllifolia, that rise little above the ground. It is generally planted on the margins of peat beds with other American peat-loving shrubs, and it is also a good plant for the rock-garden. A native of sandy "pine barrens" in New Jersey. There is more than one variety in cultivation.

Leontice (*Lion's Leaf*).—Dwarf perennials of the Barberry family, natives of Europe and Asia. There are some three or four species in cultivation, all pretty plants, about 1 ft. high, and bear in spring bright yellow blossoms. L. Leontopetalum, Chrysogonum, vesicaria, and odessana are the kinds grown, and are all perfectly hardy ; but, as they seem to be

injured by the excessive moisture of our winters, they are generally cultivated in frames or under hand-lights, to shelter them and preserve their flowers from the effects of the weather in spring. A light friable soil is best to plant them in. The large depressed root-stocks, which resemble the corms of a Cyclamen, should not be placed beneath the soil, but fastened by some means, so that only the bases, from which the fibry roots are emitted, should be in contact with the ground.

Leontopodium alpinum (*Edelweiss*).—A pretty and hoary-leaved alpine plant, the small yellow flowers surrounded by star-like heads of leaves clothed with a



Leontopodium alpinum (Edelweiss).

dense white woolly substance. The people are so pleased at seeing this plant in cultivation that they send letters to the *Times* to announce the fact. Its culture is not difficult on sandy soils, or even as a border-plant, but it grows too luxuriantly in moist rich soils. To keep a good stock of flowering plants, the old ones should be divided annually or young ones raised from seeds, which in some seasons ripen plentifully. It succeeds either on exposed spots of the rock-garden or in an ordinary border, if not placed too near rank-growing things. = Gnaphalium alpinum. Compositæ.

Leonurus Leonitis (*Lion's-tail*).—A distinct and handsome plant of the Salvia Order, allied to Phlomis, about 2 ft high, and bearing in summer whorls of very showy bright scarlet flowers. It is a Cape plant, and is not hardy enough for our climate during the winter, even when protected by a cold frame, though in warm light soils, in the southern parts of the country, it thrives out-of-doors in summer, and where it will not bloom out-of-doors, it is worthy of a place as a cool greenhouse plant. Near Paris, established plants placed out for the summer flower well. Wherever it can be grown in the open air, it would be valuable for association with the finer bedding and subtropical plants. Cuttings strike freely in spring—more freely than in autumn—in a slight bottom-heat.

Leopard's Bane (*Doronicum*).

Leptinella scariosa.—A very dwarf Chilian plant, with small deeply-cut foliage, forming a dense carpet, on which account it is employed for flat geometrical bedding, for, though a fast grower, it does not require clipping to keep it down, and grows in any soil. Its flowers are inconspicuous. Division. Compositæ. L. filicaulis and L. dioica, if not the same, are very similar.

Leptosiphon.—Pretty Californian annuals. To produce the best results these charming annuals must be strongly grown, and robust specimens can only be obtained by thin sowing. In light dry soils early autumn sowing is recommended, sufficiently early to permit the young plants to attain some size before the setting-in of winter. Fair success however may be looked for, especially in good soils, where spring-sowing will often yield excellent results; while the advantages of autumn-sowing are best seen in light sandy soils. Of the numerous kinds in cultivation the best is L. roseus, which is one of the most charming of hardy annuals, forming dense tufts, studded with rosy-carmine flowers. The very pretty L. luteus and its deeper-coloured variety aureus are scarcely inferior to L. roseus, which they resemble in habit, though with smaller flowers.

The hybrid varieties of these are interesting for the singular variety of shades occurring among them. The larger-flowered species, L. densiflorus and L. androsaceus, should be too well known to need description; both have lilac-purple flowers, and are most attractive annuals, and of both species there are good white varieties deserving of especial recommendation. All natives of California. Polemoniaceæ.

Leptosyne.—Californian plants of the Composite family, resembling some of the Coreopsis. L. Douglasi is a pretty half-hardy annual, about 1 ft. high, and having large yellow flowers. L. Stillmanni resembles it, but is smaller. L. maritima, a perennial, is somewhat tender, and should be treated as an annual. It is a showy plant, about 6 in. high, and bears large bright yellow flowers. All these plants thrive best in an open sunny position in a light warm soil. The seeds should be sown early in heat, and the seedlings transplanted in May.

Leucanthemum alpinum (*Alpine Feverfew*).—A very dwarf plant. The leaves are small, and the abundant flowers are supported on hoary little stems 1 to 3 in. long, are pure white with yellow centres, and are more than 1 in. across. It is rather quaint and pretty, and well deserves cultivation in bare level places, on poor sandy or gravelly soil in the rock-garden. It is sometimes known as Chrysanthemum arcticum and Pyrethrum alpinum. It is a native of the Alps, and is readily increased by division or seed. For other species of Leucanthemum see Chrysanthemum.

Leucojum (*Snowflake*).—Pretty bulbs allied to the Snowdrop, but bolder and easily naturalised in rich valley soils.

L. æstivum (*Summer Snowflake*).—A vigorous plant, flowers white drooping on stalks 1 to 1½ ft. high. In clusters of four to eight on a stem, the leaves in shape like those of Daffodils. It blooms early in summer (in many places before the end of spring), and is pretty in mixed borders or on the margins of shrubberies. It thrives in almost any soil, but is strongest in deep alluvial soil, and is multiplied by separation of the bulbs. It is excellent for the wild garden, and increases as rapidly as the common Daffodil. A form of L. æstivum is L. Hernandezi, a native of Majorca and Minorca, growing to about the same height as L. æstivum, but with narrower leaves, flowers only half the size, and usually not more than three flowers on each stem, appearing nearly a month earlier.

L. vernum (*Spring Snowflake*).—A beautiful early flower about 6 in. high. The fragrant drooping flower resembles a large Snowdrop, the tips of the petals being marked with a greenish spot. It is excellent for the rock-garden or borders, and thrives in a light, rich soil. Imported bulbs make little show for the first year or two, but when established they flower freely.

L. carpaticum is considered a variety, bearing two flowers on the stem, flowering a month later. Other cultivated Snowflakes are L. hyemale and L. roseum; but these are very rare, and somewhat difficult to cultivate.

Leucophyta Brownei.—A New Hollant plant, with slender hoary stems, in a small state largely used for flat geometrical beds in summer. Increased by cuttings in early spring. Compositæ.

Leucothoë.—Beautiful evergreen shrubs of the Heath family, most of them very old garden plants, and common in collections of American plants. There is a family likeness among the kinds, the best-known being L. acuminata, 1½ to 2½ ft. high, with slender arching stems, in early summer wreathed with white bell-shaped pretty flowers. L. axillaris is similar, and so are L. Catesbæi and L. racemosa, all of which are known under the name Andromeda. They are natives of N. America, hardy, thriving in light soil, preferring peat, and are suitable for the margins of groups of American shrubs, and for low parts of rock-gardens. A newer and very beautiful species is L. Davisiæ, introduced a few years sinces from California, and not so hardy as the others. It makes a neat little evergreen bush 2 or 3 ft. high, and has small leaves on slender stems, in May bearing clusters of small white flowers. It is one of the choicest of evergreen hardy shrubs, and thrives with Rhododendrons and Azaleas in peat soil.

Lewisia rediviva (*Spatlum*).—A remarkable and beautiful Rocky Mountain plant, allied to Portulaca, very dwarf, 1 in. or so high, with a small tuft of narrow leaves, from the centre of which the flower-stalks arise. The blossoms are large for the size of the plant, being from 1 to 2½ in. across, and vary from deep rose to white. The roots are succulent, and can retain life a long time even when dry, and as it sometimes fails to develop leaves annually, is wrongly supposed to be dead. It should be grown in sunshine, for it cannot be flowered in shade, and the crown kept high and dry, though the roots should have moisture. A crevice in the rock-garden is the best situation for it. If

grown in pots, the plant should be on broken stones, and the roots in light sandy loam with peat. After flowering, it shrivels up and becomes a withered twisted mass, like so many bits of string. Oregon, Utah, and Rocky Mountains.

Leycesteria formosa. — A distinct flowering shrub, a native of the Himalayas, nearly hardy throughout these islands, much commoner in Ireland and the west than in the home counties, but it is graceful in flower and form, and reaches 6 ft. high in mild districts; the flowers white, tinged with purple; the leafy bracts purple, succeeded in autumn by purple berries, which are eaten by pheasants, and therefore it is planted in some places for covert. In mild districts it is an evergreen, but generally loses its leaves in late autumn. It thrives in various soils, and under trees.

Liatris (*Snakeroot*).—North American perennials of some beauty, having the flower-heads arranged in long dense spikes. Some are effective border flowers when well grown, and well repay good cultivation. L. elegans grows about 2 ft. high, and has pale-purple spikes 1 ft. or more in length. L. pycnostachya, 2 to 4 ft. high, has deep purple flower-spikes from August to October. L. spicata is one of the handsomest and neatest, growing 1 to 2 ft. high, and its violet-purple spikes continue long in beauty. L. scariosa, squarrosa, cylindracea, elegans, and pumila much resemble the foregoing, and, like them, succeed in any rich light soil, and are best here and there in among peat-loving shrubs or in good borders. Propagated by division in spring or by seed.

Libertia.—Beautiful plants of the Iris Order, of which some are hardy enough for the open border. L. formosa is beautiful at all seasons, even in the depth of winter, owing to the colour of its foliage, which is as green as the Holly; and it bears spikes of flowers of snowy whiteness like some delicate Orchid. It is neat, dwarf, and compact, and has flowers twice as large as the other kinds.

Libertia formosa.

They lie close together on the stem, and remind one of the old double white Rocket. L. ixioides, a New Zealand plant, is also a handsome evergreen species, with narrow grassy foliage and small white blossoms. L. magellanica is also pretty when in flower. All of these thrive in borders of peaty soil, and in the rougher parts of the rock-garden, but they grow slowly on certain loamy soils, living perhaps, but never showing the freedom and grace which they do on free or peaty soils. Increased by seed or by careful division in spring.

Ligularia.—Large perennials, remarkable for bold foliage, one or two for great size, and strikingly distinct aspect, though

not quite beautiful in flower. L. macrophylla is vigorous, with an erect stem nearly 3½ ft. high, and very large glaucous leaves, the yellow flowers borne in a long spike. Free, moist, and somewhat peaty soil is the most suitable for this plant, which is multiplied by careful division in autumn or in spring; it is useful for grouping with fine-leaved herbaceous plants, but will seldom find a place in the select flower garden. Caucasus. L. sibirica, Fischeri, and thyrsoidea are fine-leaved plants, and worth growing with L. macrophylla for their foliage. The Japanese species, L. Kæmpferi and Hodgsoni, are better grown under glass, except in summer, when they may be used among fine-leaved plants in the sub-tropical garden; but the hardy kinds are most interesting.

Lilac (*Syringa*).

Lilium (*Lily*).—The Lilies are such beautiful plants that no garden should be without a variety of them, combining as they do stateliness and grace with brilliant and delicately-coloured flowers. The many kinds in cultivation afford a rich choice. All are beautiful, but some are better suited for particular localities than others. The habit and general character of the plants being so varied, their uses are likewise varied. Some are suited for the rock-garden, others for the mixed border, many for the shrubbery—especially for the Rhododendron beds—while not a few are so robust that they are at home in the wild garden, holding their own against native plants. Their true place, however, is the garden proper, and, when their uses are understood and expressed, there will be a total change in the aspect of the flower garden.

Lilies may be grown in various ways:—

1. Under glass you may have Lilies in flower all the year round.

2. In the open border you may enjoy their beauty each in its own season.

3. You may take them up when coming into flower in the border, and plunging them roots and all into a sufficiently large pot with suitable soil, shade them for two or three days, and then transfer them to bloom in a conservatory or balcony, without damage, providing they are kept well-watered.

Culture is important, but arrangement and grouping are even more so. There are Lilies which will grow in any ordinary soil; a good, rich loamy soil suits the greater number; others want plenty of sand, so as to keep the soil free; while others can be easily grown in ordinary soil if it is mixed with leaf-mould or peat. It will thus be seen that there are no great difficulties in the way of growing a large number of kinds. In nearly all cases Lilies are more vigorous and brilliant where partially protected from severe frosts; and the flowers last longer when sheltered from the scorching rays of the mid-day sun. The shrubbery border, among Rhododendrons (for those requiring peat), and the mixed border between shrubs and herbaceous plants, where the young shoots get a slight protection from the early frosts, are among the best situations. A very safe place is near the edge of a Rhododendron bed; soil that will grow Rhododendrons will grow most sorts of Lilies, and afford protection from "blight and spot," which in some seasons, notably when cold and wet follow drought, greatly injure the growth and flowering of some species, even though the bulbs be unhurt. It should be remembered that bulbs of nearly all Lilies occasionally lie dormant a whole season, and push out luxuriantly the following summer, especially the Martagon tribe.

[1] Manure should never be dug in with the bulbs, though they accept it gratefully if liberally applied as a top dressing after they have been established a year. The only manure to be dug in at planting is rich peat and sand, in the proportion of two parts of peat to one of sand.[2] This is advisedly called manure. In light soils L. auratum and some others are all the better for a top-dressing of dry clay broken small. Though to each brief description below we have appended a word or two upon cultivation, it is perhaps advisable to add a few general remarks. It should be borne in mind that, however beautiful nearly all the known Lilies are, some are extremely fastidious; but there is a rare choice of beauty among those that are easily cultivated. Lilies may be divided into three classes—first, those that are best grown in pots, such as neilgherrense, Wallichianum, philippinense, and nepalense; also Wallichianum superbum (sulphureum), Lowi primulinum, Bakeri, new

[1] Experience has shown me that manure may be applied, more liberally than I thought, to the Speciosum group; while Giganteum literally revels in "muck." I have given with much advantage to pot Lilies (Longiflorum, Speciosum, and Henryi) Clay's Fertilizer, Albert's Concentrated and Fish Manure, so that I begin to believe that, given sound healthy bulbs, manure, especially in the liquid forms, may be given to a much greater extent than was originally supposed. I have seen an acre of Speciosum and Longiflorum Lilies in full luxuriant bloom, whose bulbs were planted at the top of farmyard manure dug in to receive them.—ALEXANDER WALLACE.

[2] Sea-sand, where it can be procured, is by far the best kind to use; all bulbs take to it kindly, as it always attracts moisture.

Burmese Lilies ; and, in many soils and climates, speciosum, auratum, and longiflorum ; secondly, those that are best grown out-of-doors in loamy soil ; thirdly, those that are best grown out-of-doors in peaty soil. On light soils the following kinds do remarkably well : L. candidum, longiflorum and its varieties, chalcedonicum, excelsum, and the speciosum section ; all of the umbellatum, croceum, and elegans type ; also tigrinum sinense. For deep loamy soil the best kinds are L. auratum, Szovitzianum, Humboldti, the Tiger family, most of the Martagon group ; while in an intermediate soil of leaf-mould, loam, and sand, we advise the planting of Buschianum, philadelphicum, pulchellum, Browni, giganteum, tenuifolium, Krameri, etc. The North American forms require more peat and more moisture than the other groups. Lilies require, so far as their roots are concerned, a cool bottom, abundant moisture, and, for most kinds, a free drainage. The slope of a hill facing south-east or south-west, for instance, with water from above percolating through the sub-soil, so as to always afford a supply, without stagnation, would be an admirable site.

Lilium auratum.

PROPAGATION.—This is generally and most readily effected by separating the bulblets or offsets from the parent bulbs, and these, detached and grown in the same way as the parent, in the course of

a year or two make good flowering plants. The scales of the bulbs afford a means of propagation ; but this is a slower method. Raising Lilies from seed is somewhat tedious, though many kinds in this country perfect seed in plenty, and in the case of such kinds as L. tenuifolium the seedlings flower in three or four years ; though others will not flower for several years. The finest kinds, such as the Japanese and Californian Lilies, are now so cheap that it is scarcely necessary to propagate from home-grown plants. It will be well, however, if, by rapid increase, or otherwise, they become plentiful enough to adorn the smallest cottage gardens. Several Lilies, chiefly Japanese and Californian, are largely imported every year. As soon as received, all bulbs should be examined, and decaying matter should be removed. They should then be laid in soil, or, better still, Cocoa-nut fibre in a moderate condition of moisture, until the bulb recovers its plumpness and the roots are on the point of starting from the base. Then they should be potted or planted out as required ; but, before this, decaying scales should again be removed, as a few of the outside ones are often bruised in transit, and after they have been in the soil a little time decay sets in, which if not then taken off may contaminate the whole bulb. Of those so imported, L. auratum and Krameri should, when potted, be surrounded with sand, but some do well without it. The most difficult to import among the N. American Lilies are L. Washingtonianum and L. rubescens, since, as a rule, they suffer much more than the large, solid bulbs of L. Humboldti, or than those of pardalinum, canadense, and superbum. These solid bulbs should be treated as above directed, but L. Washingtonianum, rubescens, and Humboldti should not be potted, as they never succeed in that way ; and indeed all the N. American Lilies do much better if planted out. Those grown in Holland, such as the varieties of davuricum, elegans, and speciosum, etc., arrive plump and sound, but it is much better to lay even these in soil a little while before potting.

L. Alexandræ.—A beautiful new dwarf Lily, apparently a hybrid between longiflorum and auratum, bearing a large, well-opened, reflexed flower, broad petalled and pure white, from a southern Japanese Island ; and therefore grows best under glass. Its native name is Uke uri.

L. auratum.—One of the grandest of Lilies, and now too well known to need description. It is most valuable both as regards size and colour of the blossoms. Some forms have flowers nearly 1 ft. across, with broad white petals copiously spotted with reddish-brown and having broad bands of golden-yellow down the centre. The poorest forms have starry flowers and scarcely any markings. Several named varieties are particularly distinct ; and the chief are cruentum and rubro-vittatum, which have deep crimson instead of yellow bands down the petals. Rubro-vittatum : this variety has a very distinct bulb, the foliage is darker, and it is a hardier, better doer than the type. Platyphyllum is also more easily grown than the type. The white-petalled variety of platyphyllum, generally called virginale, is perhaps one of the most beautiful forms. Wittei and virginale, the flowers of which have no colour but the golden bands ; rubro-pictum, with a red stripe and spots ; platyphyllum, with very large flowers and broad leaves ; and Emperor, a grand flower, with reddish spots and centre. There are also some beautiful hybrids raised between L. auratum and some of the other species ; for example, L. Parkmanni (between L. auratum and L. speciosum), which has large white flowers banded and spotted with carmine-crimson. The bulbs of L. auratum are regularly imported in large quantities from Japan and sold at a cheap rate every autumn, so that it is readily procurable. Much has been written upon the culture of this Lily, but it is not so difficult as many suppose, if a good start be made. It will thrive in ordinary soil, if well drained and fairly enriched. It grows freely in peat or loam, a mixture of both with a little road-scrapings best fulfilling its requirements. Where the soil is naturally poor, light, and sandy, it should be taken out to a depth of 18 in., and replaced with the compost above mentioned, or some fine, well-enriched mould. The bulbs should be planted in this, and, as soon as growth commences in spring, should be mulched with decomposed manure or short Grass. If the garden soil be fairly good, it need only be well stirred and manured, but the manure should be thoroughly decomposed. A sheltered situation should be chosen, and if possible screened from the mid-day sun, and protected from westerly and southerly gales and from heavy driving rains ; for this Lily is very susceptible to injury by cold draughts and cutting winds. No better place can be chosen than a snug nook sheltered from the north and east by shrubs, but at the same time open to the sun. The best examples that have been seen were grown in a Rhododen-

dron bed, and planted in a deep, moist, peaty soil, where they have been for years undisturbed. When planted among other things the young and tender uprising shoots are greatly protected in spring. As to propagation, there is scarcely any need to enlarge upon that, as bulbs are imported so plentifully; and it is only necessary to separate the young bulbs and replant them in good soil. Those who increase this Lily from seed must be prepared to exercise a little patience, as the seed is long germinating and the seedlings are several years before flowering. The seed should be sown, as soon as ripe, in a frame. The seedlings should be planted out as soon as the bulbs are of an appreciable size.

Lilium candidum (White or Madonna Lily).

L. Browni is a fine Lily in the way of L. japonicum, but with larger flowers. It is readily distinguished from any other kind by the rich brownish-purple markings on the exterior of the blossoms, which in well-grown plants are sometimes 9 in. in length. It is hardy and vigorous, and succeeds without giving much trouble. In a soil and position which suits L. auratum it flourishes, and need only be lifted every few years and replanted in fresh rich soil. It grows from 2 to 4 ft. high, and has deep green foliage distinct from allied kinds. The variety Colchesteri is handsome. Quite recently, some remarkably fine and strong-growing varieties of this Lily have been obtained from the district whence L. Henryi came; named by Prof. Baker Chloraster and Leucanthum.

L. bulbiferum is one of the handsomest of European Lilies, and is about 2 ft. high. It bears large crimson flowers shading to orange. The variety umbellatum is finer and stronger, and has large umbelled clusters of flowers. This Lily is generally distinguished from its congeners by bulblets on the axils of the leaves. It grows freely in ordinary soil, and flowers in early summer. A capital plant for bold groups, and thriving under partial shade or in the open.

L. canadense (*Canadian Lily*).—This beautiful flower is among the oldest of cultivated Lilies. It is 2 to 4 ft. high, and bears, on slender stems, terminal clusters of drooping blossoms usually orange, and copiously spotted with deep brown. It also occurs with red flowers (rubrum) and with yellow flowers (flavum). L. parvum, L. Bolanderi (new), L. Grayi (new), and L. maritimum resemble it, and like it require a partially-shaded position and a

moist, deep peaty soil enriched by decayed leaf-mould. It flowers late in summer, and is very attractive in bold masses, such as are often seen in nurseries about London. Like its allied forms it makes elegant groups among choice shrubs such as Azaleas and Rhododendrons ; and by such an arrangement we get a second bloom and a variety of form from beds that had only one blossoming season, and were poor and stiff in outline ; we prevent senseless digging when the groups are once in place ; and we keep the shrubs from growing into a solid ugly mass, while they shelter our Lilies.

L. candidum.—One of the best-known and loveliest Lilies, seen in almost every cottage garden, and producing snow-white blooms in summer. It dislikes coddling or being meddled with, and thrives best when undisturbed for years in good garden soil. Any attempt to deal with it like the more delicate ones generally results in failure. The best-flowered plants are in old gardens, where the bulbs are allowed to run as they like with no attention whatever. In bold masses, no plants can compare with the common white Lily when in bloom. It is so fair a flower that there is scarcely a place which a good plant or well-grown group of it will not adorn. But the careful growth and the proper placing of such lovely hardy plants give the highest charm to the garden. For years it has been difficult to find even a miserable tuft in many "show" gardens, though they displayed nothing there so good as a tall white Lily in a cottage garden. Moist loam seems to suit it generally, though, like other Lilies, it will grow in a variety of soils. The varieties peregrinum, striatum, and monstrosum are not so fine, but the striped-leaved variety aureo-marginatis is valuable for its foliage in winter.

L. chalcedonicum (*Scarlet Martagon*) is a very old and handsome Lily, of tall and graceful growth, and bears several pendulous, vermilion, turban-shaped blossoms about the end of July. It is one of the easiest to cultivate, thrives in almost any soil, and is best when well established and left undisturbed. There are a few varieties, majus being the largest and best. The others are græcum, rather taller than the type and having smaller flowers ; pyrenaicum, with yellow flowers ; Heldreichi, tall and robust, flowering a week or two earlier ; and maculatum, a very handsome form. Native of Greece and Ionian Isles. Similar to the scarlet Martagon is the Japanese L. callosum, a pretty Lily, 1½ to 3 ft. high, with slender stems, bearing in summer several brilliant scarlet blossoms. L. carniolicum, of a similar character, is 1 to 3 ft. high, and produces in early summer turban-shaped nodding blossoms of bright vermilion or yellow. Both these thrive under the same conditions as L. chalcedonicum.

L. concolor.—A pretty little Lily from Japan, 1 to 3 ft. high, bearing three to six bright scarlet flowers, which are spotted with black, star-shaped, and erect. There are some three or four varieties—pulchellum, or Buschianum, an early variety from Siberia, 1½ to 2 ft. high, with crimson blossoms ; Coridion, with flowers somewhat larger than the type, and of a rich yellow spotted with brown ; sinicum, a Chinese form, with four to six crimson flowers heavily spotted and larger than the type ; and Partheneion, with scarlet flowers flushed with yellow. This charming Lily and its varieties are quite hardy, though they require some attention in cultivating. They succeed in half-shady places in a soil composed of two parts of peat, one of loam, and one of road-scrapings ; but seem to require renewing every few years. This Lily and its allies are suited for grouping among the smaller and choicer evergreen shrubs where not in a special Lily bed. A raised bed and a wet summer seem to suit this Lily best.

L. croceum (*Orange Lily*) is one of the sturdiest and hardiest, and therefore one of the commonest of Lilies. It grows in almost any soil or position, and bears in early summer huge heads of large rich orange flowers. In the mixed border it is attractive, but shows best on the margin of a shrubbery, where its stems just overtop the surrounding foliage. It is always best after some years' growth. A native of the colder mountains of Europe, it is one of the Lilies that may be naturalised, but is never so strong as in rich garden-ground. Lilies are said not to like manure, but we have never seen this one so fine as when in well-manured ground after several years' growth. Indeed, we have planted it over a subsoil, so to say, of solid cow manure, and have had bulbs and flowers of enormous size in two years. It is much grown in cottage gardens in the North of Ireland. A group in an open space among low evergreen shrubs is superb.

L. davuricum is a slender European Lily with moderate-sized red flowers spotted with black. Like L. elegans, it has several varieties, the chief being Sappho, incomparable, erectum, multiflorum, Don Juan, and Rubens. Being strong growers and flowering freely, they are fine plants

for the mixed border, for margins of shrubberies, or for groups or masses, thriving in partial shade as well as in sunny places.

L. elegans.—One of the best and most generally grown of the early Lilies. It is commonly known by the name of Thunbergianum. It is very variable, and there are about a dozen named varieties. The type grows about 1 ft. high, and has stout erect stems, which bear numerous narrow leaves, and are terminated by a bright orange-red flower, 5 or 6 in. across. A native of Japan, flowering with us about the beginning of July. Most of the varieties are so distinct as to merit a slight description. They are—marmoratum and marmoratum aureum, two of the earliest forms; alutaceum, not more than 9 in. high, with a large pale apricot-coloured flower, copiously spotted; armenaicum (venustum), about 1½ ft. high, with several moderate-sized flowers (in autumn) of a rich glowing orange-red; atrosanguineum, about 1½ ft. high, with large flowers of rich deep crimson; Batemanniæ, about 4 ft. high, with several moderate-sized flowers, in late summer, of a rich unspotted apricot tint (L. Batemanniæ and L. Wallacei are put by Prof. Baker as allied to L. Leichtlini and the Tiger group. I do not consider the above two species to be Thunbergianum); bicolor, about 1 ft. high, with large flowers orange-red, flamed with a deeper hue; brevifolium, 1½ ft. high, with flowers pale red and slightly spotted; citrinum, like armenaicum, but taller; fulgens, 1 to 1½ ft. high, with four to six large flowers of a deep red; sanguineum, 1 to 1½ ft. high, with one or two large blood-red flowers; L. Horsmanni, a dwarf form with richly-coloured flowers of a blood-red mahogany tint, and Splendens the early form of L. Wilsoni; Alice Wilson, the beautiful, scarce, lemon-yellow, dwarf form; Van Houttei, 1½ ft. high, with very deep crimson-red flowers, spotted with black; Wallacei, 2½ ft high, with rich orange-red flowers, spotted with black; Wilsoni, 2 ft. high, with large apricot-tinted, yellow striped flowers—one of the latest to bloom. All the L. elegans group are perfectly hardy; they grow vigorously in almost any soil, but prefer a deep loamy one with an admixture of peat. They like an open position, and are suitable for planting around the margins of shrubberies. Small groups are beautiful in the open spaces that should exist in every shrubbery or Rhododendron bed. They are all excellent border-plants, and the dwarf kinds may be introduced into the rock-garden. In all cases they must be placed in sunny situations.

L. giganteum.—A noble Lily of huge growth and in aspect different from any other. Its bulb is large and conical, and develops spreading tufts of handsome shining heart-shaped foliage. The flower-stems are stout and erect, 6 to 10 ft. high, terminated by a huge raceme, 1 to 2 ft. in length, of about a dozen long nodding fragrant flowers, which are white and tinged with purple on the inside. It is one of the hardiest Lilies, and gives very little trouble. It flourishes best in a sheltered position, where there is an undergrowth of thin shrubs to protect the growth in spring. The soil must be deep

Lilium giganteum.

and well drained, and must consist of sandy peat and leaf-mould, strengthened by a little rich loam, and plenty of rich manure. Years sometimes elapse before the tufts of foliage send up bloom. Nepaul. L. cordifolium, a Japanese plant, is a similar, but inferior, species, very rare in cultivation. It requires the same treatment. Cordifolium is said to grow naturally in Japan in shady damp places, cool and moist. A small group of three or four plants will do well in an open spot among shrubs, in a free peaty soil, and when in flower the effect will be all that can be desired.

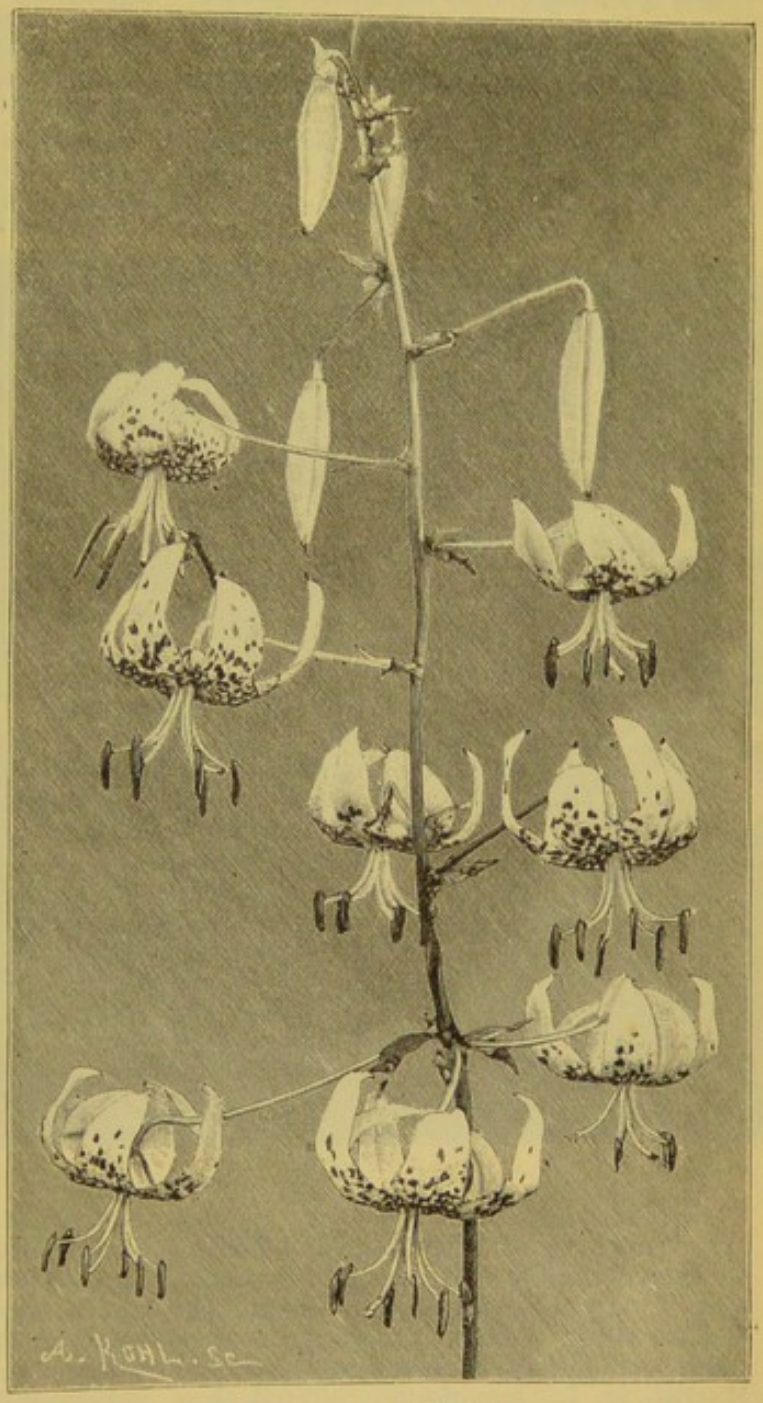
L. Hansoni.—A handsome Japanese species, about 4 ft. high, having whorls of bright green leaves and a terminal spike

of about a dozen bright, orange-yellow, brown-spotted flowers. It flowers about the beginning of June, is quite hardy, and succeeds in sheltered situations in a soil consisting of two parts of peat, one of loam, and one of road-scrapings.

L. Humboldti is very graceful. The singular beauty of the blossoms and the elegant manner in which they droop from their slender stalks, make it most desirable, and its flowers, on account of their great substance, are more lasting than any other Californian Lily. The stout and purplish stems attain a height of 4 to 8 ft. The leaves are in whorls of from ten to twenty each, and are of a bright green. The flowers differ considerably in colour and markings, but are usually bright golden-yellow, richly spotted with crimson-purple. The variety ocellatum or Bloomerianum is dwarf, and has petals tipped with brownish-crimson. It grows best in an open border of rich peaty or leafy soil of a good depth. Columbianum, *syn.* Nitidum, seems to be a smaller variety of this Lily.

L. japonicum, or Krameri as it is more often called, possesses the most delicate beauty of any. The flowers are of the shape and nearly as large as those of L. auratum. They are either pure white or delicate rosy-pink—generally the latter. L. japonicum is 1 to 3 ft. high, and sometimes bears five blooms—but generally only one or two. It is somewhat difficult to grow, owing to its delicate constitution, but the best specimens produced in this country were grown under the same conditions as L. auratum and speciosum. On account of its beauty it deserves the most careful attention. It is a lovely plant for a select spot between choice dwarf shrubs, in free peaty soil or deep sandy loam with vegetable soil in it. When Mr. Kramer first sent me this Lily he wrote that he obtained it from a mountainous slope at a high altitude.

L. longiflorum (*White Trumpet Lily*).—This is among the most beautiful and most valuable of garden Lilies. The typical form is 1 to 3 ft. high, the stems in summer being terminated by reflexed, tubular, waxy-white flowers, which are sweetly scented. There are several varieties, the best being the early variety now called præcox, of rather dwarf habit, with long, pointed, three-nerved, dark-green foliage; the flowers are of great substance, tubular, and but little reflexed at the tip, which flowers a fortnight earlier than the type,



Lilium Humboldti.

bears larger and more numerous flowers, and is in every way superior to it. Takesima is recognised by a purplish tint on the exterior of the blossoms and on the stem. Wilsoni, or eximium, the finest variety, with bold dark foliage, nearly 4 ft. high, with numerous flowers about 9 in. in length. Takesima is the latest to bloom. Madame Von Siebold is also a fine variety. L. longiflorum giganteum is the variety generally obtained from Japan; strong bulbs will send up a head of from 8 to 12 flowers widely opened; the foliage is bright green; under glass this Lily may easily be forced. L. formosanum, the variety from Formosa, has its flowers ribbed and flushed with rosy-brown; they are somewhat smaller in size than the type. L. Harrisi is L. longiflorum altered by growth in a tropical climate. Bermudas, S. Africa, &c. Jama-Jura and Liukiu are native names for the varieties mentioned. The variegated-leaved form (albo-marginatum) is desirable, as the variegation is distinct and constant. L. longiflorum and its varieties sometimes bloom well in borders, but care should be taken that they are not injured by spring frosts. L. longiflorum is so early that, unless protected by the leaves of evergreens, its growth is apt to be checked. A well-drained light loam, well enriched with leaf-mould, suits it admirably. L. Wilsoni is benefited by a lighter soil and by a warmer and more sheltered position. When just pushing the growth in spring it is advisable to encircle the plants with a few dead branches, if unprotected by shrubs. Where this fine species and its forms fail in the ordinary soil of the garden, success may be ensured by making a special soil of rotten manure, leaf-mould, or cocoa fibre. In such a mixture, so free and open that the hand could be pushed down below the bulb, we have seen them perfectly grown where the natural soil was too stiff and impervious. The hardier varieties are admirable for artistic gardening, their fine forms being very effective when tastefully grouped on the fringe of beds of choice bushes and when touching and seeming to spring out of the Grass. They are also good in beds either specially devoted to them alone or in combination with other plants. Similar to L. longiflorum are L. neilgherrense, philippinense, Walli-

Lilium longiflorum Harrisi.

chianum, and nepalense, but none is hardy and all are poor and unsatisfactory, except, perhaps, for the greenhouse.

L. Martagon (*Turk's-cap Lily*).—This is so common that we need only mention its varieties. These are very fine, especially dalmaticum, which has flowers larger than the type and of a shining blackish-purple, a contrast to the loveliness of the pure white variety (album). Cattaniæ is a form of dalmaticum and scarcely differs from it. Like the type, the varieties thrive freely in a good loamy soil ; they are perfectly hardy and are rather partial to shade, growing freely in grassy places, open woods, or copses. Some of the finer varieties are good garden plants, and should be grouped in the spaces between hardy Azaleas or similar flowering bushes.

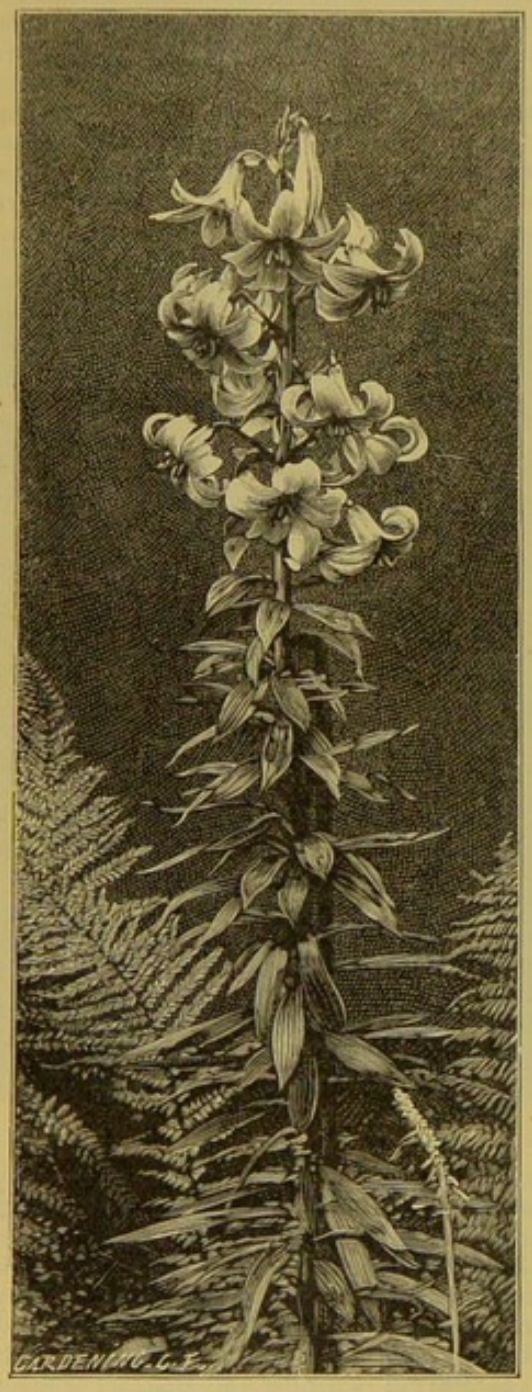
Mr. R. A. Jenkins writes as to the white Martagon : "The white Martagon Lily is one of the most distinct of the family, and if given a suitable soil and position there are but few of its relatives that excel it in beauty, hardiness, or freedom of bloom. As to its free-flowering qualities, suffice it to say that three bulbs in my garden after being planted as many years ago gave me no less than 167 blooms, two of the stems carrying forty-two and forty-nine blooms. Even in the summer immediately after planting the Lilies sent up forty blooms. This I attribute to their being moved early in September, for if planted late in the year, most of the Martagon section refuse to bloom in the ensuing summer. I find that this Lily does best in good deep soil enriched with leaf-mould, and without manure or sand. As the above-mentioned soil suits such plants as Anemone sylvestris and Lily of the Valley to perfection, I have carpeted the ground with them, and they serve to keep the soil cool during the summer, while in May they furnish me with countless flowers."

L. monadelphum is a magnificent Lily of noble growth. The stout flower-stems vary from 3 to 5 ft. in height, and are terminated by a pyramid of six to twenty turban-shaped flowers, ranging in colour from a rich canary-yellow to a pale lemon-yellow. Some forms have spotted flowers, and some are much larger than others. The varieties are known as L. Szovitzianum, colchicum, and Loddigesianum. L. monadelphum thrives best in moist deep loamy soil, well enriched with good manure at the time of planting ; but does not show its true character till it has been planted several years. It rarely fails, and is one of the least disappointing of all. It may be readily increased from root-scales, a fact which is taken advantage of by many cultivators, and is the only method of increasing and keeping pure any really good or marked variety. Seed is, however, the readiest way of acquiring a stock of this truly charming plant. The seeds are usually sown in large shallow pans as soon as ripe, and remain there for two years, by which time the bulbs have attained a considerable size ; they are then planted in beds in rows 6 in. apart, with 4 in. between the bulbs, replanting when necessary. By this treatment flowers are frequently produced by seedling plants four or five years after sowing.

White Martagon Lilies.

L. Parryi is a new and distinct species from California. It is of elegant slender growth, and 2 to 4 ft. high, bearing graceful trumpet-shaped flowers of rich yellow, copiously spotted with chocolate-red, and delicately perfumed. The flowers being borne horizontally, render it very distinct. It grows in elevated districts in South California, in boggy ground. Not much

is known of its culture, but the finest plants have been produced where the soil was two thirds common peat and one third loam, with plenty of coarse sand. A bed in a shady spot was selected, in which the bulbs were placed at a depth



Lilium monadelphum, var. Szovitzianum.

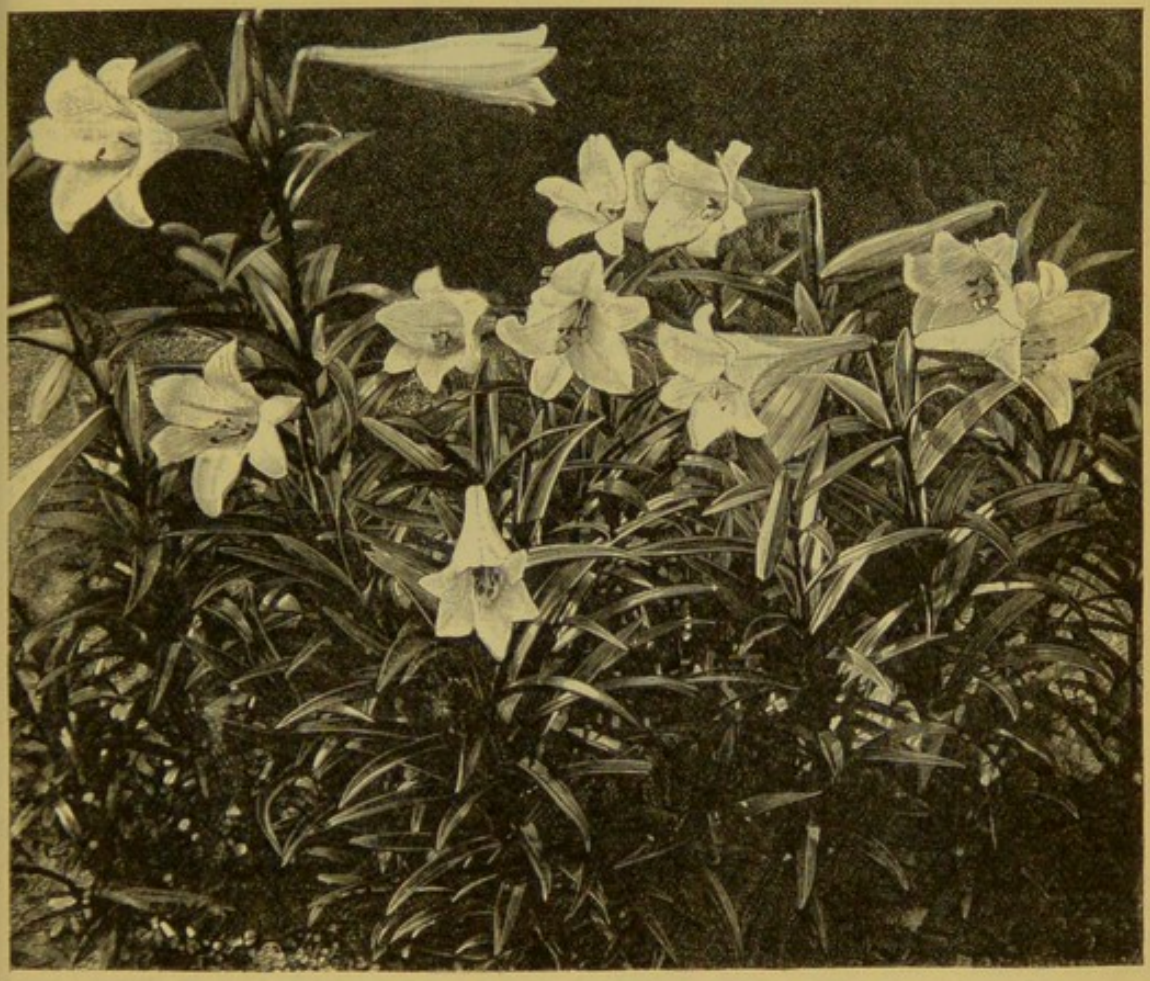
of 4 in., having underneath about 1 ft. of the soil. Here the strongest bulbs threw up stems 4 ft. in height, and the greatest number of blossoms on one stem for the first season was six.

L. pardalinum (*Panther Lily*).—One of the handsomest of the Californian Lilies, and one of the most valuable for English gardens, as it makes itself thoroughly at home in them and grows as vigorously as in its native habitat. It is 6 to 8 ft. high, and has large drooping flowers of bright orange, spotted with maroon. There are several varieties, the most distinct being—Bourgæi, one of the finest, having stout stems 6 to 7 ft. high, with twelve to twenty flowers of bright crimson, shading to orange, and freely spotted with maroon, and blooming a fortnight later than any other; pallida, a dwarf variety, scarcely 5 ft. high, bears flowers nearly double the size of the type, and paler in colour; californicum, a more slender variety, 3 to 4 ft. high, and the brightest in colour; pallidifolium (puberulum), a small form, with lighter flowers; and Robinsoni, a robust variety, with stout stems 7 to 8 ft. high, and with massive foliage, large flowers of a bright vermilion shading to yellow, and freely spotted. This last is the noblest, and should be grown if possible. The Panther Lily is one of the most satisfactory of all Lilies; it has a strong constitution, increases rapidly, soon becomes established, and rarely pines away, as many kinds do. It likes a deep, light, good soil, enriched with plenty of decayed manure and leaf-soil, where the roots can receive ample moisture. It should always be in a sheltered position, like the sunny side of a bold group of shrubs or low trees. In a special bed the near shelter of hedges is desirable, though their roots should be kept away. Bare borders are not the places where this noble Lily does or looks best—there is no shelter or support for plants which in their own country have many shrubs for companions and are sheltered by the finest trees of the northern world.

L. polyphyllum.—A rare and beautiful Lily, 2 to 4 ft. high, and having large turban-shaped flowers of a waxy-white, copiously spotted and lined with purple. North India. Mr. M'Intosh, of Duneevan, Weybridge, who has been most successful with it, writes: "Sandy loam, peat or leaf-mould, sand, and charcoal, with a slight admixture of pulverised horse-droppings, and good drainage under the bulbs, are all I have to tell; and I think early staking and tying may have something to do with many growing taller than they otherwise might."

L. pomponium.—This lovely Lily must not be confounded with the L. pomponium usually sold as such, this latter being

simply the red variety of L. pyrenaicum. L. pomponium is elegant and vigorous, and blooms earlier than the varieties of chalcedonicum and pyrenaicum to which it is related. It is about 3 ft. high, is erect, and has long linear leaves. The flowers appear in a lax raceme 1 ft. through, and a well-established plant will bear as many as twenty flowers. In rich loam it grows luxuriantly in sunshine or shade, and no difficulty is experienced with either home-grown or imported roots. Maritime Alps. L. pyrenaicum, a similar



Lilium longiflorum Wilsoni (White Trumpet Lily).

but smaller plant, with small yellow flowers, is a variety of L. pomponium, and the red form is much inferior to the true L. pomponium, though generally sold for it. These varieties require the same culture as L. pomponium. L. pomponium has an extremely offensive odour, and is not, therefore, likely to be used for cutting.

L. speciosum, or lancifolium as it is erroneously called, is one of the most popular for pot-culture, and is no less desirable for the open air, though, being somewhat delicate, it is grown to perfection under glass. It is well known, and we need not describe it, but we will mention the chief varieties. There is the true speciosum, which has large deep rosy blossoms, richly spotted; vestale, pure white; album, white or faintly tinged with pink; rubrum, deep red; roseum, rosy-pink; punctatum, white spotted with pink; Krætzeri, very large white flowers with greenish stripe on the exterior; album novum, a somewhat finer variety with light orange anthers, and broader petals of great substance; fasciatum album and fasciatum rubrum, two monstrous varieties bearing numerous flowers on flattened stems. Among the more beautiful Japanese forms are roseum, superbum, and formosum, and rubrum macranthum, cruentum, compactum, and, darkest of all, Melpomene (not the American Melpomene). In this group must also be included the fine L. Henryi, an orange-coloured speciosum, first sent to this country by Dr. Henry from Central China, and appropriately named after him. It is a strong grower, perfectly hardy, and from its

unique tint and bold growth a grand acquisition to our gardens. Other fine varieties have originated in America, and among these Melpomene is very distinct. The beautiful hybrid, Mrs. A. Waterer, is large, white, and spotted with pink. All the varieties require shelter from winds and draughts, and a rich loamy soil mixed with peat and leaf-manure. They flower for the most part in September, and last longer in bloom than many other Lilies. In good soils, very happy use can be made of these handsome Lilies in warm and sheltered places where their blooms may be fully developed.

L. superbum (*Swamp Lily*).—One of the stateliest of N. American Lilies, bearing late in summer beautiful orange-red flowers, thickly spotted. It may be recognised at once by its purple-tinged stems, which rise 5 to 10 ft. high, and which are very graceful, waving with the slightest breeze. A pyramid of flowers terminates each stem. L. superbum delights in moist deep soil consisting chiefly of peaty and decayed leaf-manure, and is one of the best Lilies for growing in shady woods when the undergrowth is not too rank. In the garden it should have snug glades and nooks protected by shrubs, and moist rich soil. L. carolinianum is a less showy form.

L. tenuifolium.—A most elegant dwarf Lily especially valuable for earliness in flowering. It is 1 to 1½ ft. high, and has narrow leaves on slender stems, furnished with a cluster of about a dozen brilliant red turban-shaped flowers, which shine like sealing-wax. It succeeds in open warm borders of light sandy loam, but is all the better for a hand-light or frame, as it flowers very early. Siberia and N. China. L. callosum and its form, stenophyllum, are similar but less showy.

Lilium testaceum.

L. testaceum (*Nankeen Lily*).—This is a distinct-coloured Lily, and should always be grown, being of easy culture and thriving in any ordinary soil, though preferring one that is peaty. It has the growth of the white L. candidum, but the flowers are a delicate apricot, or nankeen, colour. When well grown it is 6 or 7 ft. high, and bears several flowers in a large head. Other names for this Lily are L. excelsum and isabellinum. It is one of the plants that grow freely in London.

L. tigrinum (*Tiger Lily*).—This is one of the commonest kinds, and is too well

known to need description. No garden should be without it, for few plants are so attractive or have such stately growth. The common kind is handsome, but the variety splendens is much finer, having larger flowers with larger spots, is produced later, and grows 7 ft. high. Fortunei is an early form and as desirable as splendens. The double-flowered variety (flore-pleno) is showy and vigorous. Erectum also is distinct and desirable. L. pseudo-tigrinum and the varieties of Maximowiczi, though referred to other species, much resemble L. tigrinum. The Tiger Lily is very easy of cultivation, thriving best in deep sandy loam with an open, but sheltered position. The earliest varieties begin to flower at the end of August, and the latest last till the end of October. The Tiger Lily may be quickly propagated by the bulblets, which form in the axils of the leaves.

L. Washingtonianum.—A lovely Californian Lily, 2 to 5 ft. high, bearing a cluster of large, white, purple-spotted flowers that become tinged with purple after expansion. Nearly allied to this, and by some considered a variety is L. rubescens, which has smaller flowers which are of a pale lilac or nearly white. These flowers are erect—not horizontal, as in the Washington Lily. Neither L. Washingtonianum nor L. rubescens is easy to grow, owing, probably, to their being but little understood at present. The best results have been obtained in partially-shaded situations, in loose, peaty, well-drained, but moist soil. The wonderfully brilliant series of Lilies introduced from N. America and Japan of recent years, which have given wholly new aspects of vegetation in the flower garden, are figured in colour and life-size in the volumes of *The Garden*, and will be found enumerated in the general index to that work.

A list of the rarer Lilies introduced into Europe of late years :—

L. Alexandræ
„ Thunbergianum Horsmanni
„ „ Splendens
„ „ Wilsoni
„ „ Alice Wilson
} Is. Japan.

„ Bolanderi
„ Grayi
} Oregon.

„ Parryi, California.

„ Henryi
„ Chloraster
„ Leucanther
} China.

„ Nepalense
„ Lowi
„ Sulphurum
„ Primulinum
„ Bakerianum
} N. Burmah.

L. Polyphyllum, N. W. India.

List of hybrid Lilies known :—

L. Alexandræ, auratum × longiflorum.
„ Dolhansoni, Dalmaticum × Hansoni.
„ Parkmanni, speciosum × auratum.

Lily, African (*Agapanthus*).
„ **Arum** (*Calla*).
„ **Atamaxo** (*Zephyranthes*).
„ **Belladonna** (*Amaryllis*).
„ **Bernard's, Saint** (*Anthericum*).
„ **Bruno's, Saint** „
„ **Cape** (*Crinum capense*).
„ **Day** (*Hemerocallis*).
„ **Ethiopian** (*Calla*).
„ **Guernsey** (*Nerine*).
„ **Lent** (*Narcissus*).
„ **Madonna** (*Lilium candidum*).
„ **Mariposa** (*Calochortus*).
„ **Orange** (*L. croceum*).
„ **Panther** (*L. pardinalum*).
„ **Peruvian** (*Alströmeria*).
„ **Plantain** (*Funkia*).
„ **Pond, Yellow** (*Nuphar*).
„ **Scarborough** (*Valotta*).
„ **Scarlet Martagon** (*L. chalcedonicum*).
„ **Swamp** (*L. superbum*).
„ **Tiger** (*L. tigrinum*).
„ **Turk's-cap** (*Martagon*).
„ **White** (*L. candidum*).
„ **White Trumpet** (*L. longiflorum*).
„ **Wood** (*Trillium*).

Lily of the Valley (*Convallaria*).

Limnanthemum nymphæoides.—A pretty native water-plant, growing in ponds or slow streams, with floating tufts of leaves, and bright yellow flowers 1 in. or more across. Where not plentiful in a wild state it is worth getting for lakes and ponds. Propagated by division or seed sown in mud, as soon as gathered. *Syn.*, Villarsia. Gentian order.

Limnanthes Douglasi.—A vigorous though dwarf hardy annual, valuable because so early; the flowers yellow and white, and there is a pure white variety. Few annuals are hardier, severe winters not injuring it, and it requires neither a deep nor a rich soil, but thrives where the earth is poor as well as in ordinary garden soil. It often sows itself on light soils, and gives no further trouble; but if wanted for a special purpose in spring, the seed should be sown in autumn in boxes or in the open ground; for summer-flowering sow in the spring. Plains of California and foothills of the Sierra Nevada.

Limnocharis Humboldti.—An interesting water-plant, in summer covering the surface with heart-shaped leaves

and soft yellow flowers, for several months ; it will thrive either in running or still water, if planted 6 to 9 in. below the surface, and may also be grown in tubs sunk in the ground. These tubs should be about 1½ ft. in depth, should be half-filled with loamy soil, and then filled up with water. In fountain-basins and clear, still waters, where the plant is fully exposed to the sun, it flowers freely during summer, but it will not survive out-of-doors in winter, except in the mildest districts, and unless placed at least 18 in. below the surface. Plants put out of a warm aquatic house in May soon begin to grow in the open air in tanks well exposed to the sun. Division. Butomaceæ.

Linaria (*Toadflax*).—An interesting family, which includes some beautiful garden annuals and perennials, varying from dwarf alpines to tall coarse plants.

L. alpina (*Alpine Toadflax*) forms dense, spreading, dwarf, and silvery tufts, covered with bluish-violet and intense orange flowers. It is usually biennial ; but in favourable spots, both wild and cultivated, becomes perennial. It sows itself freely, being one of the most charming subjects that we can allow to "go wild" in sandy, gritty, and rather moist earth, or in chinks in the rock-garden. In moist districts it will establish itself even in gravel walks, is readily increased from seed, which should be sown in early spring in cold frames, or in the places where it is to remain out-of-doors. It is found on moraines and in the débris of the Alps and Pyrenees.

L. cymbalaria (*Ivy-leaved Toadflax*) often drapes walls in a graceful way, and is grown by cottagers as a window plant, a common name for it being "Mother of Thousands." A moist half-shady place best suits it, and the white variety is even prettier than the species.

L. dalmatica is a handsome plant, 3 to 5 ft. high, much branched, and with, in summer, a profusion of large showy sulphur-yellow blossoms. It thrives best in warm places in light well-drained soil, and when once established can be eradicated with difficulty. L. genistæfolia, which also has yellow flowers, is similar but inferior.

L. macedonica is a new and distinct plant, from 2 to 3 ft. high, and throwing up shoots from the base. It differs from L. dalmatica in its broader leaves, and is quite hardy.

L. purpurea is a pretty kind with spikes of purple flowers, and one occasionally sees it on old walls, as it thrives well in dry spots.

L. triornithophora is a beautiful plant when well grown, 1 to 1½ ft. high, and with large purple long-spurred flowers in whorls of three. It is rather delicate, and, though perennial, should be raised yearly from seed. L. triphylla is similar.

L. vulgaris (*Common Toadflax*).—This is well known, and is very pretty as one sees it growing in wild or neglected gardens, but is also a good garden plant. The British variety Peloria is a handsome Toadflax, flowering freely after midsummer in a warm sunny border, and is effective in a mass.

A few other perennial Linarias that may be mentioned are L. hepaticæfolia (Hepatica-leaved Toadflax), from Corsica, and is nearly always in flower in summer and autumn ; L. saxatilis, which has dark brown and yellow flowers ; and L. anticaria, a good rock-plant, forming little tufts and sowing itself freely. The finely-veined flowers are dull white tinged with lilac.

ANNUAL TOADFLAXES.—Some of the annual species are among our prettiest border flowers growing about 1 ft. high, and very effective in broad masses. Seed should be sown in ordinary garden soil in early spring, and the seedlings will flower in July and August. The best are L. reticulata, with small purple flowers ; the variety, aureo-purpurea, being a charming plant, with flowers which vary from rose-purple to dark orange. L. bipartita is also very variable, the colours ranging from deep purple to white. Perezi has small yellow flowers ; whilst the flowers of maroccana vary from violet to pink ; and those of multipunctata, the dwarfest of the group, are black spotted with yellow.

Lindelophia spectabilis.—A showy perennial, about 1½ ft. high, bearing in early summer drooping clusters of deep purple-blue flowers. It is suitable for borders in sandy loam, and is quite hardy in well-drained places, but is not so valuable as other plants of the same order. Seed or division. North India. Borage Order.

Linnæa borealis (*Twin Flower*).—A little evergreen creeper, the slender upright stalks bearing two flowers each, delicately fragrant white, often tinged with pink, and drooping. It is usually found in moist woods, where it forms a dense carpet and is wrongly supposed to be difficult to cultivate. Little need be done beyond planting healthy young plants in a moist sandy border or rock-garden. I have often seen it thriving, where the air was pure and the soil suit-

able; and it is excellent for a moist rock-garden, growing rapidly, and forming a charming fringe to groups of small alpine shrubs, in cool borders or on cool parts of the rock-garden. N. Eur., Asia, and Amer.; also Scotch mountains.

Linosyris vulgaris (*Goldilocks*).—A showy native plant, 1 to 2 ft. high, in late summer and autumn bearing clusters of bright yellow flowers. It grows in any ordinary soil, but is scarcely a garden plant. =Chrysocoma Linosyris. Composite Order.

Linum (*Flax*).—Plants of marked elegance and lightness of growth, and including some pretty garden plants.

L. campanulatum (*Yellow Herbaceous Flax*).—A perennial with yellow flowers on stems 12 to 18 in. high, distinct and worthy of a place. A native of the south of Europe, it flowers in summer, and flourishes freely in dry soil on the warm sides of banks or rock-gardens. Similar to it is L. flavum, or tauricum, also a handsome and hardy plant with yellow flowers; but L. arboreum, a shrubby kind, also with yellow flowers, is not hardy in all districts, though where it thrives it is a pretty little evergreen bush for the rock-garden.

L. grandiflorum (*Red Flax*) is a showy hardy annual from Algeria, with deep red blossoms. By successive sowings it may be had in bloom from May till October. Seed sown in autumn will give plants for spring-blooming, and sowings made from March to June will yield a display through the summer and autumn. By sowing seeds in pots in good rich soil in summer, and plunging in a sunny border with plenty of water, plants may be obtained for the greenhouse or window during October and November. If protected from frost the plant is perennial.

L. monogynum (*New Zealand Flax*).—A beautiful kind with large pure white blossoms blooming in summer. It grows about 1½ ft. high in good light soil, and its neat and slender habit renders it particularly pleasing for the borders of the rock-garden or for pot-culture. It may readily be increased by seed or division; it is hardy in the more temperate parts of England, but in the colder districts is said to require some protection. L. candidissimum is a finer and hardier variety Both are natives of New Zealand.

L. narbonnense (*Narbonne Flax*).—A beautiful kind, bearing during summer many large light sky-blue flowers, with violet veins, growing best on rich light soils, and is a fine plant for borders, or for the lower flanks of the rock-garden, forming lovely blue masses 15 to 20 in. high. Southern Europe.

Other similar but inferior blue-flowered kinds are the common L. perenne, usitatissimum, alpinum, sibiricum, alpicola, collinum, and austriacum; all are hardy European species, and make pretty border or rock-garden plants. The white and rose varieties of L. perenne are pretty plants.

L. salsoloides (*White Rock Flax*) is a dwarf half-shrubby species, essentially a rock-garden plant; its flowers, white with a purplish eye, reminding one of some of our creeping white Phloxes. In the rock-garden, in a well-exposed sunny nook, the plant is hardy, and trails over stones, flowering abundantly. It produces seeds rarely, so that it must be increased by cuttings of the short shoots taken off about midsummer; these will strike freely, and make vigorous plants when potted off in the following spring. Mountains of Europe. L. viscosum, with pink flowers, is a closely allied plant not so pretty.

The Common Flax, which gives us the linen fibre, is a pretty annual plant worth a place for its beauty among annual flowers.

Lion's-tail (*Leonitis Leonurus*).

Lippia.—L. nodiflora is a dwarf perennial creeper bearing, in summer, heads of pretty pink blooms. It grows in any situation or soil, and is a capital plant for quickly covering bare spaces in the rock-garden where choicer subjects will not thrive.

Liriodendron tulipiferum (*Tulip Tree*).—One of the noblest of flowering trees. It is only when the tree has reached maturity that it bears its beautiful Tulip-like flowers of pale green and yellow. Young Tulip trees should be planted on lawns, as the flowers are very pretty in a cut state for the house and the tree a beautiful one at all times. N. America.

Liquorice (*Glycirrhiza*).

Lithospermum (*Gromwell*).—A few of these Borage-worts are pretty and worth growing. One of the finest is L. prostratum, a spreading little evergreen having flowers of a lovely blue, with faint reddish-violet stripes, in great profusion when the plant is well grown. It is hardy, and valuable as a rock-plant from its prostrate habit and the fine blue of its flowers—a blue scarcely surpassed by that of the Gentians. Its shoots may be allowed to fall down the sunny face of a rocky nook, or to spread into flat tufts on level parts of the rock-garden. On dry sandy soils it forms an excellent border-

plant, and becomes, if the soil be deep and good, a round spreading mass, 1 ft. or more high. In such soils, it is suited for the margins of beds of choice and dwarf shrubs, either as a single plant or in groups. In heavy or wet soil it should be in the rock-garden, or on banks, and in sandy earth. It is sometimes grown as L. fruticosum, but the true L. fruticosum is a little bush, and not prostrate. Easily propagated by cuttings. S. Europe.

L. petræum (*Rock Gromwell*).—A neat, dressy, dwarf shrub, something like a small Lavender bush, with small grayish leaves like those of the Lavender. Late in May, or early in June, all the little gray shoots bear small oblong purplish heads, and early in July the plant is in full blossom, the full-blown flowers being a beautiful violet-blue. The best position for it is in the rock-garden somewhere near or on a level with the eye, on a well-drained, deep, rather dry sandy soil on the sunny side. Native of dry rocky places in Dalmatia and Southern Europe. Propagated by cuttings, or seeds if they can be obtained.

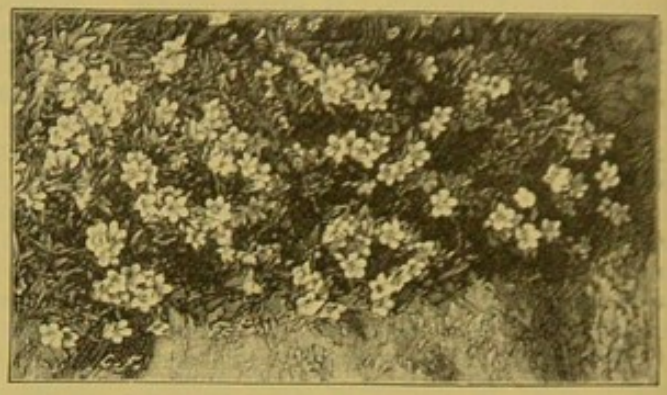
L. purpureum-cœruleum, a British plant, L. Gastoni, L. canescens, L. graminifolium, L. tinctorium, and L. rosmarinifolium, are very pretty plants, but coming from sunnier lands than ours are not really at home in our climate, and for the most part they can only be grown well on dry ledges of the rock-garden in the most favourable districts.

Lizard Orchis (*Orchis hircina*).

Lloydia serotina.—A small bulbous Liliaceous plant, suitable for the cool parts of the rock-garden, and not of the showy order of beauty. It is one of the first flowers the early visitor to the Alps sees by the pathway over the high mountains. Alps.

Loasa.—These plants are remarkable for singular flowers and stinging foliage. L. hispida is pretty, growing about 18 in. high, with deeply-cut foliage and short stinging hairs, the flowers 1 in. across, of a bright lemon-yellow, the centre prettily marked with green and white. It blossoms several weeks in succession during August and September. The other kinds in cultivation are the beautiful L. vulcanica, with its pure white flowers and red-and-white striped centres; L. lateritia, a twining species, with orange-red flowers; and L. triloba. All are natives of the cool regions of Peru and Brazil, and can be grown in the open air during summer. Treated as half-hardy annuals, and grown in a light fertile soil, they are interesting for open borders; the climbing species, such as lateritia, require branches to twine among. All may be freely raised from seed.

Lobelia.—Distinct and varied plants, some of high value for the flower garden.

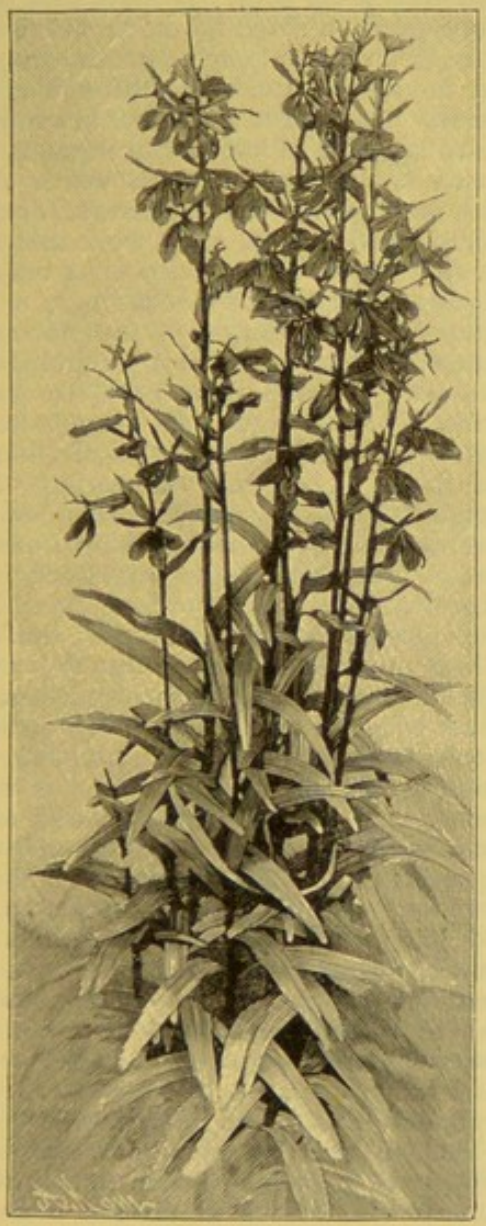


Lithospermum prostratum.

The perennial Lobelias, of which L. splendens and L. syphilitica may be taken as types, are amongst the most useful of autumn flowers. Although fairly hardy, they are impatient of excessive moisture, and in most districts require protection during winter. This may be done by placing ashes in the shape of a cone over the crowns, or lifting and storing in a dry shed or frame. The latter method, though perhaps more troublesome, is safer, as the plants are always under control and easier propagated in spring. By storing the roots in frames they begin to grow earlier, and where large stocks are required it is most convenient. Although impatient of moisture during the resting period they revel in it when in active growth, and where beds can be prepared in the vicinity of lakes or streams, better results will be obtained than in the mixed border or flower beds. In propagating in early spring they can be divided into single crowns, and these potted on soon form sturdy plants ready to plant out on the approach of warm weather. They thrive best in a free vegetable soil and like plenty of sun, unless in the case of L. cardinalis, which I find thrives best in a partially-shaded bed. In some districts with light soils and often near the sea these plants do not require protection in winter.

L. cardinalis (*Cardinal Flower*).—The true plant is one of the rarest and one of the prettiest of the genus. The brilliant effect produced in autumn by tufts of this species well repay any trouble it may

give, for though by no means fastidious, the difficulty of growing it well in small gardens in the absence of shade and moisture is great. It is a bog-loving plant, being found in wet ground in Brunswick, Florida, and the borders of Texas, and is not very hardy. It is, however, a true perennial, although maybe a short-lived one, and should be frequently raised from seed to make sure of keeping up the stock. This species is not so



The scarlet Lobelia (Lobelia cardinalis).

liable to disease as L. splendens and its varieties. Grown on an ordinary border, it invariably has a weak, stunted appearance, but in a free rich soil, in a shady position and well supplied with moisture, I have often seen it 3 to 4½ ft. high and flowering profusely. The flowers are of the most vivid scarlet, and as they last a long time in bloom it well deserves care. So far as I know, there are no varieties of this species in cultivation. Dr. Gray mentions its varying to rose colour and even white, but this, it seems, is rare. Parkinson mentions it as "cherished in our garden in 1629," and gives it as "growing near the river of Canada where the French plantation in America is seated." It is hardier than L. fulgens, living through the winter in open beds and with little or no protection. Its leaves are shorter and greener than those of L. fulgens; the flowers, too, are smaller, but more numerous on the spikes, and of a vivid scarlet colour on spikes from 2 to 3 ft. in height.

L. splendens.—This species is also called L. fulgens, and is a brilliant and precious plant for the flower garden. Its leaves are long and narrow, and the flower-stalks taller and thicker than those of L. cardinalis, the flowers larger with broad over-lapping petals. The best known, and a handsome form of this, bears the name Queen Victoria. Its leaves are a deep purple colour, and the flowers a brilliant crimson-red. Firefly is the handsomest variety in this section, and was raised in Ireland. In good rich soil it attains to a height of 5 ft., whilst in colour the flowers are intensely vivid and rich. A merit of this kind is that it bears lateral flower-spikes around the central one much more freely than Queen Victoria, and these keep up a succession of bloom after the leading spike is past its best. Huntsman is another variety, brighter in colour than Firefly. Sir R. Napier, Rob Roy, and other varieties have been obtained from it. These vary in colour and habit very much, and as they are all robust, free-flowering plants, they are valuable in the autumn garden, giving brilliant effects until cut down by frost. The variety ignea has broader leaves and larger flowers.

This Lobelia suffers from a kind of rust, which fastens on the main fleshy roots when the plants are at rest, and rots them. This disease, working as it does at a time when growth is at a standstill, is not perceived in time to be checked, and makes its appearance towards the end of October or the beginning of November, especially if the weather be cold and wet. The plants should then be carefully taken up, reserving as much of the roots as possible, the soil being shaken off, and the roots well washed. The disease will be readily discovered by its rusty-looking spots, which

must be cut out with a sharp knife, as the least portion will suffice to destroy the plant. After the plants are examined they may be potted or laid in a frame in some free sandy soil, and very fine specimens may be obtained by potting and plunging in a slight bottom-heat, keeping the top quite cool. In about a fortnight they will have made fresh fibre, and all danger will be past. They may then be kept in a cold frame during the winter, and planted out where desired in spring. The bottom-heat, however, is not indispensable,; for they will succeed if carefully and sparingly watered after potting. All the plants of the Lobelia fulgens show their great beauty only on peaty or deep leafy and moist soils ; often on loamy soils the growth is short and weak, the flowers poor, and under such conditions they may not be worth growing.

S. syphilitica.—A variable species, not very showy, hardy and robust in free moist soils, it stands our winters well, and is prolific in varieties of violet and purple, varying to rose and white. L. hybrida of gardens appears to be a hybrid between L. splendens and L. syphilitica, though this is uncertain. Its fine rich violet, purple flowers mark it out for special distinction. It is valuable for grouping in the flower garden or mixed border, and is one of the hardiest of the hardy Lobelias. It may be left out during winter with safety, and can be lifted, divided, and replanted in spring. The leaves are almost as broad as those of L. cardinalis, glandular, hairy, and with the long sepals and hairs of L. syphilitica.

L. Tupa.—This is also known as Tupa Fuelli, and although a native of Chili, will be found to stand well in the south protected with sifted ashes, gravel, or other loose material in autumn. It is best, however, against a south wall or in front of a house, and when doing well often attains a height of 6 to 8 ft. ; the flowers large, brick-red, in large racemes, from July to September. L. Cavanillesi is said to be amenable to the same treatment as above. In deep free soils near the sea L. Tupa is sometimes a very distinct and handsome plant, and is best fitted for borders among large plants or for a warm corner among shrubs.

L. Erinus.—The dwarf section of annual Lobelia is one of the most important, being much used among half-hardy bedding plants. The chief points to start with are good soil and well-grown established plants. The soil should be light and rich, and rest on a dry bottom perfectly drained. On a porous bottom it may be plentifully watered during a dry time in summer without fear of injuring the roots. The roots cannot make way, nor can the plants thrive in a strong adhesive soil of clay or heavy loam, and if the soil be heavy, it must be lightened by a plentiful addition of leaf-mould, sand, or peat. This Lobelia thrives admirably in equal parts of some sandy loam and leaf-mould with a sand to keep it open. Charcoal dust and peat form good additions to loam, as also does spent manure from Mushroom beds. A slight mulching of one-year-old sifted hot-bed manure will be found useful for keeping out the drought and nourishing the roots through a dry season. One of the difficulties in carrying dwarf Lobelias in full beauty through the season is the freedom with which they seed, and the moment the flowers fade they should be picked off every week throughout the season. Dwarf Lobelias may be propagated by seeds or cuttings, or by lifting the plant, potting it, and placing it in a gentle bottom-heat until established ; then setting it on a light airy greenhouse or forcing-house shelf, when it may be increased by cuttings and root-division in the spring. Increase by cuttings, and potting a few old plants in autumn, is the best method of preserving and increasing special varieties. They strike freely in a brisk heat in a moist pit or frame in spring. The cuttings should be potted by the end of May in the same way as seedlings sown in heat in September, October, or February. Those who want early Lobelias from seed should sow in the autumn, and prick the seedlings off in boxes or pans, or shift them into 2½-in. pots before winter ; store them on shelves near the light, and well exposed to air ; shift them again in March into 6-in. pots of equal parts of leaf-mould and loam, and they will be perfect for planting by the end of May. Spring-sown seedlings may go into smaller pots, and be planted rather more closely, but will not flower so early nor so well. On the whole, autumnal propagation, by cuttings or seeds, is preferable to sowing in spring.

The varieties are numerous, and it is difficult to make a selection to suit every locality. L. Erinus is divided into five sections—viz. compacta, of which there is a white form ; speciosa, of which the best are Blue Stone, Ebor, Blue Beauty, Emperor William, Blue King, Lustrous, Brilliant ; ramosoides ; pumila, of which grandiflora and magnifica are fine forms, as is also the pure white Mrs. Murphy ; and Paxtoniana, which is a lovely blue. The double variety is also beautiful where it succeeds but it is hardly to be depended

upon. Sometimes it forms a sheet of bloom, and at others the shoots run up through it, as it were, and prevent it from blooming, giving it the appearance of tufts of Grass.

Other dwarf Lobelias are ramosa, with large light-blue flowers, and coronopifolia, also with large blue flowers. Both are half-hardy annuals, requiring the same treatment as L. Erinus. L. ilicifolia is another dwarf trailing species, a native of the Cape, and is best suited for growing in suspended pots in greenhouses, though in some localities it succeeds as a rock-garden plant.

Locust Tree (*Robinia*).

Loiseleuria procumbens.—A wiry little shrub, growing close to the ground, the plants forming tufts with small reddish flowers in spring. Its bloom is never attractive, and the plants transferred to gardens from the mountains usually perish, because perhaps the strongest specimens are selected instead of the younger ones. Its true home is the rock-garden, and it prefers deep sandy peat. *Syn.* Azalea procumbens. Heath Order. Arctic and alpine Europe and Asia and higher Scottish mountains.

Lomaria.—Ferns, for the most part tropical, and requiring artificial heat; but in mild parts two or three thrive in the open air. L. alpina, a native of New Zealand, is dwarf and produces, from a creeping rhizome, abundance of dark shining green fronds, 4 to 6 in. in height. It is specially adapted for the rock-garden, should receive similar treatment to the Ceterach (to which it forms a charming companion), and should, like it, be associated with Sedums and alpine plants. L. crenulata is similar, but not quite so hardy, though it succeeds in the mildest localities, as will also the Chili L. chilensis, a Tree Fern of noble growth. These Ferns should be placed in the snuggest quarters of the hardy fernery, and care should be taken to protect them during severe cold.

London Pride (*Saxifraga umbrosa*).

Lonicera (*Honeysuckle*).—These graceful, fragrant, and beautiful plants may be made a charming aid to the flower garden or the pleasure-ground. Wherever picturesque gardening is attempted they are beautiful if isolated and allowed to ramble in their own way; while occasionally on banks, in groups, they would be charming. The Honeysuckles occur wild throughout the Northern Hemisphere, though they are essentially plants of a temperate zone. But it is only intended to enumerate those that can be grown in the open air in Britain and those that are to be got in nurseries. The Twining Honeysuckles form a distinct group of species in the large genus Lonicera. Most of them are ranged under the section Caprifolium, which formerly ranked as a genus. This group of species besides having a twining growth has additional distinguishing characters in the whorled clusters of flowers terminating the young shoots. The Erect-growing or Bush Honeysuckles have the flowers axillary and generally in pairs. Among the twining species there are a few that have axillary flowers, and range under a sub-section Nintooa, and of these Lonicera japonica is a typical example, while the commonest example of the Bush Honeysuckles or Xylosteum is L. tatarica. The two well-known early spring-flowering Honeysuckles from China, L. Standishi and fragrantissima, though generally seen trained to a wall, are not true twiners. The nomenclature of Lonicera is so confused, that it is not an easy matter to extricate from the crowd of names and synonyms those which fit the plants we wish to write about. The names given in Continental and American catalogues are most perplexing.

European Species.

There are four twining Honeysuckles of Europe in general cultivation, all of which are hardy in this country and have fragrant flowers. Of these, by far the most important are—

L. Periclymenum (*Honeysuckle Woodbine*), a plant familiar to all who know anything of our native wild flowers. It is a native of the middle of Europe and northwards, and is a true native in England, where it is generally seen in hedgerows and thickets. Numerous varieties of this species have sprung up either wild or under cultivation, though the distinctions in some of these are not very obvious. Some differ in regard to colour of flowers, others in time of flowering, and these are the most important. The wild form flowers about midsummer, according to the season, but the variety serotina continues to flower till autumn, and is known as the Late Dutch Honeysuckle, as its flowers are decidedly redder than those of the type. According to Loudon, it was once called the Flemish Honeysuckle, as it was brought here early in the eighteenth century by Flemish florists. Another variety, belgica, is popularly known as the Dutch Honeysuckle, as distinguished from the Late Dutch, and

it is a stronger growing plant than the type. Its branches are purplish and its flowers are reddish outside, yellowish within. The variety known as Early Cream is probably a form of Caprifolium, though it is classed in catalogues as a variety of Periclymenum.

I suspect that L. semperflorens is a variety of Periclymenum, though Koch places it as a variety of the allied species L. etrusca. From the name, one would infer that it is a perpetual flowerer, and it is a beautiful garden plant. The Oak-leaved Honeysuckle (quercifolia) is a variety of the common form, having leaves sinuated like those of the Oak, and L. japonica resembles this variety in this respect. The name odoratissima of some nurseries stands for a very fragrant form of this species.

L. Caprifolium (*The Goat's-leaf Honeysuckle*) is a common plant, but not a true native, though it occurs occasionally in a naturalised state. It may be at once distinguished from Periclymenum by the broad glaucous leaves, which on the flowering shoots are joined, forming a concave cup. The flowers, borne in clusters, axillary and terminal, have long tubes, yellowish and blush tinted, and very fragrant. They are produced in May and June, and are succeeded in autumn by yellowish berries. It is a robust, deciduous twiner, and grows wild in chalky districts in hedges and woods. There are numerous recorded names of varieties of this Honeysuckle, among them being rubella, pallida, verna, villosa, atrosanguinea, and Magnevillei. The last-named is one of the most distinct.

L. etrusca (*The Italian Honeysuckle*) may be said to be the southern form of L. Caprifolium. It is a moderate grower and has yellow flowers, reddish on the outside, and scented, in early summer. It is not so hardy as the two foregoing, and can only be recommended when a collection is the object.

L. implexa (*Minorca Honeysuckle*).—This is a southern kind, which, though it lives in our climate, never seems to grow freely. It is distinct in its foliage, which is smaller and more rounded than in the others, and is quite evergreen; the flowers purple and yellow colour, becoming more yellow as they fade. It has been in English gardens for over a century, and is a native of the Balearic Isles and Sicily. The L. splendida of Boissier from Spain I do not remember to have seen in cultivation, though it appears to be a desirable plant from the description of it.

Japanese and Chinese Species.

Coming to the Honeysuckles from the far East, we find a confusion of names that is almost bewildering, brought about chiefly by botanists and others giving new names to old and well-known species with established names. It seems that there are in gardens three distinct species of Japanese Honeysuckles, and these three were introduced during the first quarter of this century. But since then these plants have been rechristened again and again until there is an abundant synonymy amongst them. In Hemsley's "Enumeration of all Known Plants from China," this crowd of names is ranged under two or three species, and as this is the latest authoritative work on Chinese botany, it will be as well to follow it, though perhaps it is doubtful if the wrong names that have become established in gardens and nurseries will now be altered. These three species are—

L. japonica of Thunberg, which Loudon, in his "Arboretum," correctly figured fifty years ago. According to Hemsley, the synonymy includes L. flexuosa of Thunberg, L. chinensis, L. brachypoda, L. chinensis var. japonica, L. brachypoda reticulata, and aureo-reticulata. This is now such a well-known and common plant in gardens, that it must be familiar to many under one of the names quoted. It is, next to our own Honeysuckle, L. Periclymenum and its varieties, the most valuable as a garden plant. It is as hardy as the common Honeysuckle, and retains its foliage during winter. It may be distinguished from the other two Japanese species by its slender growth, deep green shining leaves, which have a marked tendency to vary from the normal ovate form to a pinnatifid or Oak-leaved form, and this tendency is most marked in the varieties named heterophylla and diversifolia, though at all seasons it is evident in the true plant. It is important to remember this character, as it distinguishes it at a glance from a similar species when out of flower. The flowers of L. japonica are in pairs on the tips of the young shoots. They are tubular, slender, white tinged with red, and fragrant. It continues to flower from midsummer till the beginning of autumn, and is a very fast grower, and a sturdy pot plant planted in spring will cover two or three square yards of wall during the summer. Being perfectly hardy, there is no need to protect by a wall, but it is generally seen, especially the pretty variegated form aureo-reticulata, as a wall-covering.

Supported by a stump or trellis it makes a dense mass of graceful foliage.

L. confusa of De Candolle is the beautiful Honeysuckle that is grown under the name of L. Halleana generally. A slender plant with long twining branches, the leaves are ovate and not pinnatifid, as in L. japonica, deep green, with not such a ruddy tinge as in L. japonica, neither is there a variegated form. The flowers are in pairs from the axils of the leaves on the tips of the young shoots, pure white when first expanded, changing to yellow, and this is the character that makes the plant so beautiful apart from its fragrance and free flowering. It flowers throughout the summer, and its lithe, slender stems will soon reach the top of a wall or tree stump. I do not think that it can be considered so hardy as L. japonica, but it seldom gets seriously injured.

L. flexuosa is the third Eastern species that I think should be regarded as distinct, though Mr. Hemsley places L. flexuosa of Thunberg as a synonym of L. japonica. This may be so botanically, but the plant I am describing appears to me to be very distinct from both japonica and confusa, and the reference specimen upon which I base my conclusion is the old plant growing against the wall of the herbaceous garden at Kew and which has always been labelled L. flexuosa. Out of flower it resembles L. confusa, but the leaves, though ovate and of a ruddy tinge, show no inclination to become pinnatifid or sinuated. It has more robust branches than L. japonica and the leaves are downy. The flowers are tubular, reddish outside, whitish inside and fragrant. This plant I do not think is common in nurseries, but a more beautiful wall climber could not be planted. At midsummer it produces quite a mass of sweet-scented blossoms and continues for a long time in bloom.

North American Species.

There are several American species in collections, the most important of which for the garden are the following.

L. flava (also named L. Fraseri in collections) is a moderate climber, with broad ovate leaves, pale green beneath, and terminal clusters of flowers, bright rich yellow fading to a deeper shade, and delightfully fragrant. It grows most luxuriantly in the more Southern States, and hence is best when planted against a sunny wall in this country.

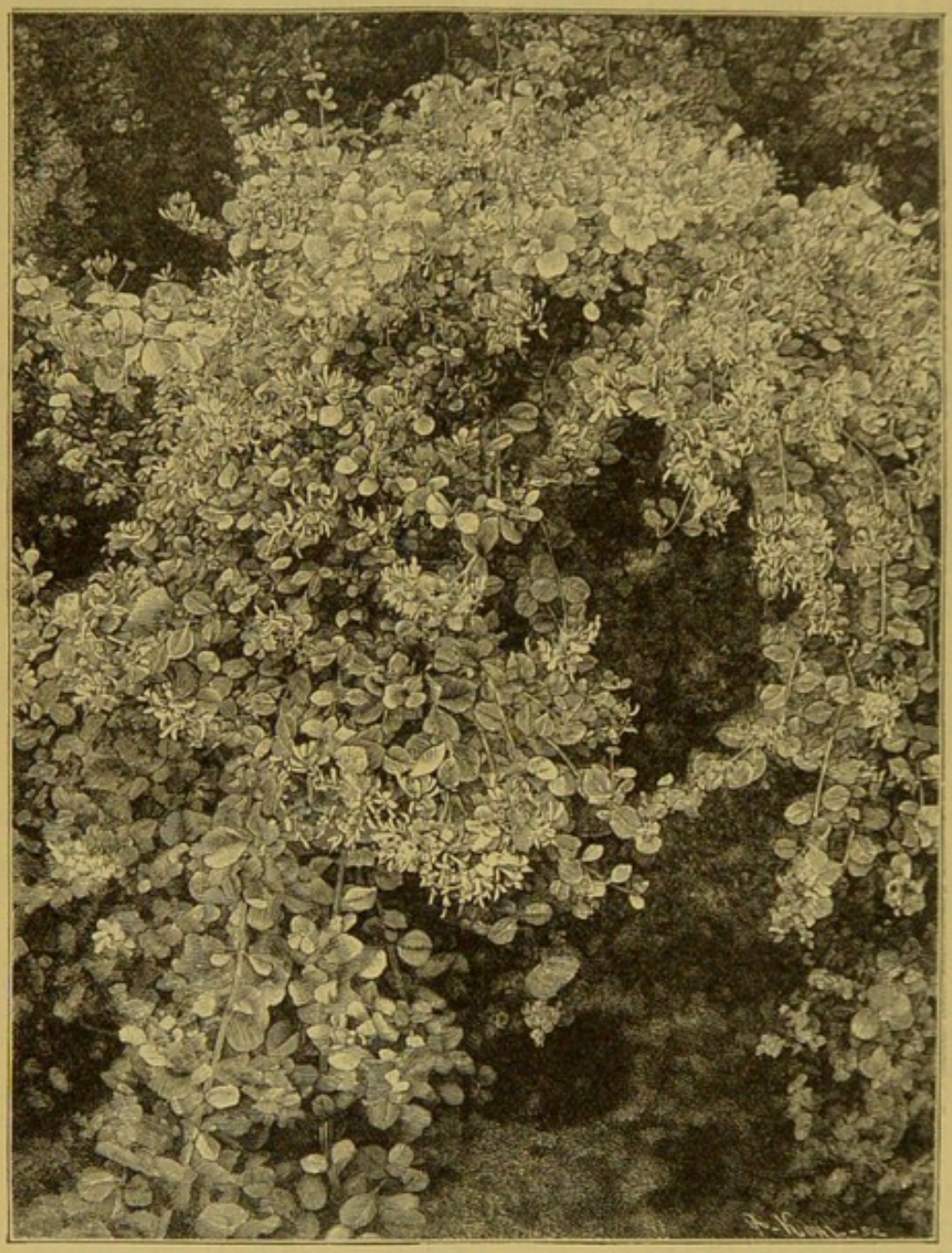
L. grata (*The American Woodbine*) is regarded as the American representative of L. Caprifolium, under which species it is sometimes placed as a variety. It is a vigorous grower, having broad glaucous leaves (almost evergreen), the upper ones joined as in Caprifolium. The flowers are in clusters, whitish, with a purple tube fading to a yellowish shade, and fragrant. It flowers in May, and grows wild in rocky woodlands in the New England States.

L. sempervirens (*Trumpet Honeysuckle*) is the most beautiful Honeysuckle that has come to us from the West, both for the greenhouse and the open garden, where it flourishes well in the southern counties, and none of the Honeysuckles have such brilliantly-coloured flowers. It is a robust-growing climber, quite evergreen when protected. From the beginning of summer till the end it bears a profusion of loose clusters of long, tubular flowers, which are scarlet outside, yellow within. There is a variety called major and another named minor, the latter being the commoner; in fact I do not remember having ever seen the major variety. There is not a more desirable plant for the roof of an unheated or cool greenhouse than the Trumpet Honeysuckle, and in peaty soil it grows luxuriantly. In the open it is best against a warm wall. There are several named varieties of L. sempervirens, but I cannot say how far they are distinct from the major and minor forms.

Some valuable results would probably be obtained if some hybridist would take the Honeysuckles in hand, especially by inter-crossing the brilliant-coloured L. sempervirens with the hardier and fragrant species. There is one hybrid named Plantierensis which has sempervirens for one of its parents. It is a beautiful climber, having large orange-scarlet flowers.

Culture.—With regard to the garden treatment of Honeysuckles, it is more a question of position than cultivation, as none of the kinds are fastidious as to soil provided it is not too heavy or too light and poor. They all flourish best in a light rich soil in a fully-exposed sunny position. It is a mistake to plant Honeysuckles at the base of shady trees and expect them to climb up and produce crops of flowers as they do when in the open, but this is done habitually in even large gardens where also climbing Roses are planted at the bases of hungry trees and expected to flourish. Honeysuckles naturally delight to twine upon other

plants, but in shade they do not flower. One often sees a thicket overrun with common Honeysuckle, but until the trees have been cut the Honeysuckle does not flower. It loves to ramble over a hedge, as we see it by the wayside, and in the garden one can make various hedge combinations with it and some other hedge plants, such as Sweet Brier, common Roses, Holly, Quick, and a host of other things. To cultivate Honeysuckles to perfection, they should not be planted near any other living shrub, but should be supported by a dead tree trunk or trellis, as then the Honeysuckle gets food enough from the soil. This is why one sees plants of Honeysuckle on a wire trellis bearing much finer blooms than is the case when growing over trees or hedges. A good plan is to plant some in good soil against wood posts at distances of 12 ft. apart, and when they have reached the top of the posts to connect them by a festooning chain from post to post, as Roses and Clematises are often done.



Lonicera periclymenum (Honeysuckle).

Some attention is required in pruning, especially the European and American

deciduous species. The old stems should be cut away so as to encourage new ones, otherwise if allowed to go unpruned the plants die out. The Japanese Honeysuckles are more vigorous, and only require pruning to keep them in check. This is especially the case with L. japonica and its variegated form, which soon form an impenetrable mass of shoots, and that is why they should not be grown on an arbour or over a walk, as owing to the dense shade the under side becomes full of dead leaves and shoots. The Dutch and similar growing kinds are best suited for arbours.—W. G.

Loosestrife (*Lysimachia vulgaris*).

Lopezia.—Mexican annuals of the Fuchsia family, not showy. L. coronata grows 1 to 1½ ft. high, with red flowers from July to September. L. racemosa is similar, but inferior. They thrive in ordinary soil, but are only useful where annual plants are much grown. Seed should be sown in March in the open border.

Lophospermum scandens.—A tender climber with long slender stems, pale green hairy leaves, and large pink flowers. It thrives in the open air in summer, and is a beautiful plant for festooning old stumps, or for trailing over dead branches placed against a warm south wall. It may be easily raised from seed in heat in early spring or autumn and kept through the winter, but the best plan is to lift the plants in autumn and to winter them in a greenhouse.

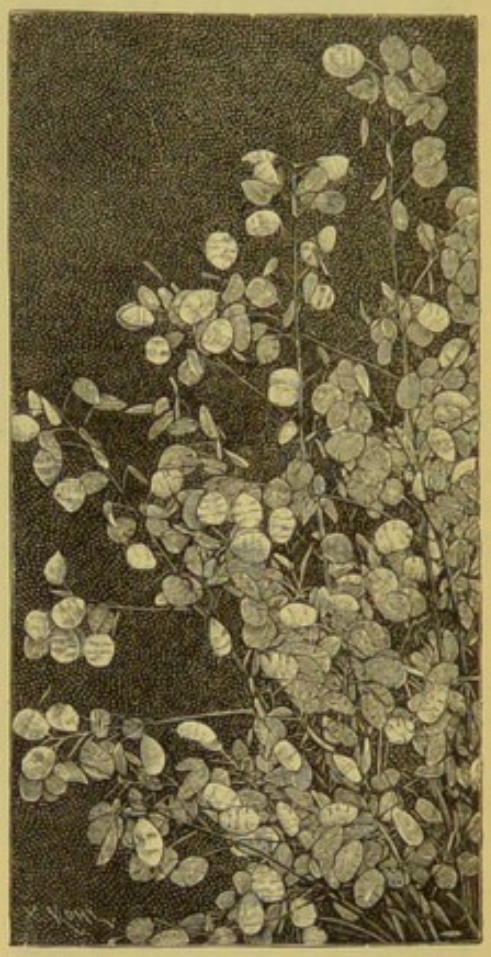
Lords and Ladies (*Arum*).

Lotus (*Bird's-foot Trefoil*). — Most plants of this genus are weedy, the one best worth growing being the native L. corniculatus, which occurs in almost every meadow, or pasture, forming tufts of yellow flowers with the upper part often red on the outside. Though so common, it is worthy of a place in the garden. The double-flowered variety is the best, as the flowers continue longer in perfection. L. creticus, maroccanus, sericeus, are found in botanical gardens, but are not so pretty. L. Jacobæus, a tender species with almost black flowers, succeeds in the open air in summer, and is all the better for planting out. The Lotus is best planted so that its shoots may fall in long and dense tufts over the face of stones.

Love-in-a-mist (*Nigella damascena*).

Love-lies-bleeding (*Amarantus*).

Lunaria biennis (*Honesty*). — When well grown this old-fashioned plant is beautiful, not only on account of its fragrant purple blossoms, but from the silvery flat seed-pods that succeed them. In borders, on the margins of shrubberies, and in half-shady situations, it is effective in April and May, in any ordinary light garden soil. Honesty is charming in a semi-wild state on chalky or dry banks and in open bushy places. Seed should be sown every spring, and the plants



Lunaria biennis (seed vessels of Honesty).

should be thinned out during growth in order to make good ones for the next year. L. rediviva is a perennial similar to the Honesty, but with larger and more showy flowers. It is 2 or 3 ft. high, and flowers in early summer, doing best in half-shady borders of good light soil. Division or seed. Mountain woods of Europe. Cruciferæ.

Lungwort (*Pulmonaria*).

„ Virginian (*Mertensia*).

Lupinus (*Lupine*).—Beautiful annuals, biennials, and perennials, chiefly from N. America. The species in cultivation are few, though the names occurring in catalogues are numerous. The best of the perennials are—

L. arboreus (*Tree Lupine*).—A precious plant for dry soils and rough rocky banks

or slopes, the scent of a single bush reminding one of a field of Beans. Its purplish variety is good, though not nearly so valuable, and there are some inferior yellowish varieties. The best

Lupinus polyphyllus.

variety is the yellow, because while there are good blue perennial Lupines, there is no other good yellow. It forms a roundish bush, 2 to 4 ft. high, and is easily raised from seed; handsome forms are increased from cuttings. It may be killed in severe winters, but is worth raising from time to time where the soil suits it.

L. polyphyllus, one of the handsomest hardy plants, 3 to 6 ft. high, with tall flower-spikes crowded with blossoms, varying from blue and purple to reddish-purple and white ; in summer thriving in open positions in any kind of garden soil. It is a fine plant for naturalising, as it holds its own against stout weeds. The principal varieties are argenteus, flexuosus, laxiflorus, Lachmanni, rivularis, and grandiflorus. N. America Division: seeds.

L. nootkatensis is a dwarfer species, and has large spikes of blue and white blossoms. It flowers earlier than L. polyphyllus, and continues in bloom for a long time, but it is not a good perennial, and requires to be frequently raised from seeds. N. W. America.

ANNUAL LUPINES are among the most beautiful of hardy annuals, extremely varied in colour, and of the simplest culture. As they grow quickly, they need not be sown till about the middle of April. They thrive in any common soil. L. sub-carnosus is a beautiful ultramarine blue, and should always be grown. L. hybridus atrococcineus is the finest of all, having long and graceful spikes of flowers of a bright crimson-scarlet, with white tips. Other excellent sorts are mutabilis, Cruikshanki, Menziesi, luteus, superbus, pubescens, Hartwegi, and the varieties of Dunnetti. Many other sorts are so much alike that they are not worth separating. The smaller annual Lupines are very pretty, and could be charmingly used to precede late-blooming and taller plants.

Luzuriaga radicans.—A small Liliaceous evergreen from Chili almost hardy in the mildest localities, though even in these it does not thrive so well as in a cool house. It is worthy of a trial in a cool bed of peat, on the north side of the rock-garden, among the larger alpine shrubs.

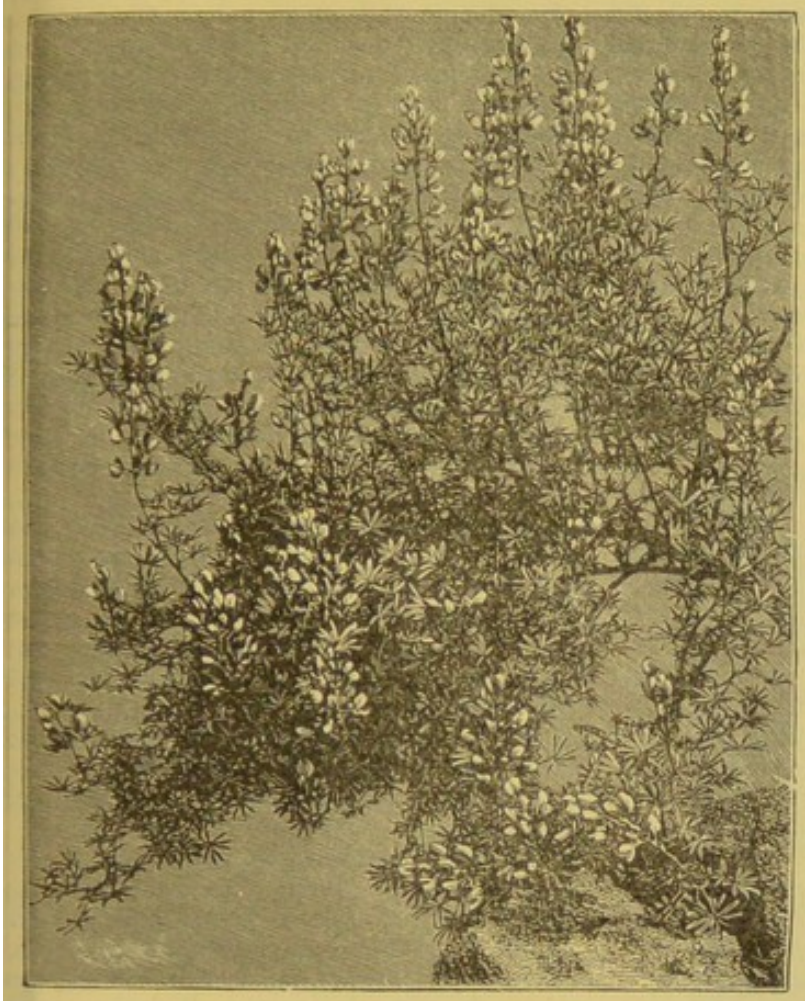
Lychnis (*Campion*).—Plants of the Pink family, among which are a few well suited for the garden. All are perennial.

L. alpina is a diminutive form of L. Viscaria, the tufts being seldom more than a few inches high and not clammy. In cultivation it is pretty and interesting, if not brilliant, and may be grown without difficulty in the rock-garden, or in rather moist, sandy soil. A British plant.

L. chalcedonica.—An old border plant, 1½ to 4 ft. high, with large dense heads of brilliant scarlet flowers, and of easy culture in any good ordinary soil. There is a handsome double scarlet variety. The double white and single white kinds are less desirable. Division.

L. diurna.—The double deep purple-

red sort of this common native plant is very desirable, being very hardy and very showy, and never failing in any soil to produce a fine crop of bloom in early summer.



Lupinus arboreus.

There are two double red varieties of L. Flos-cuculi (Ragged Robin), pretty border plants. Division.

L. grandiflora.—A handsome plant, typical of the numerous varieties now in cultivation under the names of Bungeana, and others which grow 1 to 2 ft. high, and bear flowers in a cluster of a dozen or so, each flower being 1 to 2 in. across, fringed at the edges, and varying from vivid scarlet to deep crimson, and from pink to white. If exposed to strong sun the colour of the flowers soon fades, but in a partially-shaded place they retain their true colour for a considerable time. They are good border flowers, thriving in warm sheltered situations in light soil, for though quite hardy they are apt to suffer from moisture and cold. They are greatly benefited by frequent transplanting, say every other year. All the varieties may be raised by seeds or from cuttings. L. fulgens, a Siberian plant, is similar to the forms of L. grandiflora.

L. Haageana is a reputed hybrid between L. fulgens and L. coronata or grandiflora. It is one of the best of this valuable group of border plants, in itself extremely variable, affording nearly every shade of colour, from the brightest scarlet to white. The flowers are large, of good substance, and produced in the greatest profusion all through the summer months; indeed, as a permanent "bedder" we have rarely seen its equal. Where it can be managed, a partially shady spot should be chosen for the most brilliantly coloured forms, as the flowers fade somewhat when exposed to bright sunshine. Apart from this they will be found to grow more strongly, and continue longer in beauty in a cool spot. The plants vary in height considerably, and this should be taken into account when choosing for permanent bedding use. The variety called hybrida is a veritable gem, dwarf, compact, and giving an abundance of prettily fringed, vivid scarlet flowers. The colours seem fixed, and we have now good distinct scarlet, crimson, pink, salmon, and several white forms, all worthy of attention, and suitable as substitutes for Geraniums in summer bedding. They can be increased with the greatest ease either by cuttings, division, or when in quest of new forms by seed, which is best sown as soon as ripe in boxes and placed in a cold frame. The seedlings by the end of May will be ready to plant in their permanent quarters. They may almost be treated as annuals or biennials, especially in heavy soils, where the hopes of their living through severe winter in northern counties will be limited indeed. In the neighbourhood of London they give very little trouble, and are a source of much enjoyment.

L. Lagascæ.—A lovely dwarf alpine plant, with many bright rose-coloured flowers, about ¾ in. across. It is suited

for adorning fissures on the exposed faces of rocks, associated with the smallest alpine plants. It is easily cultivated in the rock-garden in any free sandy or gritty soil. An exposed position should be preferred, as the plant is very free in growth. The flowers appear in early summer, and if not weakened by shade, or by being placed in frames, are in fine condition when the plant is about 3 in. high. Readily increased by seed. *Syn.*, Petrocoptis Lagascæ.

L. Viscaria (*German Catchfly*). — A British plant, with long Grass-like leaves, bearing in June many showy panicles of rosy-red flowers, on stems 10 to nearly 18 in. high. The bright-coloured variety called splendens is the most worthy of

Double Ragged Robin.

cultivation. L. V. alba, a charming white variety, is worthy of a place in gardens, as also is the double variety, which has rocket-like blooms. They are excellent for the rougher parts of the rock-garden, and as border plants on dry soils. The double variety is used with good effect as an edging plant about Paris. Easily propagated by seed or division.

Lycium (*Box Thorn*). — Rambling shrubs, the best-known being L. europæum, a common climber on cottage walls. Though not a showy flowering shrub, few others are so rapid in growth, so graceful, and so indifferent to the nature of the soil. It is also suited for covering porches, pergolas, and arbours, and in late summer and autumn, when every long drooping branch is thickly hung with small orange-scarlet berries, it is pretty. The flowers are small, purple and white, and the unripe berries are of the same tints. The description of L. europæum may be taken as applying to the other kinds in gardens, as they are all much alike, though differing more or less in a botanical sense. The commonest kinds are L. chinense, from China; L. barbarum, from North Asia; L. afrum, from North Africa; L. Trewianum, and L. ruthenicum. They are of rapid growth, and therefore suitable for covering high walls, though all are deciduous. Sometimes hedges are made of Box Thorns, for, as they all throw up numerous suckers, the hedge soon becomes thick. There is a species named L. chilense against one of the walls at Kew, which seems to be more rapid in growth than the rest.

Lycopodium dendroideum (*Ground Pine*).—A very distinct Club Moss, worth a place in the rock-garden, its little stems, 6 to 9 in. high, much branched, and clothed with small, bright, shining green leaves. It flourishes best in a deep bed of moist peat in a low part of the rock-garden, where its distinct habit is attractive at all seasons. Difficult to increase, it is rare in this country. N. America, in moist thin woods.

Lygodium palmatum (*Climbing Fern*). —An elegant North American twining fern, hardy in a deep, peaty, moist soil if in a sheltered and partially shady position. The wiry stems are furnished with delicate green fronds. It may be allowed to trail on the ground, but it prefers to twine around the branches of some shrub.

Lyonia.—Plants allied to Andromeda; indeed the species belonging to it, numbering about three, are sometimes called Andromedas. They are not important, but would add interest to a collection of peat-loving shrubs. The chief are L. ligustrina, frondosa, and rubiginosa, which have evergreen foliage and small white blossoms.

Lysimachia (*Loosestrife*).—Plants of the Primrose family of much diversity of habit. The most familiar example is the common creeping Jenny (L. Nummularia), than which there is no hardy flower more suitable for any position where long-drooping, flower-laden shoots are desired, whether on points of the rock-garden, or rootwork, or in rustic vases, or on steep banks, growing in any soil; in moist soil the shoots attain a length of nearly 3 ft., flowering throughout their extent; it is easily increased by division, and flowers in early summer and often throughout the

season. There is a yellow-leaved variety (L. N. aurea), which retains its colour well, can be readily increased, is useful for rock-gardens or borders, and merits its name. The other kinds are tall and erect. L. vulgaris, thyrsiflora, lanceolata, ciliata, verticillata, punctata, and davurica are all 2 to 3 ft. high, have spikes of yellow flowers, and, delighting in wet places, are suitable for the sides of ponds, lakes, streams, and similar spots. Indeed, they grow almost anywhere, but in a border they must have a place to themselves, as by their spreading they soon destroy weaker subjects. L. clethroides, a Japanese species, is a graceful plant, 2 to 3 ft. high, with long nodding dense spikes of white blossoms, and the leaves in autumn of brilliant hues. L. Ephemerum is a similar plant, from S. Europe, but is scarcely so fine. There are some beautiful species, such as L. atropurpurea and lupinoides, which are rare.

Lythrum (*Purple Loosestrife*).—The common waterside L. Salicaria is the most familiar plant of this genus, and one of the showiest. It is well worthy of culture where it is not plentiful. The beauty of the ordinary wild kind is surpassed by the varieties originated in gardens, of which superbum and roseum are the finest. The colour of these is a much clearer rose than that of the wild kind, and the spikes are larger, particularly those of superbum, which, under good cultivation, are 5 or 6 ft. high. These plants are well worth growing by lakes or in boggy ground, and are easily increased by cuttings, which soon make good flowering specimens. Isolated plants in good soil make well-shaped bushes, 3 or 4 ft. high and as much through, and look better than when planted closely in rows.

L. virgatum, alatum, Græfferi, flexuosum, and diffusum, smaller plants, and not so showy, are not without beauty.

Macleaya (*Bocconia*).

Madaria elegans.—A hardy Californian annual with showy yellow and brown flowers, requiring the treatment of hardy annuals.

Madwort (*Alyssum*).

Magnolia (*Lily Tree*).—There are about twenty species of Magnolia known, and all but some half-dozen or so are in cultivation in this country. The headquarters of these trees are in China and Japan, a few are peculiar to the Himalayan region, and a few more to North America. All are handsome trees or shrubs ; some may be classed amongst the most beautiful objects to be met with in the gardens of temperate climates. A glance at the engraving, representing a very fine specimen of the Yulan, will show what glorious effects may be obtained in spring, in the South of England at any rate, by its use. It is true enough, unfortunately, that frosts sometimes injure the flowers and change their snowy whiteness into an unsightly brown. Perhaps the reason that this Magnolia and its allies are not more often met with in gardens is owing to the fact of their not transplanting readily. The best results are obtained if the plants are planted just as growth begins in spring. The fleshy roots when injured rot rapidly, and when autumn-planting has been practised, many succumb to the ordeal, those that do not do so outright often struggling on in a pitiful plight for years. A little care in transplanting in spring, in sheltering with mats from dry winds or hot sun, and in syringing the wood to prevent shrivelling, until the plants are established, would do much to prove that the Magnolias can be planted with every prospect of success. Some species occasionally ripen seed freely in this country, and it is well worth while to sow this seed at once. If dried and kept like other seeds until the following season, all chance of germination will have passed. All the species of the natural order Magnoliaceæ have seeds which retain their vitality for but a very limited period.

M. acuminata (*Cucumber Tree*) makes a noble specimen when planted singly in the park or pleasure-ground. It is deciduous, the leaves varying from 5 in. to 1 ft. in length, and glaucous green, the flowers yellow-tinged, bell-shaped, and slightly fragrant. There are fine examples of this tree at Kew, in the gardens of Syon House, and Claremont. In its native country it attains a height of from 60 to 90 ft., with a trunk from 2 to 4 ft. in diameter. The yellow Cucumber tree (M. cordata) is regarded by Professor C. S. Sargent as a variety of M. acuminata. It is a rare plant in a wild state, as it does not appear to have been collected since Michaux found it in Georgia.

M. Campbelli, one of the most gorgeous of Indian forest trees, has not fulfilled the expectations of those who took so much trouble in introducing the species to British gardens. In a wild state it attains a height of 150 ft., and the fragrant flowers, varying from deep rose to crimson, come before the leaves. Probably the finest specimen in the British Islands is the one at Lakelands, near Cork, which ten years ago was 35 ft. high. In 1884 it

flowered for the first time, and a figure was prepared for the *Botanical Magazine* from material forwarded to Kew by the late Mr. Crawfurd. Considering the beauty of M. Campbelli, it would appear worth while to treat it as a wall-plant against some high building in a warm sunny position. As it occurs in a wild state along the outer Himalayas at elevations of from 800 to 1,000 ft. above sea-level, there seems every probability that the treatment suggested would prove successful.

M. conspicua.—In its typical form this has snowy-white flowers, which are borne in the greatest profusion in the latter part of April and beginning of May. Splendid specimens of this beautiful Chinese and Japanese tree are to be seen at Gunnersbury House, Syon House, and Kew. M. Yulan and M. precia are names under which this is found in some books and gardens. Several hybrid forms between this species and M. obovata occur in gardens; of two of these, M. Lenné and M. Soulangeana nigra, coloured plates have been published in *The Garden*. M. Soulangeana has flowers similar in shape and size to those of typical M. conspicua, but they are deeply tinged with red; M. Soulangeana nigra has dark plum-coloured flowers. Both these bloom a week or ten days later than the type. Other seedling forms or slight varieties of the Yulan are M. Alexandrina, M. cyathiformis, M. speciosa, M. spectabilis, M. superba, M. triumphans, and M. Yulan grandis.

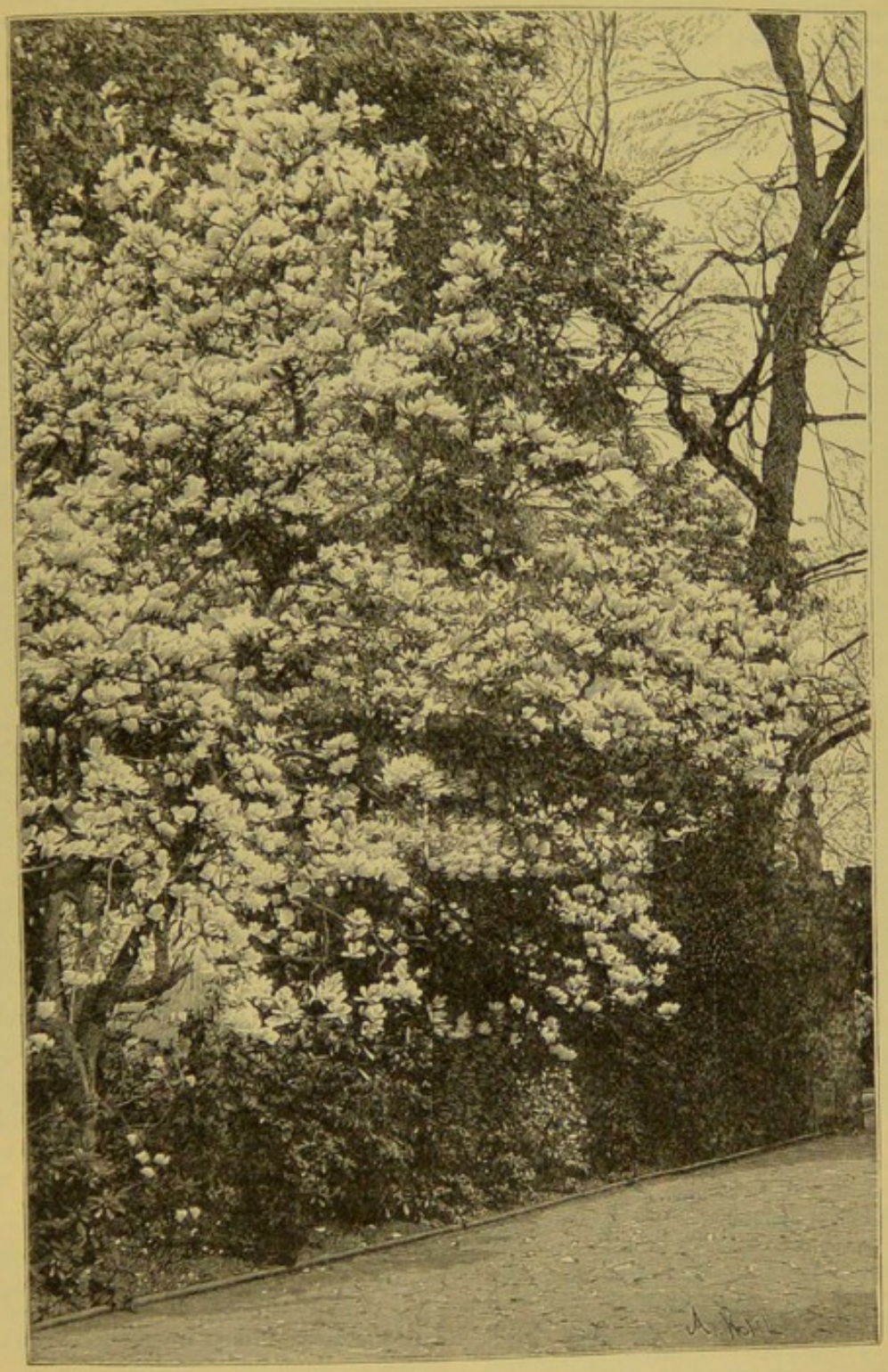
M. Fraseri, a native of the southern United States, is recognised by its green spathulate leaves, measuring about 8 in. to 1 ft. in length, and about 3 or 4 in. across at the widest part, the flowers, 3 or 4 in. in diameter, are creamy-white in colour, and appear later than those of any other cultivated species. In a wild state the tree attains a height of from 30 to 50 ft.

M. glauca, the Laurel Magnolia or Sweet Bay of the eastern United States, is a delightful sub-evergreen shrub, with leathery leaves, bluish-green above and silvery below. The flowers are globular in shape, very fragrant, opening of a rich cream colour and gradually acquiring a pale apricot tint with age. In a wild state this species occurs in swamps and attains a height of 20 ft. It is hardy and easily grown in Britain in peat soil.

Magnolia stellata.

M. grandiflora, the great Laurel Magnolia of the southern United States, is—in England—best treated as a wall-plant; under these conditions it thrives well and flowers freely. In order to form some idea of the beauty of this species it is necessary to see it in large symmetrical stately trees in the west of France, where climatic conditions obtain which more nearly approach those of its native habitats. A correspondent in the West of England writes to *The Garden* as to the culture of this plant: "At one time it was thought necessary to protect the trees with mats during the winter, but this practice, which necessitated restricting the growth considerably, has

largely ceased, and the trees in some instances have attained a very great height. For instance, there is one under my charge that is now fully 50 ft. high. The bole of the stem is slightly over a yard in circumference. In some seasons several scores of blooms are borne by this tree, but during the winters of 1891 and 1892 many of the more exposed points were badly injured by frosts, and the bloom lessened in quality accordingly. A very exposed position is not suitable for this heavy-foliaged tree, and shelter from cold winds is desirable.



The Yulan (Magnolia conspicua) at Gunnersbury House.

Where Magnolias succeed best is in the nooks between bay windows or irregular fronts of dwelling-houses, buttresses on extra high walls also affording a good shelter. The best instance of what can be done in the way of clothing extra high yet sheltered walls with evergreen magnolias is to be seen at Canford Manor, Wimborne, Dorset, while there are also several fine specimens against high walls at Ashton Court, near Bristol. It is quite useless to plant them in a tiny hole, but the site should be well prepared by trenching or forking peat and leaf soil freely into common garden soil, or, better still, fresh loam, a space not less than 3 ft. by 30 in. being prepared for each tree. Once the trees have attained a good size, no further trouble need be taken with the roots, as they are quite capable of foraging for themselves. In planting, it is advisable to moisten and then slightly loosen the ball of soil, some of the roots being spread out. During the first summer the soil about the roots should be examined occasionally and watered thoroughly when dry. The tops branch naturally, and all that need be done is to spread them out thinly, and to keep the growths secured to the walls or trellis. In after years the strongest branches will require to be kept to the walls by means of strips of leather and strong nails, the side shoots being tied to these with tar twine. They ought not to be very closely trained, or so much so as to present a painfully neat appearance, but if the branches or shoots are left too long the strong winds may break them off."

M. hypoleuca.—This is the wood commonly used by the Japanese in the manufacture of objects to be lacquered; it is preferred for sword sheaths, and the charcoal made from it is used for polishing lac. In the southern part of Yesso it is abundant in the forests, and forms fine trees 60 ft. or more in height, with a trunk diameter of 2 ft. The leaves are 1 ft. or more long, and 6 or 7 in. wide, dark green and smooth above, and clothed with white hairs beneath. The flowers are creamy-white in colour, deliciously fragrant, and when fully expanded measure 6 or 7 in. across, the brilliant scarlet filaments forming a striking contrast to the petals. There are no large specimens as yet in this country, but as the species thrives well in the north-eastern United States, it is fair to assume that it will do well in Britain.

M. Kobus, a Japanese species, grown in the United States under the name of M. Thurberi. It is hardy in the south of England, having been grown outside for several years at Kew. The leaves are 6 or 7 in. long by about half as much in width, the flowers 4 to 5 in. in diameter, creamy-white. Professor Sargent, who found the species growing in the forests of Hokkaido, in Japan, describes it as a tree 70 to 80 ft. high, with a tall straight trunk 2 ft. in diameter. He says the flowers appear before the leaves, about the middle of May.

M. macrophylla.—This, unfortunately somewhat tender in a young state, is worth growing simply for its beautiful leaves, which are green above and clothed with white hairs beneath, and attain a length of upwards of 3 ft. The open bell-shaped fragrant flowers are white with a purple blotch at the base of the inner petals, and measure 8 or 10 in. across. In its native habitats—the southern United States—it forms a tree from 20 to 40 ft. in height, with a trunk rarely exceeding 1 ft. in diameter.

M. obovata is a native of China; in Japan it only occurs in cultivation. It is a dwarf-growing bush, perfectly hardy in the South of England, and bears freely its purple sweet-scented flowers, though not in the same profusion as are those of the white-flowered M. conspicua. This species has a number of synonyms, amongst which the following are the most frequently met with in books and nursery catalogues: M. discolor, M. denudata, M. liliflora, M. purpurea, Talauma Sieboldi, etc. There are several varieties, but these differ so slightly from each other and from the type, that descriptions without good coloured figures would be next to useless. The best are Borreri, angustifolia, and erubescens.

M. stellata.—An excellent coloured plate of this very beautiful Japanese shrub was published in *The Garden* in June 1878, under the name of M. Halleana. This species is the earliest of the Magnolias to flower, and it should be extensively grown for the beauty of its starry white flowers. A variety with blush-coloured flowers, sent from Japan by Mr. Maries, has not yet been sent out by Messrs. Veitch, but it grows freely in their Coombe Wood Nurseries, and will doubtless become a favourite. Both are dwarf-growing deciduous shrubs.

M. tripetala, a native of the southern United States, has large slightly-scented white flowers, from 5 to 8 in. across, and obovate-lanceolate leaves, from 1 to 3 ft. in length. In a wild state the tree rarely exceeds 40 ft. in height. Philip Miller was the first to introduce this fine species

o British gardens. Other names for it are M. Umbrella and M. frondosa.

M. Watsoni.—A coloured plate of this beautiful Japanese species was published in *The Garden* in December 1883, under the name of M. parviflora; at that time it had not flowered in British gardens. It is hardy, has large creamy-white fragrant flowers with petals of great substance and deep red filaments, which add materially to the beauty of the blossoms.

Magnolia obovata var.

The trûe M. parviflora is probably not in cultivation in Britain.—N.

Maianthemum bifolium (*Twin-leaved Lily of the Valley*).—A plant allied to the Lily of the Valley, and a native of our own country. Its habit and relationship make it interesting, and it is easily grown in shady or half-shady spots, and under or near Hollies or other bushes. It is not fitted for the border, and is scarcely suitable for the rock-garden. *Syn.*, Convallaria bifolia.

Maiden-hair (*Adiantum*).

Mahonia (*Berberis*).

Malcolmia (*Virginian Stock*).—The old M. maritima is a charming dwarf hardy annual, and grows in any soil. The varieties are—the white (alba), alba nana, a dwarfer white than the other, and Crimson King (kermesina), a dwarf deep red sort, and these are all worthy of culture. The Virginian Stock, like many other annuals, does not show its full beauty from spring-sown seedlings, and where it sows itself in the gravel it is often handsome. Being easily raised it is a good surfacing plant in the spring or early summer garden, bolder flowers standing up from its pretty sheets of bloom, and in flakes, or masses, or beds, it is pretty and effective.

Male Fern (*Aspidium Filix-mas*).

Mallow (*Malva*).

Mallow, Jew's (*Kerria*).

,, **Syrian** (*Hibiscus*).

Mallow, Tree (*Lavatera*).
,, **White Jew's** (*Rhodotypos*).

Malope grandiflora.—One of the most showy of hardy annuals, and effective where a bold, crimson flower is desired. It is 18 to 24 in. high, and the better the soil the finer will be its bloom. If the Malope be sown in the open, the ground should be prepared by digging and manuring, the seeds being covered to the depth of ½ in. in light rich soil, gently pressed down. There is a white variety, M. g. alba. The variety M. g. rosea, white flushed with rose, is pretty and distinct. M. trifida is smaller in every part, but showy. These bold annuals are rarely used with good effect. Like all annuals, they lend themselves to rotation in the flower garden. If from any cause the beds or borders get worn out, it is worth while to try the effect of a crop of the best annuals. The Malopes, being vigorous plants, are, as a rule, best in masses or groups. S. Europe. Malvaceæ.

Malva (*Mallow*).—Of these there are few pretty garden plants; the majority are coarse and weedy. One of the most beautiful is the white variety of the native Musk Mallow (M. moschata), which is charming when in flower. It is a branching bush, with stems about 2 ft. high, and many flowers 1 to 1½ in. in diameter. It is a hardy perennial, will grow in almost any soil, is useful for cutting, and is slightly Musk-scented. M. campanulata is a beautiful dwarf plant, but rare and not hardy except in very mild districts. It is dwarf and spreading, and bears numerous lilac bell-shaped flowers. M. Alcea, Moreni, and mauritanica are worth growing in a full collection, and so is the annual M. crispa, 3 to 6 ft. high—an erect pyramidal bush of broad leaves, with a crimped margin, pretty in groups, beds, or borders. By sowing in cool frames and planting it out early in May, strong plants may be obtained early in the season.

Malvastrum.—These are similar to Mallows, but none are thoroughly hardy, being natives of the warmer parts of America. M. Munroanum is a dwarf plant with rather small orange-red flowers, and M. lateritium, a dwarf native of Buenos Ayres, has brick-red flowers. Sometimes in mild localities these plants thrive in the rock-garden or well-drained borders, in light warm soil.

Mandragora (*Mandrake*). — Curious plants of the Solanum family, mainly suitable for botanical collections. They are easily grown in warm free soil, and enjoy borders at the foot of south walls.

Marguerite.—The old French name for the Daisy, now commonly applied to Chrysanthemum frutescens.

Marguerite, Blue (*Agathæa*).
Marigold, African (*Tagetes*).
,, **Cape** (*Dimorphotheca*).
,, **Corn** (*Chrysanthemum segetum*).
,, **Fig** (*Mesembryanthemum*).
,, **French** (*Tagetes*).
,, **Marsh** (*Caltha*).
,, **Pot** (*Calendula*).

Marshallia cæspitosa.—An interesting Texan composite, 6 to 9 in. high, each stem having a Scabious-like white flower-head, about 1½ in. across. It is a perennial, flowers in the second season from seed, and in June and July a neat border plant in light soil. Although not showy, its flower-heads are so distinct that it is worth a place in the herbaceous border.

Marsh Fern (*Aspidium Thelypteris*).
,, **Mallow** (*Althæa officinalis*).
,, **Trefoil** (*Menyanthes*).

Martynia lutea.—A pretty Brazilian annual, about 1½ ft. high, with large roundish leaves and handsome yellow flowers in clusters, useful for beds, groups, and borders. It requires a light, rich, cool soil, a warm place, and frequent watering in summer. M. fragrans, another species, has sweet-scented flowers, and, under similar conditions, thrives in the open air in summer. It is best in rich borders, or among groups or beds of curious or distinct plants. M. proboscidea and others are less desirable. Seed.

Marvel of Peru (*Mirabilis Jalapa*).

Matricaria (*Mayweed*)—Weeds, excepting the double variety of M. inodora, which is a pretty plant with feathery foliage somewhat like Fennel, and with large white flowers, perfectly double. It is creeping, requires much space, and pegged down forms a dense mass which has a pretty effect in autumn. It is hardy, and perennial on most soils, and is easily propagated by cuttings or division in autumn or spring. *Syn.*, Chrysanthemum inodorum fl.-pl.

Matthiola (*Stock*).—From a few wild kinds have been obtained the numerous varieties of the garden Stocks, which have so long been among the best of our open air flowers. The principal of these species are M. incana, M. annua, and M. sinuata. M. incana grows wild on cliffs in the Isle of Wight, and is the origin of the Biennial, or Brompton and Queen Stocks; M. annua has yielded the Ten-week Stocks, and M. sinuata the others. These three primary divisions—the Ten-week, Intermediate, and Biennials—require each different treat-

ment, and Stocks are so easily grown, so fragrant and handsome, that they will ever deserve care in our gardens.

TEN-WEEK STOCKS, if sown in spring, will flower continuously during the summer and autumn. The finest strain is the large flowering Pyramidal Ten-week, vigorous plants, each branching freely, bearing a huge main spike of double flowers and numerous branching spikes in succession. A bed of these Stocks should be grown if cut flowers are in request during the summer. The seed may be sown at any time from the middle of March onward, but it is always well to get Stocks from seed early. The seed can be sown thinly in pans or shallow boxes, in a gentle heat, and, as soon as the plants can be handled without injury, they should be transplanted to other pans or boxes and grown on quickly, care being taken not to draw them so as to make them lanky. There are various places in most gardens where a bed or patches of Stocks might be grown with advantage, and, given good rich soil, they will amply reward the grower. The German growers have a formidable list of kinds, many of which are more curious than showy. There are, however, sufficient good colours among them, such as crimson, rose, purple, violet, and white, to yield distinct hues. There is a strain of English-selected Stocks, known as Pyramidal, which are of tall growth, and remarkable for their large pyramids of flowers, and there is a very distinct type known as Wallflower-leaved, which was introduced many years ago from the Grecian Archipelago, and which has shining deep-green leaves, not unlike a Wallflower. In all other respects the type is like the ordinary German Stock. One of the finest varieties of this type, and one of the most beautiful Stocks in cultivation, is known as Mauve Beauty. It has huge heads of pale, lustrous, mauve-coloured flowers. The culture for the Ten-week Stock will answer for this. The autumn-flowering strain is very desirable, as the plants succeed the German varieties, and so prolong the season.

INTERMEDIATE STOCKS may be sown either in July or August, to stand the winter and flower early in the spring, or in March, to flower in the following autumn. The strain is dwarf and bushy, and very free-blooming, and the varieties may be said to be confined to scarlet, purple, and white. There is a strain grown in Scotland under the name of the East Lothian Intermediate Stock, and much used there for beds and borders, the climate exactly suiting it for late summer blooming. It is sown in the usual way about the end of March, planted out at the end of May when 3 or 4 in. high, and blooms finely through August and September, and even later, as the numerous side shoots give spikes of flowers. Thus, by using the autumn-sown Intermediate Stocks for early blooming, the ordinary large flowering German Ten-week Stock for summer flowering, and the later East Lothian Intermediate Stock for late summer, Stocks can be had in flower for eight or nine months of the year without intermission.

BIENNIAL STOCKS comprise the Brompton and the Queen, and they should be sown in June and July to flower in the following spring or summer. They are closely allied, and are probably only varieties of the same kind; but the seed of the white Brompton is pale in colour whilst that of the Queen is quite dark. Old growers of the Stock assert that while the under side of the leaf of the Queen Stock is rough and woolly, the leaf of the Brompton Stock is smooth on both sides. Of the Queen Stock there are three colours —purple, scarlet, and white; and of the Brompton Stock the same, with the addition of a selected crimson variety of great beauty, but somewhat difficult to perpetuate. Both types are really biennials. The seed should be sown at the end of July in beds, and the plants transplanted to the open ground in the autumn. The difficulty of wintering the Brompton Stocks deters many from attempting their cultivation, and many die, even in a mild winter. A well-drained subsoil with a porous surface soil suits them best, and shelter from hard frost and nipping winds is of great service. A second transplantation of the seedlings about December has been tried with success.

Maurandia Barclayana.—An elegant Mexican twining plant, often grown in the greenhouse, but hardy enough for the open air in summer, and admirably suited for covering trellises. The deep violet flowers are very showy, and there are also white (alba), deep purple (atropurpurea), and rosy-purple (rosea) varieties. Easily raised from seed sown in early spring in heat; they will flower in the following summer if planted out in May in good soil and sheltered situations. Scrophulariaceæ.

May Apple (*Podophyllum peltatum*).

Mayflower (*Epigæa*).

Mazus Pumilio.—A distinct New Zealand plant, vigorous, and creeping underground so as rapidly to form dense tufts, rarely more than ½ in. high; the

pale violet flowers are borne on very short stems in early summer, and the leaves lie flat on the soil. M. Pumilio thrives in pots, cold frames, or the open air, and does best in firm, open, bare spots in the rock-garden, in warm positions in free sandy soil. Though not showy, it is an interesting plant, easily increased by division. Figwort family.

Meadow Beauty (*Rhexia virginica*).
,, **Rue** (*Thalictrum*).
,, **Saffron** (*Colchicum autumnale*).
,, **Saxifrage** (*Saxifraga granulata*).
,, **Sweet** (*Spiræa*).

Meconopsis (*Indian Poppy*).—Handsome Poppyworts, the most familiar of which is the common Welsh Poppy (M. cambrica); the other kinds are natives of the Himalayas, hardy, but only of biennial duration. They may be easily raised from seed sown in spring; and, indeed, a good stock of strong plants can be ensured only by annual sowings. The following is the most successful mode of cultivating them: A piece of ground is prepared by digging in good loam and well-rotted stable manure; a two-light frame is placed over it, and seedlings are put in about March. As soon as the plants are fairly established the sashes are removed (unless the weather is frosty), and throughout the summer the plants are well supplied with water. In the following April and May they will have become large plants, often 2 to 3 ft. in diameter, and are then removed to where they are wanted to flower. This may be readily done without needlessly checking them, as they form so many fibrous roots that a good ball of soil usually adheres to them. They are thus grown on as quickly as possible, being treated like biennials. They should be planted out in a well-drained rock-garden in good soil, with plenty of water in summer, but they must be kept as dry as possible in the winter, as excessive moisture in cold weather soon kills them. Sandstone broken fine should be placed under the leaves, to prevent contact with the damp soil. A piece of glass placed over the leaves in a slanting position helps to protect them from moisture. Many plants take three or four years to flower, and some may be kept in store pots for five or six years without showing any tendency to flower, but they are never so fine planted out after being cramped in this way. After flowering they all die.

M. aculeata is a singularly beautiful plant, with purple petals, like shot silk, which contrast charmingly with the numerous yellow stamens. The flowers are 2 in. across, on stems about 2 ft. high.

M. cambrica.—For the wild garden or wilderness the Welsh Poppy is one of the most charming of plants. It is a cheerful plant in all seasons, and on an old dry wall its masses of foliage are graceful; with large orange-yellow blossoms it is handsome. It is a determined coloniser, holding its own under the most adverse circumstances and making its home of the wall, rock, and the ruin. In many places it grows freely at the bottom of walls, or even in gravel walks if allowed a chance. A plant so easily naturalised needs no special care in the garden.

M. nepalensis has flower-stems 3 to 5 ft. high, which are not much branched, the nodding blossoms, borne freely, are 2 to 3½ in. across, and of a pale golden-yellow.

M. simplicifolia has a tuft of lance-shaped leaves, 3 to 5 in. long, slightly toothed, and covered with a short, dense, brownish pubescence. The unbranched flower-stalk is about 1 ft. high, and bears at its apex a single violet-purple blossom, 2 to 3 in. in diameter.

M. Wallichi is the finest kind, and a very handsome plant, between 4 and 5 ft. high. It forms an erect pyramid, the upper half of which is covered with pretty pale blue blossoms, drooping gracefully from slender branchlets. It is a most conspicuous plant in the rock-garden, where it withstands the winter without the least injury. Well-grown specimens have leaves 12 to 15 in. long, and a great number of pale blue flowers, opening terminally. Separate flowers do not last long, but a few expand at a time, and it is fully a month before they are all expanded at the base, by which time the seeds of those which opened first are nearly ripe.

Mr. Wood writes of this plant:—"I would not cover it up during the winter in any way that had the least tendency to smother its foliage, as when the covering is removed the handsome leaves have become decayed. It is hardy, and during our wettest winters, notwithstanding its hairy covering, it rolls off the wet in globules. We must remember it is but a biennial, and that nothing will save plants after they have once flowered. But, beautiful as the pale blue flowers of this species are, I think the yellowish-green rosettes of foliage, beset with their long silky hairs, are quite as effective in the first year of the plant's life as the dying glory of its flowers. It enjoys heavy loam and a wet situation, with as much sunshine as it can get. All

through the winter it is one of those plants which help to sustain our interest in our gardens until the spring flowers come."

Medicago (*Medick*).—A large genus, containing few, if any, good garden plants.

Meconopsis Wallichi.

One or two are useful on banks or slopes, where their spreading masses are seen to advantage, or on very rough rock or root-work, so placed that the long shoots may fall over the faces of rocks. For these purposes the most suitable are M. falcata and elegans, vigorous herbs with yellow flowers, which thrive in almost any soil.

Medlar (*Mespilus*).

Megarrhiza californica (*Californian Big Root*).—A twining Bryony-like plant, having an enormous root, and suitable for botanical gardens.

Megasea.—A section of the genus Saxifraga, mostly having large leaves. See Saxifraga.

Melanoselinum decipiens.—An umbelliferous shrub from Madeira, with large spreading compound leaves, and a round simple stem which is bare below. The white flowers are borne in umbels. Should be planted out in May. Useful for isolation on grass-plats, but requiring greenhouse or warm frame treatment in winter. Young plants are best for placing out. Seed.

Melanthium triquetrum.—A bulb little cultivated, with long round leaves, like some of the Alliums, and its pretty little flowers, with delicate mauve petals and purple centre, appear on spikes 5 to 6 in. long. It is half-hardy—hardy, perhaps, in favoured districts.

Melianthus major.—An effective half-hardy plant for the summer ; its finely-cut, large, glaucous leaves contrast effectively with the garden vegetation, and being of the easiest cultivation, it has become a favourite in sub-tropical gardening. Plants raised from seed early in the season make good growth by planting-out time, and by midsummer obtain a height of 3 to 4 ft. When it is desirable to have larger plants by planting-out time, it is best to sow the seeds in autumn and to keep them growing through the winter, for a stronger and earlier development will result. The Melianthus is all but hardy on a well-drained subsoil in sheltered nooks in the southern and western counties, for though the stems may be cut down by frost, the roots survive and push up in spring. Like Cannas, Arundo Donax, and similar plants, however, this plant cannot be depended upon in wet hard winters, even when carefully mulched and otherwise protected. It is far safer to lift the roots and store them under the stage of a cool house or shed.

Melissa officinalis (*Common Balm*).—A well-known old garden plant, emitting a grateful odour when bruised, 2 to 3 ft. high ; the variegated form is sometimes used for edging, and the common one may be naturalised in any soil by those who admire fragrant plants. Division. Europe.

Melittis Melissophyllum (*Bastard Balm*).—A distinct plant of the Salvia

Order, with one to three flowers about 1½ in. long in May. The peculiarly handsome purple lip reminds one of some Orchids. M. grandiflora is a slight variety, differing in colour from the normal form. The plant is distinct, and merits a place by shady wood and pleasure-ground walks, as it naturally inhabits woods. Woody spots near a fernery or a rock-garden suit it; it grows readily among shrubs, and in the mixed border. It is found in a few places in England, and is widely distributed over Europe and Asia. Seed or division. Labiatæ.

Menispermum canadense (*Canadian Moonseed*).—A hardy climber, of rapid growth; slender, twining, with large roundish leaves, in summer bearing long feathery clusters of yellowish flowers. It is useful for covering a wall quickly for summer effect, or for arbours, trellises, and pergolas, and thrives in almost any soil in shade or sun.

Mentha (*Mint*).—There are few pretty plants of this genus. One, the variegated form of M. rotundifolia, is common, and useful for edgings or for clothing any dry spots. Another is M. gibraltarica, a variety of the native M. Pulegium, used in summer for flat geometrical beds on account of its compact growth and deep green foliage, which retains its freshness throughout the season. It is one of the easiest plants to grow, and may be increased with wonderful rapidity, as it bears rapid forcing for early spring cuttings. Inasmuch as its growth hugs the soil, and throws out roots at every joint, all that is necessary is to keep cutting off little plants and potting them, or planting them in shallow boxes, and in a very short time they will in their turn bear cutting up in like manner. Being a native of S. Europe, it is somewhat tender, and is generally killed in winter.

M. Requieni is a minute creeping plant with a strong odour of Peppermint, and trails about among the tiniest plants in the rock-garden. I use it often for covering the ground beneath Tea Roses, and it spreads and grows everywhere. It is the smallest flowering plant grown in gardens.

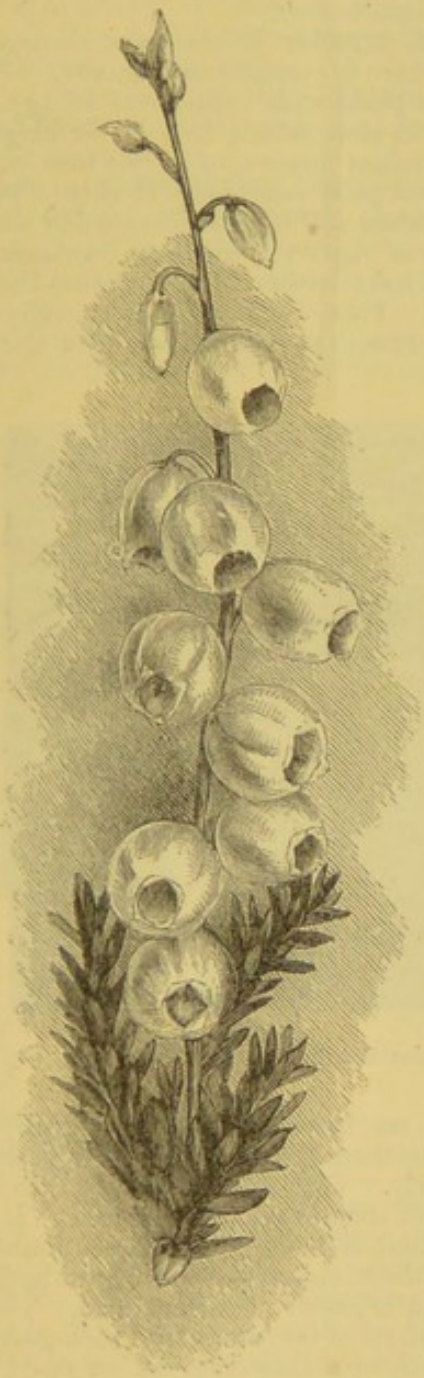
Mentzelia.—Lovely Californian plants, mostly of biennial duration, and requiring more care than most half-hardy plants. A successful cultivator of them writes to *The Garden*: "I find it necessary to sow the seed as early in the season as possible, and to grow the seedlings on in a frame, giving liberal shifts, and using a compost of fibry loam and a small quantity of leaf-mould and sand. After the final shift they should be plunged in a sunny border until autumn, and then removed to a frame for wintering. In the spring they should again be plunged in the open air, and by occasionally assisting them with weak manure water, strong and healthy flowering specimens will be produced. When beginning to show flower they should be removed to a cool greenhouse or frame, as excessive humidity at this stage is injurious to them. They may indeed be grown entirely in the open air if the weather be favourable, but in our climate the former mode is by far the most satisfactory." The following is a selection of the prettiest kinds: M. lævicaulis is a good kind, with whitish stem, 1 to 3 ft. high, both stems and leaves covered with short and stout bristles, the rich yellow flowers opening only in bright sunshine. M. nuda is 2 to 4 ft. high, with flowers resembling the last. M. oligosperma is a perennial, 1 to 3 ft. high, with bright yellow flowers 3 in. across, opening in sunshine. M. ornata is a biennial, 2 to 4 ft. in height, with creamy-white fragrant flowers 2½ to 4 in. across. It belongs to the vespertine section, that is, to those in which the flowers fully expand only towards evening.

Menyanthes trifoliata (*Buckbean*).—A beautiful and fragrant native of Britain, found in shallow streams or pools, in very wet marshy ground, and in bogs; its strong creeping, rooting stems often floating in deeper water. The flowers are borne on stout stalks, which vary in length with the depth of the water, and are beautifully fringed and suffused with pink. M. trifoliata is easy to establish by introducing pieces of stems, and securing them till, by the emission of roots, they have secured themselves. In some moist soils it thrives in the ordinary border.

Menziesia.—Dwarf shrubs, resembling Heaths, and, like them, admirably suited for large rock-gardens or wherever there is a moist peat soil. They are all of neat growth, and bear pretty drooping flowers. M. cœrulea is 4 to 6 in. high, and has pinkish-lilac flowers. It is not so beautiful or so brilliant as M. empetriformis, but merits a place in full collections, flowering rather late in summer and in autumn. Europe.

M. empetriformis.—A dwarf Heath-like bush, seldom more than 6 in. high, with clusters of rosy-purple bells in summer. Though very rare in gardens, it is one of the brightest gems for the choice rock-garden, and thrives in exposed positions in moist sandy peat soil. Unlike the rather tall and spreading M. polifolia, it may be associated with the dwarfest alpine plants. N. America.

M. polifolia (*St. Dabeoc's Heath*) is a beautiful bushy plant, 12 to 20 in. high ; its erect flower-stems bearing graceful, one-sided, drooping racemes of crimson-purple blooms. The white variety, less common, is as beautiful, and there is a pretty variety,



Menziesia polifolia alba.

with purple and white flowers, called bicolor. M. polifolia flowers in summer, and forms charming bushes, thriving best in peat, but doing well in other soils, and a precious plant for peat beds and for the bold rock-garden. The white variety is sometimes sold as M. globosa and M. alba major. Abundant in some parts of Ireland, and hence called Irish Heath.

Merendera Bulbocodium. — A bulb, very much like Bulbocodium vernum, but flowering in autumn, the large handsome flowers of a pale pinkish-lilac. Suitable for the rock-garden and the bulb-garden till plentiful enough for borders. Increased by separation of the new bulbs and by seed. S. Europe.

Mertensia. — Beautiful Borageworts, formerly known as Pulmonarias. There is something about them more beautiful in form of foliage and stem, and in the graceful way in which they rise in panicles of blue, than in almost any other family. There are in cultivation above half-a-dozen species, all of which are pretty plants.

M. alpina is a beautiful alpine kind, and should only be associated with the choicest alpine plants. The leaves are bluish-green ; the stem is only 6 to 10 in. high, and has in spring or early summer one to three drooping terminal clusters of light blue flowers.

M. dahurica, although very slender and liable to be broken by high winds, is hardy. It is 6 to 12 in. high, has erect branching stems, and bears in June racemose panicles of handsome drooping bright azure-blue flowers. It is very pretty, and suited for the rock-garden or borders, and should be planted in a sheltered nook in a mixture of peat and loam Easily propagated by division or seed. = Pulmonaria dahurica.

M. maritima (*Oyster Plant*).—Though one of our British sea-coast plants, I find that it is very little known among owners of choice hardy flowers. Another interesting fact, though a seaside plant and usually found growing in sea sand, it is amenable to garden culture. Given a light sandy soil of good depth, and a sunny position where its long and branching succulent flower-stems may spread themselves out, carrying a long succession of hundreds of turquoise-blue tubular flowers, it is a plant that we may expect to see appearing with renewed vigour year after year. It is a coveted morsel of slugs, and is best on an open part of the rock-garden.

M. oblongifolia is another dwarf species. The stems are 6 to 9 in. high, and they bear handsome clustered heads of brilliant blue flowers, and deep green fleshy leaves.

M. sibirica. — This species has the beauty of colour and the grace of habit of the old M. virginica, and grows and flowers for a long period in ordinary

garden soil. The small bell-shaped flowers are borne in loose drooping clusters, gracefully terminating in arching stems. The colour varies from a delicate pale purple-blue to a rosy-pink in the young flowers. It is more vigorous than the Virginian Lungwort (M. virginica), an older and better-known kind. A perfectly hardy perennial propagated by division.

M. virginica (*Virginian Cowslip*).—The handsomest of all, bearing in early spring drooping clusters of lovely purple-blue blossoms on stems 1 to 1½ ft. high, the leaves large and of bluish-grey. In many gardens it never makes the slightest progress; but a sheltered, moist, peaty nook is the best place for it. The finest specimens are grown in moist, sandy peat or rich free soil, with shelter near. It is a charming old garden plant, and one which unfortunately has never become common.

Mertensia virginica (Virginian Cowslip).

Mesembryanthemum (*Fig Marigold*).—Of this large genus there are several showy species well suited for the open air, though none are hardy. The Common Ice Plant (M. crystallinum) is grown for garnishing in most large gardens; it is also used as a pot-plant; but it is most effective when planted out in the rock-garden or on an old wall. In a sunny situation, however, it will grow in any good soil. It will grow from 3 to 4 ft. in a season, and on warm days has a refreshing look. Its flowers, unimportant compared with the stems and foliage, are bespangled with crystal. Seeds should be sown in heat in March, and the seedlings planted out 6 to 8 in. apart. There are two varieties — one red and the other white. M. cordifolium is a perennial, the variegated form of which is used in carpet-gardening. M. Pomeridianum is a strong species with broad foliage and large purple and rose flowers. It is not so common as the last, but it deserves a place on a south border.

M. tricolor is the most showy of the annual Mesembryanthemums. It is a neat plant with cylindrical foliage, growing in neat tufts 4 to 6 in. in height; its abundant flowers, of purple rose or white, afford good contrast. It should be sown in sandy soil in the open garden about the end of April; it dislikes transplantation, and lasts longer in the ground than in a pot. Those who possess a collection of Ice Plants in pots should turn the whole out on banks or the rock-garden and leave them there, taking cuttings off them yearly. Out-of-doors they attain beauty never seen in pots. Their foliage is singular and diversified, and the brilliant lustre of their flowers — white, orange, rose, pink, crimson—is unequalled. They are children of the sun, and a rock-garden devoted to a collection in an open sunny spot is worth seeing. A soil consisting of little besides sand and gravel suits them perfectly. As the plants have been so little grown in the open we scarcely know which are hardy and which are tender, but experiments would be interesting, for many would probably prove almost hardy.

Mespilus (*Medlar*).—How picturesque an old Medlar tree is, what a wide-spread-

ing umbrageous head it has, and how beautiful it is in early summer when studded with great white flowers among its large pale green leaves! The only other species in gardens is M. grandiflora, also called M. Smithi. It is a perfect lawn tree, as its great rounded head droops gracefully. It flowers about the middle of May, and is then beautiful, with its numerous white flowers. In some nurseries (especially on the Continent) it is called Cratægus lobata and other names under Cratægus.

Meum athamanticum (*Spignel*).—A graceful fine-leaved perennial, dwarf in habit, 6 to 12 in. high, free in ordinary soils, and hardy. In dry seasons it might wither too soon for association with autumn-flowering plants, but it is pretty for the rock-garden, borders, or for mixed arrangements of any sort. A British mountain plant, very aromatic. Division. Parsley Order.

Mezereon (*Daphne Mezereum*)

Michaelmas Daisy (*Aster*).

Michauxia campanuloides. — A remarkable plant of the Bell-flower family, 3 to 8 ft. high, the flowers white, tinged with purple, and arranged in a pyramidal candelabra-like head. Sometimes it flowers in the third or even in the fourth year, but is usually considered a biennial, and should be treated as a hardy one. Seedlings should be raised annually, so as to always have good flowering plants. It flourishes best in a deep loam. Its stately form and tall stature are effective in the mixed border or in a nook in a bed of evergreen shrubs. Warm sheltered borders and borders on the south side of walls suit it best. Levant.

Microlepia anthriscifolia.—An elegant Fern, 6 to 12 in. high, hardy, deciduous, charming in spring and summer, and of easy culture. It thrives in the open as well as in the shade, and may be used with good effect as an edging to a sheltered border.

Mignonette (*Reseda odorata*).

Mikania scandens (*German Ivy*).—A slender twining perennial, with Ivy-like foliage and small flesh-coloured flowers. It is hardy in light warm soils and situations, and is used for covering trellises. N. America. Compositæ.

Milfoil (*Achillea*).

Milium (*Millet Grass*). — Grasses, some of them graceful. Our native M. effusum is worth cultivating for its feathery plumes. It is suitable for associating with flowers in summer, and grows in any soil, preferring moist places. There are one or two other kinds worth growing.

Michauxia campanuloides.

Milk Thistle (*Silybum*).

Milkweed (*Asclepias*).

Milkwort (*Polygala*).

Milla.—The bulbous plants formerly known under this name are now described under the name of Brodiæa. The only true Milla is said to be M. biflora, a beautiful plant with large snow-white blossoms deliciously scented. It is rather difficult to cultivate, but it is well worth any care. Even if it be quite hardy, which is doubtful, it is too choice to risk in the open border.

Millet Grass (*Milium*).

Mimulus (*Monkey-flower*).—The cultivated species are valuable showy border flowers, and are for the most part natives of California. They love moisture, and are suitable for damp places, such as bogs, moist borders, and the margins of

streams and artificial water. The old M. cardinalis is showy when well grown, and is deserving of a place in any garden. There are several varieties of it. The common Musk (M. moschatus) is hardy and enduring, and is worth a corner in heavy or wet soil. M. luteus and its varieties, variegatus, cupreus, Tilingi, guttatus, and others, are typical of the beautiful hybrids which are now in gardens, and which combine the dwarf habit and hardiness of M. cupreus with the large flowers, richly spotted and blotched, of the other parent, the old M. variegatus. These hybrids, which are known as M. maculosus, bear exposure to the sun better than the parents. There is also a strain with Hose-in-hose flowers, sometimes called double. These sorts should be grown, and a packet of seeds affords a wonderful variety. The seeds of the Mimulus should be merely sprinkled on the soil; if covered by it they may vegetate less quickly and abundantly. A little damp moss may, however, be laid over the surface, but should be removed as soon as the seeds have germinated.

Mirabilis (*Marvel of Peru*).—Handsome herbaceous plants, the most familiar of which is M. Jalapa, a dense, round bush covered with flowers, nearly 3 ft. high, the flowers about 1 in. across, white, rose, lilac, yellow, crimson (of various shades), and purple—striped, mottled, and selfs. The plants may be treated as half-hardy annuals, raised from seed in a warm frame, potted on, and planted out in May. They are, however, perennial, and when the leaves are killed by frost the tapering black root must be lifted and stored in sand during the winter. The plants should be started in pots in spring and planted out as before; but after the second year the roots become unwieldy, and should be discarded. They require a warm soil and all the sunshine of our climate. The seeds ripen rapidly and readily; each flower produces one seed only, and as the seeds are large they can be gathered from the ground beneath the plants. M. multiflora is somewhat similar to M. Jalapa, but dwarfer, and the bright crimson-purple flowers are in large clusters, expanding in bright sunshine. It is a hardy perennial in light warm soils, and is a good border plant. M. longiflora, having long tubular flowers with carmine centres, is capital for the foot of a warm south wall. Mexico.

Mitchella repens (*Deer Berry*).—A neat, trailing, small evergreen herb, 2 or 3 in. high, with white flowers in summer, succeeded by small bright red berries. It thrives in shady spots on the rock-garden or the hardy fernery, in sandy peat. Division. N. America.

Mitella (*Mitre-wort*). — North American plants of the Saxifrage family. M. diphylla is rather pretty, with small white blossoms on spikes 8 to 12 in. high. M. nuda and M. Breweri are suitable only for botanical gardens. They grow best in moist peaty soil in half-shady situations.

Mitraria coccinea (*Mitre-flower*).—A bright charming little shrub from Chili, hardy in mild districts, but generally requiring winter protection. It is a small evergreen shrub, bearing in summer numerous urn-shaped flowers about 1½ in. long and of a brilliant scarlet, thriving in a mixture of sandy peat and loam, in a moist sheltered spot, with perfect drainage.

Mocassin-flower (*Cypripedium*).

Mock Orange (*Philadelphus*).

Modiola.—The prettiest of this genus is M. geranioides, a hardy perennial, about 6 in. high, and forming a dense trailing tuft of elegant foliage, which in summer is studded with showy purplish-crimson flowers. It delights in a warm open place in the rock-garden, and in such a position, if well drained, it is perfectly hardy. Malvaceæ. North America.

Mœhringia muscosa.—A somewhat inconspicuous alpine evergreen herb, 2 or 3 in. high. It is best in very fine sandy loam, on the rock-garden and in borders. Division and seed.

Molinia cœrulea.—A native Grass, of which there is a variegated form not unfrequently used as an edging for flower-beds, but there are other Grasses better suited for this purpose. Division.

Molopospermum cicutarium. — A hardy umbelliferous plant, 5 ft. or more high, with large handsome leaves which form a dense irregular bush. It loves a deep moist soil, but thrives in good garden soil. It is a fine plant for grouping with other hardy and graceful umbelliferous plants. Division. Carniola.

Monarda (*Bee Balm*).—Showy border flowers of the simplest culture, thriving and flowering in any position or soil; and therefore, besides being admirably suited for garden borders, they are excellent subjects for naturalisation in woods and shrubberies. All may be readily divided at the root. They have some variety of colour, and the varieties of M. fistulosa alone represent more than half-a-dozen different shades. The red kind scattered through American woods in autumn is very handsome. M. fistulosa (Wild Bergamot) is a robust perennial, 2 to 4 ft high, the flowers variable; the usual

colour pale red, and every gradation almost to white may be found in it. M. didyma (Oswego Tea) is robust, about 3 ft. high, the deep red flowers, borne in head-like whorls, continuing a long time in summer. M. Kalmiana is a showy plant, taller and more robust than the preceding, and is often 4 ft. high, the deep

Molopospermum cicutarium.

crimson flowers in dense whorls. M. purpurea is somewhat similar in habit to the last, but the deep purplish-crimson flowers are smaller. All are natives of N. America, and may be increased by division in spring or by seed.

Monardella macrantha.—A charming little perennial from California, 4 to 6 in. high, with slightly fragrant orange-scarlet blooms. Labiatæ.

Monkey-flower (*Mimulus*).

Monkshood (*Aconitum Napellus*).

Montbretia (*Tritonia*).

Moonseed (*Menispermum*).

Moonwort (*Botrychium*).

Morina longifolia.—A handsome and singular perennial, with large spiny leaves, resembling those of certain Thistles, and with long spikes of whorled flowers, 2 to 3 ft. high. It grows well in ordinary well-drained soil, but prefers soil which is mellow, deep, and moist; and it is easily multiplied by sowing the seed as soon as ripe in light sandy soil. It is excellent for the mixed border, and for grouping with medium-sized perennials that have fine foliage. Nepaul. M. Wallichiana is probably the same, or a slight variety. Dipsacaceæ. Seed.

Morisia hypogæa.—This is one of the most charming re-introductions of recent years among alpine flowers. It was first introduced by a Mrs. Palliser, from the Valentino Botanic Garden, Turin, from seeds presented to her by Professor Moris, who found the plant on the mountains of Sardinia, and in whose honour it is named. It was first flowered by Mrs. Marryat in April, 1834, and is figured in Sweet's *British Flower Garden* second series, tab. 190. The flowers, as large as a shilling and of a bright clear yellow, are produced singly on short stalks rising very little above the tufted foliage. The petals are wedge-shaped and twice as long as the sepals. The flowers are borne in abundance in April and May, and the contrast between them and the dark glossy foliage is effective. It seems to do best in a light rich gritty soil, and the seed should be sown directly it is ripe.—D. K.

Morna nitida.—A pretty half-hardy annual from Swan River, about 1 ft. high, in late summer bearing clusters of bright yellow blossoms, nearly 1 in. across, and similar to those of Helichrysum. Seeds should be sown in early spring in a heated frame, and to make strong plants the seedlings should be transferred from small to larger pots before planting out; two or three may be placed in each pot. It thrives best in a sandy peaty soil. *Syn.* M. elegans. Compositæ.

Morning Glory (*Ipomæa*).

Morphixia.—Iridaceous plants of the Cape of Good Hope, nearly allied to Sparaxis. There is only one cultivated species, M. paniculata, a plant about 1 ft. high, with long narrow leaves and slender flower-spikes of showy buff-white blossoms with remarkably long tubes. The variety alba has white flowers with black centres; and rosea is of a rosy-apricot hue. It flowers in April and June, and requires the same treatment as Ixia and Sparaxis.

Moss Campion (*Silene acaulis*).

Moss Pink (*Phlox subulata*).

Mother of Thousands (*Saxifraga sarmentosa*).

Mountain Avens (*Dryas octopetala*).

Mountain Cat's-foot (*Antennaria dioica*).

Muhlenbeckia.—These graceful free-growing evergreen trailers are useful as coverings for trellis-work or rocks or stumps. The kinds in cultivation are natives of New Zealand; the best known M. complexa, a very rapid grower, with long wiry and entangled branches, and small leaves. The white waxy flowers are rather inconspicuous. M. adpressa is larger and has heart-shaped leaves, and long racemes of whitish flowers. M. varia is a small kind, with fiddle-shaped leaves, and is very distinct from either of the above. In severe winters it is advisable to give a little protection like dried Fern, but this is not necessary in ordinary seasons. M. complexa is not difficult to propagate. It strikes freely in a cold frame, if the cuttings are put in in September, and the only point to observe is that they should be selected not from the twiggy shoots, but from the thicker shoots that are generally sent up rom the ground in the form of suckers, for such shoots strike freely and form good little plants the first season; while the twiggy shoots, if they strike at all, will be at least two years before they form well-established plants. This plant grows freely in some mild districts, though it is not common out-of-doors near London.

Mulgedium Plumieri (*Blue Thistle*) is a native of the Pyrenees, where it is 4 or 5 ft. high, but in our borders, and in deep strong soils it is frequently as much as 8 or 9 ft. high. Its foliage is beautifully varied in outline, and it should be planted in the rougher parts of the wild garden, and left to itself, as nothing seems to interfere with its rapid growth. As an isolated plant on Grass its remarkable foliage at once arrests observation, while its blue flowers are pretty. M. alpinum is a smaller plant. Seed or division.

Mullein (*Verbascum Thapsus*).

Musa Ensete.

Muluccella lævis.—A singular plant of the Dead Nettle family. It is by no means showy, and its only recommendation for the garden is the singular form of its calyces, which are bell-shaped and densely arranged on erect stems about 1 ft. in height. It is a fine subject for skeletonising, and the stems, bracts, and calyces may be skeletonised intact. For this purpose they should not be cut before autumn, when the plant is fully matured. Eastern Mediterranean. Should be treated as a half-hardy annual

Musa.—These fine tropical plants are seen in our parks during summer, but less frequent in private gardens. In the

London Parks, Musas, especially the smaller ones, are often plunged in the ground in their pots during the summer, but the larger ones are planted out. When they are lifted in autumn, those in pots are stored in houses, but the larger ones are lifted with small balls of earth and placed on shelves in houses with a temperature of not less than 45°. Here they are laid on their sides, their leaves being kept close together, and remain throughout the winter, with only a mat thrown over the roots. In February the roots are examined, planted in trenches, and

Musa Basjoo.

subjected to an increased temperature, when new roots soon form and begin to grow afresh. In June, after being gradually hardened, the leaves are tied up, the plants are lifted with as good balls as possible, and placed in their summer quarters. M. Ensete is the kind generally used in the open air, and in form is one of the noblest plants. Any one with a warm house may grow it, and when planted out in June, in deep, warm, rich soil, and a sheltered position, it will grow well during summer; such, at least, is our experience in London and the home counties, but such tender plants must ever have a limited use in our country.

M. Basjoo, a graceful Japanese species that has some pretensions to hardiness, has been tried as a plant for the open, but it is not hardy enough for our winters. Even in winters of ordinary severity it must have protection. As regards its behaviour in the west country, Canon Ellacomb writes :—

"I had my plant from Japan. It stood the winters of 1892 and 1893 well, dying to the ground, but coming up strong in the spring. Last year it was very grand, with leaves 4 ft. long and 2 ft. wide. It has completely died down, and as yet shows no sign of life, but I do not despair of it. It requires a sheltered corner, for wind is destructive to it."

M. Martini.—This is a new Banana from Teneriffe, and described as hardier than M. Ensete, which it equals in appearance and growth. The stem and the veinings of the leaves are of a reddish hue, and the texture of the leaves is thick and tough, so as to stand better than other kinds storms of rain and wind. It will probably be valuable in gardens in the

southern counties with slight protection during winter.

Muscari (*Grape Hyacinth*). — Pretty bulbs of the Lily family, all of the easiest culture and flowering in spring and early summer. Their proper position is either the front row of the choice border or the rock-garden, but they may be advantageously grown as window-plants in pots or boxes. In all cases they thrive best in rich, deep, sandy loam, and are easily multiplied by separating the bulbs every third or fourth year. There are many names, but few really distinct kinds.

M. botryoides is a favourite bulb, with little white teeth on blue globose clusters, about 9 in. high, and suitable for the fronts of borders. The varieties pallidum and album are distinct and beautiful; and pallidum has pale sky-blue clusters. M. Heldreichi resembles M. botryoides, but is larger, and having a longer spike of flowers. It also flowers later.

M. comosum monstrosum (*Feather Hyacinth*) is distinct from any of the foregoing—1 ft. or more in height; its beautiful mauve flowers, cut into clusters of wavy filaments, bear some resemblance to

Grape Hyacinths (Muscari).

M. armeniacum is one of the best, and its beauty is enhanced by its flowering when most other kinds have finished doing so. Its flower-stems are 8 in. high, and are terminated by dense racemes 3 to 4 in. long, of bright dark blue flowers, with small whitish teeth. The foliage is much the same as the ordinary M. racemosum. Another beautiful kind is M. Szovitzianum, which comes into bloom early and continues in blossom till the latest kinds have done flowering. The blooms are a clear blue, the teeth of the corolla white; the spike oval and larger than in other species.

purple feathers. M. moschatum has clusters of dull yellow flowers, inconspicuous, but its delicious fragrance amply atones for this. Another sweet-smelling Muscari is M. luteum, with flowers fading by degrees from a dull purplish hue to a clear yellow.

M. racemosum is a familiar old kind, with dark purple clusters and a strong smell of Plums, its long and weak leaves almost prostrate, while in M. botryoides and its varieties the leaves stand erect. It will hold its own anywhere, and will wander all over the mixed border, growing like a weed, and in any soil. It has

near relatives in M. commutatum (with blue flowers, darkening by degrees into purple) and M. neglectum—also a handsome kind. There are several other varieties mentioned in catalogues, but the best are those mentioned above. Though coming chiefly from the south of Europe, they are all hardy, and grow in any position in ordinary garden soil.

Musk (*Mimulus moschatus*).

Musk Hyacinth (*Muscari moschatum*).

Musk Mallow (*Malva moschata*).

Mutisia.—There are about forty species of Mutisia known. Eleven of these are natives of Peru, Ecuador, and Brazil, and characterised by a climbing habit and pinnate leaves. The others are natives of the Chilian Andes, and have simple leaves, rigid in texture, whilst the habit is, as a rule, bushy and not climbing. Almost every one of these forty species is remarkable for the size and beauty of its flower-heads. Plants which possess such qualities as these ought, one would think, to be well represented in English gardens. They are found at elevations sufficiently high to admit of their being grown out-of-doors in England, or at any rate in the warmer parts of the country, and yet the Mutisias are scarcely known in our gardens. Some few cultivators have been successful with M. decurrens; once or twice M. ilicifolia has been grown and flowered very well. M. Clematis is the least delicate of the garden Mutisias.

M. ilicifolia is a native of Chili, where it grows over bushes. The plant has thin wiry stems, and every part is covered with a cobweb-like tomentum. The leaves are about 2 in. long, the margins spiny-toothed, the texture leathery, and the midrib extending beyond the blade, branching and forming a strong twining tendril. The flowers are axillary, 3 in. across, with from eight to twelve ray florets coloured pale pink, or sometimes white with pink tips; the disc is lemon-yellow. It is a distinct, interesting, and beautiful plant.

M. decurrens.—Of this, the most beautiful of the three garden Mutisias, a fine plate will be found in *The Garden* for 1883, p. 553. Mr. Coleman has grown it well amongst Rhododendrons at Eastnor Castle; Mr. Gumbleton, Mr. Hooke, Mr Ellacombe, and Kew have also had it in good condition. Most cultivators kill this species by planting it in a hot, sunny, dry position, where it gets baked, and soon becomes sickly-looking, even if it lives. It wants a moist, cool soil, a sunny, airy position, and a few slender Pea sticks to clamber upon. The stems when mature are wiry, the leaves strap-shaped, with the blade extending a long distance down the stem, forming very conspicuous wings. The midrib is prolonged into a stout wiry tendril, which holds on firmly to anything it once clasps. The flower-heads are terminal, 4½ in across, with fourteen ray-florets, each half an inch across, spreading, and then curving elegantly downwards, their colour being brilliant orange. The disc is yellow, and the large involucre is bluish green tinged with purple.

M. Clematis.—The first coloured picture of this species ever published in any English work was the plate in *The Garden*, July 27th, 1883. It is a tall herbaceous climber, 10 to 20 ft. high, with pinnate leaves, terminating in branched tendrils, the leaflets being covered on the under side with a fine silky down. The plant grows very freely, does not die off suddenly like the others, and when properly treated it flowers freely. It is probable that this species would thrive out-of-doors in Devon, South Wales, and South Ireland. It grows as fast as Cobæa scandens, and is said to be propagated in the same way, viz. by means of cuttings of the young growth. This species is a native of New Grenada, Peru, and Ecuador, at elevations of from 6,000 to 11,000 ft.—W.

Myosotidium nobile (*Antarctic Forget-me-Not*).—A lovely plant about which very little is known. In its native isle it is a seaside plant, in damp sand. It is said not to be difficult to grow, but to be naturally short-lived. It has a thick root-stock, from which arise the large heart-shaped, shining green leaves, the stalks of which are grooved, and from 6 to 9 in. long; the flowers are borne on an erect stem which springs from the apex of the prostrate stem and rises to the height of 1 or 1½ ft.; it is leafy all the way up, and is terminated by a loose corymb of flowers in colour exactly like Forget-me-Not, but the shade of blue varies. After flowering, the plants should be kept in a cool and light position in a frame, and be liberally watered in dry weather. It is a native of the Chatham Islands, a small group in the Pacific, lying 400 miles east of New Zealand. It was flowered in several gardens of recent years—by Mr. Watson, of St. Albans; the late Mr. Niven, of Hull; and by Mr. Loder at Weedon, who wrote of it in *The Garden*:—"M. nobile has, however, done very well here with ordinary treatment. The seeds, which were sown in 1884, soon came up, and the young plants grew rapidly, kept in a cold frame and protected from frost by mats. In March, 1885, they were potted on, and

were kept in an intermediate house for a month or six weeks, and were then again moved back to a cool frame. Some of the plants came into flower in March, 1886, and were exhibited at a meeting of the Royal Horticultural Society on April 13th, 1886. The plants require plenty of air, and should be well syringed in warm weather and shaded from the midday sun in summer. Greenfly is fatal to them ; the plants must be kept absolutely clean." Many, however, will feel disappointed that this plant has not proved hardy with us, for it is in the rock-garden that it would be seen to the best advantage. Probably, of sandstone or the like, to prevent evaporation and preserve it from accident. It is easily raised from seed. There are many forms of this, with white and rose flowers. One group is called compacta nana, from the diminutive habit of the plant. There is, too, a yellow-leaved kind, not pretty.

M. azorica (*Azorean Forget-me-Not*) is a beautiful but somewhat tender kind, with self deep blue blooms. It is 6 to 10 in. high, and coming from the extreme western Azores, is rather tender except in sheltered localities. It grows vigorously in light soil, and may be raised from seed

Myosotis alpestris.

however, in the south of England and Ireland it may prove to be hardy, as the climate of the Chatham Islands is said to have some resemblance to that of the warmer parts of our southern coasts.

Myosotis (*Forget-me-Not*). — Lovely plants from many parts of Europe and our own land, happily well used in gardens.

M. alpestris (*Alpine Forget-me-Not*) is an exquisite plant, forming a low cushion of the loveliest blue, essentially for the rock-garden, enjoying moist gritty soil, but not drought. It is so dwarf that it should be surrounded only by half-buried pieces or cuttings. Impératrice Elizabeth is near to it.

M. dissitiflora (*Early Forget-me-Not*) is a beautiful very early flowering plant, 6 to 12 in. high. The many large handsome flowers are deep sky-blue, and continue till midsummer, like those of M. sylvatica more than any other, but farther apart on the spike. It is best in broad masses in open spots of the rock-garden, or wherever spring flowers are much valued.

M. palustris.—Although common in wet ditches and by streams and canals throughout Britain, M. palustris should be

grown in the garden among shrubs in peat beds, or for edgings, or as a carpet to taller subjects, in small beds or borders in moist soil. There are forms of this, one with white flowers, another with larger flowers than the type, whilst one is called semperflorens, from its long season of flowering.

M. rupicola (*Mountain Forget-me-Not*) is essentially a rock-garden plant, forming tufts of deep blue.

M. lithospermifolia.—I think this has the largest flowers of any of the true Forget-me-Nots, flowering freely at a height of 8 in.; the flowers striking for their size, the leaves distinct and small, but otherwise resembling those of our British Lithospermum purpureo-cœruleum. The plant is gay from its abundance of flowers and their large size.—W.

M. Rechsteineri.—Under this name I have received one of the prettiest Forget-me-Nots, an effective close-to-the-ground creeper, practically forming a dense cushion of blue for several weeks in April and May. The plant thrives and spreads like a mossy Saxifrage, but keeps flat to the ground. This will be a charming surfacing plant, through which the rarer Snowdrops and Crocuses may spear during winter and early spring.—W.

M. sylvatica (*Wood Forget-me-Not*) is used for flower-beds in spring. There is a white, a rose-coloured, and a striped variety. It should be abundant in a wild state by wood walks, in copses, etc., and sows itself freely in woods. For the garden sow seeds in beds in August every year.

Myrica (*Sweet Gale*).—The Myricas, though not showy flowering shrubs, are desirable on account of their scented foliage. The native Sweet Gale or Dutch Myrtle (M. Gale) should be wherever sweet-smelling plants are cared for. It is a thin bush, 2 or 3 ft. high, having fragrant leaves. In a moist spot, such as a bog, it spreads by underground shoots and makes a large mass. The North American species, M. cerifera (Wax Myrtle), M. pennsylvanica, and M. californica, are less common. The last is a good evergreen of dense growth, with fragrant leaves, green through the winter. It is a vigorous plant, especially in light soils, and is hardy, but is little known outside botanical collections. The Wax Myrtle is met with in old gardens, where it was planted for its spicy foliage. I find our native Sweet Gale free and vigorous in stiff soils where few things grow well.

Myricaria germanica (*German Tamarisk*).—An elegant shrub, hardly differing from the common Tamarisk of our sea-coasts, with feathery foliage and many long plume-like clusters of small pink flowers. It grows 6 or 8 ft. high in warm sandy soils, and, like the true Tamarisk, is a good shrub for dry banks where few shrubs would flourish.

Myrrhis odorata (*Sweet Cicely*).—A graceful native plant, with a peculiar but grateful odour and sweet-tasting stems, 2 to 3 ft. high, with white flowers in early summer, in compound umbels. Suitable for naturalising near wood walks and in open shrubberies in any soil, and may be used among fine-leaved perennials. Division.

Myrrhis odorata (Sweet Cicely).

Myrtle, Wax (*Myrica*).

Myrtus (*Myrtle*).—In southern and coast counties the Myrtle is hardy enough to be planted as a bush, for if its shoots are killed by frosts it often recovers the following season. But the common Myrtle is most generally grown as a wall-shrub, and house walls could not have a more beautiful covering, especially if some pretty Clematis or other graceful climber be allowed to ramble amongst the Myrtle. There are many varieties of the common

Myrtle, every one with sweet-smelling leaves, and all with white flowers. The chief sorts are the Dutch, Italian, Roman, Rosemary or Thyme-leaved, Nutmeg, Box-leaved, and Andalusian. Besides these there are some with variegated leaves, the leaves being striped with gold or silver, or spotted and blotched. In planting a myrtle against a wall, choice should, if possible, be given to a space protected from northerly and easterly winds, which in early spring are injurious to the leaves. In old gardens the Myrtle is often grown in tubs or pots for placing on lawns or terraces in summer, and is put under protection during winter: it is much more worthy of such protection than many of the plants to which our glass-houses are now devoted in winter.

Narcissus (*Daffodil*).—These are the hardiest, showiest, and most variable of early spring flowers. They are to the spring what Roses, Irises, and Lilies are to summer, what Sunflowers and Chrysanthemums are to autumn, and what Hellebores and Aconite are to winter. No good garden should be without the best of the lovely varieties now known. Narcissi vary so much in form, size, colour, and in time of flowering, that a most attractive spring garden could be made with them alone; provided one had suitable soil, and a background of fresh turf, shrubs, and trees. The best of the commoner kinds should be planted by the thousand, and, indeed, in many cases this has been done with the best results. On grassy banks, on turfy bosses near the roots of lawn-trees, or in meadows near the house, their effect is delightful. All the best Narcissi, and practically all the forms of the yellow and the bicolor Daffodils, may be planted in June, July, or August, in three ways—in the lawn or meadow, in the beds and borders of the garden, or in 6 or 8 in. pots. Five bulbs should be planted in a pot, and covered over with coal-ashes or sand until January, when they may be placed in a sunny frame, pit, or greenhouse, or even in a sunshiny window, and a crop of flowers can be secured earlier than on the open ground. The main points in beginning the culture of Narcissi are to get sound and healthy bulbs as early as possible after June, and to plant or pot them at once in good fibrous, sandy, or gravelly loam, or in any virgin soil. They like fresh deep-tilled loam, and the strongest of the bicolor and star Narcissi do not object to soils rich in manure; but it is as well to remember that no manure should be used in its raw or crude state, and that wild species and wild-collected varieties suffer and often fail if planted at once in heavily manured soils.

In naturalising the Daffodil on the Grass, the Poet's Narcissus, or the Star Narcissus (N. incomparabilis in all its forms), do not begin as late as November or December by planting the sweepings out of the bulb-stores, since such bulbs are weak and flabby, and are liable to rot in the frozen ground. The time to begin planting is June and July, and it is a good rule to refuse to plant in number after August or September.

In grouping border Narcissi it will usually be found advisable to lift and replant the clumps every three or four years, but if any delicate varieties do not flower well, or if they show signs of weakness or of disease, they should be lifted not later than July, and, after being cleaned, at once replanted, in fresh and good soil, and, if possible, in sandy or gravelly loam free from fresh manures. It is better to dig and replant Daffodils too soon than too late. The best time is when the leaves turn yellow in June or July. On well-drained loams resting on gravel, the bulbs lose both leaves and roots in June or July, and may be taken up and removed with advantage; and, indeed, where good round presentable sale bulbs are grown, the rule is to dig them every summer as soon as the leaves wither. Whenever an amateur's stock of bulbs is divided, it is wise to replant some in fresh ground, and any surplus may be naturalised in grass. The rate of increase on good soils is surprising, such splendid sorts as N. John Horsfield, N. Empress, N. Grandee, N. Emperor, and N. Sir Watkin actually trebling themselves the second year after planting. The depth at which the bulbs should be planted varies according to the texture and the drainage of the soil. In strong or wet and retentive soils, shallow planting, say 3 to 5 in. beneath the surface, is ample, but on light, sandy, and well-drained soils, or on what are known as warm soils, the depth may vary from 6 to 12 in.—in a word, the bulbs should be as far as possible below the drought and frost line.

If cut flowers are desired, then bold groups on borders, in beds, or on Grass sheltered by hedges or shrubs are desirable. The first crop can be obtained from pots or boxes in the greenhouse, and these will be followed by fully formed and bursting buds, in sheltered

and sunny places. These buds will open large, fresh, and fair if placed in pots of water in a warm greenhouse or a sunny frame or window. In March and April comes the prolific harvest of golden open-air blossoms. In cutting Daffodils or Narcissi for indoor decoration, cut the flowers when the buds are opening, or even just before, and let the stalks be long, as the flowers group better with long stalks. Do not cut the leaves of choice kinds, but use leaves of common sorts with choice flowers. Put each kind in a separate glass, but put together as many of the same kind as you like.

Such delicate southern kinds as N. Bulbocodium, N. triandrus, N. calathinus, N. juncifolius, and most of the varieties of N. Tazetta may be grown in front of sunny walls on prepared peaty or on sandy borders, or else in glasshouses in the garden; but even in such places their flowers often suffer from spring storms, and the surest plan is to adopt pot-culture in a sunny frame. N. viridiflorus, N. serotinus, N. intermedius, N. elegans, N. pachybolbos, N. Broussoneti, etc., are interesting to collectors; but the difficulties of their culture are out of all proportion to their beauty, and those who only wish for large and beautiful flowers had better ignore them. Practically, we have only six species of Narcissus worth cultivating—N. Bulbocodium, N. pseudo-narcissus, N. poeticus, N. Tazetta, N. jonquilla, and N. triandrus. Then for naturalisation, or for ordinary garden culture, these six may be reduced to three groups—N. pseudo-narcissus, or the Ajax Daffodils; N. poeticus, or the Poet's Narcissus; and the natural hybrid between these two species, the ubiquitous Star Narcissus—N. incomparabilis. These kinds are really the only free and hardy open-air Narcissi, and are the best for the meadow or the lawn.

Of the newer seedlings, perhaps the finest is the exquisite cream-tinted N. Madame de Graaff, which first flowered at Leyden in 1883. N. Glory of Leyden is a yellow counterpart of it. The two were offered, one bulb of each, for 7 guineas only a year or two ago. They are so vigorous, and they increase so fast in good soil, that buyers were amply repaid, high as these prices appear. N. Weardale Perfection, N. Monarch, and some others are so fine and so rare that they are practically not to be had, anything less than 10 guineas having been refused for a single bulb of N. Weardale Perfection. These are only show flowers, however, and many others not much less handsome may be had by the hundred or the thousand at a moderate price.

Narcissi flower in continuous succession from February until June; and when pot-culture and warm-house treatment is adopted, the double Roman Narcissus and the Italian paper-white Narcissus

Narcissus Horsfieldi.

flower in November, and there are always some Narcissi in flower from that time to June.

HYBRID NARCISSI.—The species which have best lent themselves to the hybridiser's art are N. pseudo-narcissus, N. poeticus, N. montanus, N. triandrus, N. jonquilla, and N. Tazetta. The type hybrids are N. incomparabilis, Bernardi (both found wild), Nelsoni, Barrii, Burbidgei, Humei, Leedsii, Milneri, tridymus, and odorus. There are wild an garden hybrids between N. Bulbocodium and pseudo-narcissus ; N. triandrus and N. pseudo-narcissus ; N. jonquilla and N. pseudo-narcissus ; N. pucifolius and N. pseudo-narcissus ; N. Tazetta and N.

Narcissus calathinus.

pseudo-narcissus ; N. Tazetta and N. poeticus ; N. poeticus and N. pseudo-narcissus ; and N. montanus and N. poeticus ; and also N. pseudo-narcissus and N. montanus ; while derivative hybrids have been obtained between some of these hybrids and some of the parent species. It is remarkable that while wild hybrids and garden seedlings usually enjoy richly manured soils, wild species, and the white varieties of the Daffodil, N. triandrus, and N. Bulbocodium usually die out on deep richly manured borders, but frequently live on poor, stony, or sandy soils, on dry grassy banks, or amongst the roots on the sunny sides of hedges, shrubs, stone walls, and trees.

N. biflorus (*Primrose Peerless*) is similar in habit to N. poeticus, but has creamy-white flowers, two on a scape, and the rim of the primrose corona is scariose but colourless (*i.e.* not purple). N. biflorus is now known to be a natural hybrid between N. poeticus and N. Tazetta, having been found wild with its parents near Montpellier by Mr. Barr ; and also raised from its parents in the garden by the Rev. Mr. Engleheart. N. biflorus is naturalised in England and Ireland, but is a native of Europe. It is one of the easiest of all the kinds to naturalise, and spreads rapidly, but is usually supposed not to bear seed.

PRINCIPAL SPECIES OF NARCISSI.

N. (Corbularia) Bulbocodium (*The Hooped Petticoat Daffodil*) represents a kind having slender rush-like leaves. In Spain it grows in wet meadows during winter and spring, but is dried up throughout summer and autumn. The types are golden-yellow in Spain and Portugal, sulphur-yellow in S. France, as at Biarritz and Bayonne, one variety in the Pyrenean district (N. Grællsii) is whitish, but in Algeria grows the exquisite snowy-white N. monophyllus. Hybrids between N. Bulbocodium, N. triandrus, and the Daffodil have been obtained in gardens, and are also found wild. The main varieties are conspicuus, a large, rich, golden-yellow kind with green rushy leaves ; tenuifolius, a small golden form, having a six-lobed rim to the corona, and very long rush leaves, which lie on the ground ; nivalis, abundant in Portugal and near Leon in Spain, a small golden kind with short erect leaves ; præcox, a large early-blooming form, found by Mr. Barr in Spain ; citrinus, a pale sulphur form, varying much in size ; Grællsii, the European white ; and monophyllus, the African white. These are dainty bulbs for pots or for choice borders on warm dry soils. They can rarely be naturalised in our country.

N. cyclamineus (*Cyclamen Daffodil*). —A dainty but not showy species, easily grown in a peat-earth rock-garden or in pots of peaty compost. It seldom exists from year to year in the open air. It has lived on Grass in peat, and, no doubt, could be naturalised easily enough on sandy peat soils which are wet in winter and spring, and dry in summer and autumn. In April, 1892, I saw a most lovely specimen low down in a damp little grassy bay beside a mill-race at Mount Usher in Wicklow. N. cyclamineus likes the side of a stream, and is found by streams in Portugal. Like N. triandrus,

it is readily raised from seed, and the seedlings flower the third year. It is 6 to 8 in. high, and the scapes are about the same length, each bearing a bright golden reflexed flower. It has sap-green leaves. There are large and small forms, and a bicolor variety seems to have been known long ago. N. cyclamineus, although but lately re-discovered, was figured in French books early in the seventeenth century. Like N. Johnstoni, it came from Oporto in 1884–85.

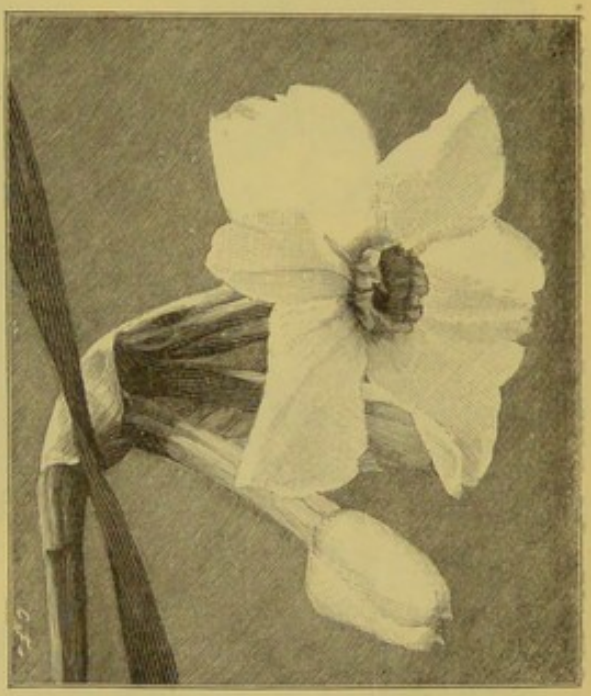
N. incomparabilis (*Star Daffodil*).—To this group belong N. incomparabilis, Barrii, Burbidgei, odorus, Backhousei, Nelsoni, Sabinei, tridymus, and the Pyrenean wild hybrid, Bernardi, which is found wherever N. variiformis and N. poeticus occur together. Of N. incomparabilis there are over a hundred named kinds, the best being: Sir Watkin or Welsh Peerless, Gloria Mundi, Queen Sophia, C. J. Backhouse, Princess Mary, Gwyther, splendens, Beauty, Autocrat, Frank Miles, Cynosure, James Bateman, King of the Netherlands, Commander, Figaro, Goliath, Mabel Cowan, Mary Anderson (delicate, but of a splendid colour), Fair Helen, and Queen Bess. There are three or four handsome double forms of N. incomparabilis, long known in gardens. The most abundant of these is incomparabilis fl.-pl. (Butter and Eggs). There is a white variety, with vermilion chalice segments, known as Eggs and Bacon or Orange Phœnix; and a pale sulphur double called Sulphur Kroon, which is exquisite if well grown. Sulphur Kroon is often known as Codlins and Cream.

Of Barr's Peerless (N. Barrii, hybrids), the best are Conspicuus and Sensation, but Golden Star, Crown Prince, Flora Wilson, Miriam, Barton, Orphée, General Murray, Albatros, Sea Gull, Maurice Vilmorin, and Dorothy E. Wemyss are all good, and are useful for extended culture on Grass or for cut flowers.

The Burbidge hybrids are like the Barrii forms, but have small crowns. Their chief value lies in the freedom and earliness of their bloom, as they open days before even ornatus—the early April form of N. poeticus. The best varieties are Burbidgei (type), Agnes Barr, Beatrice Heseltine, Baroness Heath, Constance, Crown Princess, Ellen Barr, John Bain, Little Dirk, Model, Mrs. Krelage, and Mary.

Of Leeds' silver star forms the best are exquisite on good sandy soils, and their whiteness and delicate purity and grace render them most acceptable as cut flowers. The best are: N. Leedsii (type), amabilis, Beatrice, Hon. Mrs. Barton, Katherine Spurrell, Duchess of Westminster, Madge Matthew, elegans, Minnie Hume, superbus, Princess of Wales, Magdalina de Graaff, Gem, Grand Duchess, Acis, and Palmerston. Hume's hybrids are deformed Daffodils, the best being Giant and concolor. Sabine's hybrid (N. Sabinei) is a bold white bicolor, with a shortened trumpet, and so are the so-called Backhouse hybrids—Wolley Dod and William Wilks, a shapely and effective flower of good substance and with vigorous leaves.

More starry, but with smaller cups, are Nelson's hybrids; tall, free, and distinct habit; the best, Nelsoni major, minor, pulchellus (perfect shape), Mrs. C. J. Backhouse, aurantius (orange-red cup), and William Backhouse. Collected bulbs of N. Bernardi are very variable in size and form, and some, like E. Buxton, have fine orange-red cups, which resemble Nelson's aurantius. N. tridymus is a variable hybrid between the Daffodil and N. Tazetta with two to three flowers on a scape.



Narcissus biflorus.

N. jonquilla (*Jonquil*).—Long known in gardens, and imported from Italy and Holland for forcing in pots. N. stellaris has narrow perianth lobes, and N. jonquilloides is a robust form from Spain. The varieties gracilis and tenuior are now supposed to be hybrids between the Jonquil and some other species, or between N. intermedius and juncifolius, N. inter-

medius itself being a hybrid between some form of N. Tazetta and the Jonquil. The Jonquil, when strongly grown on a warm border, is handsome and very sweet, and N. gracilis is the latest of all single Narcissi, as it blooms with N. poeticus fl.-pl. in May or early June. The double Jonquil is rarely seen doing well in open ground, but as a pot plant it is handsome. S. France and Spain.

N. juncifolius (*Rush Jonquil*).—A small plant, suitable only for sheltered borders, for stone edgings, and for pot-culture in a cold frame. It is very variable, and rupicola, minutiflorus, and scaberulus are well-known variations. Its small Jonquil-scented flowers have very large cups, often widely expanded, which are crenulate at their edges. The var. rupicola flowers and seeds annually in the rock-garden at Edinburgh Botanical Gardens, and seems hardier than the type.

N. odorus (*Great Jonquil*). — This plant, although found wild in S. France, Portugal, and N. Spain, is now believed to be a hybrid = N. jonquilla × N. pseudo-narcissus. The leaves are rushy, and two or three yellow starry flowers are borne on each scape. The best kinds are N. odorus (Campernelle), and rugulosus, a more robust form, with larger flowers. A double form, very handsome on warm soils, is known as Queen Anne's Jonquil.

N. poeticus (*Poet's* or *Pheasant's-eye Narcissus*).—One of the oldest, sweetest, and most popular of garden flowers, and erroneously supposed to be the Narcissus of the Greek poets. It is widely distributed in France and Germany, and extends to the Pyrenees. In upland meadows of the Pyrenees it is very abundant in June and July. It flowers from the beginning of April until June. N. ornatus is now grown by the million for Easter decoration. N. grandiflorus is a very large floppy variety, N. poetarum has a saffron-red

Narcissus Sir Watkin.

crown, and N. tripodalis has reflexed segments and a bold crimson-scarlet ring. The typical N. poeticus is a tall plant, with a small shapely flower, but is not often seen. N. Marvel has a bladder-like spathe like an Allium, and a pale and shapely flower. N. patellaris has a broad crown and a saffron rim, and blooms late ; but the form usually met with early in May is N. recurvus, the Pheasant's-eye of cottage-gardens. N. recurvus has a green eye and a crimson-fringed crown. All the forms, especially ornatus and recurvus, naturalise perfectly, and of recent years bulbs have been dug on the Pyrenees by the thousand for naturalisation. They are so variable in habit, size, shape, and colour that any number of varieties could be selected from them. The June-flowering double form of N. patellaris, or Gardenia Narcissus, is very fine. It does well on deep sandy borders. It is a shy flowerer, and many of its buds go blind, so that half the stock should be transplanted every year in August. N. stellaris, the latest single form of N. poeticus, flowers in June. Some very fine and shapely seedlings of N. poeticus have been raised by Mr. Engleheart.

N. pseudo-narcissus (*Common Daffodil*).—There are several hundred varieties of the Common Daffodil, either wild or cultivated. The only native of Britain is the common English kind, which extends from Cornwall to Fife, and is specially plentiful in the south-eastern counties. In Normandy, Daffodils by millions light up the woods in April, while many fine forms are wild in Spain and in the Pyrenean region, and the richest of golden Daffodils come from Spain and Portugal. Nearly all Daffodils do well on Grass, if the soil be at all suitable ; and as regards our wild English Daffodil, the Grass is the only place in which to grow it permanently. Daffodils are usually divided into three groups : first, golden Daffodils, such as N. maximus, Tenby, and spurius ; secondly, bicolors, such as John Horsfield, Empress, Grandee, &c. ; thirdly, sulphur and white kinds, such as Exquisite, and the white Daffodils, such as the wild Pyrenean and N. moschatus. Nearly all the golden kinds are robust and easily grown, and the bicolor group are even more so, but, speaking broadly, the delicate sulphur and the white sorts are tender and unsatisfactory, except on the most favourable soils. The following are the best in each group :—

Golden Daffodil Group—abscissus (muticus), Ard Righ, Emperor, Countess of Annesley, Bastemil, Captain Nelson, spurius, coronatus (General Gordon), Golden Spur, Distinction, obvallaris, Henry Irving, Glory of Leyden, Golden Prince, Golden Plover, Golden Vase, Her Majesty, John Nelson, spurius, major, maximus, M. J. Berkeley, and Mrs. Elwes. Nanus and minor are dwarf varieties, minimus is the smallest of all the Daffodils. Shakespeare, Hodsock's Pride, Fred. Moore, Wide Awake, Marchioness of Headfort, P. R. Barr, rugilobus, Santa Maria, Samson, Sir W. Harcourt, Townshend, Boscawen, Stanfield, Croom a Boo (Ard Righ with a frilled trumpet), Weardale Perfection, Monarch, and many others are not as yet much grown.

Bicolor Group—Empress, John Horsfield, Grandee, Dean Herbert, Michael Foster, Alfred Parsons, George C. Barr, Harrison Weir, J. B. M. Camm, John Parkinson,

Narcissus poeticus.

Mrs. Walter Ware, Mad. Plemp, T. A. Dorien Smith, and variiformis. Carrie Plemp, Princess Colibri, and Duchess of Teck are new kinds.

White and Sulphur-flowered Group—moschatus, albicans (Leda), cernuus (very variable), Cecilia de Graaff, Colleen Bawn, cernuus pulcher, C. W. Cowan, Dr. Hogg, Exquisite, J. G. Baker (volutus), F. W. Burbidge, Lady Grosvenor, Galatea, Mme. de Graaff, Mrs. F. W. Burbidge, Mrs. J. B. M. Camm, Mrs. Thompson, Helen Falkiner, pallidus præcox (the variable sulphur Daffodil of Biarritz and Bayonne), pallidus asturicus, Princess Ida, Sarnian Belle, tortuosus,

Narcissus Emperor.

Wm. Goldring, W. P. Milner, Minnie Warren, Countess of Desmond, Robert Boyle, Silver Bar, Mrs. Vincent.

The best of the double Daffodils are—Telamonius plenus (Van Sion), very free and robust, naturalised everywhere; double English, minor plenus (Rip van Winkle); lobularis plenus; Scoticus plenus; plenissimus (Parkinson's great rose double); capax plenus (Eystettensis), an exquisitely pretty and pale six-rowed double, but requiring a warm sandy soil, and remarkable as being a distinct double, of which the single type is unknown; Cernuus, C. bicinctus; the last do well in warm, stony soils, and, like other delicate kinds, enjoy the company of tree, shrub, or Rose roots.

Johnstoni (Johnston's hybrid Daffodil) was found by Mr. A. W. Tait near Oporto in 1885, and figured in *Bot. Mag.*, 7012; it is a natural hybrid, between N. pseudo-narcissus and N. triandrus, and is variable, Mr. Tait having in March 1892, sent me a bicolor form (Garrett × N. triandrus albus). The best forms are N. Johnstoni (type), Queen of Spain, Mrs. Geo. Cammell, Pelayo, and Mr. Tait's new bicolor form to which I have above alluded. The Rev. G. H. Engleheart has repeated crosses between the parent species, and has produced a pale sulphur or white Johnstoni ("Snowdrop") and others.

Hybrid Narcissus Snowdrop.

N. Tazetta (*Polyanthus* or *Bunch Narcissus*).—This is the classical Narcissus of Homer and other poets, Greek and Roman—the flower of a hundred heads that delights all men, and lends a glory to the sea and the sky. Tazetta is focused in the Mediterranean Basin, but extends from the Canary Islands to the north of India and to Japan. It has long been naturalised in the Scilly Isles and in Cornwall; but its early habit of growth, acquired in more sunny climes, often with us causes the flowers to be injured by frosts and storms. These Narcissi are hardy on warm dry soils, and as pot-plants many of them are handsome, while in deep, warm, sandy borders, which are sheltered by sunny walls or by plant-houses, they frequently do well, but as a rule bulbs must be imported from France, Italy, or Holland every year. The earliest are the double Roman and the paper-white (N. papyraceus). One variety from China may be grown in a sunny window if placed in water, and the bulbs submerged and held in position by gravel or stones. The growth of this variety is rapid, and good bulbs produce five to eight spikes. Its shop name is "Sacred Narcissus" or Chinese "Joss Lily."

The best varieties are Grand Monarque, States-General, Newton, Scilly White (White Pearl), Soleil d'Or, Bathurst, Baselman major (Trewianus), Gloriosus, Sulphurine, Czar de Muscovie, Grand Sultana, Grand Primo Citroniere, Luna, Her Majesty, Queen of the Netherlands, Lord Canning, and Golden Era.

N. Baselman minor is now proved to be a hybrid between N. Tazetta and N. poeticus, and a similar hybrid has been found wild near Montpellier.

N. triandrus (*Ganymede's Cup*).—A distinct and elegant species which is rarely happy out-of-doors except on warm, moist, and sheltered borders, or in nooks of the rock-garden, but which as a pot-bulb has no superior for delicate beauty, its flowers rivalling in texture those of the Cape Freezias. The late Mr. Rawson, of Fallbarrow, Windermere, grew it in pots, and his specimens bore fifty to a hundred flowers. His plan was to rest it thoroughly after the leaves faded, and then to top-dress the bulbs, and rarely or never to re-pot them. As a rule N. triandrus is short-lived, but it naturally reproduces itself from seeds, which bloom the second or third year after sowing. The principal varieties are N. albus (Angel's Tears), N. calathinus (a robust form from the Isle de Glennans), and L'Ile St. Nicholas. On the coast of Brittany N. calathinus grows among rocks and short sandy sward close to the sea, and within reach of its spray during rough weather. N. pulchellus has a primrose perianth and a white cup, and is very pretty. In the late Mr. R. Parker's nursery at Lower Tooting, in 1874, it was very strong and healthy in an open-air bed resting on the gravel, and some of its scapes bore seven or nine flowers. No

other Narcissus has a cup paler than the perianth segments. Pulchellus has recently been found wild in Portugal and Spain.

DISEASES AND INSECTS.—As Narcissi may be grown on dry warm soils, or in grassy lawns and meadows, the insects and fungoid diseases that would affect them on deep-dug and highly manured borders are few and far between. Neither cattle nor sheep molest them, and game and poultry, and even the most voracious of rabbits and the most impudent of town-sparrows leave the flowers alone. That their leaves and roots are poisonous, or acridly narcotic, may account for this. In some gardens and nurseries the larva of the Narcissus Fly (Merodon equestris) infests old bulbs, and whenever bulbs are imported from abroad or are dug for replanting, this larva should be searched for and exterminated. The bulbs affected may generally be known by their necks feeling soft when pinched. All such bulbs should be cut open and the larvæ extracted and killed. Such means are the only cure, as no insecticides will kill the pest without destroying the bulbs. The pest checks both root and bulb growth, but after the larvæ are removed the rare bulbs recently infected may be planted for stock, for although the heart be eaten away, the lateral buds at the base of the bulb-scales often produce young bulbs.

N. poeticus and its varieties have rarely been infected by a leaf fungus (Puccinia Schrœteri), and so far its ravages have been limited.

Bulbs of Narcissus are now and then found to be afflicted with black canker or "black-rot," probably caused by Peziza cibovioides, but so far little serious injury has been done. The most insidious disease that affects Narcissi is one to which Mr. C. W. Dod some few years ago originally drew attention, under the name of "basel rot." The stunted flowers come up prematurely, while the leaves have a diseased appearance, and are much dwarfed and contorted. The base of the bulb rots away, while no roots are formed from the disc, and the wet and flabby bulb-coats are more or less discoloured, as if parboiled. This disease is most prevalent among white Daffodils, white single and double ; but yellow kinds such as Ard Righ and maximus are affected on wet and cold soils, and even N. Tazetta, N. Leedsii, and N. jonquilla are also affected. In many cases this disease is checked by annual digging and re-planting in July or August ; and sometimes bulbs, affected on deep rich borders, have recovered on being transplanted to Grass or beds of Moss and Briar Roses. Cold and wet, or even richly manured soils, seem especially conducive to this disease, and the only remedy is to alter the conditions of growth as soon as the leaves have died away. A celebrated northern grower of Narcissi tells me that some sorts that formerly failed on level borders do well on the drier and warmer grassy banks to which he transferred them. Facility in altering conditions of growth is often the best way to save plants that show signs of disease or failing in any way. It is a great consolation to know that many of the best and most showy kinds, if broadly and naturally grown on the Grass of meadow or of outlying lawn, are rarely, if ever, afflicted seriously with the above pests.—F. W. B.

Narthecium ossifragum (*Bog Asphodel*).—A small native plant, like an Iris, with a spike of small yellow flowers. It is interesting for the bog-garden.

Nasturtium (*Tropæolum*).

Neillia opulifolia (*Nine Bark*). — A common shrub generally known as Spiræa opulifolia. It is usually 3 to 5 ft. in height, but in good soils and in sheltered places it makes a bush 8 or 10 ft. high, and as much through. It blooms about midsummer, the small white flowers being borne in dense feathery clusters. A more important shrub for ornamental planting is the variety aurea, with golden leaves. The yellow tinge of the foliage is extremely bright, and, at a distance, looks like a glowing mass of yellow bloom. This variety is a hardy and vigorous shrub suitable for planting anywhere.

Neja. — Small half-shrubby Composites. N. gracilis makes a pretty rock-garden plant on account of its elegant feathery foliage and its bright yellow, Daisy-like blossoms. It thrives in the open air from spring to autumn, but should be wintered in the greenhouse. Brazil.

Nelumbium luteum (*Yellow Sacred Bean*). — The hardiest known Sacred Bean, and therefore the one most interesting for northern gardens. Its large blossoms are a pale yellow, and its large round leaves arise boldly out of the water 3 to 4 ft. I have seen it flower strongly in the Garden of Plants at Paris : it remained out all the winter in a fountain basin in a sheltered and warm nook in the open air. It would probably flower out-of-doors in a sunny and sheltered spot in the south of England. It is rare, but may be procured from some nurseries, or from America. The beautiful N.

speciosum is another noble aquatic, and is well worth a trial wherever there is a contrivance for heating the water of a small pond or tank in the open air.

Nemastylus.—Bulbous plants of the Iris family, natives of the warm parts of N. America, and consequently are not quite hardy with us, though they may be grown in the same manner as the Ixia. There are three species introduced—N. geminiflora and N. purpureus from Texas, and N. cœlestinus from Florida, of dwarf growth and bearing showy blossoms, which are fugacious and borne long in succession.

Nemesia floribunda. — Pretty hardy annuals of the simplest culture, growing about 1 ft. high, and bearing in summer fragrant Linaria-like blossoms, white with yellow throats. N. versicolor has blue, lilac, or yellow and white blossoms ; and its variety compacta, blue and white flowers. If sown in ordinary soil in masses in early spring and then well thinned, the plants will have a pretty effect for several weeks after June. Cape of Good Hope. Scrophulariaceæ.

N. strumosa.—This is a pretty half-hardy annual, from South Africa. The flowers display a variety of colours, white, pale yellow, and shades between pink to deep crimson. Sow in heat in March, and transplant the seedlings in May, or sow in the open ground after the middle of May. It grows 12 to 15 in. high, and has five or six stems, each of which bears a head of flowers, but little foliage. A good point in favour of this annual is its long-continued beauty, from summer until late in autumn.

Nemophila.—Pretty Californian hardy annuals of much value for our gardens. The species from which the cultivated varieties have been derived are N. insignis, N. atomaria, N. discoidalis, and N. maculata. N. insignis has sky-blue flowers, and its varieties are grandiflora, alba, purpurea-rubra, and striata. N. atomaria has white flowers speckled with blue. Its varieties are cœlestis (sky-blue margin), oculata (pale blue and black centre), and alba nigra (white and black centre). N. discoidalis has dark purple flowers edged with white, and the flowers of its variety elegans are maroon margined with white. N. maculata has large white flowers blotched with violet, and its variety purpurea is of a mauve colour. These kinds are all worth growing. They thrive in any soil, and are of the simplest culture. In spring some pretty combinations may be effected by arranging the masses in harmonising colours. All Nemophilas are well suited for edgings and for filling small beds, as they are compact in growth. The insignis section should always be preferred to the others. Seeds should be sown early in August for spring-flowering, and in April for summer-blooming. To secure a good display of flower, however, the best time to sow is in August, and the soil should be a light one, where the seed can germinate freely, and where the plants will not become too robust before winter sets in. If the seed be sown where the plants are to flower, the results will be most satisfactory ; but if transplanting be necessary, it should be done early in the winter. A ball of earth should be attached to each plant, and to secure this thin sowing is indispensable. These plants often grow better and give prettier effects in the cooler northern parts of the country and in Scotland. Hydrophyllaceæ.

Nepeta (*Cat Mint*). — N. macrantha has rather showy purple flowers, but is too tall and coarse for the border. N. Mussini is an old plant, and was once used a good deal for edgings to borders, a purpose for which its compact growth suits it well ; but none of these plants are among the best perennials.

Nephrodium.—The native Nephrodiums are alluded to under the head of Aspidium. Besides these native kinds there are a few North American species that are hardy, and very handsome, and these thrive under the same conditions as the native kinds. The chief sorts are N. Goldieanum, N. intermedium, N. marginale, and N. noveberacense. Several Japanese and Chinese species thrive without protection in mild localities, but they cannot be recommended for general culture. N. fragrans is a sweet-scented little form. It is somewhat delicate, but thrives in a sheltered situation.

Nerine. — Beautiful bulbous plants, mostly from S. Africa. The hardiest, the Guernsey Lily (N. sarniensis), has long been a favourite in the Channel Islands, and there, though it is a native of Japan, it is hardy in light soil. Its flower-stems are about 1 ft. high, surmounted by a large cluster of blossoms of a rich crimson. The bulbs are imported from the Channel Isles in large quantities, and require a sunny position in a light warm soil, a border at the foot of a south wall being the best. They are usually sent about August, and should be planted as soon as they come ; they will flower in September or later. After the flower is past the leaves will appear, and these

leaves must be protected against frosts, either by lifting the plants and placing them under glass, or by protective material. Plants protected in this way have in some localities withstood the winters for years. Several other Nerines are less hardy than the Guernsey Lily, but they succeed in the open in summer, and, if protected, will flower in September or October, but they should not be left out during the winter except in extremely mild localities. The kinds that should be tried out are N. corusca, N. Fothergilli, N. pulchella, N. pudica, N. undulata, and their varieties.

Nertera depressa (*Fruiting Duckweed*).—A pretty little plant, thickly studded with tiny reddish-orange berries, and with minute round leaves which are suggestive of the Duckweed of our stagnant pools. It forms densely matted tufts in the open air, best perhaps on level spots in the rock-garden. It is also often grown in pans, and out-of-doors in some places may require protection in winter. N. depressa may be propagated by dividing old plants into small portions and placing them in small pots in a gentle heat until they start into growth, and then removing them to a cooler atmosphere. If a stock is required, the points of the young shoots should be taken off, and inserted in pans filled with equal portions of leaf-mould and sand. After watering, a square of glass or a bell-glass should be placed over the pan. Thus treated, the cuttings will take root in a few days. They should then be potted off into 2½-in. pots, and again placed in a gentle heat until they are established. Rubiaceæ. New Zealand.

New Holland Daisy (*Vittadenia triloba*).

New Holland Violet (*Viola reniformis*).

New Zealand Flax (*Phormium enax*).

Nicandra physaloides.—A pretty Peruvian half-hardy annual, about 2 ft. high, of stout growth, bearing in summer numerous showy blue and white bell-like flowers, and thriving in an open position in light soil. Seed should be sown in heat in early spring or in the open air about the end of March, and the seedlings should be transplanted in May. One plant is sufficient for a square yard. Solanaceæ.

Nicotiana (*Tobacco*).—Stout half-hardy annuals of rapid growth, and excellent subjects for associating with other stately plants in the sub-tropical garden. The varieties differ chiefly in the stoutness and the height of their stems, and in size of their leaves and flowers, these differences depending largely on cultivation. The best growth is got in rich ground and sheltered positions. The Tobaccos form noble groups, or backgrounds to masses of Reeds, Pampas Grass, Bamboos, Rushes, or other semi-aquatic plants. Seed must be sown in February in a warm house or frame. Prick off the plants as soon as they appear, and pot them in a genial heat of, say, 60°. Then about the end of May fine plants will be ready for putting out from 6 or 8 in. pots. They will start off at once, and not cease growing until frost comes. The most useful of all is N. affinis, used largely in gardens large and small, in distinct groups or with other things. Some of the best effects are got from this kind in association with Heliotropes and tall plants. The flowers are creamy-white, and produced in profusion, opening only in the evening, when they give out a rich spicy fragrance. It is much smaller in leafage and habit than

Nicotiana affinis.

such kinds as N. macrophylla, and therefore more suitable for small gardens.

Nierembergia.—The only quite hardy Nierembergia is N. rivularis (White Cup), one of the handsomest of all. The stems and foliage trail along the ground like those of the New Holland Violet, while barely pushed above the foliage are open cup-like creamy-white flowers, usually nearly 2 in. across. They continue during the summer and autumn, and have a pleasing effect in the distance, as they suggest Snowdrops at first, and are quite as pretty when closely viewed. To ensure success with Nierembergias have heavy, firm soil, a level surface, and sunny aspect. The tender Nierembergias are N. frutescens, a sub-shrubby plant of erect growth,

Nierembergia rivularis.

and N. filicaulis, or gracilis as it is called, which has slender drooping branches. Both have pretty white flowers pencilled with purple, and are suitable for the rock-garden in summer or for drooping over the edges of vases. Propagate by cuttings in spring in heat.

Nigella (*Fennel Flower*).—Hardy annuals of the Crowfoot family, all curious and pretty with feathery Fennel-like foliage and bluish or yellowish blossoms. N. sativa, N. orientalis, N. damascena (Devil in a Bush), and N. hispanica are the kinds cultivated, N. hispanica being the prettiest, growing about 1 ft. high, and with showy blue flowers from July onwards. There is a white variety and a variety with deep purple blossoms. All the Nigellas should be sown in March, in light warm soil in the open border. They should be sown in the place which they are to occupy, as they do not succeed so well if transplanted. I sown in autumn, the seedlings often survive the winter and flower early and well.

Night-scented Rocket (*Hesperis tristis*).

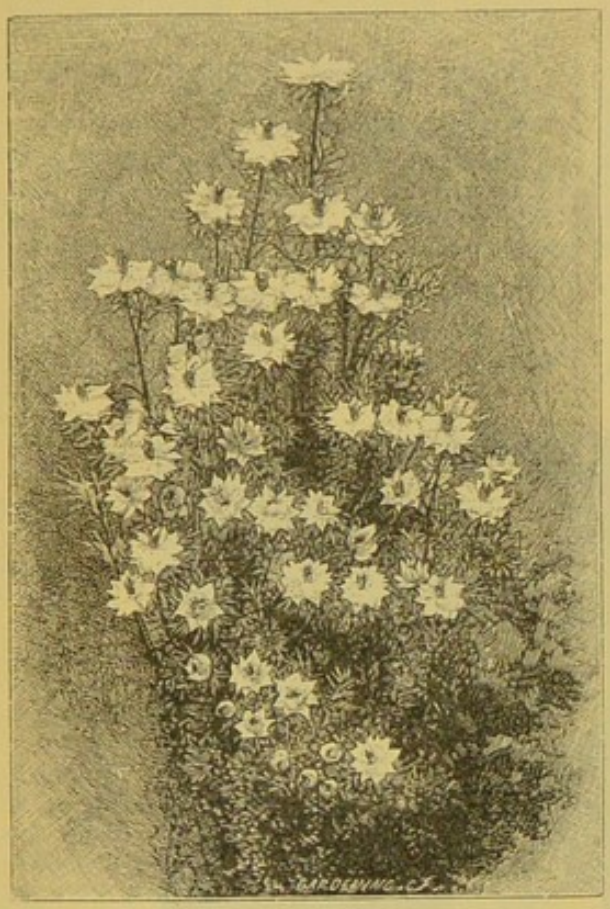
Nightshade (*Solanum*).

Nolana.—Pretty hardy annuals from S. America—N. paradoxa, N. prostrata, and N. atriplicifolia among the best. They have slender trailing stems, and flowers generally blue. N. atriplicifolia has beautiful and very showy blue flowers with a white centre, and there is a white variety (N. a. alba). The Nolanas are suitable for borders or for the rock-garden, as they thrive in any warm open situation in good light soil. As seedlings do not transplant well, seed should be sown in the open in March, and the plants well thinned out. Nolanaceæ.

Nothochlæna Marantæ.—An elegant hardy New Holland Fern, with dark green erect fronds, 6 to 12 in. high, which proceed from a creeping rhizome. It requires a moist peaty soil and a sheltered shady spot in the rock-garden or the fernery, or on a wall made for the smaller Ferns.

Notospartium Carmichaelliæ (*Pink Broom of New Zealand*).—This is much like some of the Brooms, hence its name, the leafless, graceful shoots studded late in June with small bright rosy pen-shaped

flowers in clusters towards the point. Its graceful growth is well seen in the bolder arrangement of the rock-garden. In New Zealand it grows 20 ft. in height, and



Nigella damascena.

seems to be fairly hardy here, though not a shrub for cold climates or exposed places.

Nuphar (*Yellow Water-Lily*).—The most familiar Nuphar is the common Yellow Water-Lily (N. lutea), which inhabits many of our lakes and slow-running rivers, in company with the Water-Lily. It has a very interesting little variety called pumila or minima, which is found wild in some of the Highland lakes, and which has the same vinous perfume as the type. N. advena is the N. American ally of our yellow Water-Lily, and resembling it, but larger and with leaves which stand erect out of the water, and is a much finer plant. N. Kalmiana, also a N. American kind, much resembles the small variety of N. lutea, and is an interesting plant to grow in company with it. The cultivation is quite simple—placing the rootstocks in water 2 to 3 ft. deep, when they will soon root in the mud.

Nuttallia cerasiformis (*Osoberry*).—A deciduous shrub, and one of the earliest to flower. Hardly before winter is past its abundant drooping racemes of white flowers appear, and they usually do so before the leaves. When in bloom it bears a resemblance to the Flowering Currant (Ribes sanguineum), and forms a dense bush, 6 to 12 ft. high, growing in any kind of soil; is hardy, but not showy, and scarcely pretty. California.

Nycterinia.—Pretty half-hardy annuals from the Cape of Good Hope. N. selaginoides grows about 9 in. high, forming dense compact tufts of slender stems, in late autumn, covered with small white, orange-centred blossoms fragrant at night. N. capensis is about the same size as N. selaginoides, and is of similar growth, its flowers larger, and not of so pure a white. N. selaginoides and N. capensis require to be sown early in heat, and to be transplanted in May in light, rich sandy loam in warm borders. N. Lychnidea is a small shrubby perennial with yellowish-white blossoms, thriving in warm borders in summer. It should be propagated either by cuttings in autumn, or by seeds in spring. Scrophulariaceæ.

Nymphæa (*Water-Lily*).—A beautiful family of water-plants distributed over many parts of the world, some of the northern kinds hardy, the tropical ones only to be grown under glass in our latitudes. Of late much interest has been aroused in the many hybrid hardy kinds, by the acquisitions of M. Latour Marliac, who has given us an addition to our hardy flowers which cannot be overestimated. He has added the large and noble forms, and the soft and lovely colour of the Eastern Water-Lilies to the garden waters of northern countries. The splendid beauty of these plants will lead people to think of true and artistic ways of adorning garden waters. Our own native Water-Lily was always neglected and rarely effective, except in a wild state; but when people see that they may have in England the soft and beautiful yellows and the fine rose and red flowers of the tropical Water-Lilies throughout summer and autumn, they will begin to take more interest in their garden water-flowers. Even the wretched formless duckponds which disfigure so many country seats will begin at last to have a reason to be.

Should there be limits to cultivating the Nymphæas in the open garden in the northern parts of England and Scotland, it will be quite easy to keep them in houses in the winter and turn them out in

the summer. Another interesting aspect is what may be done in greenhouses and warm houses in cold or unsuitable places, and many may in that way enjoy their fine

Notospartium Carmichaeliæ.

forms and lovely colours quite near the eye, though the greatest merit of the plants is the giving us quite new and beautiful pictures in the open garden. The new hybrid kinds continue blooming long after our native kind has ceased, and from the middle of May to nearly the end of October flowers are abundant.

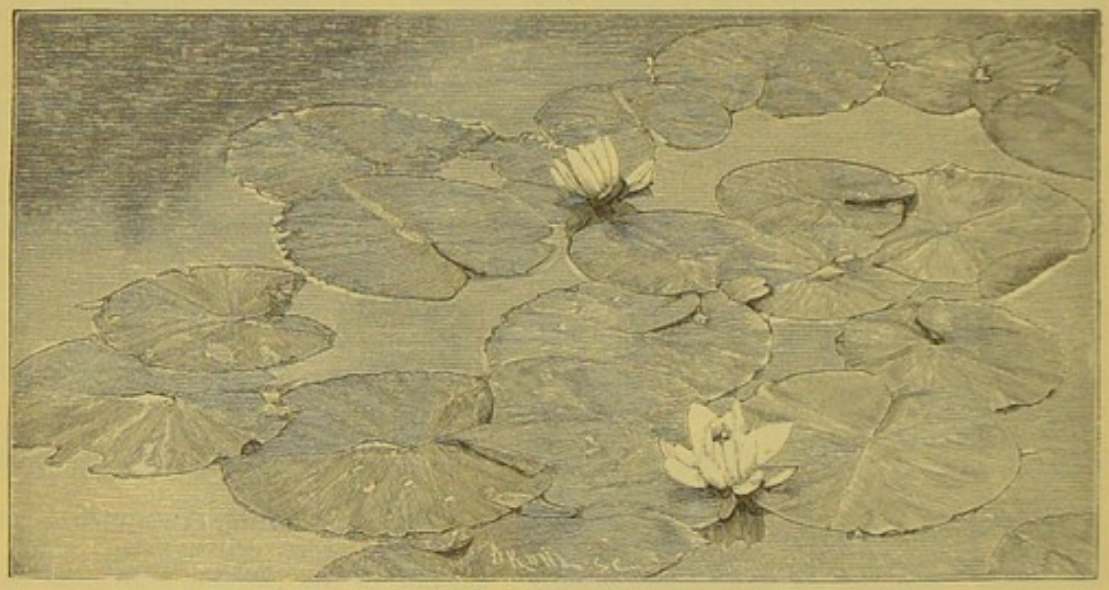
CULTURE OF HARDY WATER-LILIES.—These lovely water flowers are not difficult to manage. A simple way of planting is to put the plants with soil in some shallow baskets and sink them to the bottom, and before the basket has rotted the plant will have fixed itself to the bottom with fresh roots. The best season for planting is the spring, and plants put in in April or May make sufficient progress to flower before summer is gone. It is best to have the pink ones nearest at hand, where they can be seen closely, and the yellows associate well with the pinks, whilst the whites may be in the distant parts, if such there are, as they are effective wherever placed. There is nothing like a lake, stream, or pond, but failing these, one may resort to other things with some success, and the plants may be well grown simply by sinking tubs in the ground and half filling them with soil and then filling up with water. Those who could afford it, too, might make brick and cement tanks, to be sunk in the ground to a depth of from 2½ to 3 ft. These, with a foot of soil and the rest water, would grow excellent Water-lilies, and the plants do not want a great depth of water over their crowns. It would be well to arrange that at least a foot might cover them in winter, and then they are virtually safe from frost. Possibly they might not be killed if frozen with the water, but it is better to avoid troubles from this cause. Early in the season they have strange ways as to opening and closing; the opening being a short day of from 8 a.m. to 3 p.m. Later, however, they lengthen their day to nearly twelve hours, and open daily whether bright or dull, although at first they await clear sunshine before expanding, and on a dull day remain perfectly closed.

In respect to culture M. Maurice Vilmorin, who grows most of the varieties, writes—

"The best mode of culture is the simplest, which consists in sinking a portion of the rhizome furnished with one or more shoots in a pond or other piece of water 2 or 3 ft. deep (some kinds may require more than this), and having a muddy or clayey bottom. The long roots can be confined in a small loosely-woven game-basket (the older and more worn out the better), allowing the point of the shoot to protrude for a couple of inches. Some roots exist very near the end of the shoot; these must be left free, and they will soon lengthen out and fix themselves in the soil of the pond bottom. Planting should only be carried out in the month of May except in the case of the earliest varieties. It could be done at any season of the year, but I think early planting is best. Water-lilies planted out-of-doors flower better and even somewhat earlier than when they are grown in tanks. They are able to hold their ground against the wild water plants with the exception of the Bulrush (Scirpus) and the Reed-mace (Typha), the roots of

which should be extirpated if any exist near them. Clayey bottoms seem to suit them very well ; the water may either be running or not, and may either be of a fixed depth or may vary in its level to an extent of 1 or 2 ft. without injuriously affecting the plants. In the absence of a pond or pool with a natural mud bottom, these Nymphæas may be successfully grown in tanks 4 or 5 ft. deep, the bottoms of which are covered with a layer or bed of rich compact clayey soil 1 ft. in depth. This soil having been moistened, the roots of Nymphæas are planted in it, after which the bed of soil is covered with a layer of river sand an inch, or a little more, in depth. Water is then admitted slowly until it reaches a depth of 3 ft. in the tank. Plants grown sides without meeting with any sustenance. In speaking of planting in a pond or tank, I gave special directions for the operation, but these water plants are so tough that they will bear a far more summary method of treatment, and a Nymphæa may with every prospect of success be planted in a pond by simply fastening a stone to a piece of a root and throwing it into the water.

"In tanks the water may be kept fresh by putting into it a few small fishes, not larger than gold fish. Gold fish are fond of the seeds of Nymphæa, so that the seed-vessels should be looked after and gathered as soon as they will burst when squeezed tightly. The ripe seed keeps good for a pretty long time if stored in a dry place ; it germinates usually in a



Hardy American Water-lily (N. tuberosa) in open water at Gravetye, Sussex. Autumn.

in this way come into leaf at the same time as pond plants. Lastly, if neither ponds nor tanks are available, these Water-lilies can still be easily grown, for, as M. Latour-Marliac wittily observed, like Diogenes, they can content themselves in a tub ; we may even go further than this and say that they find themselves quite at home in half a cask buried in the ground and half filled with soil and water. On lawns the cask or half cask might be sunk level with the surface, thus giving the leaves and flowers of the Water-lilies the appearance of growing out of the ground. Last and least satisfactory of all I shall mention the mode of growing them in a basket at the bottom of a tank not furnished with a bed of soil. Here the new roots issue through the basket and extend themselves on all satisfactory manner, and the seedlings can be pricked out without any difficulty. The raising of seedlings, however, cannot be said to be an easy matter, as for more than a year one must carefully attend to the condition of the shallow water which covers them by keeping it clean and up to the proper level, besides giving the plants more room as they require it and various other attentions. In an aquarium one of the greatest enemies of the seedlings is the frog, which does harm by squatting in the pots that are just covered by the water, often making cavities in the soil and breaking down the young plants. These would be better kept in tubs containing a little pounded charcoal and placed in an Orange-house.

"The enemies of Water-lilies are water-rats and swans and other water birds,

especially moorhens, which often pull them to pieces, but the plants can be protected with wire-netting. Moorhens are very destructive to the flowers, and should be closely watched. There is, however, another enemy. We noticed it first by seeing leaves detached and floating. On the water becoming clearer one could see what appeared to be small bits of stick an inch or so long attached in numbers to the leaf-stalk. It was the grub of the caddis fly with its house upon its back. In the hollow stick it was safe from the fish, and, fastening upon the young and tender leaf-stalk, the grubs fed away until the leaf was eaten asunder. Strong-established plants are not likely to suffer, but a watch should be kept on young plants if rare varieties."

We propose to take the hardy wild kinds first, beginning with —

N. alba (*White Water-lily*).—Our native Water-lily is often in flower before May is over, and in a wild state is usually finest where there is a depth of from 2 to 3 ft. of water over the crowns. There are several varieties of it in cultivation, one being named minor, with small flowers, and is well adapted for small pieces of water, but its value is diminished through the increase of fine hybrids. Rosea is a pretty pink form, but does not bloom freely. N. a. candidissima has broad, showy, pure white flowers, blooming early, and is in beauty often till late autumn. The variety plenissima is remarkable for the number of petals composing the flowers, and maxima, as the name suggests, has large flowers. Minor is a small-flowered form; the flowers very double. It is not easy to get all these varieties, but the great interest now taken in Water-lilies may lead to their growth in nurseries.

N. tuberosa.—This is a North American kind, hardy and beautiful. It has not the long, thick, fleshy root-stock peculiar to most Nymphæas, but instead a thick, fleshy tuberous mass of roots; hence its name. Its flowers, opening in the latter half of summer and throughout the autumn, are white, larger, longer, and broader in the petal than those of other wild species; and it can be increased readily by division, and is free in growth even in open unsheltered water.

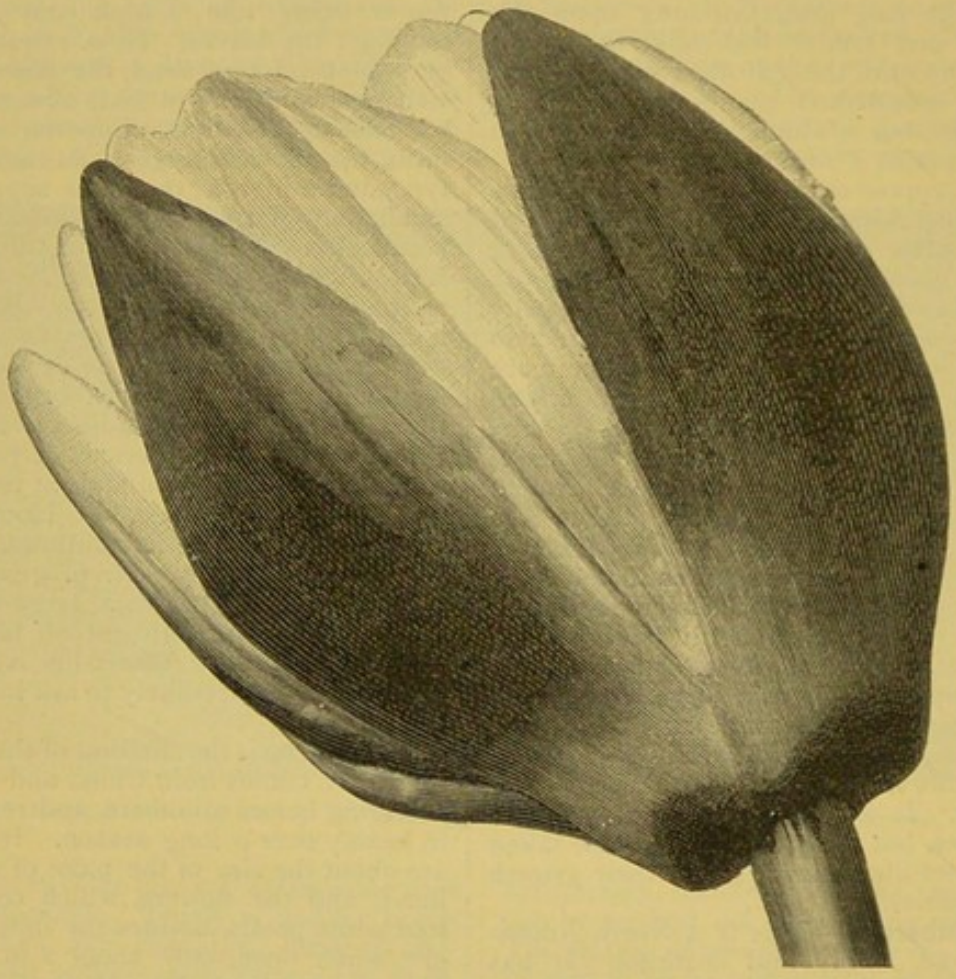
N. odorata (*Sweet Water-lily*).—This North American species is a near ally of N. alba, but has rather larger flowers, and borne from June till autumn, sweetly scented, and usually white. The species is found in lakes or slow-running streams, and it grows readily, and is easily increased by division. There are several varieties. N. o. sulphurea has prettily marbled leaves, and the long-pointed buds are quite 4 in. in length, opening into spreading flowers nearly 8 in. across, and of delicious scent. The colour is a good yellow. The variety grandiflora has yellow, sweet-scented flowers. The large leaves are mottled with brown above, but spotted with red on the reverse side. N. o. rosacea has flowers about 4 in. across, bright rose in colour, with yellow centre, of sweet fragrance; the petals narrow, the flower being like a pink star floating amongst the leaves. N. o. exquisita is a very deep-coloured kind, the flower being rich rose-carmine—in fact, almost red at the base of the petals. Superba is a fine form, with flowers larger than those of the type, and minor, as the name suggests, is small, but pretty. This is found in the ponds of New Jersey. N. o. Caroliniana is described by Mr. Gerard, of New Jersey, as the finest of the odorata varieties, and it is supposed to be a cross between N. odorata rosea and N. alba candidissima. Another form is called N. o. rubra, but the name is rather misleading, as it cannot be called red. The flowers are pure rose at the base, shading to pink at the edges and tips of the petals. It blooms profusely from June till late autumn, and the flowers open widely. N. o. gigantea is, as its name suggests, a large-flowered variety; but where to get all these fine forms of this hardy Water-lily is a question that many are likely to ask in vain for the present.

N. pygmæa is the smallest of the Water-lilies. It comes from China and Siberia, flowering before all others, and remaining in beauty over a long season. Its leaves are about the size of the palm of a man's hand, and the flowers, which consist of four white petals, besides the inner parts, are, when open, only about 2 in. across. Helvola is a dainty little Water-lily raised by M. Latour-Marliac. It is a seedling from N. p. alba, and has pale, straw-coloured flowers; the leaves of somewhat oblong shape, marked with brown above, and spotted with red underneath.

N. sphærocarpa (*Caspary's Lily*).—This is thought by some a distinct species, and others make it a variety of N. alba. It begins to flower earlier, and with the water at a lower temperature, than any other kind; its flowers in shape like those of N. alba, but rosy-carmine in colour, blooming flush of flowers in May and June, but not blooming late in summer. There are many kinds to succeed it, however, and its earliness is a great point in its favour. M.

Maurice Vilmorin, in the *Revue Horticole*, writes that :—" It comes into flower sooner than any other kind, and requires a considerably less degree of warmth in the water to produce its finest flowers. It prefers to grow in waters that are deep, pure, and fresh, and its flowers are at their best during the latter half of the month of May, when they attain a size little less than that of the flowers of N. alba, from which they differ in being more widely opened. The deep rosy-carmine colour which characterises the four or eight inner petals then spreads over nearly all the rest, the outer petals, however, remaining somewhat paler than the others. This brilliant suffusion of colour preludes, with a brief interval, the end of the flowering season, the interval being all the shorter if the weather is warm and the plants are grown in an aquarium or a pool which does not receive a supply of running water. The root-stock of this plant is very thick, and increases in length rather slowly, but it is a better seed bearer than any other kind."

N. flava (*Yellow Water-lily*) is the only yellow kind found wild, and exists in Florida. It was introduced into this country several years ago, and, although fairly hardy, has not proved very desirable in cultivation. Instead of having a thick rhizome, it has a mass of fibrous roots, and in addition it sends out long runner-like shoots after the manner of a Strawberry, and these form young plants. The flowers are canary-yellow. From its habit it could hardly be grown in a confined space, but there is no need to trouble about it. Doubtless it was one of the parents of M. Marliac's yellow hybrids, and we have its charming colour embodied in plants that stay at home, and for months send up magnificent flowers in unbroken succession. N. mexicana is apparently botanically the same as N. flava, but Mr. J. N. Gerard, of Elizabeth, N.J., says "it is a charming thing and a fine doer, having a cone-like tuber from which runners start out from thong-like shoots and then flower."



Bud of hybrid Water-lily, N. Marliacea carnea (natural size) gathered from open water at Gravetye, Sussex, at the end of October.

M. MARLIAC'S HYBRIDS.—These are the gems of the Water-lily family, and there are many of them of the highest beauty.

N. M. albida is finer than any other white-flowered Nymphæa ; vigorous ; the leaves bright purple-red when young, lustrous green as they get older ; the flowers fully 7 in. across, rich yellow in the centre, the outer petals very long, broad, but gradually shorten towards the centre.

N. M. carnea and N. M. rosea are similar to the preceding kind, but distinct in colour, the first-named kind having flowers suffused with pale flesh tint, and in the other the colour deepens into rosy-pink.

The Canary Water-lily (N. M. chromatella) is one of the finest of the hybrids ; the leaves, at first purplish-red, change to deep red, with distinct and beautiful dark brown-red markings, whilst the flowers are large, soft yellow in colour, with deeper centre.

N. M. rubra punctata is a shapely flower, 4 in. in diameter, with twenty-two sepals and petals ; the four sepals dark olive-green behind, and pale rosy-lilac in front, the petals deep rose-purple and delicately marbled.

N. M. ignea is a larger flower, nearly 5 in. in diameter when fully open ; the sepals pale olive-green, edged with rose behind and pale rose, nearly white, in front. There are eighteen shapely petals, closely imbricated, and forming a beautiful cupped whorl around the vivid orange-red based stamens in the middle of the flower. The petals are of a deep, but bright rosy-crimson.

N. M. flammea varies in colour, which consists of innumerable minute red dots on a white ground, the outer petals appearing pink, and the colour deepening to red in the centre of the flower.

The Laydekeri group of varieties embraces many exquisite forms. Fulgens is a charming Water-lily, the flower small and having fine outer dark green sepals, and about fifteen cupped and shapely crimson-magenta petals, glowing like a ruby in the sun.

N. L. fulva has its flowers washed and pencilled with bright red on a creamy-yellow ground, the stamens golden-yellow, and the leaves mottled with brownish colour on the surface, but the reverse side spotted with red.

Liliacea is a dainty flower, only about 2½ in. across when wide open ; the sepals dark sap green, margined behind with pale rose, while the fifteen peach-blossom-tinted petals are in contrast to the small tuft of golden-yellow stamens ; the rosy petals have quite a silvery lustre in the sunlight.

N. L. lucida has very large flowers of a soft vermilion shade, the stamens orange, whilst the large leaves are spotted with chestnut and with bright red on the reverse side.

N. L. purpurata has beautiful flowers, symmetrical in form and rich red in colour, crimson towards the centre ; the stamens are reddish carmine.

Seignoureti has delicate yellow flowers, shaded with soft rose and flushed with carmine ; they rise nearly six inches above the water, the leaves being spotted with chestnut on the limb, and on the reverse side with red. L. rosea is a lovely kind, quite the finest of the small varieties ; the flowers are about 2 inches across, numerous, and of a rose-purple shade, passing to white at the end of the petals.

N. Robinsoni is a beautiful Lily raised by M. Latour-Marliac, star-like in form, somewhat larger than N. Laydekeri, and generally of a lovely rose colour, deepening towards the centre. It is distinguished by the rose being finely spotted throughout with white, though the impression given is rather that of suffusion than of spotting. This is a most distinct flower, calling to mind the old-fashioned rosy semi-double Hollyhock in form and colouring, but as yet extremely rare. It is named by M. Marliac, after the author of this book.

Oak Fern (Polypodium Dryopteris).

Œnothera (*Evening Primrose*).—These are amongst the prettiest of hardy flowers, and are easily grown in all soils. From June onward they are in their beauty, many varieties becoming more full of flowers in late summer. They have large bright yellow or white flowers, in many kinds so freely and continuously borne as to make them of great value. Their name notwithstanding, many are open by day ; as for instance, Œ. linearis, speciosa, taraxacifolia, and trichocalyx. Many of the finest Evening Primroses are natives of States west of Mississippi, such as California, Utah, Missouri, and Texas. They all bloom the first season from early seedlings. Some of the true perennials, and particularly the prostrate ones, are shy seeders, but the tall ones seed freely. The largest kinds are very beautiful in any position, but from their height and boldness they are suited for the wild garden and for shrubberies. Sowing themselves freely, they are apt to become too numerous and somewhat "starved," so that they

are best when confined to large groups. In any flower garden not confined to flat beds only, an isolated bed of them looks well. Amongst them we have tall erect sorts like Œ. Lamarckiana, prostrate, as in trichocalyx and cæspitosa, and white flowers, as in the last-named two, while coronopifolia and speciosa often change with age to pink or rose. Few plants have finer yellow blooms than missouriensis and Lamarckiana; and, moreover, they are very large—4 to 6 in. across. Nearly all are more or less fragrant, particularly cæspitosa, marginata, fragrans, and eximia.

Œnothera marginata.

Œ. biennis is a handsome biennial, 3 to 5 ft. high, with large bright yellow flowers. Its variety grandiflora or Lamarckiana should always be preferred to the ordinary kind, as the flowers are larger and of a finer colour, having a fine effect in large masses, and is well suited for the wild garden.

Œ. fruticosa (*Sundrops*).—This and its varieties are among the finest of hardy perennials, 1 to 3 ft. high, with showy yellow blossoms. There are about half-a-dozen distinct varieties, the best being linearis, or, as it is usually called, riparia, about 1½ ft high, bearing an abundance of yellow blossoms. It is one of the best of yellow Evening Primroses for small beds, for edgings, or as a groundwork for other plants, and it goes on flowering even after the first frosts. It is always prudent to lift a few or strike a potful of cuttings in case of accident, though in spring the old plants may be divided to any extent. Given sandy loam, these plants thrive in borders or in the margins of shrubberies. N. America.

Œ. glauca is a handsome N. American species similar to fruticosa. It is of sub-shrubby growth, becomes bushy, and bears yellow flowers. The variety Fraseri is a still finer plant, and where an attractive mass of yellow is desired through the summer there are few hardy plants of easy cultivation so effective. In a large rock-garden a few plants here and there give good colour, and the plants bloom long.

Œ. marginata.—A dwarf plant, never more than 12 in. high, with flowers in May, 4 to 5 in. across, from white gradually changing to a delicate rose; as evening approaches, coming well above the jagged leaves, retaining their beauty all night, and emitting a Magnolia-like odour. It is a hardy perennial, and is increased by suckers from the roots, and by cuttings, which root readily. An excellent plant for the rock-garden and for borders. *Syn.*, Œ. cæspitosa. Œ. trichocalyx, a similar species, but probably only an annual, is a beautiful plant well worth growing.

Œ. missouriensis.—A handsome herbaceous plant from N. America, with prostrate downy stems, and clear yellow flowers, sometimes 5 in. in diameter, and borne so freely that they may be said to cover the ground with gold. There is no more valuable border flower, and when well placed in the rock-garden it is effective, especially if the luxuriant shoots are allowed to hang down. As seed is rarely perfected, the plant is better increased by careful division, or by cuttings taken in April. As a border plant it does not grow so freely in cold clayey soils as in warm light ones. The blooms open best in the evening. *Syn.*, Œ. macrocarpa.

Œ. speciosa.—A handsome plant, with many large flowers, at first white, changing to a delicate rose. The plant is erect and its stems almost shrubby, 14 to 18 in. high. A true perennial, valuable for

borders, or the rougher parts of the rock-garden. It is a native of North America, and is increased by division, cuttings, or seeds, but does not seed freely in this country. It thrives in well-drained rich loam, in borders, where, if undisturbed, it will soon spread into a large tuft. In heavy soils it is apt to be injured during severe winters.

Œ. taraxacifolia, a Chilian plant, is one of the finest of those Evening Primroses characterised by a low trailing growth and large blossoms, which attain their fullest expansion towards evening. Œ. acaulis, a much inferior plant, has smaller flowers, but possibly is only a variety of Œ. taraxacifolia. Both are hardy and perennial in light soils, but in wet and heavy soils they often perish during winter. Œ. taraxacifolia has a fine effect in rich deep soil in the rock-garden, where its trailing stems can droop over the ledge of a block of stone. The flowers, 2½ to 3½ in. across, are pure white when they open, but gradually change to a delicate pink.

Œ. triloba is a handsome hardy annual species, of dwarf growth, with large and showy yellow blossoms. It is also called Œ. rhizocarpa. Other showy annuals are Œ. sinuata and its variety maxima, Œ. macrantha, odorata, bistorta, Veitchiana, and Drummondi. These are all worthy of culture, requiring the treatment of half-hardy annuals, and ordinary garden soil.

Olearia (*Daisy Trees*).—All those plants which have been known by the name Eurybia must now be called Olearias. This gives us a genus of over eighty species, all of them natives of New Zealand and Australia. Most of the kinds in cultivation here are natives of the former country. But amongst the Australian species there are many beautiful shrubs which would pay for their introduction. Indeed, O. insignis is exceptional amongst the New Zealand kinds, but resembles some found in Australia. In the latter country there are species with large flowers in which the ray florets are blue. The genus is very closely related to Aster, which is so extensive in the northern hemisphere, especially in America.

The species already in cultivation are really useful and handsome shrubs, easily cultivated, evergreen, free-flowering, and of good habit. The only drawback is their not proving hardy, except in warm localities. Still, there are a great many gardens where they will grow and thrive, and there is also the chance that in time most of the kinds will get acclimatised sufficiently to bear an ordinary English winter. Some of them, as, for instance, O. insignis, are good greenhouse plants.

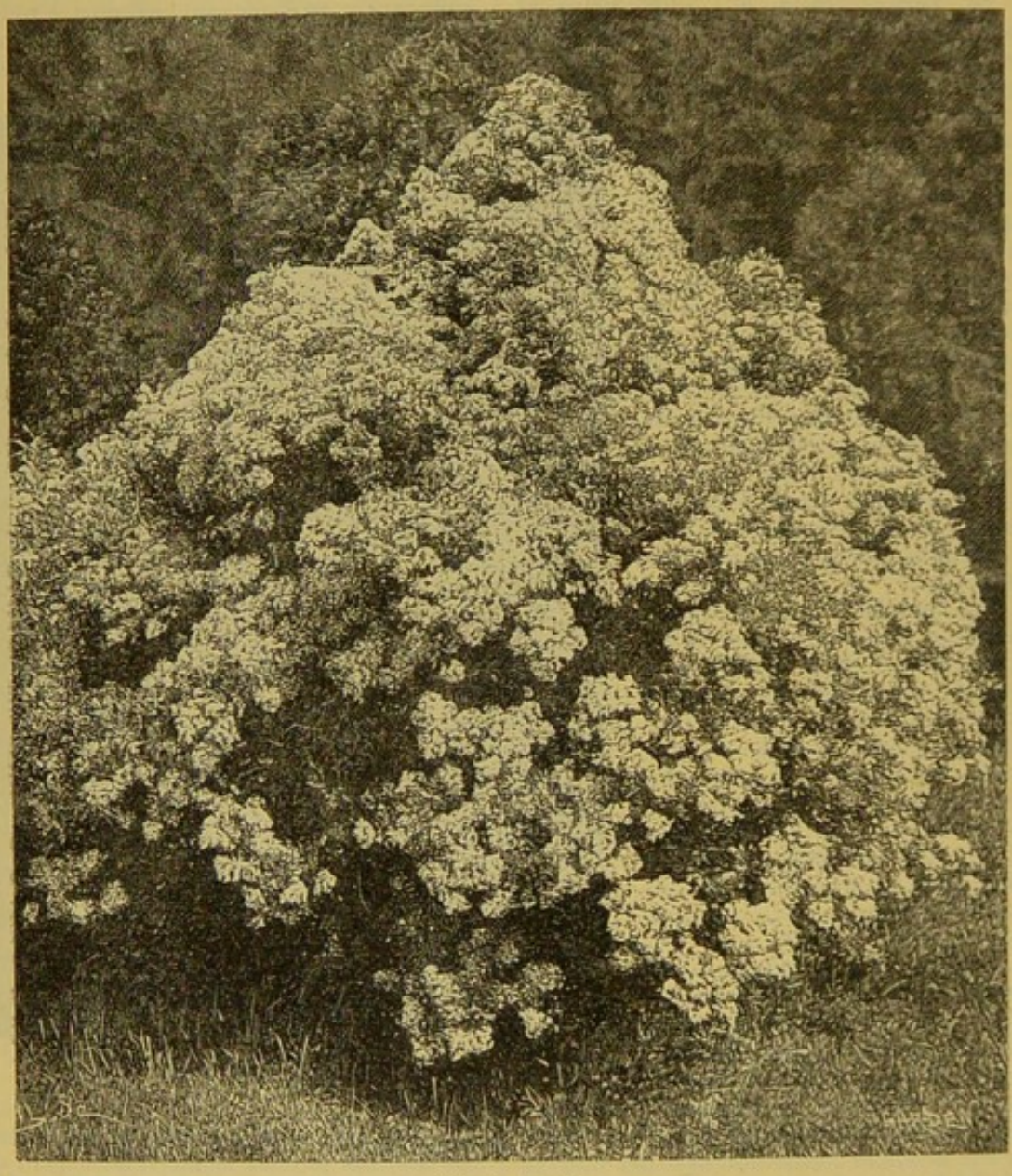
An Evening Primrose (Œnothera Lamarckiana).

O. insignis.—The plant is dwarf, branched, the branches as thick as the little finger; the leaves from 3 to 5 in. long, 2 in. broad, rounded at the ends, thick and hard, shining green on the upper surface. With this exception the whole plant is covered with a thick, felt-like coating of pale brownish tomentum. The flowers are on erect peduncles, which are as thick as a goose-quill and from 6 to 9 in. long; the flower-heads are a little over 2 in. across; remaining fresh on the plant for about six weeks. This plant is one of the most interesting and prettiest of the composites which are found in New Zealand. It is a native of

Middle Island, where it is said to grow on the driest rocks.

O. argophylla is the Muskwood of Tasmania and New South Wales, the whole plant smelling very strongly of Musk when bruised, a single leaf rubbed in the hand emitting a powerful and agreeable odour. Large plants of this species are grown in the greenhouse at Kew, where it forms a shrub covered with oblong, toothed leaves, which are clothed with silky hairs. The flowers are small, but the plant is worth growing for its fragrance, and is of the easiest culture, requiring greenhouse treatment.

O. dentata is cultivated in the Scilly Isles and other warm districts, where it forms a large bush covered with rusty brown tomentum, except on the upper surface of the leaves. The flowers are over 1 in. across and numerous, in terminal racemes; the ray florets number about twenty, each ½ in. long, curved upwards, forming a saucer-like head; white, tinted with rose, the disc being bright yellow. This is a beautiful flowering shrub which would probably thrive in the south of England in sheltered situations. It grew well at Kew against a wall for several years, but was destroyed by a very severe winter. New South Wales. For the plant introduced from New Zealand under the name of O. dentata, see under O. macrodonta.



Olearia Haasti.

O. Gunniana is hardy in the south of England. At Coombe Wood it thrives without any protection on a slope and planted in light sandy loam, producing every summer a mass of beautiful blossoms. It forms a bush, with small, toothed, green leaves, the under

surface, and other parts of the plant covered with white, felt-like tomentum. The flowers are very abundant, clothing the branches with a mass of white Daisy-like blooms, borne singly on the ends of hundreds of tiny branches, 1 in. across, with about a dozen ray florets, ½ in. long and white, the disc being yellow. Tasmania.

O. Haasti.—This is hardy in most parts of England, growing to a large size in the more favoured localities, and if planted in large groups it has a good effect when covered with its thousands of Aster-like flowers, and even out of bloom it is attractive. In New Zealand, where it is found at altitudes of about 4,000 ft., it forms a small shrubby tree. The flowers are very numerous, in terminal corymbs, the ray florets ¼ in. long, white, the disc yellow. The plants usually bloom in August, and remain in perfection several weeks.

O. ilicifolia is very similar to O. macrodonta, differing in being less thickly covered with down, sometimes almost glabrous, and the leaves longer and narrower. The flower-heads are exactly the same in both species. A plant is growing against a wall at Kew, where it flowers in June. New Zealand.

O. macrodonta.—This is the O. dentata of the New Zealand Flora, there being another dentata, the true one, native of Australia, and described above. Mr. Gumbleton, of Cork, who grows these plants successfully, describes O. macrodonta as being hardy with him, and a profuse blooming and ornamental shrub. I saw it in flower on a sunny border last year at Kew, the plant being about 2 ft. high, with large silver-green, Holly-like foliage and dense heads of whitish flowers. When fully grown it attains a height of 20 ft., the stem 2½ ft. in diameter at the base, the branches stout and forming with the leaves a round, somewhat flattened top, which is hidden by dense heads of white flowers in the month of August. The foliage smells agreeably of Musk.

O. myrsinoides was cultivated in Mr. Jackman's nursery at Woking, and is described as being as handsome a shrub as O. Haasti. It is a low bush, the short dentate leaves, as well as the branches, being covered with silky down underneath. The flowers are small, in panicles on the upper portions of the branches. Here it is said to be as hardy as O. Haasti. Tasmania and New South Wales.

O. nitida.—Mr. Gumbleton grows this at Cork, where it is hardy, and flowers freely, forming a large bush, clothed with leathery leaves about 2 in. long, the branches and under surface of the leaves covered with a thick silvery down. The flowers are in crowded heads or corymbs, very small, but numerous, white with a yellowish disc. This species is a native of New Zealand, at 4,000 ft. altitude.

O. ramulosa.—This is a handsome little shrub which has been in cultivation many years under the name of Eurybia ramulosa. It is covered with a rough pubescence; the flowers numerous on long, curving branches, forming elegant sprays of pretty, starry blossoms; small, but so abundant, that the effect of a well-grown plant when in flower in September is charming. Tasmania and New South Wales.

O. stellulata was one of the first species introduced, and it was cultivated by Knight at Chelsea, and by Loddiges at Hackney at the beginning of this century. It has lately been spoken very highly of by Mr. Hartland and others in Ireland. It grows to a height of about 5 ft.; the leaves varying in length from ½ in. to 2 in., the upper surface green, the rest of the plant covered with a rusty tomentum; flowers in leafy panicles, long and graceful in form; each flower is small, Daisy-like, white, with about a dozen ray florets. When grown against a wall this species flowers very freely in June and July. There are several varieties of it described by botanists. Tasmania and New South Wales.

O. Traversi.—This is the bastard Sandal Wood of Chatham Island, where it is the most valuable of the native timber trees, 35 ft. high, with a stout trunk and many branches. It flowered a year or two ago outside at Cork and at Stranraer, and has leaves 2 in. long, the upper surface smooth green, all the rest of the plant covered with silky down. The flowers are numerous in axillary and terminal panicles, small and creamy white. Except in favoured localities it is hardly likely to thrive out of doors.

O. corymbosa has been noted in *The Garden* as a hardy species cultivated in England, but I cannot ascertain where.

O. gummosa is also mentioned in *The Garden* as a pretty species, which thrives in the neighbourhood of Newry.—W.

Omphalodes (*Navelwort*). — Pretty plants belonging to the Borage order and really useful in the flower garden.

O. linifolia, a beautiful Portuguese hardy annual, 9 to 12 in. high, with glaucous-green leaves and pure white flowers from June to August; it may be grown in ordinary soil, the seeds sown at intervals from April to June, or in September and October; the plant often sows itself.

O. Luciliæ, a charming rock-plant, has flowers twice the size of O. verna, of a pretty lilac-blue, and harmonising beautifully with the glaucous gray of the foliage. It is hardy, and succeeds in a warm border or the rock-garden, where its branches hang over the ledges, but the place must be thoroughly drained, for though the plant requires abundance of water during growth, it suffers from stagnant moisture. To protect it against slugs, which are fond of it, strips of perforated zinc, about 3 in. wide, bent so as to form rings round the plants, are used. O. Luciliæ is increased by division or by seeds. It grows freely in some soils, as, for example, in Wheeler's nursery at Warminster. Asia Minor.

O. verna (*Creeping Forget-me-not*).—A

charming little plant, bearing in early spring handsome flowers of a deep clear blue with white throats. These flowers remind one of a Forget-me-not, and the plant is excellent for the rock and spring garden: no plant is more worthy of naturalisation; in cool, moist, thin woods

Omphalodes Luciliæ.

it runs about as vigorously as any native plant; it thrives by woodwalks, and also in open places, and in any position is one of the prettiest plants. There is a white variety, but it is not so pretty as the blue kind.

Onoclea sensibilis.—This handsome hardy Fern belongs to the group known as "flowering Ferns," from the fertile frond being contracted so as to give it the appearance of an unopened spike of flowers. The fronds are a beautiful fresh green, especially in spring. Though not very fastidious as to soil, it succeeds best in a cool and moist situation, such as the base of the rock-garden, or in the American garden, especially if a little sheltered by neighbouring plants. If the fronds are allowed to remain on the plants until they appear to be ripe, it will be found that the spore-cases are open and the spores shed, as they drop while the fronds look quite green, therefore the best way is to cut off the frond as soon as indications of bursting are perceived, and to lay it in a sheet of paper for a few days, when all the spores will drop out. N. America.

Ononis (*Rest Harrow*).—Hardy plants of the Pea family of which the wild Liquorice (O. arvensis) is one of the prettiest of our wild plants, and is worthy of cultivation on banks and in the rough rock-garden, forming dense tufts covered in summer with racemes of pink flowers. The white variety is also good, and is worthy of a better position than the common form, which grows in any soil. No plants are more readily increased from seed or by division. It is distinct from the spiny O. campestris, which has stems nearly 2 ft. high, and sometimes more. O. rotundifolia is a distinct and pretty plant, which is hardy, and easily cultivated, flowering in May and June and through the summer; it attains a height of 12 to 20 in. according to soil, and is suitable for the mixed border or the rougher parts of the rock-garden. Seeds or division. Pyrenees and Alps. These are the best of about half-a-dozen garden species, which also include O. fruticosa, Natrix, and viscosa.

Onopordon (*Cotton Thistle*).—These noble plants, usually left to the botanic gardener, are valuable for their stately port and showy flowers. They thrive in exposed places and among shrubs in sheltered ones, and may be effectively used in a variety of ways. Moderation in their use, however, is desirable, as in some situations they seed so freely as to require judicious keeping down. O. Acanthium (Down Thistle) is a bold and vigorous native plant. With very large, stout branching stems, often more than 5 ft. high, covered with long, whitish web-like hairs, and bearing large heads of purplish flowers. The habit of O. illyricum is more branching, the leaves and stems are much more spiny, the stems are stiffer and the leaves are greener and more deeply cut. O. arabicum is 8 to 10 ft. high, is erect and very slightly branching, and both sides of the leaves, as well as the stems, are covered with white down. O. græcum is also a handsome plant.

Onosma (*Golden Drop*).—Borageworts, of which O. tauricum was introduced about the beginning of the present century, and is among the finest of hardy flowers. It is an evergreen perennial, 6 to 12 in. high, soon forming dense tuft, and bearing

in summer drooping clusters of clear yellow almond-scented blossoms, which have gained for it the name of "Golden Drop." The best place for it is the rock-garden, drained, with a good depth of soil, so that the plants may root strongly between the stones, the soil a good sandy loam, mixed with broken grit. Seeds or cuttings. Mountains of Greece. O. echioides requires similar treatment, excepting that the plants must be raised every year and planted out in the rock-garden to flower. It seeds freely in warm seasons, is biennial, and less valuable for the garden than O. tauricum, which it resembles in habit, save that its flowers are paler yellow and not so pretty.

Onosma tauricum (Golden Drop).

Onychium japonicum.—This elegant Japanese Fern, often grown in the greenhouse, is hardy in most situations. In severe winters, however, some common Brake may be thrown over it. The fronds are finely divided, an intensely dark green, from 1 to 2 ft. high, and useful for bouquets, or for placing loosely in vases with cut flowers.

Ophioglossum vulgatum (*Adder's-tongue*) is a native Fern not often seen in gardens; found in moist meadows; and the best position for it therefore is in colonies in the hardy fernery or the moist stiff soil in the rock-garden. O. lusitanicum, a dwarf variety, is interesting, but capricious, and difficult to cultivate.

Ophiopogon (*Snake's-beard*).—Herbaceous perennials, about 1½ ft. high, the flowers, usually small, lilac, appearing late in summer and in autumn in spikes, 2 to 5 in. long, rising from grassy tufts of evergreen foliage. They thrive in borders or margins of shrubberies in sandy loam, but are scarcely ornamental. O. japonicus, Jaburan, spicatus, Muscari, and longifolius are the best known, and usually in botanical collections. In Italy they are used to form green turf, in lieu of Grass, which perishes from the heat. Division. Japan and India.

Ophrys.—Small terrestrial Orchids, singularly beautiful, and among the most curious of plants. Many have been in cultivation, but these being tender plants, chiefly from S. Europe, they must have protection, and require much attention. A few native species, however, can be grown in gardens, and of these one of the most singularly beautiful is the Bee Orchis (O. apifera). This varies from 6 in. to more

than 1 ft. in height ; it has a few glaucous leaves near the ground ; flowers in early summer, the lip of a rich velvety brown with yellow markings, bearing a fanciful resemblance to a bee. It is usually considered difficult to grow, but it may be easily kept on dry banks in the rock-garden, in a firm bed of calcareous soil, or of loam mixed with broken limestone. It thrives best if the soil be surfaced with some very dwarf plant, or with an inch of Cocoa-fibre and sand, so as to keep it moist and compact about the plants. Other interesting species for a collection of hardy Orchids are O. muscifera, arachnites, aranifera, and Trolli.

Opuntia (*Prickly Fig*).—There are several of these succulent plants in cultivation, but few are hardy enough for the open air in our climate. The hardiest are O. vulgaris, missouriensis, humilis, brachyantha, and Rafinesquei ; the finest of these is O. Rafinesquei, an evergreen well worthy of culture, bearing in summer large showy yellow blossoms on fleshy branches ; thriving in a sunny corner of the rock-garden in good dry soil, and sheltered from any passing danger to the stems, for it is rather fragile, and anything brushing against it would injure it ; by the skilful placing of a few rough stones, it is easy to prevent injury without shading the plant. To prevent splashings, the ground might be surfaced with a dwarf mossy Saxifrage or Sandwort. Snails and slugs are fond of this plant, and in the spring, and even in mild winters, may destroy it. A dressing of soot will keep away these pests. To increase the plant, the cutting, a single joint, is potted in sandy soil, and the pot placed in a sunny airy spot under glass and watered very sparingly, and in a short time it will form roots, and commence to push out young shoots. The hardier kinds are from N. W. America, where the winters are severe.

Orange Ball-tree (Buddleia).

Orchis.—These terrestrial Orchids are beautiful, and well worth cultivation among hardy flowers. Those who do not want a full collection will find the species mentioned below easily grown if placed under good conditions at the outset ; some of our native Orchids are worth a place, but few succeed with them, chiefly because the plants are transplanted at the wrong season. The usual plan is to transplant just when the flowers are opening, but at this period of growth the plant is forming a tuber for the following year, and, if this is in any way injured, it dies. If, instead of this way, the plants are marked when in flower and allowed to remain until August or September, when the tubers are matured, the risk of transplanting is lessened, provided the plant be taken up with a deep sod. The ground where the plants grow may be surfaced with such plants as the Balearic Sandwort, Lawn Pearlwort, and the mossy Saxifrages. The situation for Orchids should be an open one, and the soil a deep, fibry loam in a drained border. The following are the kinds most worthy of culture :—

O. foliosa.—A handsome Orchid, one of the finest of the hardy kinds, 1 to 2 ft. or more in height, with long spikes of rosy-purple blossoms in May, lasting long in bloom. It delights in moist nooks at the base of the rock-garden, or in the bog-garden in deep light soil. Madeira.

O. latifolia (*Marsh Orchis*).—A fine native kind, 1 to 1½ ft. high, with long spikes of purple flowers in early summer. It thrives in damp boggy soil, in peat or leaf-mould. There are several beautiful varieties, the best being præcox and sesquipedalis ; the last being one of the finest of hardy Orchids, about 1½ ft. high, and a third of the stem is covered with purplish-violet flowers.

O. laxiflora is a pretty species, 1 ft. to 18 in. high, with loose spikes of rich purplish-red flowers, opening in May and June, and thriving in a moist spot in the rock-garden. Guernsey and Jersey. Division.

O. maculata (*Hand Orchis*).—One of the handsomest of British Orchids, and pretty in the poorest soils, but finer in rich soil, and if well grown in moist and rather stiff garden-loam its beauty will surprise even those who know it well in a wild state. Carefully plant patches of twelve or twenty tubers in a moist deep soil, and when the plants form dense tufts two or three years afterwards they will be as beautiful as Orchids from warmer climes. They flower in summer, and may be associated with other hardy Orchids or planted in mixed borders. The variety superba is a fine plant, and should be secured.

Other beautiful kinds, but more or less difficult to establish in gardens, are O. papilionacea, purpurea, militaris, mascula, pyramidalis, spectabilis, tephrosanthos, and Robertiana.

Orchis Bee (*Ophrys*).

O. Butterfly (Habenaria).

O. Fly (*Ophrys*).

O. Hand (Orchis maculata).

Oreocome Candollei is a hardy perennial, effective for the margins of shrubberies, or for planting singly, making a pyramid, 5 ft. in height, with large leaves

finely divided, recurving gracefully, of a fresh green colour, with umbels of pure white flowers rising above the foliage. It grows well in any ordinary garden soil. Himalayas. Umbelliferæ. Division.

Oreodaphne californica (*Californian Bay*).—A handsome and fragrant tree, rare in our country, and though not hardy in every part of the country, there are places where it would thrive. When pressed the leaves emit a powerful and agreeable odour, which sometimes has injurious effects. They are largely used for making bay water.—A. D. W.

Origanum (*Marjoram*).—The common O. vulgare is scarcely ornamental, but O. Dictamnus (Dittany of Crete) is a pretty plant, somewhat tender, and best grown under glass rather than in the open air, though during mild winters it may survive. It has mottled foliage, and small purplish flowers, in heads like the Hop, hence the name Hop-plant. O. Sipyleum is similar, and is quite as pretty. In the open air these plants should have a warm spot in the rock-garden.

Orchis foliosa (Madeira Orchis).

Ornithogalum (*Star of Bethlehem*).—Bulbous plants, some of them hand-

some, others not very distinct, but all useful in the Grass and in borders, in any good garden soil.

O. arabicum.—This is one of the most charming of the genus, and although not strictly hardy it does well out-of-doors in warm spots in the south. Its large green leaves appear in October, the flowers in March or April, borne in spikes, 1 to 2 in. across, pure white, and handsome. Algiers.

O. armeniacum. — A well-marked kind belonging to the umbellatum group; flowers in May, from six to ten in a dense corymb, white, with the exception of a broad green keel; the leaves gray-green with incurved margins. Armenia.

O. comosum.—A pretty little kind, useful for shallow ledges on the rock-garden, 4 to 6 in. high; the leaves narrow, thick, and recurved; flowers numerous in flat heads, milk-white, with yellowish anthers; in May and June.

O. exscapum.—A dwarf kind (2 in.), in spring with umbels of large white flowers just above the neck of the bulb; the leaves a little longer, narrow and reflexed. It succeeds well on dry stony ground, in the full sun. S. Europe.

O. glaucophyllum.—A close ally of O. umbellatum, which it resembles in habit, with flat, glaucous leaves, without any trace of a central marking; flowers in early summer, ten to twenty in a corymb, pure white on the inside, the outside green.

O. latifolium.—A handsome kind of the O. pyramidale section; the root-leaves are broad, sword-shaped, and spreading; the flower-stems 1 to 3 ft. in height, bearing a long spicate head of large white flowers—over a hundred on a robust plant, in May and June. It is hardy, and charming for grouping among dwarf shrubs in borders, and also, like many of the group, for naturalisation in grassy places. Tauria.

Arabian Star of Bethlehem (Ornithogalum arabicum).

O. narbonense.—A tall species from Southern Europe, and nearly allied to O. pyrenaicum; differing, however, in its dwarfer habit, its longer flower-stalks with no yellow in the flower, and is a finer plant, with a flower-stem 1 to 2 ft. high, bearing in early summer about fifty blooms in a dense raceme, white with a green stripe along the mid-rib.

O. nutans.—A graceful easily grown kind. In borders amongst other named

bulbs, however, it becomes a nuisance, on account of the freedom with which its bulbils are formed. In a rough grassy place it is at home, and flowers in April and May in racemes, drooping, green on the outside, whitish-green inside. O. Boucheanum is a variety with larger flowers. S. Europe.

O. pyramidale.—Nyman in *Flora Europæ* describes it as a garden or cultivated form of O. narbonense, but it differs; in robust plants the flower-stems grow 3 to 4 ft. in height, bearing pyramidal clusters of pure white flowers, marked with green stripes on the back, the long narrow leaves often withering before the flowers are fully open. It is a charming species for borders and for massing amongst shrubs, where, if left undisturbed, it gives bold effects.

O. pyrenaicum is found in many localities in Britain, but is not a showy species; the flowers, yellow and green, borne on long racemes in summer; the leaves fleshy, bright green.

O. sororium.—A charming dwarf kind allied to O. exscapum, discovered in the Cicilian Taurus; the flowers in crowded bunches, pure white, with a broad stripe of green down the back, in May.

O. umbellatum (*Common Star of Bethlehem*).—One of the best-known and most beautiful; useful for borders, a first-rate bulb for naturalising in Grass; its flowers, white, in loose umbels on stems about 6 in. in height, in May and June. Europe.

O. unifolium.—A pretty dwarf kind, one-leaved, but with many flowers, in loose racemes, pure white, and, though not very large, attractive on the rock-garden.—D.K.

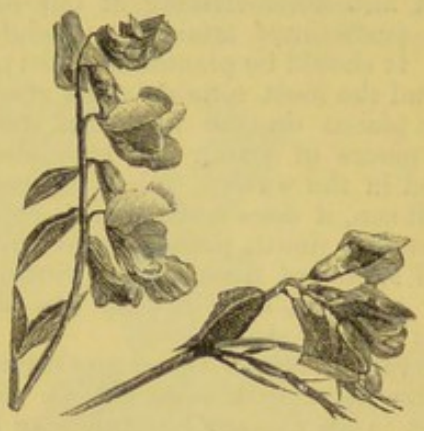
Ornus europæa (*Flowering Ash*).—A handsome flowering tree of medium growth, suitable for lawns, or for grouping with larger trees making a round-headed tree, generally not exceeding 30 ft. in height. Its foliage resembles that of the common Ash; in early summer, usually about the end of May, it bears large plume-like clusters of flowers of a yellowish white; a South European tree, it is hardy, although its young foliage is sometimes injured by late frosts. There are various so-called species of Ornus (now placed in the genus Fraxinus) which do not differ materially from the common O. europæa. O. floribunda is a native of the Himalayas, more tender than the European species, but lives well in warm southern districts.

Orobus (*Bitter Vetch*).—Often pretty plants of the Pea Order, flowering usually in spring. They are suitable for the mixed border, for the rougher parts of the rock-garden, or for naturalising. We mention only the distinct kinds.

O. aurantius is a handsome plant, 18 to 24 in. high, with orange-yellow flowers in early summer. O. tauricus is a nearly-allied species, also with orange flowers. Both require to be well established before they bloom freely, and they are useful for borders in ordinary soil.

O. lathyroides is a lovely border plant, 18 to 24 in. high; its bright blue flowers borne in dense racemes; increased freely by seeds, and thrives in ordinary soil.

O. vernus (*Spring Bitter Vetch*).—One of the most charming of border flowers. From black roots spring healthy tufts



Spring Bitter Vetch (Orobus vernus).

of leaves with two or three pairs of shining leaflets; the flower-buds appearing soon afterwards, almost covering the plant with beautiful purple and blue blooms in April.

Besides the type there are varieties:—tenuifolius, with narrow leaflets and flowers similar, though the habit is more lax; flaccidus, similar to tenuifolius, but brighter and denser, and with broader leaves; cyaneus, the most attractive, larger and possessing a strange intermixture of colours, some a bright blue, others a greenish-blue. Then there is a double-flowered kind and a pure white variety, all thriving in deep warm soils.

Some other species useful for borders and the rock-garden are—O. pubescens, O. canescens, O. varius, and O. Fischeri, but O. vernus and its forms are the handsomest. All are of easy culture in ordinary garden soil, and are increased by seeds or division of the root.

Orontium aquaticum (*Golden Club*).—A handsome aquatic perennial of the Arum family, 12 to 18 in. high; in early summer its narrow spadix is densely covered with yellow flowers, which emit a singular odour. The plant may be grown

on the margins of ponds and fountain-basins, or in the wettest part of the bog-garden. North America.

Orychophragmus sonchifolia. — A scarcely hardy plant of the Wallflower Order. An annual, and under certain conditions biennial, or even perennial. A showy plant about 2 ft. high, its violet-blue flowers borne in loose terminal racemes. It is worth growing in warm districts as a half-hardy annual. *Syn.*, Moricandia. China.

Osmunda (*Royal Fern*). — So-called "flowering" Ferns made familiar by our native Royal Fern (O. regalis), which is found in many bogs and marshy woods, and is well worth cultivating, as it is the largest and most striking of our native Ferns (sometimes attaining a height of 8 ft.). It should be planted in moist peaty soil, and the most suitable spots are half-shady places on the banks of streams or of pieces of water. It may also be planted in the water. When exposed to the full sun, it does well, with its roots in a constantly moist, porous, moss-covered soil, if sheltered from strong winds. In shady positions and in deep bog soil it attains a great size.

The various North American Osmundas may be associated with it. O. cinnamomea is an elegant N. American Fern with pale green fronds; the variety angustata is smaller, and the fronds are less inclined to droop. This species, like O. regalis, is deciduous. O. Claytoniana is another deciduous species, and has vivid green fronds, 2 to 3 ft. high. O. interrupta is the same. O. gracilis is a native of Canada, somewhat resembling a dwarf form of our Royal Fern, the fronds about 2 ft. high. O. spectabilis is a slender form of O. regalis; its fronds are smaller, and the young ones come up reddish-purple. North America. These exotic species are of the simplest culture in the hardy fernery, in moist peaty soil.

Ostrich Fern (Struthiopteris).

Othonna cheirifolia (*Barbary Ragwort*).—A distinct Composite plant, with whitish-green tufts, 8 in. to 1 ft. high, or on rich soils perhaps more. It is a spreading evergreen, flowering sparsely on heavy and cold soil, but on light soils often blooming freely in May; the flowers yellow, about 1½ in. across, but not pretty. It is useful from its distinct aspect on the rough rock-garden or in the mixed border. Cuttings. Perishes in severe winters, at least on clay soils. Barbary.

Ourisia coccinea. — A bright dwarf Chilian creeper, bearing in early summer scarlet blossoms in slender clusters, 6 to 9 in. high. Though hardy, it is reputed difficult to grow, and it should be placed against a block of soft porous stone in a moist place, such as the foot of a wall with an east aspect. Its creeping stems will soon run over the stone, and it will flower freely. Scrophulariaceæ.

Ostrowskya magnifica (*Great Oriental Bellflower*).—This remarkable and handsome hardy plant was found by Dr. Regel on the higher mountains of Chanat Darwas, in Eastern Bokhara, and is like a huge Platycodon in aspect, but distinct, the flowers being of great beauty, several inches across, of a delicate purple, veined and varying from seed; the leaves are in whorls. The plant likes a deep sandy loam, as the carrot-like roots when of full size go down to a depth of 2 ft. They must be carefully handled as they are very brittle. The Ostrowskya does not apparently thrive equally in all places, and is often disappointing. Seeds germinate readily in a cold frame, but a few years elapse between sowing and flowering.

Oxalis (*Wood Sorrel*). — Dwarf and often pretty perennial or annual plants, for the most part more happy and free in temperate countries, but some hardy with us on warm borders and on the rock-garden. They all thrive best in a sandy soil in the warmest and driest place in a garden. The following are the best kinds for our gardens:—

O. Bowieana.—A robust species, forming rich masses of leaves, 6 to 9 in. high, and umbels of rose flowers continuously throughout the summer, suitable for warm borders at the foot of a south wall. In cold soils it seldom flowers, but on very sandy, warm, and well-drained soils it flowers abundantly, and when this is the case it may be used with effect as an edging to beds of autumn-blooming plants, and where it does well it is one of the most precious of hardy flowers. Division. Cape of Good Hope.

O. floribunda.—A free-flowering kind, hardy in all soils; for months in succession it bears numbers of dark-veined rose-coloured flowers. The white-flowered variety flowers as freely as the rose-coloured form, and both are very useful for the rock-garden and for margins of borders, and are easily increased by division. O floribunda appears to be the commonest kind of Oxalis in cultivation. America.

O. lasiandra.—A distinct and beautiful kind, with large dark green leaves, and in early summer umbels of bright rose-coloured flowers, and useful for warm borders and the rock-garden. Mexico.

O. lobata.—A stemless little plant with three deeply-lobed bright green leaflets, and blossoms about ¾ in. across, rich yellow, the centre delicately pencilled with chocolate. A free-flowering bright little plant during sunshine, thriving in warm sandy loam on well-drained borders. It survives mild winters unprotected. Chili.

O. luteola is one of the prettiest, forming a compact tuft ; the flower-buds ½ in. in length, and a soft creamy-yellow, but when open they are as large as a half-crown, and pure white, shading to yellow towards the centre ; it is not hardy, but in light sandy soil will survive a winter if protected.

O. Acetosella (*Stubwort, Wood Sorrel*).—The prettiest of the kinds known so far for our gardens is our native Wood Sorrel, which bore in old times the better name of "Stubwort"—a name which should be used always. This grows itself in such pretty ways in woody and shady places that in many gardens there will be no need to cultivate it. Where it must be cultivated it will be happy in the hardy fernery or in shady spots in the rock-garden, or under trees, or the lawn, or in any shady or half-shady places in ground not dug.

There are other species worthy of a place, especially on very dry sandy soils, and among them are O. Smithi, rosea, Deppei, speciosa, arborea, violacea, versicolor, incarnata, tetraphylla, venusta, and corniculata. O. corniculata rubra is sometimes used for bedding, and should always be encouraged where there are old quarries and rough rocky places, especially in a calcareous district, for this handsome plant speedily covers the most unpromising surfaces. In gardens, however, this Wood Sorrel becomes a troublesome weed. If a collection be grown, it should be borne in mind that it is very difficult to preserve the correctness of the names, for the minute bulblets become mixed up with the earth, and the elasticity of the seed-pods permits the seeds to scatter in all directions.

Ox-eye Daisy (Chrysanthemum Leucanthemum).

Ox-eye, Great (Pyrethrum).

Oxlip (*Primula*).

Oxytropis.—Plants of the Pea family, nearly allied to Astragalus, the best of which is O. pyrenaica, a dwarf species, with pinnate leaves covered with silky down, barely rising above the ground, the flowers a purplish-lilac, barred with white, and borne in heads of from four to fifteen in early summer. It is a native of the Pyrenees, rare in gardens, and increased by seed or division. It should be planted on well-exposed and bare parts of rock-gardens, in firm, sandy, or gravelly soil. O. Halleri has charming, compact flowers, of a decided self colour—as deep a blue as that of the Gentians, and proves a manageable plant in the rock-garden in deep moist loam. O. uralensis, a dwarf species from the Ural Mountains, has rosy-blue flowers in compact heads, about 4 in. high. Other kinds are—O. montana, fœtida, strobilacea, campestris, and its several varieties ; all of these are dwarf, and thrive in sandy loamy soil in open spots in the rock-garden.

Oxyura chrysanthemoides.—A neat hardy annual of the Daisy Order, with showy yellow flowers in summer. It should be sown in a broad mass in ordinary soil in autumn, and the seedlings well thinned out. California.

Oxalis Acetosella.

Oyster Plant (Mertensia maritima).

Ozothamnus rosmarinifolius.—A neat little evergreen shrub from Tasmania, almost hardy in the south and coast districts, with small, Rosemary-like leaves, and about the end of summer bearing dense clusters of small white flowers. It thrives in any light soil, and should be planted in an open sunny spot or on a warm bank.

Pachyphyton bracteosum (*Silver bracts*).—A stout, succulent, half-hardy plant, used for placing out in geometrical beds in summer. The thick fleshy leaves form rosettes, and the whole plant has a whitened hue and distinct aspect. Readily propagated by pulling off the leaves and placing them in pans in a dry warm pit or stove.

Pæderota.—Dwarf alpine herbs nearly allied to Wulfenia. There are two species in gardens, the best being P. Bonarota,

which is found among rocks, on the Alps in Austria and Carniola, from 2 in. to 1 ft. high; the flowers small, varying from pink to bright violet, and borne during May and June in dense terminal racemes, 1 to 3 in. long. The other cultivated kind, P. Ageria, is less showy, 1 to 1½ ft. high, and has pale yellow blossoms in May and June. Alpine districts of Carinthia and various parts of Italy.

Pæonia (*Pæony*).—The Pæonies are among the most beautiful of hardy flowers, and are indispensable for the garden. They combine stateliness of growth with beauty of colour and, frequently, delicious fragrance. Though there are several typical species in botanical collections, by far the most important

Ozothamnus rosmarinifolius.

are the hybrid obtained by intercrossing some half a dozen kinds. Pæonies are divided into two groups—the tree or shrubby kinds, comprising the varieties of P. Moutan; and the herbaceous kinds, of which the common P. officinalis is typical. The hybrid sorts have been obtained chiefly from P. officinalis and other European kinds, together with the Chinese species albiflora, sinensis, and edulis, the forms of the latter class being particularly fine. The European varieties flower early and the Chinese late, so that the flowering season is considerably prolonged.

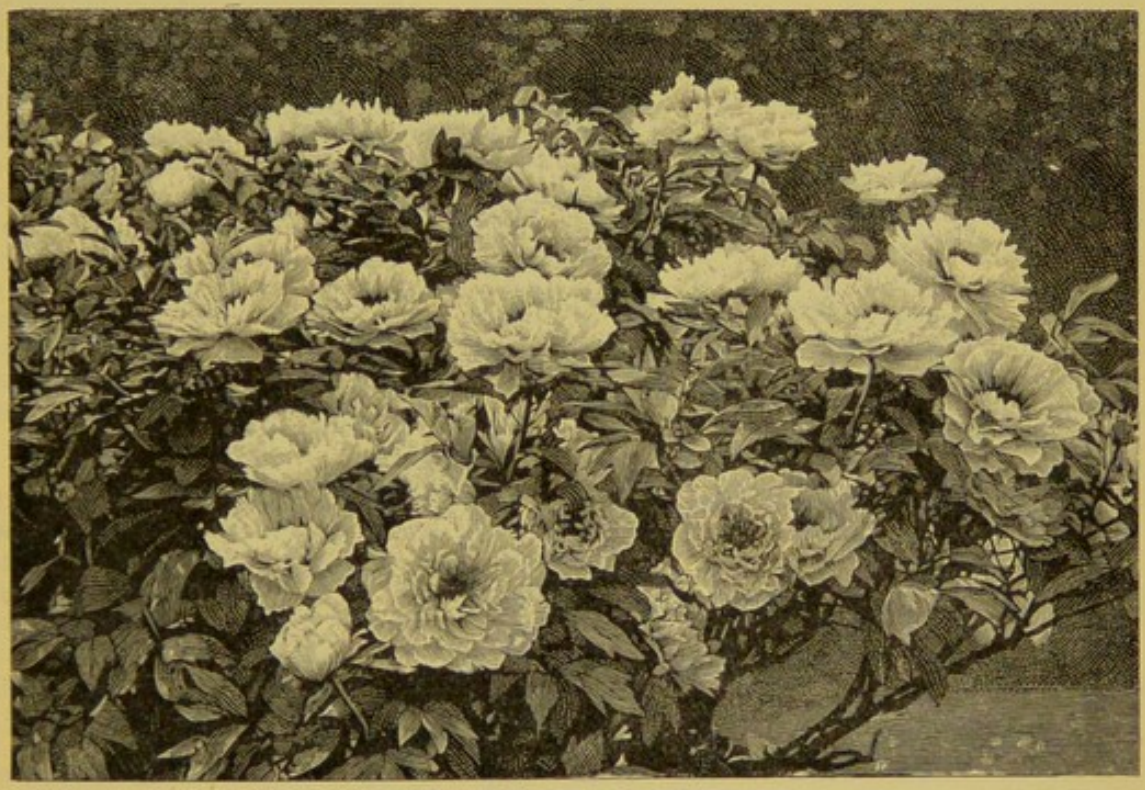
HYBRIDS.—Among these there is an extensive variety of colours—white, pale yellow, salmon, flesh-colour, and numerous intermediate shades from pale pink to brightest purple. Among the oldest varieties the most remarkable are grandiflora, double white; Louis Van Houtte, papaveriflora, rubra triumphans, sulphurea plenissima, rosea superba, Zoé, Mme. Calot, Gloria Patriæ, and Prince Troubetskoy. The most beautiful of more recent date are: Arthémise, atrosanguinea, Virgo Maria, Mme. Lemoine, L'Espérance, Triomphe de l'Exposition de Lille, Jeanne d'Arc, Eugène Verdier, and Mme. Lemoinier; and among those most worthy of notice are: Mme. Lebon, Marie Lemoine, Henri Laurent, Mme. Jules Elie, multicolor, Stanley, Charlemagne, Mme. Geissler, Bernard Palissy, and Van Dyck. There are also many commoner varieties—for example, those varieties of P. officinalis (such as anemonæflora, rubra, and Sabini), of P. albiflora, peregrina, paradoxa, and especially of the small P. tenuifolia, with its feathery foliage and large deep red blossoms. There is also a double variety of this species. These as well as the varieties are perfectly hardy, and need no protection against frost, however severe.

CULTURE.—A good moist loam, enriched with cow manure, is the soil best suited to them. They can be planted at any time, but from October to April is the best time. Have the ground well prepared by manuring and by trenching to the depth of about 3 ft., and plant them at least 4 ft. apart in each direction.

They must not be expected to flower well before the second or third year. An open position renders them robust, and they need not be shaded from the sun until they flower, when some slight shade will prolong and preserve their delicate tints, and enable them to become more thoroughly developed than they otherwise would. As soon as the buds are well formed, water the plants judiciously now and then with liquid manure. When the tufts have become very strong, and have impoverished the soil, separate and transplant them in fresh ground.

POSITION.—Most gardens contain spots so shaded that few plants will thrive in them. In such places Pæonies would grow luxuriantly ; and their colour would often be more intense, while they would last much longer than if fully exposed to the sun. They may therefore be made useful as well as ornamental, even in small pleasure-grounds, although their proper place is undoubtedly the fronts of shrubberies, plantations, and the sides of carriage drives. Where distant effect is required, no plants answer so well, as their size and brilliancy render them striking even at a long distance. When planted on either side of a Grass walk, their effect is admirable, especially in the morning and about sunset ; and when planted in masses, they are invaluable for lighting up sombre nooks. If grown only for their flowers, or their buds, or for the purpose of increasing them, they may be placed in nursery lines in some rich part of the kitchen-garden.

Besides being used for the garden proper, there are few plants more fitted for the wild garden ; and the most brilliant and one of the boldest things in wild gardening is a group of scarlet Pæonies in meadow Grass, in early summer. This may be managed so that they come into the garden landscape, so to say, and are seen at a considerable distance from certain points of view. So placed, they could not be an eyesore or in the way when out of flower, as they sometimes are in the mixed border. There is a good deal to be done by the tasteful cultivator in considering the positions suited for some kinds of plants ; in deciding, for example, how to arrange plants which are very handsome in spring and early summer, but which do not continue in perfection very long, so that their effect when out of flower, or even their disappearance, shall not mar any arrangement.



Pæonia Moutan (Tree Pæony).

P. Moutan (*Tree Pæony*).—This is another noble plant from which we have beauty, for its varieties, like those of the herbaceous kinds, are very numerous. It is quite hardy, and, when properly

planted, requires little care; precious for borders, and is specially suited for isolation on lawns. Its blossoms are gorgeous in early spring, and its young leaves assume every shade of colour, from violet-crimson to green. Tree Pæonies are not particular as to soil or position; they grow as well in sand as in strong loam, though they prefer a good strong soil. If the soil is too sandy, decomposed manure and loam, or if too clayey, manure, sand, and similar materials should be added. Moutans are gross feeders, and amply repay occasional top-dressings of half-decomposed cow manure. Of the scarcer and better varieties nurserymen generally send out plants one or two years old, which are grafted on the roots of P. edulis. In a proper place, dig out a pit 1½ ft. deep and 2 ft. in diameter; put in a few inches of half-decomposed cow manure, and mix it well with the soil, insert the plants with the grafts buried a few inches under the ground, where they will, in time, throw out roots of their own. The plants do not flower well until the third year after planting, but they afterwards blossom freely in profusion. Being of slow growth, they are not propagated by division to any great extent, but are multiplied chiefly by grafting upon the roots of the herbaceous varieties. This grafting is performed in August. The grafts are placed in frames, where they unite, and in the succeeding year are transplanted in rows in the nursery.

September and October are the best months for planting Moutans, but if planted in pots they may be put out in spring, when all danger of frost is over. Good plants set in autumn produce many flowers the second or third year after planting. Each year they increase in size and beauty, and soon become the most attractive features of the garden. They flower the first of any Pæonies, and put forth their blooms early in May. Until the second half of this century only white, rose, salmon, and lilac sorts were known; and we are indebted to Mr. Fortune for his Chinese varieties, most of which have scarlet, violet, and magenta flowers. Von Siebold, too, introduced a number of Japanese varieties, which, however, form a different race, and are mostly single or semi-double. The following list contains some of the best varieties: Athlète, large, double, lilac; Bijou de Chusan, pure white; Carolina, bright salmon; Colonel Malcolm, violet; Comte de Flandres, very large, rose; Confucius, deep pink; Elisabeth, deep scarlet, very double; Farezzii, large, pale lilac striped with violet; Fragrans maxima fl.-pl., pale rose; Lambertiana, blush rose petals, tipped with violet; Louise Mouchelet, large, double, pink; Madame de Sainte-Rome, bright lilac-rose; Madame Stuart Low, bright salmon-red; Marie Ratier, large, rose; Odorata Maria, pale rose; Prince Troubetskoy, very large, double, deep lilac or violet; purpurea, a deep amaranth, semi-double kind; Ranieri, bright amaranth; Rinzii, very large, bright rose; Rosini, a semi-double, brilliant rose-coloured variety; Rubra odorata plenissima, very large, double, lilac-rose; Souvenir de Madame Knorr, large, double blush; Triomphe de Malines, large, violet, a colour which deepens at the base of the petals; Triomphe de Vandermaelen, very large, and double violet-shaded rose; Vandermaeli, blush, almost white; Van Houttei, large, double, carmine; and Zenobia, white. Some of the most strikingly beautiful, such as Gloria Belgarum, Elisabeth, and Souvenir de Gand, are well worthy of glass—that is, having a sash or two put over them in spring to save them from late frosts and rainy weather. Plenty of air must be admitted, and the flowers gain in an astonishing degree, both in size and colour.

Pagoda Tree (Sophora japonica).

Palafoxia Hookeriana. — A pretty dwarf annual Composite, forming a dense tuft about 1 ft. high, with loose clusters of rosy-pink flowers. It should be treated as a half-hardy annual, and grown in a warm border of sandy soil. Mexico.

Palava.—Mellow-like annuals from Peru and Chili. P. rhombifolia, about 1 ft. high, is somewhat procumbent, and in July and August has rosy-purple blossoms, about 1 in. across. P. moschata is similar, but erect. P. flexuosa, a pretty Chilian plant, about 1½ ft. high, also has rosy-purple blossoms. They all require sowing in heat in early spring, and, when large enough, they should be transplanted to a sheltered part of the open border.

Pampas Grass (Gynerium argenteum).

Pancratium.—The only really hardy kind is the South European P. illyricum, 1 to 2 ft. high, which bears in summer umbels of large white fragrant blossoms. It thrives in a warm exposed border of sandy loamy soil, well drained, the bulbs protected by litter in winter. The plants are better for transplantation about every third year in autumn as soon as the leaves are decayed. Increased by offsets from the parent bulbs. The hardiest of the other species are P. parviflorum, maritimum,

littorale, and rotatum, but these only succeed on warm soils in mild localities, and are best grown in a frame or a cool greenhouse.

Panicum. — Grasses, chiefly tropical, though a few are hardy enough for outdoor cultivation.

P. altissimum is a very handsome hardy perennial Grass, very much like P. virgatum, forming dense erect tufts, 3 to 6½ ft. high, according to climate and soil, the flowers being a dark chestnut-red.

P. bulbosum.—A strong species, with a free and beautiful inflorescence, about 5 ft. high; the flowers spread gracefully. It is suited for grouping near the margins of shrubberies.

P. capillare.—A hardy annual, growing in tufts from 16 to 20 in. high, pretty in full flower, the tufts being then covered with large pyramidal panicles, borne at the ends of the stems and in the axils of the stem-leaves. It grows in any soil, often sows itself, and is suited for borders or beds, being one of the most graceful plants in cultivation.

P. virgatum.—A handsome hardy Grass from North America, 3 to 4 ft. high, forming close tufts of leaves, 1 ft. or more long, and with many graceful tall branching panicles. Admirable for borders or for isolation in the picturesque flower garden or pleasure-ground. Its colour, though quiet, is very pretty throughout the autumn, and even the leaves and stems are pretty when left standing through the winter. Division.

White Poppies.

Pansy. See Viola.

Papaver (*Poppy*).—Some of the most brilliant of hardy flowers, and of the

simplest culture. There are a few good perennials, but the majority are annual and biennial. They range from the tiny alpine Poppy to the stately P. orientale and its varieties. The following is a selection of the best garden kinds :—

P. alpinum (*Alpine Poppy*).—This has beautiful large white flowers, with yellow centres and dissected leaves, cut into fine acute lobes. A native of the higher Alps, it may sometimes be seen in good condition in our gardens, but is liable to perish, unlike a true perennial. It varies a good deal as to colour, there being white, scarlet, and yellow forms in cultivation. The variety albiflorum has white flowers, spotted at the base, while the hairy variety flaviflorum has showy orange flowers. Easily raised from seed. P. pyrenaicum is similar to P. alpinum, but taller : it occurs with white, yellow, and orange-red blossoms, which, however, do not always come true from seed.

P. nudicaule (*Iceland Poppy*).—A dwarf kind, with leaves deeply lobed, and large rich yellow flowers on naked stems, 12 to 15 in. high ; it is handsome for borders or the rock-garden, is easily raised from seed, and forms rich masses of cup-like flowers, but is not a true perennial, and should be raised annually. There are several white, yellow, and orange-red varieties, and one large and handsome. Siberia and the northern parts of America.

P. orientale (*Oriental Poppy*), the most showy of all Poppies, is among the noblest of hardy plants, and the variety bracteatum is larger and handsomer. This variety forms huge masses of handsome foliage ; the flowers on stiff stalks, with leafy bracts at intervals, are 6 to 9 in. across, and of brilliant scarlet, each of the four petals marked inside at the base with a purple-black spot, the whole forming a cross, which gives the flower a striking effect. P. orientale has naked flower-stalks, and as a rule the flowers are pure scarlet, but some have a black spot. It seems as if orientale has been crossed by bracteatum, for there are a good many hybrids in gardens. The fault of this Poppy is its weak stalk, owing to which it does not hold its large flowers erect like its rival, and its bloom is sooner past. There are several varieties besides bracteatum ; concolor has no spots at the inner base of the petals ; triumphans is dwarfer. These are effective for borders, or for isolated masses on Grass, and flourish in almost any well-drained soil. They are most effective in groups in the rougher parts of the pleasure-ground, or in the shrubbery.

P. Rhæas (*Common Corn Poppy*).—The Carnation, Picotee, and Ranunculus Poppies are double forms of the common red field Poppy, possessing almost every colour except blue and yellow ; some being self-coloured, others beautifully variegated. They are also known as French and German Poppies. Some are dwarfer than others, but all are between 2 and 3 ft. in height. Of recent years pretty single forms of the Corn Poppy have become popular under the name of "Shirley Poppies." Being hardy annuals, they can be sown where they are to bloom but should be grown in good soil to bring out fully their size and colour. The seed, being very small, should be sown thinly, and the plants eventually thinned out to 6 or 8 in. apart, so that the lateral shoots may develop and the flowers have sufficient space. Few annuals afford such a brilliant display as the different kinds of Corn Poppy in outlying beds and borders during summer.

Opium Poppies (Papaver somniferum).

P. somniferum (*Opium Poppy*).—This beautiful and variably-coloured Poppy is

a valuable hardy annual. It generally grows about 2½ ft. in height, and varies from white to deep crimson. The double scarlet, the double striped, and the double white are all varieties of it, and their great flower-heads have a bold and striking effect planted in masses. By selection, a type called the Pæony-flowered Poppy has been obtained from them; it has large and very double broad-petalled flowers, which vary in colour from white to dark crimson, and is distinct. P. somniferum and its varieties are treated as hardy annuals in the same way as P. Rhæas.

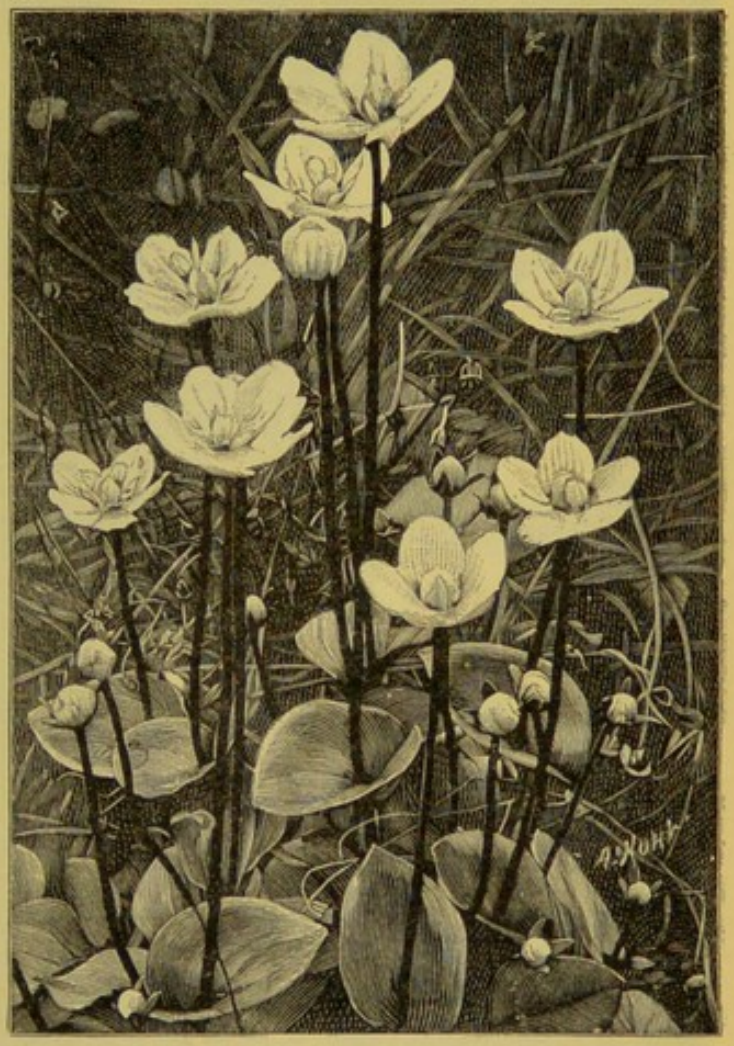
P. umbrosum is a brilliant hardy annual, about 2 ft. high, in habit like the common field Poppy, the flowers dazzling scarlet, with a jet-black blotch on the inner base of each petal, conspicuous also on the outer face of the petals, making masses of the plant a grand sight early in summer. Its seeds should be sown in autumn, so that strong plants may be ensured for the following summer. Caucasus. P. arenarium is another showy annual from the Caucasus. Other handsome Poppies, such as P. spicatum, pilosum, and lateritium, are perennial, and of the simplest culture.

Paradisia Liliastrum (= Anthericum).

Pardanthus chinensis.—An Iris-like plant, 3 to 4 ft. high, with orange-coloured blossoms spotted with crimson, very fugitive, and the plant not being hardy is scarcely worth growing. It should be treated like Ixia and Sparaxis. Iridacæa. China.

Paris quadrifolia (*Herb Paris*).—A native plant, about 1 ft. high, and with yellowish-green flowers. Though not very handsome, it may be naturalised in places where it is not native, and in moist shady spots.

Parnassia (*Grass of Parnassus*).—Interesting and pretty plants for the bog-garden or for moist spots in the rock-garden. In our moist heaths and bogs Parnassia palustris is frequent, and a very pretty plant it is—handsome enough to cultivate in moist spots where it will grow as in its native haunts. Three other kinds, natives of North America, are quite as showy. P. fimbriata has large flowers with peculiar fringe-like appendages, its kidney-shaped leaves resembling those of P. asarifolia, another hardy species, about 9 in. high, which bears similar white flowers without fringes. P. caroliniana differs from P. asarifolia, in having oval or heart-shaped leaves; it flowers about the same time, usually from the beginning of July till the end of August. These hardy Parnassias thrive best in a moist peaty soil or a spongy bog.



Parnassia palustris (Grass of Parnassus).

Parochetus communis (*Shamrock Pea*).—A beautiful little creeping perennial, with Clover-like leaves, 2 to 3 in. high, bearing in spring Pea-shaped blossoms of a beautiful blue. It is of easy culture in warm positions on the rock-garden and the choice border, and where the climate is too cold to grow it in the open air it may be grown in a cold frame. Division or seed. Nepaul. Leguminosæ.

Paronychia.—Small creepers of slight

Passiflora Constance Elliot.

value. P. serpyllifolia, on account of its dense turfy growth, might be used for clothing a dry bank where little else thrives, or for covering a bare space in the rock-garden.

Parsley Fern (Allosorus).

Parsnip, Cow (Heracleum).

Parsnip, Giant (Heracleum).

Partridge Berry (Mitchella).

Pascalia glauca.—A hardy Chilian plant of the Compositæ, related to Heliopsis; an erect perennial, with glaucous leaves and yellow flower-heads, thriving in ordinary soil.

Paspalum.—Grasses, chiefly tropical and sub-tropical. P. elegans is a pretty hardy annual, and is about the only cultivated kind that thrives in the open air and is worth growing.

Pasque-flower (Anemone Pulsatilla).

Passerina nivalis (*Sparrow-wort*).—A dwarf alpine plant, allied to Daphne. About 1 ft. in height, with Mezereum-like blossoms, found at high elevations of the Pyrenees. A rock-garden plant.

Passiflora cærulea (*Passion-flower*).—The hardy blue Passion-flower, so often seen as a wall-climber in southern districts, from its beauty and distinctness deserves to be grown wherever the climate permits. It is not so suitable for arbours or trellises as for walls, the heat from the walls aids in ripening the wood, and so enables it to withstand the winter. A southern aspect is best for it, though it grows against west or east walls, only requiring a good soil, and, perhaps, a slight protection during winter. The white variety, Constance Elliot, is as hardy as the older kind. No other variety of P. cærulea is so distinct, and no other Passion-flower is hardy enough for outdoor walls. The blue Passion-flower first came from Brazil two hundred years ago.

Paulownia imperialis.—A fine flowering tree from Japan,

hardly suitable for our climate generally, though in a few places it succeeds. It comes into flower and leaf so early, that if the winter is mild and the spring late the buds and often the young leaves are injured by late frosts; but, if otherwise, there is a lovely bloom. It is fine in leaf as well as in bloom; the leaves are a foot in length, and have even exceeded 20 in. The flowers are in erect spikes, resembling in form those of a Bignonia; of a delicate mauve purple, blotched inside with a deeper tint. In countries a little warmer than Britain this tree is very beautiful and much used in public gardens and even in street planting. At maturity the Paulownia assumes a dense rounded head, but rarely exceeds 30 ft. in height, although in some south-coast gardens there are trees nearly 40 ft. in height.

If the shoots of young trees are cut back annually, as those of the Ailanthus often are, the Paulownia makes strong shoots bearing enormous leaves, and is then of sub-tropical aspect with the advantage of being much hardier than the house plants used in summer to give such effects. Paulownias are generally best on a light but deep loam, and rarely succeed in very sandy or in excessively stiff soils.

Pavia (Æsculus).

Peacock Iris (Vieusseuxia glaucopis).

Pearl Bush (Exochorda grandiflora).

Pelargonium. — Nearly all Pelargoniums are natives of the southern hemisphere, or have originated as hybrid or cross-bred varieties in European countries. They are often erroneously termed Geraniums, but although allied to the Geranium family they are distinct from it, Geraniums being chiefly natives of the northern half of the globe, all of them being hardy plants. The genus Pelargonium contains many species, which botanists have divided into several sections, and many kinds will grow and flower in the open air during summer, although unable to withstand our winters.

Of all varieties for the flower garden the "zonals" are the most useful, and they are supposed to be descended from two distinct species, P. zonale and P. inquinans. As bedding-out plants they are of great importance; and the facility with which they yield improved forms has led to the introduction of numerous beautiful varieties, of nearly all shades of colour, from white to intense scarlet; while the richest purple and violet shades are also to be found, and these would almost appear to foretell the advent of even a blue Zonal Pelargonium. The Zonal Pelargonium, on account of the brilliancy of its bloom, has sometimes been too freely used in the flower garden, but these matters are now better understood. Among the Zonal varieties there are many with variegated and beautiful foliage, this particularly being the case in that section of the Zonals known as Tricolors, which, on account of their not succeeding so well in some soils as might be desired, are less grown out-of-doors than they deserve. Where they succeed, however, they form very attractive beds, when grown for the sake of their foliage, the trusses of bloom being removed from time to time as they appear. The varieties known as the "bronze zonals" are also beautiful outdoor plants, the free exposure intensifying the rich tints of the leaves.

No plants are more easily increased than these: cuttings may be inserted whenever they can be obtained, and will root freely in any ordinary light or sandy soil, in the open air during summer and autumn, and under glass during winter and spring. The principal stock of plants is, however, generally got by cuttings inserted in pots, pans, or boxes in the open air during the early autumn, such cuttings making the best plants. During winter the protection of glass and the exclusion of frost are essential.

ZONAL PELARGONIUMS FROM SEED may also be treated as annuals, and will bloom in less than ten months from the time of sowing; but the seed should be sown as soon as it is ripe, say during August. Enough seed can always be had by retaining a few plants for the purpose, in front of a greenhouse, in any light, airy spot. If new varieties are sought, recourse must be had to artificial fertilisation; but this is unnecessary if the plants are merely for planting out in the parterre. If the plants used for seed be all of the same sort, the seedlings may be expected to prove tolerably true—*i.e.* the same variety as the plants. The pots should be of convenient size (say 6 in. in diameter), and filled to within ½ in. of the rims with light turfy soil; the seed may be sown rather thickly, gently pressed into the soil, and slightly covered with it. Water with a fine rose, cover the pots with a piece of glass, and place them in a temperature of about 65°; the seeds will soon vegetate, and the piece of glass should then be removed; the plants when large enough should be pricked off into seed-pans and kept near the glass in a reduced temperature during the winter. Early in the following March they should

be potted singly into 3-in. pots and placed in a cold pit, or a similar structure where frost is excluded, until the time arrives when they may be safely planted in the flower garden or wherever they are required. During the early part of the season such plants may bloom less profusely than those from cuttings, but their neat habit and healthy foliage will compensate for this.

Many sorts remarkable for the beauty of their blooms, are, nevertheless, by their habit, unsuited for bedding-out ; and few of the many beautiful double varieties of Zonals can be recommended for outdoor culture, unless as standards, with clean stems, 2½ or 3 ft. in length. In this form they are sometimes effective ; for being compelled to draw sustenance through a slender stem, induces a very free-flowering habit. Strong stakes are needed to support the heavy heads, and the principal branches should be secured to circular hoops. Single varieties may with equal facility be formed into standards, and in their case seedlings are likely to form specimens sooner than plants from cuttings. Before frost, all standards should be well cut back, taken up, and repotted in pots not larger than may contain the

Pelargonium "Niphetos."

roots ; they should be staked and afterwards placed in a temperature not under 60° until they root. Treated thus annually, such plants are often in perfect health, even when twelve or fourteen years old.

Next in importance to the Zonals for outdoor culture are the Ivy-leaved kinds or the varieties of P. lateripes. More particularly is this the case since their crossing with the Zonal varieties, which has produced many beautiful sorts useful for outdoor culture. As to treatment, it may be said to be in nearly all respects identical with those of the Zonal varieties, with the exception of being somewhat more tender, and requiring a little more warmth in winter.

Among other Pelargoniums few are suitable for outdoor culture, or for bedding, their growth in the open air, in even light or poor soil, being too luxuriant. Each section will now be considered separately, and the varieties that succeed when planted out will be mentioned. There are, however, so many varieties of Zonals, and the older varieties are so often superseded by others that are not always improvements, that it will only be necessary to give a short list of sorts really known to be good. It must, however, be borne in mind that some sorts succeed in certain soils and situations which are by no means successful in others.

The following are a few of the many Zonal varieties suited for outdoor culture or for massing in the flower garden or elsewhere : Anna Pfitzer, Ball of Fire, Corsair, Culford Rose, Distinction, Dr. Orton, Fire King, Harry Hieover, Henry Jacoby, Havelock, Jenny Dodds John Gibbons, King of the Bedders, Master Christine, Mrs. Lancaster, Mrs. Turner, Mrs. Miles, Mulberry, Newland's Mary, Vanessa, Vesuvius and its salmon-coloured variety, Violet Hill Nosegay, White Perfection, White Princess, and White Vesuvius.

The bronze Zonal varieties are as well suited for bedding-out as the green-leaved kinds, being in all respects as vigorous. Their flowers vary in colour. The bright golden ground colour and rich leaf zones of some of them, however, show to greater advantage when the blooms are removed.

Pelargonium Dr. André.

The following are a few of those that may be considered the best bedders : Black Douglas, Bronze Beauty, Bronze Queen, Crown Prince, Gilt with Gold, Golden Harry Hieover.

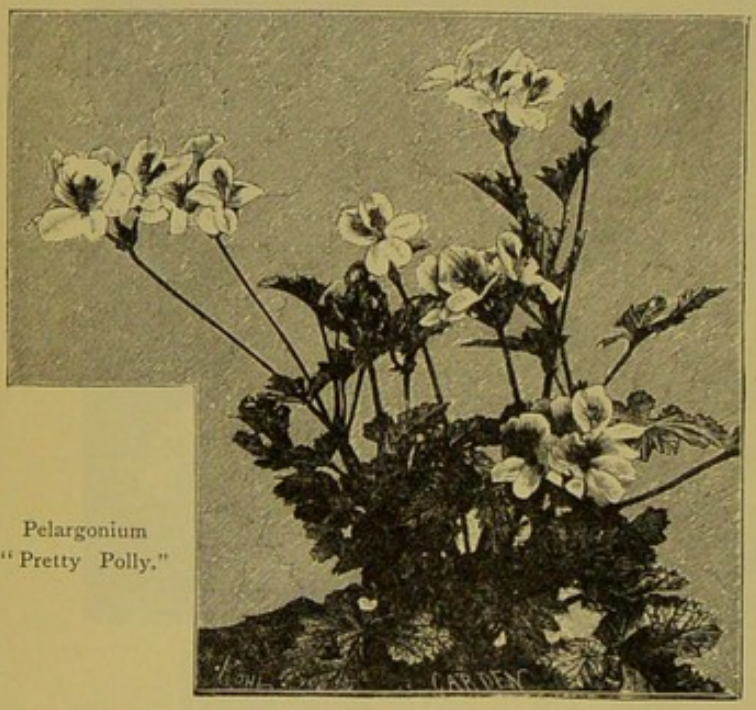
There are also some useful bedding varieties with yellow zoneless leaves, such as Crystal Palace Gem, Golden Christine, and Robert Fish ; while Happy Thought is a singular variety, each leaf having a large disc of a creamy-white colour, while the margins are green, but it is inclined to grow rather too robust in rich soils.

Though the variegated Zonals, or golden Tricolors, do not succeed equally well as bedding plants in all kinds of soil, the following varieties will, with ordinary care, generally give satisfaction : Mrs. Pollock, Sophia Cussack, Sophia

Dumaresque, Beautiful Star, Victoria Regina, Edward Richard Benyon, Macbeth, Lady Cullum, Peter Grieve, William Sandy, Prince of Wales, and Howarth Ashton.

The drawback as regards the silver tricolor sorts, when planted out in the open air, is the circumstance of the central or green portion of the leaves expanding faster than the white or coloured margins of the same, so that the centres of the leaves become somewhat puckered. The following are among the best for this purpose: Italia Unita, Lass o' Gowrie, Eva Fish, Maxwell Masters, Lady Dorothy Neville, and Miss Farren.

Among silver-margined zoneless sorts, Mangle's Variegated, a very old variety,



Pelargonium "Pretty Polly."

is still useful, together with Silver Chain, Flower of Spring, Mrs. J. C. Mappin, Princess Alexandra, and Waltham Bride, the three last having pure white flowers.

Of the Ivy-leaved sorts, and their hybrid varieties, the following are useful as bedding plants: Album grandiflorum, Duke of Edinburgh, l'Elégante, Bridal Wreath, Willsi roseum, Dolly Varden, and Emperor.

Comparatively few of the Cape species or of their hybrid varieties are of much use as bedding plants: a few, however, are sometimes used with pretty good effect. Some of these are—Diadematum, Lady Mary Fox, Lady Plymouth, Pretty Polly, Prince of Orange, Rollison's Unique, Crimson Unique. Most of the sweet-scented sorts, when planted out-of-doors during the summer, succeed admirably, and furnish abundance of fragrant flowering shoots for cutting for the house.—P. G.

Pellæa atropurpurea.—An elegant dwarf North American Fern, hardy in sheltered localities if planted in a shady peat border well drained in winter. Some of the other North American species might also prove hardy.

Peltandra virginica.—A handsome-leaved plant of the Arum family, with broad deep green leaves 2 to 3 ft. high, hardy, and, like the Callas, will grow in shallow pools or lakes. = Caladium virginicum. N. America.

Pennisetum longistylum.—One of the most elegant of Grasses, 1 to 1½ ft. high; the flower-spikes are borne on slender stems; they are from 4 to 6 in. long, of singular twisted form, and enveloped in a purplish feathery down. It is useful for cutting, as it lasts a long time, is perennial and hardy. P. fimbriatum is a similar species, equally desirable.

Pennyleaf (*Hydrocotyle*).

Pentstemon.—Varied in colour, profuse in flower and of graceful habit, Pentstemons have a value for our flower-beds and rock-gardens, that few other plants possess especially as their blooming season extends five months, commencing in June with the charming blue P. procerus, and finishing with the endless varieties of P. Hartwegi, in all shades of rose, scarlet, and crimson. whose beauty holds its own even in November, long after the more fragile plants of the flower garden have perished. Within the past few years also much has been done to improve the Pentstemon by selection of varieties of P. Hartwegi and P. gentianoides, which, however, with all their wide range of colour, lack the beautiful clear blue of some of the species, and have a somewhat monotonous effect. The garden varieties, or so-called hybrids, resulting from this selection, may be ranged under two series of colours—those from P. Hartwegi belonging to the red-flowered set, and those from P. gentianoides to the purple-flowered. As regards culture, the species have the reputation of being difficult to manage, as some of the shrubby

section die when they are apparently in robust health. To ensure success, often drainage is essential, as they suffer more from excessive moisture at the roots than from cold. The soil best for Pentstemons is friable loam, with a mixture of well-decayed leaf mould and sharp sand. It is well to have a few plants in cold frames, to fill any vacancies in the borders. They may be propagated either by cuttings or seeds. The former mode applies chiefly to the shrubby kinds, which strike freely in spring; and, in favourable seasons, seeds are borne by those from which it is not practicable to obtain cuttings. Any attempt to multiply some kinds by dividing the tufts will result in the loss of the plants, but P. barbatus and P. procerus endure this mode of propagation. Seed should be sown in February or March on a gentle hot-bed under a frame, in seed-pans well drained with broken plaster and filled with a compost of peat soil and sand. In April the seedlings should be pricked out under a frame, and these, planted out in May, will usually come into flower by autumn. Another mode is to sow in May or June in the open air, in ground enriched with leaf-mould. The seed-beds should be covered with chopped Moss, to preserve a uniform temperature and humidity. In August the seedlings should be potted and removed to a greenhouse or conservatory for the winter. It is necessary to observe that the seed sown at either of these seasons frequently does not germinate until the following year.

The following are some of the best cultivated species. Many are excluded, however; some on account of their rarity, and others, such as P. antirrhinioides, cordifolius, and Lobbianus, because they are not sufficiently hardy for border culture, though they succeed well enough against a warm wall.

P. azureus is a very pretty dwarf, branching kind, with numerous branches, bearing many blossoms in whorls, clear violet-blue, towards the end of summer, and lasting a long time. California.

P. barbatus.—A tall handsome plant, often named Chelone barbata, with underground stems forming tufts, whence rise, to a height of 3 ft. or more, several graceful stems, supporting many rosy-scarlet flowers, in long succession. There is a white variety. The variety Torreyi is a fine robust plant, of greater height and without the beard on the lower lip of the flower which characterises the species. Being a native of Colorado and Northern Mexico, it is hardier than the older plants, and is a showy border perennial of easy culture.

P. campanulatus is an old inhabitant of our garden borders, a slender plant, about 18 in. high, branching freely, and in southern districts having an almost shrubby character; the rose-coloured flowers in one-sided racemes blooming for a long period. Mexico. P. pulchellus is a variety.

P. Cobæa.—One of the handsomest kinds, bearing late in autumn long leafy racemes of flowers, nearly 2 in. long, pale purple, pencilled with red streaks and delicately suffused with yellow, the base of the tube being a creamy-white. P. Cobæa thrives generally without protection, but it is difficult to increase. The name is used in trade lists for several spurious kinds, but the true plant when in flower can be readily recognised. Texas.

P. crassifolius.—Allied to P. Scouleri, but the flowers are of a charming light lavender colour and the plant admirably suited for a dry knoll of the rock-garden; but this knoll must be well exposed to the sun and on a deep mass of bog soil or peat, so that while the situation of the plant is dry, the roots may find what they require. P. Menziesi resembles P. Scouleri, but has reddish purple flowers.

P. cyananthus.—A lovely kind, 3 to 4 ft. high, bearing in May and June dense spikes about 1 ft. long of bright blue flowers. The new variety Brandegei is an improvement on the type, being more robust, and having brighter flowers. Rocky Mountains, and N. America.

P. diffusus.—A semi-shrubby kind, 2 to 4 ft. high, with violet-purple flowers in a large, loose, many-branched head, throughout the greater part of summer and autumn. Its relative P. Richardsoni much resembles it, but is inferior in beauty, and P. Mackayanus and P. argutus are nearly allied. This plant is liable to succumb to the damp of our winters. Like all the Pentstemons, P. diffusus is readily increased by cuttings, and might come true from seed, but, in this country, seed is rarely matured. N. W. America.

P. Digitalis is a large-leaved free-growing kind, of erect habit, not very showy. The same remark applies to P. pubescens, lævigatus, perfoliatus, and glandulosus.

P. Fendleri.—A distinct glaucous kind, with a long, one-sided raceme of light purple flowers, 12 to 15 in. high, hardy in ordinary soils. P. Wrighti is a similar plant with magenta-tinted blossoms, and its variety angustifolius is also pretty.

P. Hartwegi, generally known as P. gentianoides, and one of our best autumn-flowering plants, its progeny, called into existence by the skill of the florist, including endless variety of colour and increased size of bloom, the narrow tubular flower acquiring almost the dimensions of a Foxglove. About the beginning of this century it was found by Humboldt and Bonpland in Mexico, at an altitude of nearly 11,000 ft., but it was not introduced into cultivation till 1828.

THE HYBRID PENTSTEMONS, among the most precious of flowers, are supposed to have descended from P. gentianoides, but there is little doubt that most of them have come from the pretty P. Hartwegi. P. Cobæa, too, has probably been employed in hybridising, for some varieties bear a strong resemblance to it. Whatever their parentage, they are beautiful plants, and much use should be made of them, as they are valuable in autumn and carry their beauty into winter, at least in western and seaside gardens.

The varieties of Pentstemon succeed in any good soil, and are certain to do well in a good loam enriched with manure and leaf-soil. They can be planted out in groups, in beds or in the mixed border, where their various colours blend charmingly, among them being a wonderful range of colour from white to scarlet, with intermediate shades of pink, rose, purple, carmine, and purplish-lilac. If good plants be put out by the end of April, they will bloom about the middle of June, and yield a succession of flowers until winter. They are increased both by cuttings and by seeds ; the cuttings taken in August or early in September from the young growth round the main stem, and they should be put into a prepared sandy bed, on a shady border, under a hand-glass, or into boxes or pots in a cold frame, where they root readily, and those in boxes or pots might be wintered there, and not transplanted till spring. Those in the border should be lifted and potted and planted in a cold frame for the winter, or transplanted to the open ground in a well-prepared bed, and protected during severe weather with a little litter or branches of Evergreens ; but the young plants should not usually be planted out till March or April. To increase the stock of any given variety rapidly, the store pots of cuttings rooted in autumn should be put in a gentle bottom-heat in spring, and induced to grow ; if the young growths be taken off when they are 2 in. in length, and put into pans of sandy soil of the same temperature, they will quickly strike, and by May and June, if properly treated, will be healthy plants.

SEEDLINGS.—The Pentstemon is a free seeder, and there is no difficulty in obtaining seed. Seed should be taken from only the finest varieties showing distinct or novel character—and such varieties can scarcely fail to yield something worthy of cultivation. The seed should be sown in February or early in March in a gentle heat : it will quickly germinate, and when the plants are large enough to handle, they should be pricked off into shallow boxes, and, after a time, hardened off in a cold frame. Here they can remain till the end of May or later according to size, and they should then be planted out in well-prepared beds. When they flower, which they will do by August and September, any especially good varieties should be marked to propagate from. If the bed of seedlings be allowed to stand for another season (and this is often a good plan), the seed-stalks should be cut away as soon as ripe, and the bed cleaned, top-dressed with leaf-soil and short manure in spring, and there will be a plentiful harvest of flowers the following summer. Seedlings should be protected by a cold frame during winter, and planted out in April in good soil in a sunny spot.

P. heterophyllus. — A dwarf sub-shrubby kind, its showy flowers, singly or in pairs in the axils of the upper leaves, of a pinky lilac ; plants from seed are very liable to vary. Though hardier than many species, it succumbs to severe winters ; and plants should be kept in frames. California.

P. humilis.—A very distinct alpine species, rarely exceeding 8 in. in height, forming compact tufts, its large blossoms of a pleasing blue suffused with reddish-purple : it should be planted in the rock-garden in a fully exposed spot in gritty loam and leaf-mould, and during summer the plant should be copiously watered. It blooms in early June, and is a native of the Rocky Mountains, abundant about Pike's Peak.

P. Jeffreyanus.—A showy kind, and the best of the blue-flowered class, its glaucous foliage contrasting finely with its clear blue blossoms borne during the greater part of the summer. It is a handsome dwarf border plant, but not being a good perennial, the stock should be kept up by the aid of seedlings, which will bloom much more vigorously than old plants. North California.

P. lætus is a close ally of P. azureus and P. heterophyllus, and, like them, is of

dwarf branching habit, with blue flowers in raceme-like panicles about 1½ ft. high, blooming in July and August. It is a native of California, and is as hardy as most of the species from that region.

P. Murrayanus.—A distinct plant, and one of the most beautiful, 3 to 6 ft. high, with tiers of brilliant scarlet flowers, and broad glaucous leaves. It should be raised from seed annually, and the seedlings should be grown well for flowering the following summer, as few plants are more worthy of care. It is a native of Texas, and loves a warm sunny soil. P. centranthifolius is similar but not so handsome, though easier to grow, and hardier.

P. ovatus, also known as P. glaucus, is a fine vigorous plant, 3 to 4 ft. high, the flowers small, but in dense masses, in colour varying from intense ultramarine to deep rosy-purple; their brilliant colour, and the handsome form of the plant combine to give it a special value. It should be considered a biennial, as it usually flowers so vigorously in the second year as to exhaust itself. Mountains of Columbia.

P. Palmeri.—A handsome species of robust habit, in good soil 3 to 5 ft. high; the flowers in a many-flowered panicle 18 to 24 in. long, peach-coloured and streaked with red, corolla with a gaping mouth. The plant is quite hardy, succeeding in almost any well-drained soil, and flowering about midsummer. P. spectabilis is similar.

P. procerus is a beautiful little plant, and about the hardiest of all the species, as it takes care of itself in any soil. It is of a creeping habit, sending up from the tufted base numerous flowering stems 6 to 12 in. high. The small flowers are in dense spikes, and, being of a lovely amethyst-blue, they make it charming for either the border or the rock-garden. It seeds abundantly. It is the earliest to blossom of all the Pentstemons. P. nitidus and P. micranthus are synonymous with P. procerus, and P. confertus is somewhat similar. P. confertus has straggling stems, and is a very distinct species, though by no means showy.

P. Scouleri is a small semi-shrubby plant of twiggy growth. Its large flowers are of a slaty bluish-purple, and are arranged in short terminal racemes; they are not produced in great abundance, but, combined with the dwarf and compact growth of the plant, they have charms sufficiently distinct to render it worthy of cultivation. P. Scouleri may be readily increased in spring by cuttings of the young shoots, since such cuttings strike freely in a little bottom-heat similar to that used for ordinary bedding plants.

P. speciosus, a remarkably handsome kind, has stems 3 to 4 ft. in height, and many-flowered clusters of flowers, which are sky-blue, varying to a reddish hue. P. glaber is nearly related to P. speciosus, but is dwarfer. The flowers are of various shades of purple, and early in summer are borne in crowded spikes about 1 ft. in length. On account of its dwarfness it is better suited for the rock-garden than most of the kinds. P. grandiflorus is very handsome, and allied to P. speciosus and P. glaber. It grows about 3 ft. high, and from July to August produces large flowers of a beautiful pink colour. Another and similar species is P. secundiflorus, which bears in one-sided racemes blossoms of clear blue and violet. It is about 1½ ft. high when well grown. P. acuminatus is a beautiful similar kind. These all require to be raised from seed annually, and to be planted out the second year.

Perilla nankinensis.—A half-hardy annual, with dark vinous-purple foliage. Generally used in lines, but a few plants in a group here and there in the mixed border or the sub-tropical garden are effective. Seed should be sown about the middle of February in pans or boxes in heat: the seedlings should be transplanted into boxes in soil not over-rich, and after being gradually hardened off, they should be planted out about the end of May. For those without artificial heat in spring it is not a very suitable plant, as it requires heat to get to the requisite size for planting in proper time. It is much used in bedding-out, and often with the worst results, so far as taste is concerned.

Periploca græca.—A rapid-growing shrubby climber, excellent for walls, arbours, trellises, and the like, but on account of the somewhat unpleasant odour of its flowers it is not advisable to plant it against the walls of a dwelling-house. Its long slender stems and branches form a dense mass, and at midsummer are covered with brownish-red velvety flowers; it is deciduous, and therefore unsuitable for a winter-screen. A native of Southern Europe, it is hardy, and has been grown in English gardens for nearly three centuries.

Periwinkle (Vinca).

Pernettya mucronata.—A beautiful little Evergreen of the Heath family from South America, but hardy enough for our gardens. Apart from the evergreen foliage, its beauty lies in the berries which it bears in autumn, the size of

small Cherries, dull purple in the type, but there are varieties with berries of white, rose, pink, crimson, purple-black, and every intermediate shade. They should be planted where the soil is peaty or sandy, and even a heavy soil may be made suitable by adding decayed leaf-mould and sand. For autumn and winter beds on a lawn near the house they are excellent, as they have a cheerful aspect throughout the winter.

Persicary (Polygonum Persicaria).

Petasites fragrans (*Winter Heliotrope*).—A rampant weed with fragrant flowers 4 to 12 in. high, in December and January, unless the weather is very severe, bearing flowers, deliciously fragrant, of a pale dingy lilac, in a rather short panicle. It is unfit for garden culture, as it runs very much at the root and becomes a weed, but it may be planted on rough banks, lanes, and in hedgerows, as it is very useful for winter bouquets, and may carpet, so to say, a small clump of shrubbery, where it can be conveniently gathered. Another species, P. vulgaris (Common Butterbur), is a native plant, 2 to 2½ ft. high, closely allied to the common Coltsfoot, but having great Rhubarb-like leaves; the flowers appear in spring before the leaves, and are of a dull pinkish-purple. Exotic plants, with less effective leaves than this have been used in gardens; but it should not be allowed to come nearer to the garden than the margin of some adjacent stream or moist bottom. Division.

Petrocallis pyrenaica (*Rock Beauty*).—A beautiful little alpine plant, forming dense cushions 2 to 3 in. high, when not in flower resembling a mossy Saxifrage; its flower pale lilac, faintly veined, sweet scented, in April. Though hardy, it is fragile, and is best placed on the well-made rock-garden, in sandy fibry loam, in level sunny spots, where it can root freely in moist soil, mingled with broken stones. It may also be grown in pots plunged in sand in the open air, and in frames in winter, but it becomes "drawn" and delicate under glass. Easily increased by seed or careful division. Alps and Pyrenees.

Petunia.—In certain positions, some Petunias produce a charming effect in masses; and all are well suited for large vases, for baskets of mixed plants, for low trellises, and for planting under windows and walls. The spots chosen for Petunias should be open and sunny, and the soil deep and rich, for in low damp situations they mildew and canker as soon as the first cold nights of autumn set in. The best bedding varieties are Spitfire, dark purplish-crimson; Dr. Hogg, purple, with white throat; Miss Amy, crimson and white; Countess of Ellesmere, rosy-crimson, with a lighter throat; and Delicata, white, striped with purple. If they are sown in heat in February or March, good plants may be had for putting out at the end of May, but it is not safe to plant them out earlier. Seedlings, too, are now so good that they are frequently planted in mixed borders for cutting. The named kinds must be propagated from cuttings. Cuttings should be inserted in August in a bed of leaves or other fermenting material at a temperature of 70° to 75°, and with a top-heat of 65°, since they strike quickly under such conditions. As soon as rooted they should be taken out of the bottom-heat and placed in cold frames till frosty nights set in; then removed to an intermediate house and placed on shelves near the glass, remaining there in store-pots till spring, then potted off singly and grown sturdily on till planting-out time. The roots are so brittle that, however well they are rooted, the soil does not adhere to them; and this is why it is necessary to pot singly, for if the plants are put in pans or boxes, and transplanted thence to the beds, they suffer greatly, and are a long time getting re-established.—W. W.

Phacelia.—Californian hardy annuals; none of the cultivated kinds very important. P. congesta is the best, and smaller than either P. tanacetifolia or circinalis. They have dense heads of small blue or violet flowers. Hydrophyllaceæ.

Phalangium (= Anthericum).

Phalocallis plumbea.—A Mexican bulb. Its slender stems, a yard or so high, bear flowers about 3 in. across, which are lead-coloured and tinged with yellow. These flowers, however, are very fugitive, often lasting only a few hours. P. plumbea is not hardy, but is interesting to grow with tender bulbs such as Sparaxis and Ixia. Iridaceæ.

Pharbitis (= Ipomœa).

Phaseolus (*Kidney Bean*).—A very large genus of the Pea family. The common Scarlet Runner (P. multiflorus) and the French Bean (P. vulgaris) are the most familiar examples, and the other species are suitable only for botanical collections. A pretty effect is often given by the Scarlet Runner on trellises in cottage-gardens.

Pheasant's-eye (Narcissus poeticus).

Philadelphus (*Mock Orange*).—Handsome flowering shrubs, with the exception

of P. mexicanus, hardy, and many of them from their beauty deserving a good place. They are generally seen struggling for existence in some choked-up shrubbery border, and often in some shady spot where the bloom is sure to be meagre. Where planted in a group or mass, ample space should be allowed for the access of sunshine, as upon this will to a very great extent depend the future display of bloom. The larger kinds are seen to great advantage when isolated on the Grass or disposed thereon in a group of three or four, plenty of room being allowed each for its full development. Some of the smallest, and especially P. microphyllus, look well in a small bed by themselves, or they may be employed as a foreground to the larger kinds. In pruning the Philadelphus, as with most other flowering shrubs, if carried out at all, the main thing should be to remove exhausted and useless wood rather than to interfere with clean recent shoots. The entire genus (and more particularly the larger growing forms) is in a very confused state, and it is no uncommon thing to see two names applied to one plant, or a couple quite distinct bearing one name.

Philadelphus grandiflorus.

P. MICROPHYLLUS.—This forms a dense bush, at the most not more than a yard, and frequently less, in height, clothed with small Myrtle-like leaves, disposed in a regular manner on the slender twigs, which in their turn are arranged very regularly. The flowering spray is handsome; its fragrance is very different from that of any other kind, being more like a combination of ripe Apples and Quince. This little shrub is a native of New Mexico and some of the adjacent States. It was not long in Europe before the hybridist took advantage of such a distinct shrub, and M. Lemoine, of Nancy, raised a variety, Lemoinei, which was announced as the result of a cross between P. microphyllus and the European P. coronarius. It forms a shrub in appearance about midway between its parents, and flowers profusely. The blossoms possess the fragrance of its North American parent, without any of the heavy smell common to the Mock Orange. Since P. Lemoinei was sent out, a second form has made its appearance from the same source, under the name of P. Lemoinei erectus. Though of more erect habit, it is in other respects much like the preceding.

P. GRANDIFLORUS.—While P. microphyllus is the best of the small-growing kinds, this is the best of those with large blossoms, and it is certainly one of the finest flowering shrubs to be met with in gardens. The blooms are a couple of inches in diameter, white, and with little scent, the bush forming a rounded mass from 6 ft. to 12 ft. in height. There is a variety of this (laxus) less in stature and of a more open style of growth than the type. P. speciosus is now regarded as synonymous with P. grandiflorus.

P. GORDONIANUS is another large-grow-

ing kind, native of North America, whose blooms are smaller than those of the last named, but they are very numerous, and later in expanding than most of the others, and on that account this species is especially valuable. It was introduced from North-west America in 1823, and was named in compliment to the late Mr. R. Gordon, of the Horticultural Society's Garden, Chiswick. Other species a good deal in the same way are P. inodorus and P. verrucosus, both North American, while P. mexicanus is too tender to be generally planted.

P. SATZUMI is a slender, yet freely branching bush about 6 ft. high, the flowers rather small, borne in little clusters for some distance along the shoots. Slight forms of this are often met with under different names, and it is also very probable that the North American species could be reduced in number if grown under similar conditions.

P. HIRSUTUS.—This derives it name from the hairy undersides of the leaves, while the flowers are, with the exception of those of P. microphyllus, about the smallest of the genus. They are also generally solitary, but are borne in such profusion that a specimen is wonderfully pretty when in bloom. This, as a rule, grows about 4 ft. or 5 ft. high.

P. CORONARIUS is the common European Mock Orange, which is well known. There are, however, one or two well-marked varieties, viz., nanus, a little bush about 2 ft. high, that rarely flowers ; variegatus, whose leaves are margined with white ; and aureus, of moderate compact growth, whose foliage retains its golden hue throughout the summer. Several varieties with double blossoms are to be met with, among which may be mentioned florepleno, primulæflorus, and rosæflorus.—T.

Phleum (*Cat's-tail*). — Grasses, some native. The variegated-leaved form of P. pratense is pretty constant, and suitable for edgings in any soil.

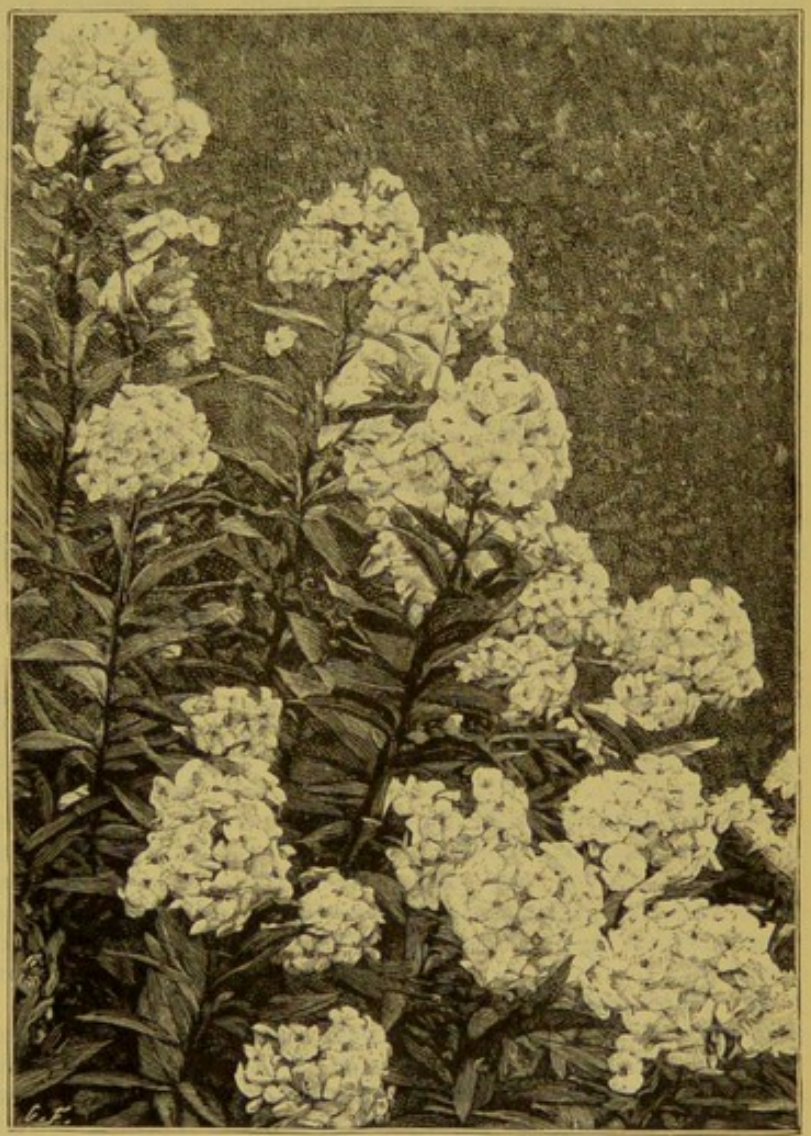
Phlomis (*Jerusalem Sage*).—Among the finest hardy plants of the Sage family. There are about a dozen kinds in cultivation, showing great diversity of size and habit. Some, like, P. fruticosa, are shrubs, others stout herbaceous plants, while others again, as P. armeniaca, are sufficiently alpine for the rock-garden. The most desirable is the South European P. fruticosa, a half-shrubby plant 3 to 4 ft. high, its Sage-like leaves covered with rusty down, while its large rich yellow flowers, attractive in summer, are in dense whorls for about half the length of the branches. It may be grown in the mixed border or associated with shrubs in an open spot. It it hardy in light soils in the southern counties. Of the few other shrubby kinds none is so fine, and though P. ferruginea is similar, it is neither so effective nor so hardy. Of herbaceous kinds the best is P. Herba-venti, a strong plant 1 to 3 ft. high, its rich purplish-violet flowers in dense whorls. P. tuberosa and P. purpurea, with purple flowers, may be naturalised with it, as they flourish in any soil or situation. The best herbaceous kinds with yellow flowers are P. Russelliana and P. Samia, both about 3 ft. high, strong growers, and do well for naturalising. The very dwarf P. armeniaca has silvery leaves and reddish-purple flowers. P. cashmeriana somewhat resembles P. Herba-venti, but its flower-heads are denser, and its flowers, besides being larger, have a broad violet-purple lip. All the species are easily propagated —the shrubby kinds by cuttings and seed, the herbaceous sorts by division and seed.

Phlox.—One of the most popular of North American plants for the most part showy garden perennials ; but the annual P. Drummondi alone has produced distinct varieties enough to furnish a garden with almost every shade of colour. The perennials are numerous, and present such variety in habit, that for the garden they may be divided into three distinct groups. One is alpine in habit ; of this the beautiful P. subulata, or Moss Pink, is the best known, but there are many others in the Rocky Mountains and westward, some of them more truly alpine. Next to these are severa that may be grouped as running or creeping Phloxes, perennial, but with prostrate stems. Lastly, there are the well-known tall garden Phloxes, generally called the perennial Phloxes, though all Phloxes but P. Drummondi are perennial. Perennial Phloxes have been so hybridised that the types are quite lost sight of in a vast number of garden forms. P. subulata, for instance, varies so much in the wild state that its forms have been described as species.

EARLY OR SUMMER-FLOWERING PHLOXES have chiefly come from P. suffruticosa. They include many varieties, varying principally in colour, and flowering during June and July. They grow in any good border or bed, and if the subsoil be too wet, it must be drained, and about 9 in. of good Hazel-loam enriched with good old manure and a small quantity of broken bones laid on the surface. In the herbaceous border a pit can be dug—say, 12 in. square and 9 in. deep—and filled with this compost. Summer Phloxes are useful in

June and July, as they come between the spring and autumn sorts. The following are twenty-four of the finest: Beauty, Beauty of Edinburgh, Bridesmaid, Conqueror, Caller O', George Eyles, James Nicholson, Mrs. P. Guthrie, Mrs. Burton, Mrs. Gellatly, Philip Pollock, William Mitchell, Allen M'Lean, Dr. Robert Black, Duchess of Athole, Indian Chief, Mary Shaw, Mrs. Ritchie, President, Redbraes, Socrates, The Bouquet, The Deacon, and The Shah.

AUTUMN OR LATE-FLOWERING PHLOXES have been obtained by hybridising and selecting from various N. American species, principally P. paniculata and its varieties acuminata, decussata, and pyramidalis, which are stronger and taller than the early Phloxes, and immediately succeed them in flower, thus prolonging the season at least two months from the end of July. They are bright and varied in colour, including all shades from rich vermilion to pure white, but the many shades of dingy purple and magenta are objectionable. There are endless varieties, more or less distinct, but the following will be found a good selection: Coccinea, David Syme, Gavin, Greenshields, Jane Welsh, Jenny Grieve, Lothair, Matthew Miller, Mrs. Keynes, Monsieur Rafarin, Rêve d'Or, Robert Paterson, William Blackwood, Andrew Borrowman, Carnation, Henry Cannell, James Alexander, James Cocker, Madame Verlot, Major Molesworth, Miss Wallace, Mrs. Tennant, Thos. Chisholm, Triomphe du Parc de Neuilly, and William Veitch. For large beds, and to get bold masses of distinct colour, the following are the most effective and can be used according to the shades of colour required, viz.: Coccinea, rich vermilion; Carnation, white and spotted with purple; James Alexander, rich crimson; Lothair, bright scarlet; Mrs. Keynes, pure white; Robert Paterson, rich crimson; William Blackwood, rosy-salmon; Miss Wallace, pure white; and Major Molesworth, scarlet with a crimson eye. When in beds or borders, the early and late sorts should be planted alternately, and arranged according to height and colour, a mass of bloom, lasting for at least three months, being produced. After planting give each plant a good stake, and tie it up when necessary. In spring the number of shoots should be reduced according to the strength of the plant and nature of the variety. Phloxes of this group are also improved by a top-dressing of good rich soil every spring; and in very hot and dry seasons good watering will prolong the bloom.



White Herbaceous Phlox.

The way to propagate Phloxes is by seed, cuttings of the stems and roots, and division. Seed should be taken from the

best sorts ; and sown in boxes or pans in good free loam, immediately after being ripe. Keep it in a greenhouse or warm pit close to the glass. The young seedlings will appear in February and March ; and when fit to handle prick them into boxes of good soil and keep close and warm for a short time ; they can then be grown with the other plants intended for the flower garden. The strongest will be fit to plant out in April and May. They will flower the first season, but will not be strong until the second. In the second year all the best sorts ought to be marked and then grown a third year, to test them with the best named kinds. Cuttings can be taken at all seasons, and in propagating from roots cut the oldest into pieces about ½ in. in length, sown, so to speak, in boxes, and treated like seedlings.

The leaves also strike, but this is a very slow way. As regards division, this consists in taking the old plant and cutting it into small pieces. The habit of the plant should be strong and erect, with plenty of broad and healthy foliage, and not exceed 3 or 4 ft.

P. Carolina is a handsome plant, about 1 ft. high, with slender stems terminated by a cluster of large showy deep rose flowers. P. ovata has broader leaves ; while P. nitida is also handsome. P. glaberrima, is far less important. These kinds flower in summer, in ordinary soil and an open spot.

P. divaricata.—A handsome plant from North America, larger than either the Creeping Phlox (P. retans) or the Moss Pink (P. subulata), and about 1 ft. high with large lilac-purple blossoms in summer, while the leaves are rounded at the base, and are egg-shaped or lance-shaped. Rock-garden in good soil. Increased by division.

P. Drummondi. — One of the most beautiful of half-hardy annuals, varied and brilliant in colour, and not injured by bad weather, like many other flowers. It may be used in a variety of ways, such as a carpet to beds of standard Roses, as it does not interfere with the well-being of the Roses, but hides their naked stems. It is also suitable for rustic vases and boxes ; but it is when in masses that its beauty and diversity of colour are best seen. Seed should be sown about the first week in March in shallow pans or boxes, in a light rich soil, and a warm and rather moist temperature. Prick off the seedlings when fit to handle in boxes or a bed in a warm house in a temperature of 50° to 60°. Here they will soon grow, and place them out in the shade to harden as the weather gets warm. Those growing in a bed should be again transplanted to a prepared bed in a cold frame, kept covered for a few days, and hardened gradually. When the plants are 3 to 4 in. high, pinch out the main shoot, to induce bushy growth, and prolong the flowering period. The bed should be fully exposed to the sun, and if good moist soil, the plants will be uninjured even in the hottest weather. Although generally treated as an annual, P. Drummondi strikes freely from cuttings in autumn; these are useful for pots and early spring bloom in the conservatory or the greenhouse. Varieties are endless, and some very distinct named sorts differ from the type not only in colour but in growth.

P. pilosa is a pretty plant 10 or 12 in. high ; large flat clusters of purple flowers, ½ to ¾ in. in diameter, appearing from June to August. It is one of the rarest of cultivated Phloxes, though a spurious kind is sometimes sold for it. The true plant reminds one of P. Drummondi. Another rare species is the true P. bifida, an elegant plant the flowers bluish-purple.

P. reptans (*Creeping Phlox*).—This is a beautiful little plant with the large flowers and rich colour of the taller Phloxes. It mantles the old border or the rock-garden with a soft green, 1 or 2 in. thick, and sends up numbers of stems from 4 to 6 in. at the end of April or beginning of May, each bearing from five to eight deep-rose flowers. It is pleasing on the rock-garden or border; and makes pretty tufts round beds of hardy plants : it is also useful for spring-bedding, vases, or for the edges of raised beds ; and everybody who cares about hardy spring flowers should grow it in one of these ways. It thrives best in peat or light rich soils. As it creeps along the ground, giving off numbers of rootlets at the joints, it is propagated with the greatest ease. It is known as P. verna and P. stolonifera as well as P. reptans. P. procumbens is a similar plant, but taller, and not so desirable.

P. setacea is sometimes considered the same as P. subulata, but its leaves are longer and farther apart on its trailing stems, the whole plant being less rigid. The flowers are of a charming soft rosy-pink, and have delicate markings at the mouth of the tube. P. s. violacea is a handsome Scotch variety more lax in growth and with deeper coloured flowers, almost crimson. Both the variety and the type are lovely plants for the rock-garden, where with roots deeply seated

among the fissures and enjoying coolness and moisture, they thrive luxuriantly in any amount of sunshine.

P. subulata (*Moss Pink*).—A Moss-like little Evergreen, the flowers pinkish-purple or rose-colour, with a dark centre, and so dense as to completely hide the plant. The stems, though 4 in. to 1 ft. high, are always prostrate, so that the dense matted tufts are seldom more than 6 in. high ; but in moist, sandy, and well-drained soil, when the plant is fully exposed, the tufts attain a diameter of several feet, and a height of 1 ft. or more. P. frondosa is a vigorous form of P. subulata, and in any ordinary light garden soil its trailing branches will soon cover almost a square yard of surface. P. nivalis is as trailing, but smaller, and with shorter, more densely arranged leaves. Its flowers are snow-white. P. Nelsoni is no doubt a hybrid between P. subulata and its forms, as it possesses foliage of an intermediate character ; the flowers pure white with a charming pink eye. Besides this, the late Mr. Nelson, of Aldborough, raised a large number of seedlings, as varied in hue as Phlox Drummondi.

The dwarf Phloxes are so closely allied that general cultural remarks will suffice. Well-drained ordinary garden soil and sunny exposure are essential. Though perfectly hardy, the damp atmosphere of mild winters is fatal, and as the plants do not seed freely, they must be increased by cuttings. A sharp knife and a careful hand will soon remove the two or three pairs of leaves with their included buds without damaging either the slender stem or the joint. These should be taken off in July, when the branches are just commencing to harden, and inserted in sandy soil in a frame where they can be shaded from full sunshine, and given the benefit of the night dews by the removal of the lights. They will soon root and become good flowering plants the following season. With large patches, the readiest way is to sprinkle sandy soil over the entire plant and to work the same gently amongst the branches with the hand. If this be done during the summer or the early autumn, the trailing branches will form roots the following season, and may be planted elsewhere. These Phloxes are charming in spring, being hardy and forming gay cushions on the level ground, or pendent sheets from the tops of crags or from chinks in the rock-garden. Rocky hills and sandy wastes in North America.

Phormium tenax (*New Zealand Flax*).—This reminds one in habit of a large Iris, forming tufts of broad, shining, leathery leaves, 5 to 6½ ft. high, gracefully arched at the top. The lemon-coloured flowers are in erect loose spikes just above the foliage. It will generally enjoy a greenhouse, though in genial places in south and west of England and Ireland it does very well in the open air in a light deep soil. A few specimens well grown and plunged in the Grass or in the centre of a bed have a distinct effect. The variegated variety is also pleasing in the open air in warm situations in the south of England and Ireland, and in any caes will do out-of-doors in the summer. Division of the tufts in summer.

Phragmites communis (*Great Reed*) is a common indigenous waterside Grass, suitable for the margins of artificial water wherever it is not plentiful. It is excellent as a cover for Ducks.

Phygelius capensis (*Cape Figwort*).—This Cape plant is related to the Chelone and the Pentstemon, but distinct in its general effect. It grows some 3 or 4 ft. high, and its many stems are terminated by a long branching raceme of brilliant scarlet flowers, which open in May and June and continue far into autumn. It is hardy near London, though it does not flourish so well in the open as under the shelter of a wall, where it thrives. It prefers a light rich soil, but in warm sea-shore districts is not fastidious. Readily increased by portions of the root-stock, the bases of the stems being furnished with rootlets.

Phyllostachys bambusoides (Bambusa).

Physalis Alkekengi (*Winter Cherry*).—A handsome and curious south European plant, bearing in autumn bright orange-red bladder-like calyces, enclosing Cherry-like fruits. It is a hardy perennial, requiring a warm border ; 1 to 1½ ft. high. Division or seed. Solanaceæ.

P. Franchetti.—A splendid new hardy plant from Japan, possibly a variety of P. Alkekengi, but so distinct as to merit special attention. It is larger altogether than the old kind both in foliage and calyx which is brilliant coral-red in colour, though varying a little in shade, sometimes touched with orange, and generally 3 in. in length with a circumference of 7 or 8 in. The plant grows 18 in. high and requires a similar position to P. Alkekengi.

Physostegia.—Handsome perennials for associating with the bolder kinds of hardy plants. P. virginiana, 1 to 4 ft. high, has flesh-coloured or purple flowers crowded in terminal racemes. P. imbricata from Texas, has higher and more

slender stems, broader leaves, and larger flowers of a deeper colour. P denticulata is similar to P. virginiana, but rarer and less showy. All these kinds flower in summer, thrive in any ordinary soil, and

Physalis Alkekengi (Winter Cherry).

may be naturalised with advantage in moist loam. Division in spring.

Phyteuma (*Rampion*).—The Rampions are neat, pretty, and interesting, with small flowers in profusion. They enjoy a sunny position, and some of them are good rock-plants. P. orbiculare is a rare and desirable native Rampion, 1 to 2 ft. high, and is best among rock-plants, where it would be free from the destructive effects of the hoe and rake. It flourishes in a dry position in a mixture of limestone grit, peat, sand, and loam, and has violet-blue flowers in July. It is extremely impatient of removal or division, and should be raised from seed sown in autumn in a cool frame. P. Sieberi is neat for the rock-garden, requiring a moist sunny situation, and a mixture of leaf-mould, peat, and sand. It forms cushion-like tufts, and in May and June has dark-blue flower-heads, on stems 4 to 6 in. long. Division. P. humile is a neat tufted plant for the rock-garden, where it can get a dry sheltered position in winter, and plenty of water in summer. The flowers are blue, and produced in June on stems 6 in. high. Division. P. comosum is very slow-growing, and must be particularly guarded against slug. It is a genuine rock-plant, suitable for a fissure vertical or sloping to the sun, and does best amongst a mixture of a little loam, peat, sand, or grit, where it can root to the depth of 2 ft. It bears almost stalkless heads of dark purple flowers, has Holly-like leaves in June and July, and comes best from seed. P. Charmeli and P. Scheuchzeri are much alike, P. Scheuchzeri being dwarfer. It bears pretty blue flowers, on stems from 6 to 12 in. in height, and is evergreen. Sow seed in autumn.

Phytolacca decandra (*Virginian Poke*).—This North American perennial is from 5½ to nearly 10 ft. high, with reddish stems, and flower stalks. The flowers, on cylindrical spikes, are at first white, but afterwards change to a delicate rose. In autumn the colour of the leaves is in rich contrast to the pendent purple berries. It grows in almost any kind of soil, and is raised from seed or division. It is scarcely refined enough in leaf for the flower garden, but is effective near the rougher approaches of a hardy fernery, in open glades near woodland walks, or in any like position. P. icosandra is a bushy plant, 2 to 3 ft. high, the leaves similar to those of a Hydrangea. It has rather long spikes of creamy-white flowers, succeeded by fruit-clusters similar in size and shape to Indian Corn, but composed of ripe Blackberries. Should have the same treatment and position as P. decandra.

Pinguicula (*Butterwort*).—These interesting dwarf bog-plants are pretty in the bog-garden or moist spots in the rock-garden. There are about half-a-dozen kinds, all resembling each other and, except P. vallisneriæfolia, natives. P. grandiflora (Irish Butterwort) is the finest. Its flowers are large and blue-purple, the leaves broad, spreading and flat upon the rock or soil. It prefers the shady side of a moist mossy rock, where the face is steep and the narrow chinks are filled with rich loam. If planted in earth alone, where the drainage is imperfect, it usually perishes in winter. P. alpina differs from all other kinds in having white flowers, marked more or less with lemon-yellow on the lip, but sometimes tinted with pale pink. It roots firmly, by means of strong woody fibres, and prefers peaty soil mingled with shale or rough

gravel, and shady humid positions, such as is afforded by a high rock-garden with a north aspect, or by the shelter of a north wall. P. vulgaris grows freely in any sunny position in rich moist peat or peaty loam. A small form, with leaves like those of P. alpina, both in form and colour, is found in alpine bogs in the north of England. P. lusitanica, found on the west coast of Scotland and in Ireland, is smaller than any of the preceding, and has pale yellow flowers. It grows in peaty bogs exposed to the sun. P. vallisneriæfolia, from the mountains of Spain, differs from others in its clustered habit of growth. Its leaves are pale yellowish-green, and sometimes almost transparent, becoming 4 or 5 in. long, and occasionally even 7 in. towards the end of the season. The flowers are large, soft lilac colour, with conspicuous white or pale centres. Dripping fissures and ledges of calcareous rocks (frequently in tufa) suit the plant perfectly, but it requires very free drainage, continuous moisture, and a humid atmosphere.

Pink (Dianthus).

Piptanthus nepalensis (*Nepaul Laburnum*).—A Pea-flowered shrub, hardy enough for walls, which it covers with large deep green leaves similar in shape to those of the common Laburnum, and in southern and warm localities withstands our winters without even this protection. But it is only to be recommended for walls, and is not the most desirable of plants even for them. It has evergreen foliage, and in early summer long dense clusters of large bright yellow flowers similar to those of the Laburnum, but larger. It succeeds best in light soils. Himalayan Region.

Piptatherum multiflorum.—A large perennial Grass with elegant feathery panicles, useful for arranging with cut flowers. Vigorous in any soil, and hardy.

Pisum maritimum (Lathyrus).

Pitcher-plant (Sarracenia).

Plantain Lily (Funkia).

Platycodon.—P. grandiflorum, sometimes called Campanula grandiflora, is a handsome Siberian perennial, hardy in light dry soils, but impatient of damp and undrained situations, where its thick fleshy roots are sure to decay. Sometimes the decay commences below and spreads upward, but it generally begins above and spreads downward, the plant rotting off at the neck. The flowers are 2 to 3 in. across, deep blue with a slight slaty shade, and in clusters at the end of each branch. The branches are 18 in. high, and very slender at the base, so that if unsupported in their early stage of growth, they will fall to the ground, and the plant look untidy. Such neglect will be almost impossible to repair when the

Phyteuma comosum.

flowers are nearly developed, as branch after branch will break away in tying. It is better to leave them alone, merely pegging down the branches to prevent breakage by wind. Perhaps the best position for the plant would be overhanging a ledge in some sunny corner of the rock-garden, where its negligent growth is in keeping with the situation, and its flowers, being on a level with the eye, are shown to advantage. Like most Campanulas it has a tendency to revert from blue to white through various modifications. Equally pretty is the white variety, though by no means so common as the type. A rich loamy soil, good drainage, and an open situation are best. Propa-

gate by seeds, which can be readily procured. The young shoots, if taken off when about 3 in. long, in spring, and placed in a gentle bottom-heat, will strike, but not freely. The plant is a bad one to divide—division often resulting in failure, and, if attempted, must be carried out in May, when the growth has just commenced. P. autumnale, or chinense, from China and Japan, is taller and more robust than P. grandiflorum, with narrower leaves, but more dense, and its flowers, though smaller, are pretty evenly distributed along the upper half of the stems. Besides a white variety, it has a tendency to become semi-double, by a sort of "hose-in-hose" reduplication of the corolla, similar to what occurs in many of our Campanulas. The dwarf, Mariesi, from Japan, is distinct.

Platyloma.—In some mild localities the elegant New Zealand Fern, P. rotundifolium, will thrive in the open air, but seldom does satisfactorily. P. atro-purpureum is synonymous with Pellæa.

Platystemon californicus.—A pretty

Platystemon californicus.

Californian hardy annual Poppywort, forming a dense tuft, studded thickly in summer with sulphur-yellow blossoms. It merely requires to be sown in ordinary soil in the open border either in autumn or spring; but the seedlings should be well thinned out. P. leiocarpum is a similar kind.

Plumbago (*Leadwort*).—An interesting family, the hardiest being P. Larpentæ, the blue-flowered Leadwort, from China. C. capensis, usually grown under glass, may be planted out in summer, bearing its lovely pale-blue flowers continuously throughout the summer. The plants should be specially prepared for out-of-doors, young ones being always the best for edgings, though taller ones may be used in certain positions. P. capensis is used with good effect in German gardens. P. Larpentæ is perfectly hardy, its wiry stems forming neat and full tufts, varying from 6 to 10 in. high, according to soil and position. In September these are nearly covered with flowers, arranged in close trusses at the ends of the shoots, and of a fine cobalt-blue, changing to violet: they usually last till the frosts. A warm sandy loam or other light soil and a sunny warm position should be given, such as above the upper edges of vertical stones or slopes on the rock-garden. It may also be used for borders, banks, or edgings in the flower garden, particularly in the case of slightly-raised beds. Very easily increased by division of the roots during winter or early spring.

Poa.—Perennial and annual Grasses, few worth cultivating. P. fertilis has dense tufts of long, soft, smooth, slender leaves, 10 to 18 in. high, and arched gracefully on every side. In the flowering season they bear airy, purplish or violet-tinged panicles, rising to twice the height of the tufts. Isolated on lawns the plant is effective, and if in good soil gives no trouble. P. aquatica is a stout native Grass, 4 to 6 ft. high, usually occurring in wet ditches, by rivers, and in marshes. It is one of the boldest and handsomest of hardy Grasses for the margins of artificial water or streams, associated with such things as the Typhas, Acorus, Bulrush, and Water Dock. It increases rapidly.

Podolepis.—A pretty half-hardy annual from New Holland is P. gracilis: of slender growth, about 1½ ft. high, and bears terminal flower-heads of rosy-purple about 1 in. across. There is also a white

variety. P. acuminata and P. chrysantha are similar, but have yellow flowers. They require to be sown in light warm soils in spring.

Podophyllum Emodi (*Himalayan May-apple*) is similar to P. peltatum, but handsomer. The stem and leaves have a reddish tinge, the fruits 2 in. long, and

Plumbago capensis.

coral-red. The plant succeeds perfectly in peaty soil if in warm sheltered spots; and in such positions is useful for the margins of beds of American plants. Seed or division. P. peltatum (May-apple) is interesting with its glossy green, wrinkled leaves, borne umbrella-like, on slender stems, about 1 ft. high. Its waxy-white Christmas Rose-like flowers are produced in May, and succeeded by green Crab-like fruit; hence the popular name. It is adapted for shady peat borders, or for woods, but requires moist vegetable soil, and shady or half-shady positions. Seed or division.

Poet's Daffodil (Narcissus poeticus).

Poison Ivy and **P. Oak** (Rhus Toxicodendron).

Polemonium (*Greek Valerian*). — A small family of Phloxworts, mostly from North America. A few of them are familiar in gardens, and among the best are the following:

P. cœruleum (*Jacob's Ladder*) most people are familiar with. Besides the original blue-flowered species, there is a variety with white blossoms, and another handsome form with variegated foliage, which on good garden soil is almost as easily grown as the common one. It thrives best in deep, rich, but well-drained loam. To propagate it, dig up well-established plants, pulling them to pieces, and planting immediately in early autumn in a bed of good soil. Where merely required for borders and rock-garden, take up, divide, and replant the old stools where desired, in the old-fashioned way of dealing with herbaceous plants. As the variegated variety is grown for leaf-beauty alone, the flower-stems should be removed.

P. confertum.—This is one of the finest of all, with slender deeply-cut leaves, and dense clusters of deep blue flowers on stoutish stems, about 6 in. high. It requires a warm spot in the rock-garden and a well-drained, deep, loamy soil, rather stiff than otherwise. Though it requires plenty of moisture in summer, excessive dampness about the roots in winter is hurtful. It should be allowed to remain undisturbed for years after it has become established. Rocky Mountains.

P. humile is a truly alpine pretty plant with pale-blue flowers on stems a few inches high. In a dry situation and a light sandy soil it is hardy, but on a damp subsoil is sure to die in winter. P. mexicanum is similar but larger, and being only of biennial duration is scarcely worth cultivating. N. America.

P. reptans is an American alpine plant, and, though far inferior in beauty to P. confertum, is worth growing. Its stems are creeping, and its slate-blue flowers form a loose drooping panicle, 6 or 8 in. high. Snails devour it ravenously, especially the scaly root-stocks during winter, and must be watched for. P. sibiricum, grandiflorum, and Richardsoni much resemble P. cœruleum, but are more

vigorous, with larger flowers. There are several other species in cultivation, but not important.

Polianthes tuberosa (*Tuberose*). — Though a native of the East Indies, strong imported bulbs from Italy and France of this deliciously fragrant plant, if inserted in warm soil, will flower well in the open air during August. In the neighbourhood of London we have seen the Tuberose flowering freely in the open border, the bulbs in a light, sandy, well-drained soil, in which they had remained all the winter, slightly protected during severe weather by ashes or other dry material.

Polyanthus (Primula).

Polygala (*Milkwort*). — The hardy Milkworts are neat dwarf plants, with flowers much resembling those of the Pea family. P. Chamæbuxus (Box-leaved Milkwort) is a little creeping shrub from the Alps of Austria and Switzerland, where it often forms but very small plants. In our gardens, however, on peaty soil and fine sandy loams, it spreads out into compact tufts covered with cream-coloured and yellow flowers. The variety purpurea is much prettier; the flowers are a lovely bright magenta-purple, with a clear yellow centre. It succeeds in any sandy, well-drained soil, best in sandy peat, if slightly shaded from the mid-day sun. Even when out of flower it is interesting owing to its dwarf compact habit, bright shining evergreen leaves, and olive-purplish stems. P. paucifolia is a handsome North American perennial, 3 to 4 in. high, with slender prostrate shoots, and concealed flowers. From these shoots spring stems, bearing in summer one to three handsome flowers about three-quarters of an inch long, generally rosy-purple, but sometimes white. It is suited for the rock-garden, in leaf-mould and sand, and for association in half-shady places with Linnæa borealis, Trientalis, Mitchella. Some of the British Milkworts, especially P. calcarea and vulgaris, are interesting and easily grown in sunny chinks of the rock-garden if in calcareous soil. They form neat dressy tufts of blue, purple-pink, and white flowers, borne profusely in early summer. Seed may be gathered from wild plants and sown in sandy soil. Plants carefully taken up from their native positions have also been established in gardens.

Polygonatum (*Solomon's Seal*). — Of this interesting genus there are at present something like twenty-three species known to botanists. These are distributed chiefly in the north temperate regions of the Himalayas, America, Japan, China, and Europe, and with very few, if any, exceptions will be found quite hardy enough to withstand the rigours even of an English winter. There are nine distinct species known to us in cultivation, and perhaps as many varieties, and although there is some similarity amongst them in habit, all are distinct as garden plants. They thrive well in almost any position in good sandy soil, and will be all the better for an occasional liberal dressing of leaf soil. It is in shady nooks, under the shade of deciduous trees, in the wild garden, however, where they do best and are seen to the best advantage. They are increased by seeds or berries, which, sown as soon as gathered in autumn, germinate in early spring: the creeping root-stocks may also be divided to any extent, and in good soil soon form nice tufts. A few of the species are also in much request for forcing for early spring use in the greenhouse; these are generally imported instead of being grown at home, as they might well be. It simply requires singling out good crowns and growing them in rich loamy soil, lifting and potting when required.

P. biflorum.—A pretty species from the wooded hillsides of Canada, and New Brunswick, of slender graceful growth, the arching stems 1 ft. to 3 ft. in height, the small flower stems jointed near the base of the flowers, which are greenish white, two or three together in the axils of the leaves. P. pubescens, P. hirtum, and P. canaliculatum are synonymous of this.

P. japonicum. — A distinct species, native of Japan, hardy in this country, flowering in early April, growing about 2 ft. in height, the leaves of a very firm leathery texture, the flowers white, tinged purplish.

P. latifolium, the old Convallaria latifolia or broad-leaved Solomon's Seal, seems to be about intermediate between P. multiflorum and P. officinale. It is a native of Europe, and is said to have been found in Syke's Wood, near Ingleton, Yorkshire. A fine robust species, the stems being from 2½ ft. to 4 ft. high, arching, the leaves bright green; flowers large, two to five in a bunch from the axils of the leaves, greenish-white, in July. P. latifolium var. commutatum differs from the above in being glabrous throughout, with a flower-stem 2 ft. to 7 ft. in height; large white flowers, three to ten in a bunch. N. America.

P. multiflorum.—This is the common Solomon's Seal, and is the most grown of all the species. It grows from 2 ft. to 3 ft.

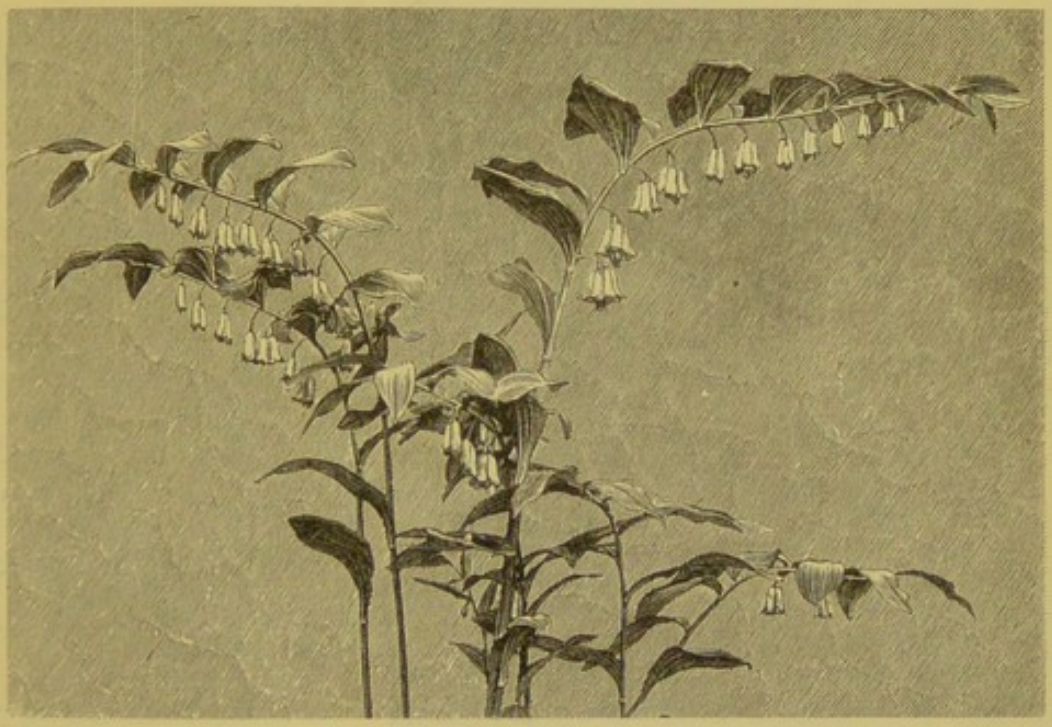
high, glaucous green; the flowers are large, nearly white, one to five in a bunch in the axils of all the leaves. It is a very robust and free-growing species, its arching stems and drooping flowers being very attractive. There are several garden varieties, notably a double-flowered one, and one in which the leaves are distinctly variegated. P. Broteri is a variety with much larger flowers; P. bracteatum, a form in which the bracts at the base of the flowers are well developed, flowering throughout the summer.

P. oppositifolium.—A charming kind confined to temperate regions of the Himalayas and hardy, although usually given as a greenhouse species. It will doubtless do best in a sheltered spot, but even in the open it has given me no trouble, and it is a good plant for shady spots on the rock-garden, the habit graceful, 2 ft. to 3 ft. in height, leaves glossy green; the flowers, white, marked with reddish lines and dots, are borne in bunches of from six to ten in the axils on both sides in late summer. The fruit is red when ripe.

P. punctatum. — Another beautiful species from the temperate Himalayas, where it is found at altitudes of 7,000 ft. to 11,000, ft., and hardy in our gardens; about 2 ft. in height, the stem angular, with hard leathery leaves, flowers white, with lilac dots, two to three in a bunch, in late summer.

P. roseum.—A handsome little plant allied to P. verticillatum. It was first sent to the Royal Gardens, Kew, by Bunge, and is doubtless the plant described in *Flora Rossica*. It appears to vary considerably in the length and breadth of its leaves in their being more or less whorled, and also in the size of its flowers, 2 ft. to 3 ft. in height, the leaves in whorls of three or more; the flowers in pairs in the axils of the leaves, clear rose-coloured, are very pretty amongst the narrow green foliage. N. Asia.

P. verticillatum.—An elegant species distributed over the temperate Himalayas, and pretty general in the northern hemisphere. It was found in Perthshire, Scotland, in 1792, and appears to have been cultivated by John Tradescant, jun., as early as 1656; 2 ft. to 3 ft. high under cultivation, the leaves four to eight in a whorl; the flowers, two to three in a bunch in the axils of the leaves, are greenish-white, smaller than those of P. multiflorum. The fruits are red when ripe. It flowers in June.—D. K.



Polygonatum multiflorum (Solomon's Seal).

Polygonum (*Knotweed*).— The vast family of Polygonums, comprising 150 species of world-wide distribution, the majority insignificant weeds, nevertheless includes several noble plants, which are well worth considering for their beauty of form. They thrive in any ordinary garden soil; those of a bushy habit should be allowed plenty of space. Tying in the

shoots detracts much from their beauty, which consists in the many flower-spikes rising above a gracefully-developed mass of foliage reaching to the ground. The dwarf perennials, most of which are evergreen, need no support, and little attention beyond an occasional trimming; but the annuals, unless grown as single specimens, and in sheltered situations, require support.

P. affine, one of the Bistorta group, is a pretty alpine feature in the Himalayas, where it grows on the wet river banks and meadows, and hangs in rosy clumps from moist precipices. In cultivation it is 6 to 8 in. high, with rosy-red flowers in dense spikes borne freely in September and October. P. Brunonis is similar and as desirable; the flowers, of a pale rose or flesh colour, borne in dense erect spikes nearly 18 in. high, and continuing more or less through the summer.

Polygonum sachalinense.

P. capitatum is a little spreading annual with numerous globose heads of pink flowers. Once established in light warm soils it sows itself, and fresh plants appear every year.

P. compactum is similar to P. cuspidatum, and forming a compact tuft 1 to 2 ft. high. It bears white flowers in great profusion, and its leaves are similar to those of P. cuspidatum, though much smaller. It flowers late in autumn.

P. cuspidatum (*Japan Knotweed*), also known as P. Sieboldi, is of fine and graceful habit, speckled with purple, and dull green leaves, frequently variegated with faint silvery blotches. Its creamy-white flowers are borne in great profusion, and the plant is then very handsome. It should be grown as an isolated specimen on the turf or in some prominent part of the wild garden Unfortunately it is weedy, and in light soils springs up everywhere.

P. sachalinense.—A native of the island of Sachalian, of similar habit to P. cuspidatum, but larger, sometimes attaining a height of 12 feet. Its bright green leaves are upwards of a foot in length, whilst the flowers, greenish-white, are in slender drooping racemes. It luxuriates in a moist subsoil near water, where it is effective when associated with bold things, and it makes a fine feature on the turf or in a good position where it can develop its noble proportions. There is no better plant for semi-wild places, or for association with vigorous things on the turf in the pleasure-ground.

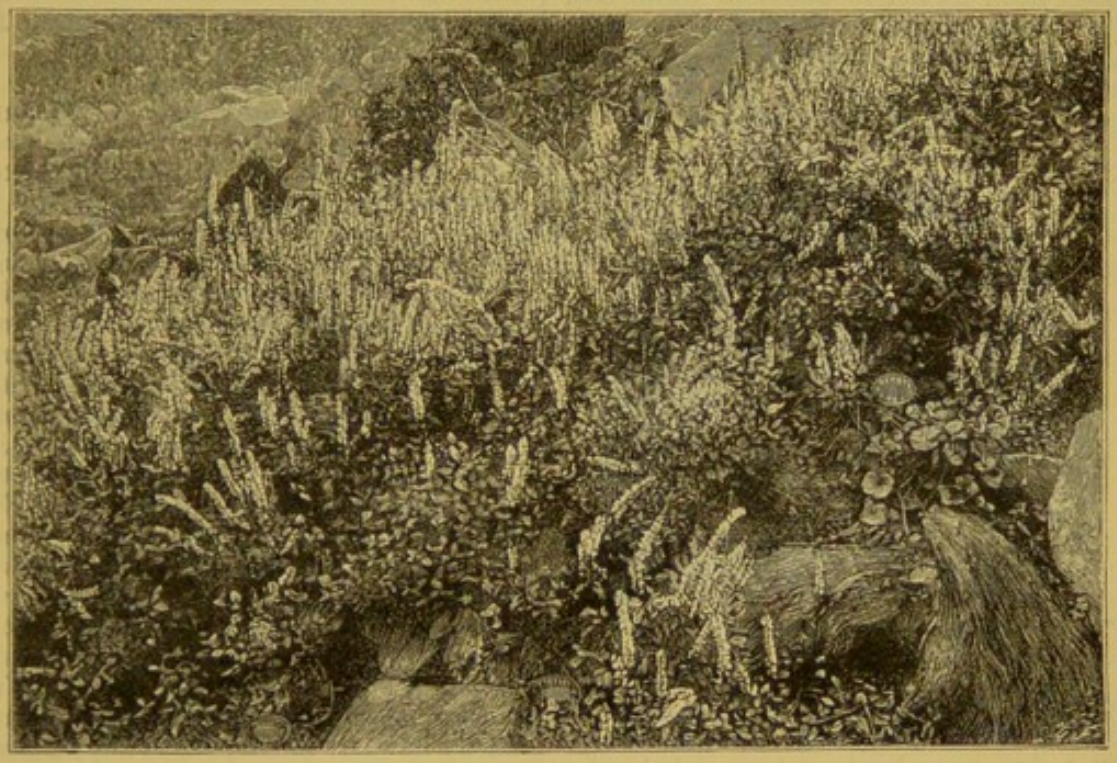
P. sphærostachyum.

P. vaccinifolium is very distinct in aspect, quite hardy, and thrives in almost any moist soil, but is best seen where its shoots can ramble over stones or tree stumps. Under favourable conditions it grows rapidly, and produces a profusion of Whortleberry-like leaves and rosy flowers. Himalayas.

Polymnia grandis is a half-hardy shrub from Mexico, with large lobed leaves, often nearly 3 ft. long, presenting striking and luxuriant masses of foliage. The stem and leaf-stalks are spotted with white, and the leaves when young covered with soft white down. Like most large soft-growing things, it is best planted out when young at the end of May to ensure fresh and unstinted growth. Easily multiplied from cuttings, which freely produce roots if placed in heat in Janu-

ary. It is best planted out at the end of May.

Polypodium (*Polypody*).—This large family of Ferns contains several good hardy kinds, the principal being the common P. vulgare; which has about a score of cultivated varieties differing more or less widely from each other. The most distinct and beautiful as well as the freest in growth are cambricum, elegantissimum, omnilacerum, and pulcherrimum. Though preferring shade, they only need a good supply of water at the root during summer, and will thrive even exposed to the full rays of the sun. Plant them in fibry loam and tough and fibry peat, with a liberal admixture of leaf-mould and well-decayed woody matter, to which add a thin top-dressing of similar material every autumn. The evergreen Polypodiums associate well with flowering plants that do not require frequent removing, and they may be made to cover bare spaces beneath trees, or to overrun stumps. A beautiful effect, too, is got by their use as a carpet or setting to some of the plants in the rock-garden. Besides P. vulgare and its varieties, there are several deciduous kinds, such as P. Dryopteris (Oak Fern) and P. Phegopteris (Beech Fern), well known to all Fern lovers. They thrive best in peat, loam, and sharp sand, with some broken lumps of sandstone, and prefer a dry situation in the rock-garden; or any situation which is not fully exposed to the sun. A slightly shaded spot should be selected, where they might be planted among flowering plants suitable for the same treatment, and affording the needed shelter. P. Robertianum (Limestone Polypody) is a beautiful deciduous species, somewhat difficult to manage; it should have a dry sheltered position, does not mind sunshine, and prefers a mixture of sandy and fibry loam, with a plentiful addition of pounded limestone. P. alpestre resembles the Lady Fern; the fronds dark green, and sometimes exceed 2 ft. in length. It may with advantage be grouped with Lady Ferns, as it flourishes under similar treatment. P. hexagonopterum, a native of N. America, is hardy in sheltered positions, and has elegant tapering dark green fronds about 1 ft. in height.



Polygonum vaccinifolium.

Polypogon (*Beard Grass*). — Pretty Grasses, chiefly annual. P. monspeliensis and littoralis are native. P. affinis is an elegant Chilian annual. All should be sown in the open border in spring or autumn.

Polystichum (Aspidium).

Pomegranate (Punica).

Pond-flower (Aponogeton).

Pond Lily, Yellow (Nuphar).

Pontederia cordata (*Pickerel Weed*).—One of the handsomest water-plants, com-

bining grace of habit and leaf with beauty of flower. It forms thick tufts of almost arrow-shaped, long-stalked leaves, from 1½ to over 2 ft. high, crowned with spikes of blue flowers. P. angustifolia has narrower leaves. Both should be planted in shallow pools of water. Division of tufts at any season. North America.

Poppy (Papaver).

Poppy, Blue Himalayan (Meconopsis).

„ **Californian** (Eschscholtzia).

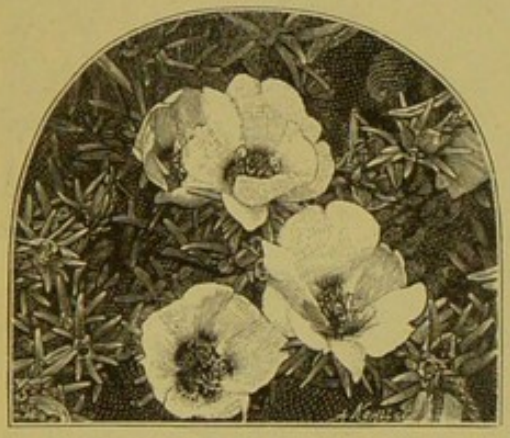
„ **Horned** (Glaucium).

„ **Plume** (Bocconia).

„ **Prickly** (Argemone).

„ **Welsh** (Meconopsis).

Portulaca grandiflora.—This bright little annual has been introduced many years from its native home in Chili, and few Chilian plants have spread so widely all over the world. It seems as happy under a tropical sun as in an English garden, where no other annual excels it



Flowers of Portulaca grandiflora.

in brilliancy, delicacy, and diversity of colour. It makes itself at home as well on a dry, poor bank as in a rich border among taller things. One can see by its growth that it is a child of the sun, and that is why one finds it so fine in gardens in the parched plains of India and Egypt, as well as throughout North America. The colours vary from crimson and white through every shade to pure yellow. There are single and double-flowered kinds, and it is difficult to say which are the more beautiful. The double flowers last longer, and greater care seems to have been made in selecting the finest of the doubles by crossing the various sorts. Forty years ago M. Lemoine, of Nancy, raised many beautiful double sorts, to which he gave names, but it was soon found useless to keep named sorts, so one buys seed now in mixed colours, as with Cinerarias. Seeds of the Portulaca should be sown thinly during the month of April in pans in a frame, and the seedlings be planted out early in June. They can be also sown in the open ground about the end of May, for succession after the frame-raised seedlings. The best plants are got when the seedlings, as soon as they are large enough to handle, are pricked out into small pots of rich soil and kept in an airy frame. The seed is best sown in light and rather rich soil, and only just covered. In planting out, choose the sunniest and warmest spots in the garden, and plant in bold masses to get a rich effect. It has proved in India one of the most useful flowering plants for bedding during the cool months. The named varieties of P. grandiflora are Thellusoni, lutea, splendens, and Regeli, while another kind is P. Gilliesi from Mendoza.

Potato Tree (Solanum).

Potentilla (*Cinquefoil*). — A large family, many hardy herbs and alpine flowers among them. The most important are the fine hybrid varieties got by hybridising showy Himalayan species such as P. insignis and P. atro-sanguinea. These two species are well worth growing. The former has clear yellow and the latter deep velvety crimson flowers. The beautiful rosy-pink P. colorata is also useful; but these three are about the only typical species of tall growth worth cultivating. The double kinds are most showy, lasting in perfection both on the plants and when cut longer than the single sorts. There are about three dozen distinct named kinds, all to be obtained from any of the large hardy plant nurseries. These varieties represent every shade of size and colour that it is possible to obtain. The culture of Potentillas, like that of most hardy flowers, is simple. They luxuriate in a light deep soil and exposed position.

The following is a good selection of double sorts: M. Rouillard, reddish-crimson; Belzebuth, dark crimson; Chromatella, yellow; Dr. Andry, scarlet, margined with yellow; Escarboucle, crimson; Bélisaire, reddish-orange; Vase d'Or, yellow; Le Dante, orange shaded with scarlet; Louis Van Houtte, crimson; Phœbus, rich yellow; Le Vésuve, crimson with yellow margin; Versicolor, yellow suffused with brownish-crimson; Vulcan, scarlet shaded with yellow; Variabilis fl.-pl., yellow with scarlet margin; Eldorado, scarlet-crimson with yellow margin; Perfecta plena, bright scarlet-crimson slightly tinged with yellow; Imbricata plena, orange-scarlet; Etna, reddish-crimson; Panorama, yellow heavily stained with scarlet; Nigra plena, dark crimson;

Meteor, yellow suffused and blotched with scarlet ; Meirsschaerti fl.-pl., yellow veined and striped with crimson ; William Rollisson, deep orange-scarlet with yellow centre ; Fénelon, orange and scarlet ; Purpurea lutea plena, scarlet-crimson slightly tipped with yellow.

Among the dwarf alpine species there are some very beautiful plants for the rock-garden. Of these the following are the best :—

P. alba (*White Cinquefoil*).—The leaves of this pretty plant from the Alps and Pyrenees are quite silvery and have a dense silky down on the lower sides. It is very dwarf, and not rampant ; its white Strawberry-like flowers nearly 1 in. across, with a dark orange ring at the base. Easily grown in ordinary soil, and on borders or for the rock-garden. It blooms in early summer, and is increased by division.

P. alpestris (*Alpine Cinquefoil*).—A plant closely allied to the spring Potentilla (P. verna) forming tufts nearly 1 ft. high, with bright yellow flowers about 1 in. across. While enjoying a moist deep soil, it cares little how cold the position is. Though not very common, it is found on rocks and dry banks in several parts of the country.

P. ambigua, from the Himalayas, is a dwarf compact creeper, with in summer large clear yellow blossoms on a dense carpet of foliage ; is perfectly hardy, requiring only a good deep well-drained soil in an open position in the rock-garden.

P. calabra (*Calabrian Cinquefoil*).—A very silvery species from Italy and Southern Europe. It has prostrate shoots, and bears in May and June lemon-yellow flowers nearly 1 in. across. It flourishes freely in sandy soil, in the rock-garden.

P. fruticosa (*Shrubby Cinquefoil*).—A pretty neat bush, 2 to 4 ft. high, and bears in summer clusters of showy golden-yellow flowers. It is suited for the rock-garden or the dry bank.

P. nitida (*Shining Cinquefoil*). — A beautiful little plant from the Alps, a couple of inches high, its silky silvery leaves seldom with more than three leaflets each. The flowers are pretty and delicate rose. It is well worth a good place in the rock-garden, and is of the easiest culture and propagation.

P. pyrenaica (*Pyrenean Cinquefoil*).—This dwarf vigorous and showy kind has fine deep golden-yellow flowers. It will grow in the rock-garden or in the mixed border without particular attention. High valleys in the Central and Southern Pyrenees. Division or seeds. The shrubby kind P. fruticosa and its varieties are worth naturalising and growing among small shrubs in rougher parts of the rock-garden.

Prairie Sunflower (Harpalium).

Pratia angulata.—A pretty plant for the rock-garden, creeping over the soil like the Fruiting Duckweed ; the flowers white, and like a dwarf Lobelia, numerous in autumn, giving place to violet-coloured berries about the size of Peas. It is hardy. New Zealand. *Syn.*, Lobelia littoralis.

Prickly Poppy (Argemone).

Pratia angulata.

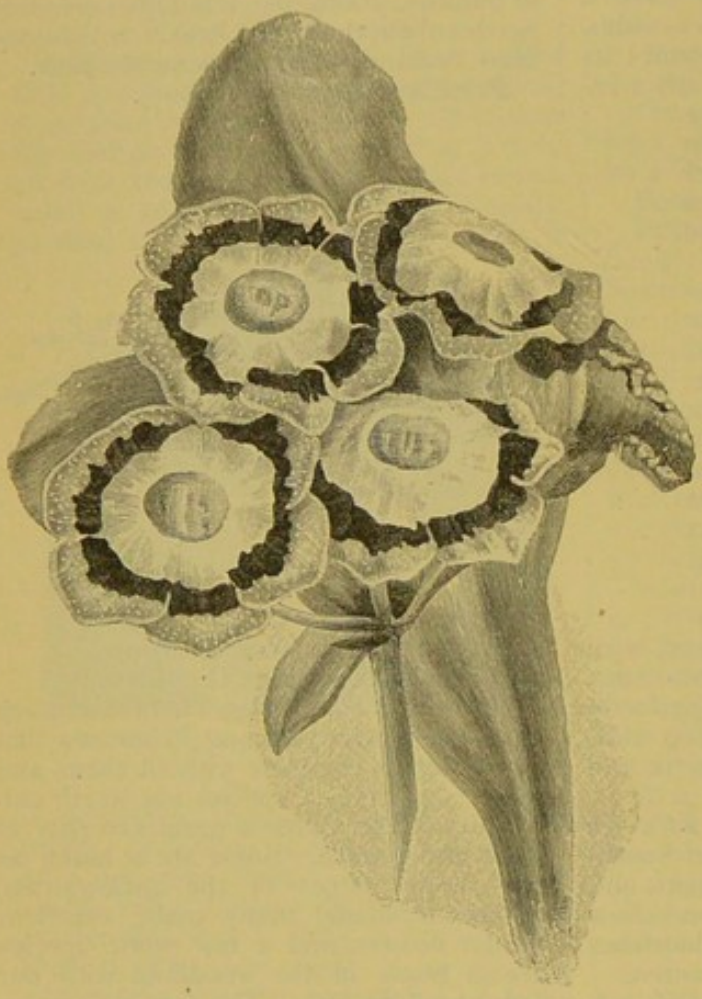
Prickly Thrift (Acantholimon).

Primrose, Evening (Œnothera).

Primula (*Primrose*).—There is so much charm and beauty among Primroses that no garden is complete without them, and there is scarcely a species not worth cultivating. They have a great diversity of habit and growth. Some are at home on the sunny slopes of the rock-garden, others in shade, many make excellent border flowers, and a few exotic species are at home in the woodland with our common Primrose. The family contains nearly a hundred different sorts ; and we have therefore confined ourselves to the most distinct and desirable kinds. There is so much confusion among certain sections, particularly in the alpine and the Himalayan species, that we have not attempted to deal with these exhaustively ; while others, such as P. nivalis, are too little known in gardens to render it necessary for us to speak of them.

P. amœna (*Caucasian Primrose*) is allied to our common primrose, but is quite distinct. The corolla is purplish-lilac in bud or when recently expanded, but turns bluer after a few days. The

umbel is many-flowered, and the blooms, which are larger than those of P. denticulata, are borne about 6 or 7 in. high ; the leaves are rather large and are woolly beneath and toothed. The blooms come out before the snow has left the ground. It is so much earlier than the common Primrose, that while that species is in full flower, amœna has quite finished blooming, and has sent up a strong tuft of leaves very much like that sent up by the common Primrose after its own flowers are faded.



Auricula, Mrs. Moore.

A sheltered position slightly shaded will be best for the perfect health and development of the plant. It flourishes quite freely in common borders, and is one of the most valuable additions to the early spring garden and mixed border that have been made for many years. It is charming for the rock-garden or for well-arranged borders, and, when plentiful enough, will, no doubt, be used in various ways. There is a stemless variety, which would probably prove a great addition to our gardens. P. sibirica is somewhat similar to P. amœna, but is rare. Division of the root. Caucasus.

P. auricula (*Common Auricula*).—In a wild state this is one of the many charming Primulas that rival Gentians, Pinks, and Forget-me-nots in making the flora of alpine fields so exquisitely beautiful and interesting. Possessing a vigorous constitution, and sporting into a goodly number of varieties when raised from seed, it attracted early attention from lovers of flowers ; its more striking variations were perpetuated and classified, and it became a "florists' flower." Its cultivated varieties may be roughly thrown into two classes : first, self-coloured varieties, or those which have the outer and larger portion of the flower of one colour or shaded, the centre or eye white or yellow, and the flowers and other parts usually smooth, and not powdery ; second, those with flowers and stems thickly covered with a white powdery matter or "paste." The handsomest of the former kinds are known by the name of "alpines," to distinguish them from the florists' varieties, and are the hardiest of all. The florists' favourites are distinguished by the dense mealy matter with which the parts of the flower are covered. They are divided by florists into four sections—green-edged, gray-edged, white-edged, and selfs. In the "green-edged" varieties, the gorge or throat of the flower is usually yellow or yellowish ; this is surrounded by a ring, varying in width, of white powdery matter, which is surrounded by another ring of some dark colour, and beyond this a green edge, which is sometimes $\frac{1}{5}$ in. in width. The outer portion of the flower is really a monstrous development of the petal into a leaf-like substance, identical in texture with the leaves. The "gray-edged" varieties have the margin of a green leafy texture, but this is so thickly covered with powder that the colour cannot be distinctly seen. The same occurs in the "white-edged" kinds, the difference being in the thickness and hue of the powdery matter. In fact, the terms "green-edged," "gray-edged" and "white-edged," are simply used to indicate slight differences between flowers having an abnormal development of the petals into

leafy substance. It is a curious fact that between the white and the gray the line of demarcation is imaginary, for both classes occasionally produce green-edged flowers. The "selfs" are really distinct, since the outer portion of the corolla is of the ordinary texture, though a ring of powdery matter surrounds the eye.

The classification of such slight differences merely tends to throw obstacles in the way of the general growth and enjoyment of the flower in gardens. Let the florists maintain these fine distinctions; those who merely want to embellish their gardens with the prettier varieties need not trouble themselves with named sorts at all. It should be borne in mind that the florists' kinds are the most delicate and difficult to cultivate. The curious developments of powdery matter, green margins, &c., tend to enfeeble the plant. They are, in fact, variations that in Nature would have little or no chance of surviving in the struggle for life. The general grower will do well to select the free sorts—alpines, and good varieties of the common border kinds. The special merit of these is that they may be grown in the open air on the rock-garden and in borders, while the florists' kinds must be grown in frames.

The free-growing kinds are most likely to be enjoyed in all classes of gardens. Their culture is very simple, light vegetable soil and plenty of moisture during the growing season being the essentials. In many districts the moisture of our climate suits the Auricula to perfection, and great tufts of it are grown in gardens without any attention. In others it must be protected against excessive drought by stones placed round it, and cocoa-fibre and leaf-mould are also useful as a surfacing. However, as none but good varieties of the alpine section are worthy of even this trouble, we would prefer, wherever practicable, that they should be placed in the rock-garden on spots where they would have some shelter and could root freely into rich light soil. They would cause no trouble beyond taking up, dividing, and replanting. This should be done every second or third year, or as often as they become too crowded or lanky. The very common kinds may be planted as edgings or in beds in the spring garden, but wherever the plant is free, naturally improved varieties should be substituted for the common old border kind.

Auriculas are easily propagated by division in spring or autumn, but best in early autumn. They are also easily raised from seed. Seed ripens in July, and is usually sown in a gentle heat in the following January. It should be sown thinly in pans. The plants need not be disturbed till they are big enough to prick into fine rich light soil on a half-shady border. It is most desirable to raise seedlings, as in this way many beautiful varieties may be obtained, and if a desirable variety is noticed, it should be marked, placed under conditions calculated to ensure its health and rapid increase, and propagated by division as fast as possible.

As to the florists' varieties, innumerable and precise descriptions of the culture considered necessary have been given, but the essential points may be summed up in a few words. They require protection in frames or pits during winter and spring, and may be placed in the open air in summer and early autumn. In winter they should be put in pits, and placed as near to the light as may be convenient, the lights being left off in mild weather, and air being given at all times, except in severe frosts. Air by night as well as by day is decidedly beneficial. The pit or frame may be the usual one for the winter months; but as soon as the plants begin to show flower, they ought to be removed to one with a northern exposure, so as to prolong the bloom. In such a place, with abundance of air, they form objects of much interest and beauty through April and the first weeks of May. After flowering they should be potted in May, and kept shaded till they have recovered. The potting usually consists of carefully shaking away all the soil and putting the plant in fresh compost; and the practice is a good one, for this plant and its wild allies put forth young roots higher up the stem every year, and the encouragement of these young roots is sure to have a good result. The pots generally used (the 4-in. size) are quite large enough where annual disrooting is practised, one sucker of a kind being placed in the centre of each pot. The wisdom of potting every plant in this way is doubtful, and it is better to select those that have sound roots, and are set firmly and low in the earth, and while disturbing the ball but little to give them a careful shift into a 5-in. pot. In growing the alpine kinds in pots—and they are as worthy of it as the other kinds—growers should put five or six plants in a 6-in. pot, one in the centre and four or five round the side, so as to form a handsome specimen. The same principle may be carried out in pans, and applied

to the free-growing florists' varieties as well as the alpines. In summer all the plants should be placed in the open air on boards or slates or a bed of coal-ashes, or some substance that will prevent the entrance of worms into the pots. Some careful growers guard the plants from heavy rains, but this is unnecessary if the pots are perfectly drained and everything else is as it ought to be. The florists rarely plunge the pots; but if plunged in a bed of clean sharp sand, or in any like material on a well-drained bottom, and free from earthworm, they will be safer and less troublesome, because free from the vicissitudes that must attend all plants exposed in a fragile porous shell containing but a few inches of soil. Some pot their plants in August, but the best time is just after the flowering, as if disrooted in the autumn, the plants have not that accumulated strength for flowering which is acquired by a long period of undisturbed growth.

The perfect development of the choicest florists' kinds is secured by mixing one part of good turfy loam and one part of leaf-mould with another of well-decayed cow manure and silver or sharp river sand. Although we have given such full directions in regard to the culture of the florists' varieties, we again earnestly advise all who care for the flower to cultivate the free and hardy forms that thrive in the open air. It is a good plan to select bright or delicate self or other colours that please one. Such kinds should be increased, so that definite effects may be worked out with each colour.

P. capitata.—One of the finest of all Primroses. It is like P. denticulata, but is very distinct as a garden plant. It has a tuft of sharply-toothed pale green leaves, not half the size of that of a fully-developed P. denticulata. In autumn it bears dense heads of flowers of the deepest Tyrian purple, which as regards depth is very variable, and is shown to advantage by the white mealy powder in which the flowers are enveloped. It is not so vigorous as P. denticulata, though hardy, and it cannot be termed a good perennial, as it is apt to go off after flowering well. It is therefore advisable to raise seedlings. This is easy, as the plant seeds freely in most seasons, and the seedlings flower in the second year. An open position with a north aspect in good loamy soil well watered in dry weather suits it best.

Primula capitata.

P. cortusoides.—A distinct species bearing clusters of deep rosy flowers on stalks 6 to 10 in. high. In consequence of its tall free habit it is liable to injury if placed in an exposed spot or open

border; and should therefore be put in a sheltered position, such as a sunny nook in the rock-garden, where it is surrounded by low shrubs, etc., or in any place where it is not exposed to cutting winds, and at the same time not shaded to its injury. It forms a charming ornament for the rock-garden, for a sunny sheltered border near a wall or a house, or for the margin of the choice shrubbery. The soil should be light and rich, and a surfacing of Cocoa-fibre or leaf-mould is beneficial in dry positions. It is one of the most beautiful and easily raised of the Primulas, being readily increased from seed, and hardy in any well-drained and suitable position. Siberia.

P. denticulata.—A pretty Himalayan Primrose, of robust growth, 8 to 10 in. high. It has large tufts of broad foliage, and produces in spring, on stout erect stems, large dense clusters of lilac blossoms. It is a most variable plant, and some of its more distinct forms have received garden names, of which the principal are mentioned below. It is paler in colour than any of its varieties, and its foliage and flower-stalks are not mealy. P. pulcherrima is a great improvement on the original. It grows from 10 to 12 in. high, and has a more globular flower-truss, which is of a deep lilac colour. The stalks are olive-green, and, like the leaves, are slightly mealy. It is very beautiful when in flower, and P. Henryi is a very strong-growing variety but does not otherwise differ from P. pulcherrima. It is a very fine plant, often 2 ft. across, and in Ireland it reaches even larger dimensions. P. cashmeriana is by far the finest variety. The flowers are of a lovely dark lilac, closely set together in almost a perfect globe on stalks over 1 ft. high. They last from March till May. The foliage is beautiful, and, like the stalk, is of a bright pale green, thickly powdered with meal, in which as in many other points the plant strongly resembles P. farinosa.

All the varieties are hardy, though their foliage is liable to be injured by early spring frosts. They may be placed either in the rock-garden or in an ordinary border, and will grow vigorously in a deep moist loamy soil, enriched by manure. They prefer a shady situation, with a clear sky overhead, and delight in an abundance of moisture during warm summers. If grown in masses in beds, the flowers should be protected by a hand-light or frame placed over them to preserve them. P. erosa is similar to P. denticulata, but is smaller and less hardy, it has paler flowers, and altogether it is an inferior plant.

P. farinosa (*Bird's-eye Primrose*).—A charming native species with small rosettes of silvery leaves, and flower-stems generally 3 to 12 in. high, though sometimes more. The flowers, which are borne in a compact umbel in early summer, are lilac-purple with a yellow eye. They vary a little in colour, there being shades of pink, rose, and deep crimson. In our gardens it loves a moist vegetable soil, and in moist and elevated parts of the country it flourishes in the rock-garden and in slightly elevated beds without any attention; but in most districts a little care is necessary. In the rock-garden it is perfectly at home in a moist, deep, and well-drained crevice, filled with peaty soil or fibry sandy loam. In the drier districts it would be well to cover the soil with Cocoa-fibre, leaf-mould, or broken bits of sandstone to protect the surface from being baked and from excessive evaporation. P. f. acaulis is a very diminutive variety of the preceding. The flowers nestle in the hearts of the leaves, and both flowers and leaves are very small. When a number of plants are grown together, they form a charming little cushion of leaves and flowers not more than ½ in. high. Being so small, the plant should have greater care, whether it is grown in the rock-garden or in pots. P. scotica is a native plant similar to P. farinosa, and requires similar treatment. The flowers, which show in April, are rich purple with a yellow eye, and are borne on stems a few inches high. Native of damp pastures in the northern counties of Scotland.

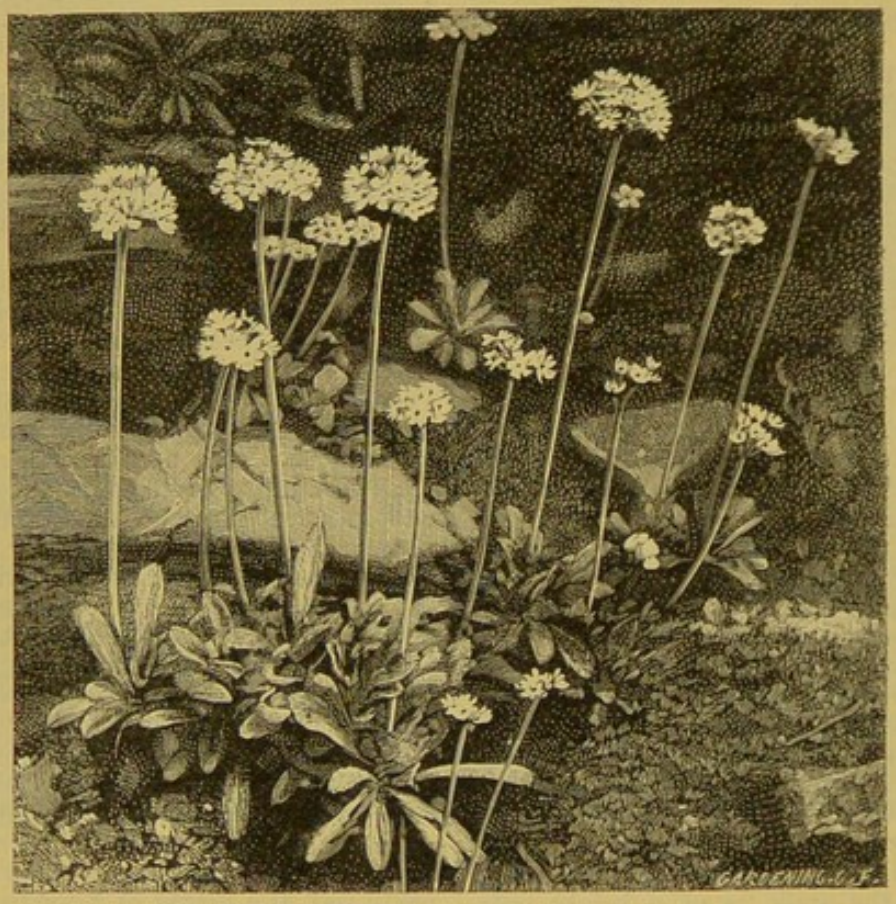
P. glutinosa.—A distinct little Primrose, rare in gardens. On mountains near Gastein and Salzburg, in the Tyrol, and in Lower Austria, it flourishes, in peaty soil, at a height of 7,000 to 8,000 ft. It is 3 to 5 in. high, bearing one to five blossoms of a peculiar purplish-mauve, with divisions rather deeply cleft. Suitable for the rock-garden, or for pots in moist peaty soil or very sandy soil. Similar to P. glutinosa are P. tirolensis, Flœrkiana, Allioni, and others, all natives of the Alps.

P. grandis.—A distinct species from the Caucasus, remarkable only for its large foliage and the smallness of its flowers.

P. integrifolia.—A diminutive Primrose, easily recognised by its smooth shining leaves, which lie quite close to the ground, and by its handsome rose flowers, which are borne one to three on a dwarf stem, and are often large

enough to obscure the plant. There is no difficulty in growing this plant on flat exposed parts of the rock-garden, if the soil be firm, but moist and free. The best way is to form a wide tuft, by dotting six to twelve plants over one spot, and in a dry district, scatter between them a few stones or a little Cocoa-fibre mixed with sand, so as to prevent evaporation. P. Candolleana is another name for this plant. P. glaucescens, spectabilis, Clusiana, and Wulfeniana are of a similar character. All are natives of the Alps. Division or seed.

first-rate border plant, and in moist shady spots of deep rich loam it grows as vigorously as a Cabbage, throwing up flower-stems 2 ft. or more high, and unfolding tier after tier of its beautiful crimson blossoms for several weeks in succession. It may be grown in the rock-garden as well as in the border, and is an excellent wild-garden plant, thriving almost anywhere and sowing itself freely. It is said to be rabbit-proof. There are several forms differing in colour; there is a white form, a pale pink, and a rose form, but the best is the original rich



Primula farinosa (Bird's-eye Primrose).

P. intermedia.—A charming hybrid between P. ciliata and P. Auricula. In habit it closely resembles some of the dwarf alpine Auriculas, and its purplish-crimson flowers have a conspicuous yellow eye, and are borne on stout erect scapes. On sheltered portions of the rock-garden its richly-tinted blossoms are seen to advantage. It is delicately fragrant.

P. japonica.—One of the handsomest of Primroses, and now too common to need description. It is a good perennial, and is not in the least tender. It is a crimson form. In raising P. japonica from seed it should be borne in mind that the seed remains some time dormant, unless it is sown as soon as it is gathered, and that it must on no account be sown in heat. A cool frame is the proper place for the seed-pan, and till the seed has germinated, care must be taken to prevent or keep down the growth of Moss and Liverwort on the soil.

P. latifolia.—A handsome Primrose, with from two to twenty violet flowers in a head. It is less viscid, but larger and more robust than its alpine congener

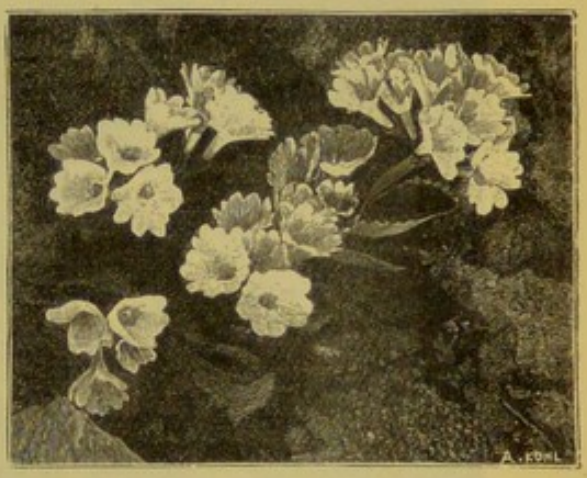
the better-known P. viscosa. Its leaves sometimes attain a height of 4 in. and a breadth of nearly 2 in., and it grows to a height of 4 to 8 in. Its fragrant flowers appear in early summer, and in pure air it thrives on sunny slopes of the rock-garden, if it has sandy peat, plenty of moisture during the dry season, and perfect drainage in the winter months. Like P. viscosa, it will bear frequent division, and may be easily grown in cold frames or pits. Alps.

P. longiflora is related to P. farinosa, but is distinct from it, being deeper in colour, and is considerably larger than the best varieties of it, the lilac tube of the flower being more than 1 in. long. It is not at all difficult to cultivate either on the rock-garden or in pots, and the treatment recommended for P. farinosa will suit it. Austria.

P. luteola.—One of the handsomest of the yellow Primroses, and a noble plant when well grown. The flower-stems are often 1½ to 2 ft. high, though they are usually under 1 ft. in height. They sometimes become fasciated, and thus carry a huge cluster of flowers 4 to 6 in. across. These flowers are like those of a Polyanthus or an Auricula, but they are borne in more compact heads. P. luteola is hardy. It likes a moist situation in full exposure, and if put out in rich borders of rather moist soil, or on the lower banks of the rock-garden, or in a copse with a good bed of leaf-soil, it will soon repay the planter. Caucasus. It has been well figured in *The Garden*, from plants that flowered at Chipping Norton, in Oxfordshire.

P. marginata.—One of the most attractive of the family, and readily distinguished by the silvery margin of its grayish leaves, and by its sweet, soft, violet-rose flowers. Even when not in flower it is pleasing from the tone of the margins and surfaces of the leaves. The flowers appear in April or May. Our wet and mild winters are doubtless the cause of its becoming rather lanky in the stems after being more than a year or so in one spot. When the stems become long, and emit roots above the ground, it is a good plan to divide the plants, and to insert each portion firmly down to the leaves, and this will be all the more beneficial in dry districts, where the little roots issuing from the stems would be the more likely to perish. P. marginata is a charming ornament for the rock-garden, and thrives freely there. In the open ground a few bits of broken rock placed round the plants, or among them if they are grown in groups or tufts, will prevent evaporation, and protect them, as they rarely exceed a few inches in height. Alps.

P. minima (*Fairy Primrose*).—One of the smallest of European Primroses. Usually there is only one flower, which is generally rose-coloured, and sometimes white, and appears in summer. The plant is only an inch or so high, but its single flower is nearly 1 in. across, and almost covers the tiny rosettes of foliage. Bare spots in firm open parts of the rock-garden are the best places for the plant, but the soil should be very sandy peat and loam. It is peculiarly suited for association with the very dwarfest and choicest of alpine plants. Division or seed. Mountains of S. Europe. P. Flœrkiana is much like it, and probably is only a variety, since the sole difference is that it bears two, three, or more flowers, instead of only one. It enjoys the same treatment in the rock-garden. Austria. Of both kinds it is desirable to establish wide-spreading patches on firm bare spots, scattering half an inch of silver sand between the plants to keep the ground cool.



Primula nivalis.

P. Munroi.—This has neither the brilliancy nor the dwarfness of the Primulas of the high Alps, nor the vigour of our own kinds, but it is distinct, and is of the easiest culture in any moist boggy soil. It grows at very high elevations on the mountains of Northern India, in the vicinity of water. Its smooth green leaves have a heart-shaped base, and are 2 in. long, and nearly as much across. From them arise flower-stems 5 to 7 in. high, bearing creamy-white flowers with a yellowish eye, which are more than an inch across. These flowers appear from March to May, and are

very sweet. Altogether, P. Munroi highly merits culture in a bog or in a moist spot of the select rock-garden. P. involucrata is a closely-allied kind, also from the mountains of Northern India. It is, however, somewhat smaller, its leaves are not heart-shaped at the base, and it is not quite so ornamental. It thrives under the same conditions as its relative.

P. Palinuri.—This is quite different from other cultivated Primroses, inasmuch as it seems to grow all to leaf and stem; while many of the other kinds often hide their leaves with flowers. In April its bright yellow flowers appear in a bunch at the top of a powdery stem. They are ornamental, though rarely fulfilling the promise of the vigorous-looking plant, and they emit a Cowslip-like perfume. P. Palinuri flourishes as a border plant in rich light soil in various parts of these islands, and nothing more need be said of its culture. It is well suited for some isolated nook on the rock-garden, where there is an unusually deep bed of soil. Established plants are easily increased by division. Southern Italy.

P. Parryi.—A pretty Primrose, bearing about a dozen large, bright, purple, yellow-eyed flowers nearly 1 in. across. These flowers are borne on stems about 1 ft. high. Though an undoubted alpine, and growing on the margins of streams near the snow-line, where its roots are constantly bathed in ice-cold water, it has succeeded in the open border in moist, deep, loamy soil mingled with peat; it is hardy, and requires partial shade from extreme heat rather than protection from cold. N. America.

P. purpurea.—A handsome Primrose, allied to P. denticulata, but far finer, for the exquisite purple flowers are larger.

Primula rosea.

They are borne in heads about 3 in. across. The leaves are entire, and distinguish it from its near relations. Sheltered and warm but not very shady positions either in the rock-garden, or in the open parts of the hardy fernery, will best suit it if the soil is a light, deep, sandy loam, and well enriched with decomposed leaf-mould. It never thrives so well as in nooks at the base of rocks, where it enjoys more heat than it would if exposed. It must not be confused with the variety of P. denticulata commonly called by the same name of P. purpurea.

P. rosea (*Rosy Himalayan Primrose*)

is a charming little Primrose, with flowers of the loveliest carmine-pink, produced in heads like the Polyanthus. Its pale green leaves form compact tufts, and the flower-stems, 4 to 9 in. high, are produced in early spring, often as many as half-a-dozen from one plant. It is perfectly hardy, and though only recently introduced from the Himalayas, has become quite acclimatised, and grows vigorously in almost any soil, preferring, however, a deep rich loam in a moist shady part of the rock-garden. When plentiful it should be tried in various positions and soils, as it has not yet been thoroughly tested.

Primula Sieboldi.

P. Sieboldi.—Though this handsome Primrose is considered a variety of P. cortusoides, it is very distinct in many important particulars. The size of its flowers, the breadth of its foliage, the creeping character of its root, its exclusively vernal habit, its pseudo-lobed or grooved seed-vessel, and the roundish flattened form of its seed, all warrant the belief in its distinctness from P. cortusoides as a garden plant. It is at any rate one of the showiest and most charming of all the Primulas, and is as easy to grow and as hardy as many others. Since its introduction from Japan numerous beautiful varieties have been raised, some of the most distinct being clarkiæflora, lilacina,

marginata, fimbriata oculata, vincæflora, cœrulea-alba, Mauve Beauty, Lavender Queen, laciniata, and maxima. These possess a great diversity of colour, and some have the petals beautifully fringed. One of the chief merits of these Primulas is that they bloom early, flowering about the month of April when other flowering plants are rare ; and another is, that they are remarkably free bloomers, throwing up successive flower-stems, and lasting a long time in perfection. Their cultivation also is comparatively easy. The best soil for them is light, rich, free material, consisting of fibry loam, leaf-mould, pulverised manure, and some grit to keep it open. They are impatient of excessive moisture, and when put in open ground should be planted in well-drained soil, or in raised positions in the rock-garden. The roots creep just below the surface, and form eyes from which any variety can be easily propagated. P. Sieboldi is a hardy herbaceous perennial, which loses its leaves in autumn and winter, when it goes to rest, and breaks up again early in spring.

P. sikkimensis.—This is a robust species, deciduous or herbaceous in our climate, and quite distinct from all other sorts. It throws up strong flower-stems, 15 to 24 in. high, bearing numerous bell-shaped flowers of a pale yellow, with mealy pedicels, and having a peculiar but agreeable perfume. Some of the stems bear a head of more than five dozen buds and flowers, and each flower is nearly 1 in. long and more than ½ in. across. P. sikkimensis starts into growth in April or early in May, and should have a shady position when in bloom, as its delicate blossoms suffer from cutting winds and bright sunshine. Blossoming in May, it remains in flower many weeks. It is hardy, and loves deep, well-drained, and moist ground ; but spots in the lower parts of the rock-garden near water, or situations in deep boggy places, suit it best. It is readily increased, either by seeds sown in summer as soon as they are ripe, or by careful division in spring or autumn. This Primrose is said to be the pride of all the Primroses of the mountains of India, inhabiting wet boggy localities at elevations of from 12,000 to 17,000 ft., and covering acres of ground with its yellow flowers.

P. Stuarti (*Stuart's Primrose*).—A noble and vigorous yellow Primrose, about 16 in. high. It has leaves nearly 1 ft. long, and many-flowered umbels. A light deep soil, never allowed to get dry in summer, suits it well ; but the most suitable place for it is some perfectly-drained and sheltered slightly elevated spot in the rock-garden. It may be planted against the base of rocks, to shelter it from cutting winds, though, when sufficiently plentiful, this precaution is unnecessary. Mountains of India.

P. villosa.—A lovely little Primrose, and one of the oldest cultivated. It is known by dark green obovate or sub-orbicular leaves. These leaves have close-set teeth, and are covered with glandular hairs, and are viscid on both sides. Its flower-stems, also viscid, barely elevate the sweet blooms above the foliage. It is well adapted for the rock-garden, in which it may be grown in any position, but it requires light peaty or spongy loam, about one-half being fine sand, and its roots should be kept moist during the dry season. It is easily increased by division, and may be raised from seed. Varieties are sometimes, but rarely, found with white flowers. It is sometimes grown under the name of P. viscosa. The variety nivea or nivalis is a beautiful plant, dwarf and neat in growth, producing trusses of lovely white flowers, which are quite distinct from any other in cultivation. It is of very easy culture, and may be grown either in pots or in the open ground. It deserves a select position in the rock-garden or in the border, a light free soil, and plenty of water during the warm season. It flowers in April and May. Alps. Similar to P. villosa are P. ciliata, Steini, hirsuta, pubescens, rhætica, pedemontana, œnensis, and Dinyana, charming little species from the Alps. All thrive under the same conditions as P. villosa.

P. vulgaris (*Common Primrose*).—Of all the Primula family none excel our native Primroses in loveliness, and they are the earliest of all to flower. The Gentians and dwarf Primulas do no more for the Alps than these charming wild flowers do for our hedgerows, banks, groves, open woods, and the borders of our fields and streams. In some places the Common Primrose varies a good deal in colour. Some of the prettiest of the wild varieties are worthy of being introduced into shrubberies and semi-wild places ; and so long as lovely colour and fragrance are esteemed in the spring flower garden, some of the more distinctly toned varieties should be sought after. Varied hues of yellow, red, rose, lilac, bluish-violet, lilac-rose, and white have already been raised, and if the good single varieties become popular, striking and desirable variations from the commoner types will be much more

likely to be preserved. For shrubberies and woodland walks, single varieties will always prove more useful than the old double kinds, because more vigorous and more easily increased. All the varieties are readily increased by division of the offsets, or by seeds, which are produced in abundance. In woods and shrubberies the plants will take care of themselves, a quality which adds to their charms; but in the flower garden some system of culture must be pursued. The following very simple one will secure the best results, both as to the production of vigorous free-blooming plants and an abundant stock. In autumn, after the summer occupants of the flower-beds are faded and removed, the Primroses and other spring flowers are planted in beds as the taste of the grower may direct. About the middle or the end of May it will be time to think of preparing the beds for their summer ornaments, and by that time also the Primroses will have begun to fade after yielding a long and abundant bloom. Then take them up, divide the offsets singly, doing this, if the day be sunny, in a shed or in a shady position. New or scarce varieties, or varieties of which a large stock is required, may be divided into the smallest offsets, but where much increase is not desired, the plants should be simply parted sufficiently to allow of their healthy development. As soon as they are parted, plant them in the kitchen-garden or in some by-place. The more rich and moist the soil the better they will grow; especially if the position be a half-shady one. The alleys between Asparagus beds would do admirably if more convenient positions cannot be found. If the weather be very bright, it would be desirable, for a few days after planting, to shade the plants by spreading boughs or old garden mats over them, and they should at this time be thoroughly watered. If the plants are strong and regular in their development,

Primula vulgaris.

they should be planted in lines, 10 or 12 in. apart each way, but if the offsets are small they should be closer in the lines. By autumn they will make fine plants, and may then be taken up; as much of the root as will come up with ordinary care, but not necessarily any soil or ball, being preserved, and the plants should be transferred to beds in the flower garden or the pleasure-ground. The varieties of single coloured Primroses are so numerous, that it seems a folly to name them; but a few of the most distinct of those propagated by division have received names. Among these may be mentioned: Auriculæflora, one of the finest; Altaica, or grandiflora, also a beautiful sort; Rosy Morn, deep rosy-red; Gem of Roses, rosy-pink; Queen of Violets, deep purplish-violet; Crimson Banner, deep maroon-crimson; Violacea, pale purple; Fairy Queen, pure white with good eye; Sulphurea, large, sulphur colour; Virginia, pure white; Brilliant, rich vermilion-red; King of Crimsons, rich massive crimson; Violetta, a very beautiful violet-purple; Lustrous, very deep crimson, with small perfect lemon eye; and Scott Wilson, a singular bluish-purple. The propagation of these kinds, as well as of all the perennial Primroses, is slow, unless they can be reproduced true from seed. A seedling may produce two others the first year after blooming; and these may produce six or eight the next year, so that it takes several years to raise a hundred plants, and some patience must therefore be exercised before the newest forms can be circulated largely.

DOUBLE VARIETIES.—The forms most precious for the garden are the beautiful old double kinds. No sweeter or prettier flowers ever warmed into beauty under a northern sun than their richly and delicately-tinted little rosettes. Once they were in every garden; but the day came when, like many hardy flowers, they were cast aside to make way for gaudier things; now, however, people are beginning to grow them again, and are inquiring for old and half-lost kinds which they used to know long ago. The best-known and most distinctly marked are the double lilac, double purple, double sulphur, double white, double crimson, and double red. These and several allied forms are occasionally honoured with Latin names descriptive of their shades of colour. In catalogues will be found the following: Primula vulgaris alba plena, lilacina plena, purpurea plena, rosea plena, rubra plena, sulphurea plena; but we had better speak of them in plain English and confine the Latin term to the species. The double kinds are slower-growing and more delicate than the single ones, and require more care, and the development of healthy foliage after flowering should be the object of those who wish to succeed with them. In the double kinds the deeper the hue the less robust the plant. The rich crimsons and the deep purples are usually most difficult to cultivate; but in the extreme north, where the climate is at once moist and temperate, they grow almost with luxuriance. The climate of Ireland also favours them, but in the south and midland districts it is necessary to give them shade and abundant moisture during summer, and in winter the protection of glass against the continued frosts and rains. The white, lilac, and sulphur kinds, on the other hand, are very hardy, and, if established, appear to stand our climate well.

Shelter and partial shade are the conditions chiefly necessary to their successful culture. Open woods, copses, and half-shady places are the favourite haunts of the wild Primrose. In them, in addition to the shade, it enjoys the shelter, not merely of the tall objects around, but also of the long Grass and herbaceous plants growing near. Taking into account the moisture consequent upon such companionship, let these facts guide us in the culture of the double kinds. It will readily be seen that a plant exposed to the full sun on a naked border is under conditions very different from one in a thin wood; the excessive evaporation and the searing away of the leaves by the wind would be quite sufficient to account for its failure.

It is therefore desirable to plant the beautiful double Primroses, in slightly shaded and sheltered positions, in borders of light rich vegetable soil; and, to keep the earth from being dried up too rapidly, spreading Cocoa-fibre or leaf-mould on it in summer. It would be better to plant them in some favourite spot permanently than to change them repeatedly from place to place. Indeed, they ought never to be disturbed except for the purpose of division. They may, however, be employed as bedding plants, and treated in the manner recommended for single varieties, but they are not then so useful or so pretty as when in good colonies or large informal groups. Double Primroses well grown, and the same kinds barely existing, are such different objects, that nobody will grudge them the trifling attention necessary to their perfect development. Occasionally they may be

seen flourishing by chance in some cottage-garden or some old country garden, where they find a home more congenial than the fashionable prim and bare flower garden. Division of the roots.

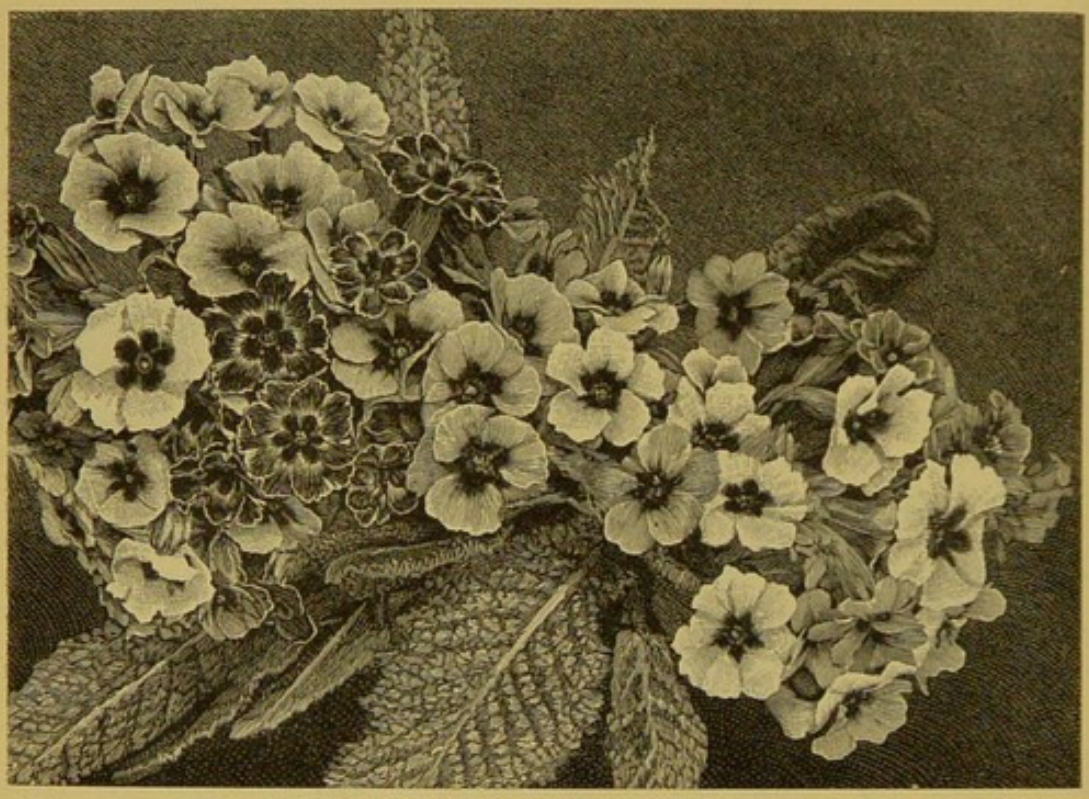
THE POLYANTHUS.—Though the origin of this beautiful old-fashioned flower is somewhat obscure, it is considered to be a form of the common P. vulgaris with the stems developed. Polyanthuses are not at all sufficiently appreciated, considering the wonderful array of beauty they present, and that for rich and charmingly inlaid colouring they surpass all other flowers of our spring gardens. It would require pages to describe even the good varieties. At one time the Polyanthus was highly esteemed as a florists' flower, and none in existence better deserved the attention and regard of amateurs ; but nearly all the choice old kinds are now lost, and very few florists really pay any attention to the flower. In consequence, however, of the great facility with which varieties are raised from seed, nobody need be without handsome kinds, especially as raising them will prove interesting amusement for the amateur. The rules of the florists are in this case of a little more value than usual, and Maddock, in the following passage, describes a very beautiful variation of the flower : "The ground colour is most to be admired when shaded with dark rich crimson resembling velvet, with one mark or stripe in the centre of each division of the limb, bold and distinct from the edging down to the eye, where it should terminate in a fine point." He further says : "The pips should be large, quite flat, and as round as may be consistent with their peculiarly beautiful figure, which is circular, excepting those small indentures between each division of the limb, which divide it into five or six heart-like segments. The edging should resemble a bright gold lace, bold, clear, and distinct, and so nearly of the same colour as the eye and stripes as scarcely to be distinguished. In short, the Polyanthus should possess a graceful elegance of form, a richness of colouring, and symmetry of parts not to be found united in any other flower." Here, however, as in most similar cases, the grower will do well to select the most beautiful of his own raising, and not be tied by any conventional rules.

Primrose Munstead Early White.

As to the capabilities of the various kinds of Polyanthus, it would be difficult to name any hardy flower which is so generally useful. The finer varieties are worthy of a place in the rock-garden amidst the choicest alpine plants ; while the showier ones are suitable for spring bedding. Numbers of vigorous varieties will form the most appropriate ornaments that can be massed by shady walks in pleasure-grounds, and some may be employed as edgings. Many varieties

are worthy of being naturalised abundantly in pleasure-grounds and along wood walks, though the enthusiastic florist grows the finer ones in pots. Polyanthuses are scarcely to be recommended for using in masses in the spring garden as much as the finer varieties of the Primrose, since in order to be admired they require to be seen rather closely; but wherever flowers are placed for their beauty rather than their effect as colour, Polyanthuses are invaluable, and they should be seen in strong colonies in shrubberies and borders. Their cultivation is almost as simple as that of meadow Grass. They grow vigorously in almost any garden soil, but best in a soil that is somewhat rich and moist; and though they thrive in the full sun, they best enjoy a partially shaded and sheltered position, and are somewhat impatient of heat and drought. When grown for bedding, they are, like the Primroses, removed in early summer from the flower garden to the kitchen-garden or nursery, and replaced there when the summer bedding plants have passed away.

There have been lately raised some varieties, a good deal larger in their parts than the type, and these are very easy of culture and very vigorous. There are, however, very few, if any, double varieties, but some varieties are curious and interesting from the duplication of the calyx or corolla; these are popularly known as "hose-in-hose" Polyanthus. They grow with the same facility as the others. The beautiful Gold-laced Polyanthuses are much prized. The best are those raised years ago, such as Cheshire Favourite, George the Fourth, Formosa, Duke of Wellington, Black Prince, Lancashire Hero, and others, and they are mentioned in most florists' catalogues of hardy plants. The common Oxlip is a hybrid more or less intermediate between the Cowslip and the Primrose. It differs from the true or Bardfield Oxlip (P. elatior) in bearing much larger and brighter flowers with longer foot-stalks, and in having in the throat of the flower the five bosses characteristic of the Primrose and the Cowslip. Some of its varieties approach the Cowslip, and some the Primrose in character. The treatment that suits Polyanthuses and Primroses will suit the Oxlip. P. suaveolens is a variety of the Cowslip found in many parts of the Continent, but is not sufficiently distinct or ornamental to merit cultivation. P. elatior, the true Oxlip, is not very ornamental, the flowers being of a pale buff-yellow, and readily dis-



"Bunch" Primroses.

tinguished by their funnel-shaped corolla, which is quite destitute of the bosses present in the Primrose and Cowslip. It is found on clayey soils in woods and meadows in the eastern counties of England, particularly in Essex, Suffolk, and Cambridgeshire. It is of easy culture, and is most suitable for collections of interesting plants, but is neither distinct nor ornamental enough for limited collections of ornamental kinds. It is also known as the Bardfield Oxlip. The blue Polyanthus (P. e. cœruleus) is a singularly handsome variety of it with slaty-blue flowers. It is now rare in gardens, but is well worth growing.

CULTURE.—Where soil is prepared for the choicer varieties, any good loam with a free addition of sand, well-rotted leaf-mould, and decomposed cow-manure will form an admirable compost. The Polyanthus may be raised with great facility from seed, which should be sown immediately after it is gathered, say about the end of June. It will indeed grow with vigour if the seed is not sown till the following spring, but by sowing it immediately nearly a year is gained. The amateur wishing to raise choice kinds had better sow the seed in pans or rough wooden boxes, but for ordinary purposes a bed of finely-pulverised soil in the open air will answer to perfection. Sowings in early spring are better made in pans or rough shallow boxes, placed in cold frames, as time will be gained thereby. The best plan is not to lose time by allowing the seed to lie idle in the drawer all the autumn and winter, but to sow it as soon as it is ripe, and have strong plants in the following spring.

Prince's Feather (Amarantus).

Prophet-flower (Arnebia).

Prunella grandiflora (*Large Self-heal*).—This handsome and vigorous plant is readily distinguished by its large flowers from the common British Self-heal (P. vulgaris), which is unworthy of cultivation. There is a white and a purple variety, both handsome plants, thriving in almost any soil, but preferring one moist and free, and a somewhat shaded position. In winter they are apt to go off on the London clay, at least on the level ground, but are well suited for mixed borders, banks, or copses. The variety laciniata has deeply-cut leaves. Europe. Flowering in summer. P. pyrenaica (Pyrenean Self-heal) is allied to the preceding, and is considered a variety of it. It is about 10 in. high, and its beautiful violet-purple flowers are larger than those of P. grandiflora. It should have the treatment recommended for P. grandiflora. Labiatæ. = Brunella.

Prunus (*Plum*).—Besides the edible Plums, there are numerous kinds little seen in gardens. There is, for example, not a more beautiful early-flowering tree than P. divaricata. In April, and sometimes in March, before its leaves appear, it is covered with small white blossoms. From its gracefully-spreading growth and its early bloom, which is as welcome as that of the Almond, it is one of the choicest of trees for the lawn. The Chinese P. triloba, is a pretty shrub, happily becoming more cultivated. It is hardy,

Prunus sinensis fl.-pl. ¦

vigorous, yet of slender and graceful growth. In spring every shoot is beautifully wreathed with clusters of double rosette-like blossoms of a delicate colour, usually pink and sometimes almost pure white. It generally blossoms before the leaves are fully expanded, and lasts in bloom for quite a fortnight. It makes a capital bush for the lawn or shrubbery, and s always seen to the best advantage in isolated groups of three to six plants. It is, however, never so fine as when against a sunny wall, for then it blossoms more abundantly, on account of its shoots

being thoroughly ripened. There are few more beautiful wall shrubs, and it will quickly clothe a large surface to a height of 10 ft. or more. It requires an annual pruning, and the old wood should be cut out to encourage the new shoots which bear the bloom. P. triloba is also known as Amygdalopsis Lindleyi, P. virgata, and Prunopsis Lindleyi. Another very fine Chinese Plum is the dwarf P. sinensis, a slender early-flowering shrub with small white flowers. It is now commonly grown as a pot-plant for greenhouses in early spring, but is perfectly hardy, and may be planted in the open shrubbery. Its double variety (P. sinensis fl.-pl.) is more ornamental and more generally grown. Its flowers are like small rosettes wreathing every twig with white. The American wild red Cherry (P. pennsylvanica) is an extremely pretty little tree, and frequently seen in old gardens. It blooms early, and about May produces a great many tiny white blossoms on every twig. The Cherry Plum, or Myrobalan, is worthy of consideration, being very pretty when in bloom in early summer. More ornamental, however, because of its rich purple foliage, is the variety P. Pissardi, recently introduced and now becoming common. In May it is crowded with blush-tinted blossoms, which harmonise well with its foliage, and it is then one of the most beautiful of all hardy trees or shrubs. It is, in fact, indispensable to a tastefully-planted garden. Other ornamental Plums worth planting are the double variety of the Sloe or Blackthorn (P. spinosa), which in good soils and suitable spots reaches 8 or 10 ft. high, and produces in spring an abundant crop of tiny rosette-like white blossoms. Some of the varieties of the Bullace Plum (P. insititia) and of the common garden Plum (P. domestica) are very ornamental whether in flower in spring or when in fruit in autumn, and, like the Pear, Apple, Medlar, and Quince, should not be confined to the orchard and kitchen-garden.

Ptarmica (=Achillea).

Pteris (*Brake*).—The Bracken (P. aquilina), the only thoroughly hardy species of this genus, is generally so common as not to need cultivation. If, however, any one wishes to introduce it where it is scarce, he should bear in mind that to transplant it successfully large sods containing the strong creeping roots must be dug up, and planted in light soil; if peaty, so much the better. In very mild localities, such species as P. cretica and the elegant P. scaberula, from New Zealand, sometimes thrive in sheltered nooks.

Pterocephalus Parnassi.—A Scabious-like plant of dwarf compact growth, forming a dense rounded mass of hoary foliage which in summer is studded with mauve-coloured flower-heads. It is a most desirable plant, thriving best in

Pterocephalus Parnassi.

light warm soils, and is suited either for the rock-garden or the ordinary border. =Scabiosa pterocephala. Greece.

Pterostyrax hispidum.—A deciduous Japanese shrub, and quite hardy enough for culture as a bush. It makes a capital wall shrub, being rapid in growth, handsome in foliage, and very beautiful in flower. The leaves are heart-shaped, about 6 in. long and 3 in. broad; the small white flowers borne very freely in drooping clusters about the end of July. Another Japanese species, P. corymbosum, is less common, though desirable for walls. Its flowers, which are white or faintly tinged, are in crowded clusters. Both species are 8 to 12 ft. high in this country. They are known botanically as Halesia hispida and H. corymbosa, but ever since their introduction they have been known as Pterostyrax in gardens.

Puccoon (Sanguinaria canadensis).

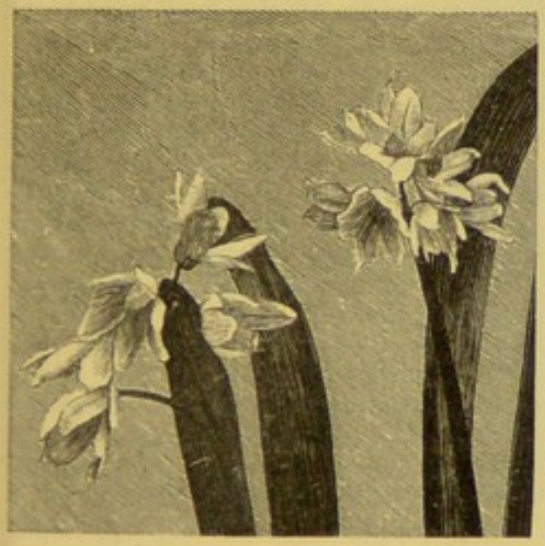
Pulmonaria (*Lungwort*).—These are vigorous and hardy in any soil. Most of them grow well under the shade of trees, and all succeed best in shade. They form dense tufts of foliage, generally handsomely blotched and speckled with white, and make pretty groups in the spring garden, or in semi-wild places, but are worthy of the best places in the flower garden. There are about half-a-dozen kinds, all like each other. P. officinalis and P. angustifolia are native plants. P.

officinalis (sometimes called P. saccharata) has rose flowers turning to blue, and P. angustifolia bears blue flowers. P. mollis is intermediate between the two, and P. grandiflora is somewhat similar to P. officinalis. P. azurea has rich blue flowers. Chiefly natives of Europe. P. dahurica = Mertenzia dahurica.

Pulsatilla (Anemone).

Punica granatum (*Pomegranate*).—Like the Myrtle, the Pomegranate is grown as a wall shrub, the walls of some old houses being covered with it, and it makes a very beautiful covering with its dense mass of tender green foliage. The type has single flowers of a brilliant scarlet, but the best is the double-flowered sort (flore-pleno), which is also scarlet, and is that most commonly seen. There is also a yellow-flowered sort and a white or almost white kind (albescens) with single and double forms, but these are rare. The flowers are borne freely on the young slender shoots of the previous year's growth, and in pruning these must be left untouched.

Puschkinia scilloides.—One of the most beautiful of spring bulbous flowers. In its growth it is like some of the Scillas,



Puschkinia scilloides.

but its flowers are delicate blue, each petal being marked through the centre with a darker colour. The flower spikes are 4 or 5 in. high. There are two forms of the plant—the ordinary one and P. compacta. Compacta is so called from its denser and more numerous flowers, and is therefore the handsomer of the two. P. scilloides is also known as P. libanotica and P. sicula. The Puschkinia delights in a sunny border with a southern aspect near a wall, or an open border slightly raised will suit it. The soil should be light and friable, and about 1 ft. in depth; and the bulbs planted about 4 in. deep. It will not thrive when mixed indiscriminately with plants of coarse growth, for their shade and consequent dampness injure the bulbs. During winter protect with a mulch, but this should be removed as soon as the severe cold is past. After the flowering season, which is late in spring, quite expose the soil so that it gets warm and dry, and to ripen the bulbs well. Shady situations in sub-alpine districts of Asia Minor.

Pyrethrum.—By far the most important of the numerous species of this genus is the Caucasian P. Roseum, which has yielded the innumerable varieties, both single and double, that have now become such popular border flowers. These varieties have much to recommend them; they are extremely showy, are very hardy and easy to grow, are little affected by sun or rain, and are invaluable as cut flowers for several months in summer and autumn. The blossoms are continually becoming more varied in colour and more refined in shape. Though Pyrethrums are in their fullest beauty in June, they are seldom altogether flowerless throughout the summer; and a succession can easily be kept up by judicious stopping and thinning. They are also invaluable for autumn decoration, for if they are cut down after flowering in June they flower again in autumn. They are easily propagated by division or seed. The proper time for propagation is in spring. Take the plants up, shake off all soil, pull them to pieces, put them in small pots, and place them in a cold frame for a few weeks until they become established. Do not keep them too close, as they are apt to damp. When they are established they may be planted out. A good rich loam suits them best, though they will grow and flower freely in any good garden soil, and the more we incorporate well-rotted manure with the soil the better they grow and the more luxuriantly they flower. Mulching, especially in dry soils, is very advantageous, as it keeps the ground moist and cool. The varieties are so numerous that it is difficult to make a selection, and new sorts are continually being raised, but the following are some of the best: White and white-shaded—Boule de Neige, Delicatum, Madame Billiard, Nancy, Niveum plenum, Olivia, Argentine, Prince de Metternich, and Ne Plus Ultra. White with yellow centre—Bonamy, Impératrice Charlotte, La Belle Blonde, Virginale, and Voie lactée. Purple

and red—Mrs. Dix, Rubrum plenum, Mons. Barral, Brilliant, and Wilhelm Kramper. Crimson—Michael Buckner, Miss Plinkie, Modèle, Multiflorum, Prince Teck, Progress, Emile Lemoine, and Marquis of Bute. Carmine and pink—Carmineum plenum, Charles Baltet, Floribundum plenum, Gloire de Stalle, Imbricatum plenum, Nemesis, Fulgens plenissimum, Haage et Schmidt, Iveryanum, J. N. Twerdy, and Rev. J. Dix. Yellow—Sulphureum plenum, Solfaterre. Lilac and rose—Comte de Montbrun, Delicatissimum, Dr. Livingstone, Gaiety, Galathée, Hermann Stenger, Lady Blanche, Lischen Minerva, Uzziel, and Roseum plenum. Most of these are double-flowered sorts ; but there is also a great diversity of colour among the single kinds, and they are quite as beautiful as the heavy-headed double flowers, and are more suitable for vases. Other species of garden value are—

P. Parthenium (*Feverfew*). — The golden-leaved variety of this plant (P. P. aureum or Golden Feather) is now common in every garden. Of this there are several forms. One is called laciniatum, and is very distinct from the older kind. These have their uses in geometrical borders, where they have a bright effect. Their culture is of the simplest description. Seed is sown in heat in spring, and the seedlings are pricked off in pans, and when large enough transferred to open borders, and there they withstand the winter unprotected. New plants should be raised every year, as after flowering the second year the old plants lose their neat compact growth.

P. Tchichatchewi (*Turfing Daisy*).—A Caucasian plant, retaining its verdure in dry weather on dry banks or slopes where few plants would flourish ; a dwarf creeper, quickly forming a carpet of green. The flowers have white rays and a yellow disc, and in forming turf of the plant in poor dry soils they should be removed, though for the rock-garden of the rougher kind or for borders the flowers have some claim to beauty.

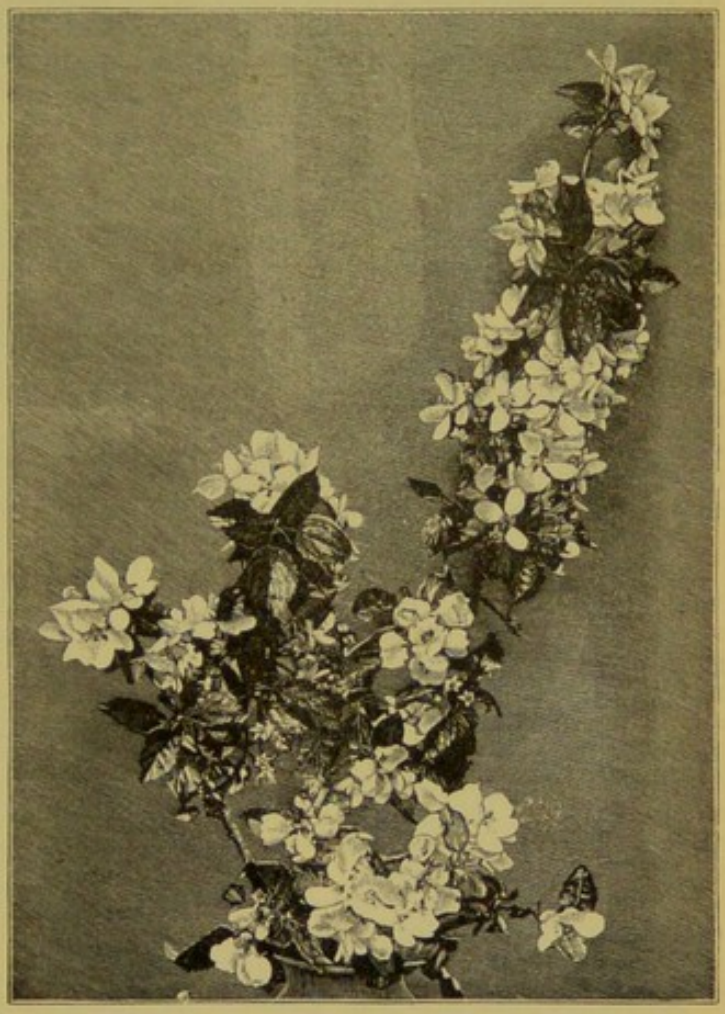
P. uliginosum is one of the noblest of tall herbaceous plants, and forms dense tufts 5 to 7 feet in height. These are crowned by lax clusters of pure white flowers, each about twice the size of an Ox-eye Daisy. It is excellent for cutting, and its blossoms are produced late in autumn before the Chrysanthemums come in. It is a stately plant for a rich border, and thrives best in a deep, moist, loamy soil. It may be naturalised in damp places. Division. *Syn.*, P. serotinum. Hungary.

Pyrola rotundifolia (*Larger Winter-green*).—A rare native plant, 6 to 12 in. high, inhabiting woods, shady, bushy, and reedy places. It has leathery leaves, and its erect stems bear long, handsome, and slightly-drooping racemes of pure white flowers, half an inch across, ten to twenty of which are borne on a stem. They have a sweet scent. P. r. arenaria is a very graceful plant, found wild on sandy seashores. It differs from the preceding in being smooth, deep green, and dwarfer, and in having as a rule several empty bracts below the inflorescence. Both the type and its variety are beautiful plants for the shady mossy flanks of the rock-garden in free sandy and vegetable soil. They flourish more readily in cultivation than any other species of the family. In America there are varieties with flesh-coloured and reddish flowers, but none of these are in cultivation. P. uniflora, P. media, P. minor, and P. secunda are also interesting British plants, and the first-named is very ornamental, besides being very rare. P. elliptica, a native of N. America, is also found in our gardens, though rarely. Any of the Pyrolas are worth growing in thin mossy copses on light sandy vegetable soil, or in moist and half-shady parts of the rock-garden or the fernery.

Pyrus (*Pear* and *Apple*).—Of these there is now a bewildering number, since botanists have classed all Apples, Pears, and their allies under the one family. Here, however, it will be convenient to adhere to the old classification, which places Pears under Pyrus, Apples under Malus, Beams under Aria, and Mountain Ashes and Service Trees under Sorbus. No one is likely to confuse one with another, and their names are more easily remembered when so classified. These old genera are now placed as sections of Pyrus. The finest flowering trees are those included under the section Malus, the type of which is the common Crab Apple (M. communis). There is a beautiful flowering variety of the Crab Apple called the Paradise Apple, having large handsome flowers, but it is seldom planted for effect, although in common use as a stock for grafting. The Chinese and Japanese Crab Apples include the finest of our small trees that flower in early summer. The Chinese double-flowered Crab (P. M. spectabilis) is a lovely tree, 15 to 25 ft. high, with a wide-spreading head of branches abundantly wreathed with large semi-double delicate rose-pink flowers. It is not often met with, except in old gardens. The varieties of P. M. baccata or Berry Apple (so called

from its small round fruits) are known as Siberian Crabs. They are graceful in growth, showy in flower, and have highly-coloured fruits, which add much to the beauty of the garden in autumn. The Japanese Crab (P. M. Toringo) has beautiful flowers and fruits. The flowers are white or pale pink, and the very small fruits are hung on long slender stalks. Of the Toringo Crab there are now several forms, differing in colour of flower and of fruit. It is a small tree, and is a large-spreading bush if the leaders are removed. The finest of the Eastern Crab Apples is the Japanese P. M. floribunda. Fully grown it makes a low tree with a dense wide-spreading head of slender branches, loaded every May with a profusion of flowers of a pale pink when expanded, and of a brilliant crimson in the bud, when they are most beautiful. No garden is well planted if this tree is wanting, as it is hardy, grows rapidly anywhere, and costs little to buy. There are a few varieties of it, one called Halleana having larger and more richly-tinted blossoms. The North American Sweet-scented Crab Apple (P. M. coronaria) is a lovely little tree with large pale pink deliciously-scented flowers. There are other ornamental Apples in the section Malus, but the foregoing include the finest and the most readily obtainable. The charming Cydonia Maulei is now placed under Pyrus, but in these articles it is described under Cydonia. Of the true Pears as ornamental trees little can be said. They are a good deal like orchard and garden Pears in growth and flower, and their fruits are not remarkable. One or two, however, may be planted for ornament. One is P. Bollwylleriana, from Central Europe, which produces in spring an abundance of small white blooms in clusters ; and another, P. Salicifolia (the Willow-leaved Pear), which is well worthy of planting on account of its distinct and beautiful foliage, has leaves of silvery whiteness. P. olæagnifolia, or Oleaster-leaved Pear is another Eastern species with hoary leaves.

Of the *Sorbus* section the common Mountain Ash (P. Aucuparia) is a familiar example, but it is too common to need description. There is a rare kind with yellow berries (fructu luteo), another kind with weeping branches (pendula), a third of erect growth (fastigiata), and a fourth with variegated leaves. The last, however, is not very ornamental, as the variegation is seldom distinct. Other species worthy of attention are P. S. americana, the American Mountain Ash, which is a good deal like our own Mountain Ash ; and P. S. hybrida, a tree of very distinct growth, with a dense pyramidal head.



Crab Apple blossom in a jar.

The leaves of P. S. hybrida are intermediate between those of P. S. Aucuparia and P. Aria (the White Beam). The true Service Tree, P. S. domestica, used to be more frequently planted than now. It is a handsome tree with elegant foliage. Of the White Beam (P. Aria) there are some very handsome kinds. Even our native White Beam is ornamental. Like the Mountain Ash, it is also one of the best trees for planting in exposed places on poor soil, and no tree thrives so well on chalk. Its broad silvery foliage makes

it show in the landscape, and it is a valuable park tree. Its allies and varieties include some beautiful trees, such as latifolia, with leaves which are broader than the type and quite as silvery. P. A. Hosti is a handsome tree, both in foliage and flower. Its leaves are large and silvery, and its delicate rose-pink flowers are in broad flat clusters. It is a Central European tree, perfectly hardy, and about 10 ft. high. The Himalayan Beam Tree, P. vestita (called also P. lanata and nepalensis) is extremely fine, but is not hardy everywhere. Its very large leaves are like those of the Loquat, and are of silvery whiteness. Where it thrives it is 20 to 30 ft. high.

Pyxidanthera barbulata (*Pine Barren Beauty*).—A curious little American evergreen shrub, smaller than many Mosses, flowering in summer, rose-coloured in bud, white when open, the effect of the rosy buds and the white flowers on the dense dwarf cushions being singularly pretty: it is plentiful in the sandy dry "Pine barrens" between New Jersey and North Carolina and often found on little mounds in low, but not wet, places. It is a charming plant for the rock-garden, planted in pure sand and leaf-mould fully exposed to the sun. Division. Polemoniaceæ.

Quamoclit coccinea.—A pretty Convolvulus-like plant, with many small scarlet flowers and slender stems of rapid growth, attaining a height of 6 to 8 ft. in a few weeks. It may be treated either as a half-hardy annual, and sown in February or March under glass or in a hot-bed, but it requires a warmer climate than ours to do its best in. Q. hederæfolia is another pretty species. It has scarlet flowers and lobed foliage, and requires the same treatment as Q. coccinea. Both are excellent plants for sheltered trellises, as they give abundance of flowers from July to September.

Quercus (*Evergreen Oak*).—The oaks of our country are the glory of our woodland, but losing their leaves in winter, cannot shelter our gardens with their fine backgrounds of evergreens as the Holm Oaks do. Therefore it is well that some of the favoured shores and valleys of the world have beautiful Evergreen Oaks which we may grow in or near our gardens, the best known of these being the Ilex of Italy, which is, happily, hardy in our country. It is perhaps most beautiful in sea-shore districts, and many gardens in such districts, both in England and Ireland, have fine specimens. Old trees give excellent shade, and it is a very pretty shelter for the flower garden. Among the most beautiful things I have seen in Nature's gardens are the Evergreen Oaks on the mountains of California, one with a camellia-like leaf, the under side being a beautiful brown-gold colour, the cup covered with fur of the same colour. This, perhaps, is not hardy with us; but there are other Evergreen Oaks of much value for our gardens generally, and though they must not stand among the flowers, their near shelter and background of beautiful leaves will be precious in many positions. With such a great shore-line, the opportunities for growing them well are vastly greater than they would be in a Continental country of like temperature to ours.

They are lovely shelter trees as groups or groves for gardens swept by sea winds. There are instructive examples of their use in this way in many places, as at St. Ann's, near Dublin, and Holkar, in Norfolk, and they are equally useful for smaller places. Sometimes after very hard winters the trees look as if they were killed, but afterwards throw off the injured leaves and grow happily again. They should be transplanted with the greatest care when young, and the best way is often to raise plants from acorns, common where the tree grows well, and which may be often gathered in Italy. They should be sown as soon as possible after ripening. The following notes do not include all the species of Evergreen Oak which have been introduced into British gardens, but the most important kinds are referred to. On our warmer shores a number of other kinds besides the common Ilex should be tried. For convenience of reference, these are arranged alphabetically.

Q. acuta is a native of Japan, with dark leathery leaves about the size of those of the common Cherry Laurel. It has passed two severe winters untouched. This has not been long enough in the country to enable one to judge the merits of an adult tree, but even as a bush it is a fine object. It is met with in books and catalogues under the names of Q. Buergeri and Q. marginata. Q. Buergeri robusta is a vigorous large-leaved form.

Q. agrifolia, the Enceno of the Californian coast, is a distinct Oak rarely seen in gardens. In general aspect it is not unlike some forms of Q. Ilex, but the leaves are of a different shade of green. Dr. Engelmann, says it is "a large tree, with a stout, low trunk, often 8 to 12 ft., sometimes 16 to 21 ft., in circumference, and with a spread of branches of 120 ft."

Q. alnifolia (*Golden Oak of Cyprus*).—Its chief charm resides in the bright gold of the under surface of the Alder-like leaves. Snow

lies for a month on the hills where this Oak is found wild, and therefore there seemed every probability that in the south and west of England it would thrive, but as far as the immediate neighbourhood of London is concerned, it has not turned out a success.

Q. chrysolepis (*Californian Live Oak*) is found along the coast ranges and along the western slopes of the Sierra Nevada, where it forms a tree 3 to 5 ft. in diameter of stem, or, at higher elevations, is reduced to a shrub. It has not been long enough in cultivation in this country for a definite judgment to be formed respecting it, but it has pretty spiny-toothed dark green leaves, somewhat golden on the under surface. In its native country it is a beautiful evergreen tree.

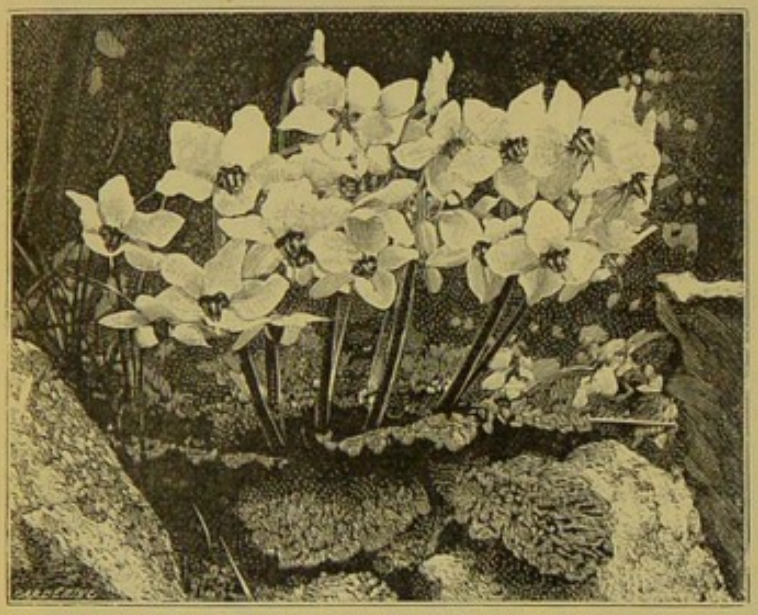
Q. coccifera is a native of Southern Europe and the Levant, in this country forming a dense bush with small spiny dark

Shoot and Acorns of Evergreen Oak.

green leaves, and very small acorns, often hardly larger than a Pea, which now and then ripen in Southern England.

Q. densiflora is a native of California, where it extends from the Santa Lucia Mountains, through the coast ranges, and especially among the Red Woods to the Shasta region. It is a tree 50 to 60 ft., or rarely 80 ft. high, and a foot or two in diameter; in some positions often a mere shrub 5 to 7 ft. high. At Kew this grows freely in rather sheltered places, and produces fine leathery leaves of a dark green colour, in outline somewhat like those of a small Spanish Chestnut.

Q. glabra, another Japanese Oak, has large handsome leaves as large as those of a common Laurel; the acorns are borne in upright spikes and take two years to ripen. Several varieties are mentioned in some continental catalogues, but they are hardly distinct enough to merit attention. At Kew the species makes a large bush and is thoroughly hardy.



Ramondia pyrenaica.

Q. Ilex.—This is the best-known of all the Evergreen Oaks, and is perhaps the most valuable for Britain. Old trees, which have been allowed plenty of space and have not been pruned, but allowed to grow naturally, resemble in form the Olive trees of the Italian coast and of the Riviera about Mentone. Q. Ilex is one of the most variable of Oaks, but few of the named varieties—and there are many—are so beautiful as the old kind. This tree has been thoroughly tried in our country, and is of high value.

Q. Suber (*Cork Oak*).—The very interesting Cork Oak, which, except for the wonderful growth of its bark, hardly differs in effect from the Holn Oak. It thrives at Kew, and has to be protected by iron hurdles to prevent the public from taking away the bark. There are fine old trees of this at Mount Edgcumbe, Goodwood, and other places, but the Cork Oak is not hardy enough for our climate generally.

Q. virens (*Live Oak* of Virginia) is in its native country a tree of the first economic value, and deserves all the encomiums passed on it by Cobbett in his *Woodlands*. All the trees in England I have seen under this name are, however, forms of Q. Ilex, and I doubt there being any fine trees of the true Q. virens in cultivation in this country.—N.

Ragged Robin (Lychnis Flos-cuculi).

Ramondia pyrenaica.—An interesting Pyrenean plant, with leaves in rosettes close to the ground, the flowers purple-violet colour, with orange-yellow centre, 1 to 1½ in. across, on stems 2 to 6 in. long, in spring and early summer. There has been a good deal of writing about its cultivation, but it is really not difficult; growing in cool peat borders, on the lower ledges of the rock-garden, or in moist chinks. It is found in the valleys of the Pyrenees, on the face of steep and rather shady rocks. There is a rare white variety which does well in borders of American shrubs in peat soil. There is one good and one or more pure white varieties, and the names of new kinds are talked of, such as R. Heldreichi, R. serbica, and R. Nataliæ; the two last found in Servia, and said to be far superior to the old plant, but of this we have to wait for proof. Cyrtandraceæ. Seed and division.

Ranunculus (*Crowfoot*).—Many of these are useless weeds, while others are among the choicest of garden flowers and ornaments of the border or the rock-garden. They are for the most part of the simplest culture; only R. asiaticus and its many varieties require special treatment.

R. aconitifolius.—The double-flowered variety, known as Fair Maids of France, is a pretty plant about 18 in. high, forming for several weeks in early summer a dense tuft covered with small rosette-like white blossoms. A really charming plant in deep moist soils. The single wild plant may be worth a place in collections.

R. acris (*Bachelors' Buttons*).—The pretty double form of this plant is also a useful kind, its rich yellow blossoms borne in button-like rosettes: a border plant, and good in moist soil, fully exposed.

R. alpestris.—A native of the alpine regions of Central Europe, and found chiefly growing in calcareous soil : a handsome kind, forming small tufts of shining, dark-green, prettily cut leaves ; flowers large pure white, with numerous yellow stamens in the centre, and borne singly on erect stems from 2 in. to 6 in. high in June and July. A good rock-garden plant in light, porous, moist soil.—C.

R. amplexicaulis is a lovely garden plant, about 1 ft. high, with slender stems, glaucous-gray leaves, and blossoms 1 in. across, pure white with yellow centres, blooming in April and May : a pretty border and rock-garden plant, doing best in a deep moist loam. Pyrenees and Alps of Provence.

R. anemonoides.—A native of the Alps of Styria and the Southern Tyrol : a handsome species; leaves large, with a purplish leaf-stalk, and divisions which are larger and less deeply cut than those of R. rutæfolius ; flowers large, with numerous divisions in the petals, of a greenish white on the inside, and of a very fine pink colour on the outside, appearing before the leaves at the same time as the plants of Anemone Hepatica come into bloom. It does best in the rock-garden in a cool place and in moist porous soil.

R. asiaticus.—An old garden plant, with neat dressy double flowers of many colours, divided into various sections, such as the Dutch, Scotch, Persian, and Turkish, each representing a distinct race, but all beautiful and well deserving care. The culture of this Ranunculus is simple if a few essentials are observed. The situation should be open, but not exposed, and the soil a loam mixed with decayed stable manure equal to a third of its bulk. About a month previous to planting, the bed should be prepared to a depth of 15 in., and planting should take place about the last half of February ; in some seasons it may take place in October, though such an early date is not the best. Drills about 5 in. apart and 1½ deep should be made with a small hoe ; the claws of the roots should be placed downwards and pressed firmly into the soil, which should be raked over the roots, and a top dressing of about 2 in. of good loam given. If the surface soil is light, it may be gently beaten with a spade in order to obtain a firm surface, and this may be repeated just before the foliage appears, say about a month or six weeks after

Ranunculus aconitifolius fl.-pl. (Fair Maids of France).

the planting. As this Ranunculus delights in moist soil, water should be given if there is a scarcity of rain, and in no case should the roots be allowed to become dry. A light top-dressing of artificial manure or guano just as the foliage is above ground will do good. When the flowers are past and the leaves faded, the roots must be taken up, dried, and stored in a cool place in sand till the next planting season, for roots left in the ground are injured by rains and never strong. The Persian varieties are the finest as regards colour, compactness, and symmetry of growth; but the Turban varieties are of hardier constitution and of freer growth, and therefore are better suited for beds, lines, and masses. The Scotch and Dutch varieties are also fine for masses in beds, being all of highly effective colours. It is useless to enumerate the different varieties, as they are usually sold according to colour, and are mentioned in nearly every bulb catalogue. The large semi-double French (de Caen) and the Italian forms of this plant are good. The wild plant, which I gathered in Egypt both in the yellow and red forms, is a lovely wild flower, and as well worth growing as any of its garden varieties.

R. bulbosus fl.-pl. is a showy plant, about 1 ft. in height, with, in early summer, numerous double yellow blossoms, growing well in any soil. Of R. repens there are two double varieties, one neat and the other untidy.

R. bullatus is a fine border plant, about 6 in. high, with large orange-yellow blossoms like those of the Marsh Marigold (Caltha palustris). It is not so hardy as the majority of the Crowfoots, and should therefore be placed in warm dry soil.

R. crenatus.—A native of alpine and siliceous mountains in Styria, the leaves entire and roundish; the flowers are large, white, with almost entire petals, two or three together at the extremity of stem, 3 or 4 in. high in April and May. The rock-garden in deep sandy soil in our country, fully exposed to the sun.

R. glacialis (L.).—Found on the Alps and the Pyrenees, also in the regions of the North. This is the plant of the icy regions, being found near to the melting snow on the loftiest mountain. The whole plant involuntarily reminds one of melting ice. The thick fleshy leaves of a dark green, and deeply incised, the stem of a brownish-red tint, flexuous, 3 or 4 in. long, glabrous, prostrate on the ground, and bearing from one to four flowers, the petals of which are at first of a light pink colour, passing into a bright coppery-red, and which remain on the plant until the seeds are ripe—everything about this plant presents a glacial and unwonted aspect. In Britain this should be kept without great difficulty in a cool and moist but fully exposed ledge of the rock-garden, in deep gritty soil with white stones or sand on the surface to keep it cool. In case of drought it should be well watered. R. gelidus and R. roseus are varieties of R. glacialis, and are cultivated in the same way.—C.

R. Lingua, a native kind, is a noble waterside plant. Its leaves rise boldly out of the water, and it has large yellow and attractive flowers. The other aquatic species, such as R. aquaticus and fluitans, are pretty plants for artificial water, but should be introduced cautiously, as when once established they spread rapidly and become too plentiful.

R. Lyalli (*Rockwood Lily*).—A lovely New Zealand plant; in moist places in the Southern Alps the plant has large rounded leaves and very large handsome waxy white flowers, not unlike those of Anemone japonica, with delicate yellow stamens in the centre. The variety Arameosa differs in being covered with scattered flaccid hairs. R. Traversi is nearly allied. In some places in Britain this plant is not hardy, but in others it stands the winter well. A writer in *The Garden* says of a plant at Kew: "It is growing in a deep peaty bed, sheltered from the north and east, and has been without protection of any kind for over two years. To get the seed of this charming plant to germinate is difficult, as importations in recent years have failed, and like many other similar plants it seems to do best when let alone. It has flowered in a few gardens, and would seem to require cool rock-garden treatment so far as now known."—W. K.

R. parnassifolius.—A native of the Alps and Pyrenees, at high elevations, where it is found growing in calcareous and granitic *débris*. A singular-looking plant with thick, entire leaves, woolly on the edges, flowers large, of a pure white colour, borne two or three together on a prostrate stem in the month of May. In the Pyrenees and on the French Alps it is rare—a circumstance which I am unable to explain—to find a flower of this handsome species which possesses the full number of petals, these being also frequently abortive. A rock-garden plant requiring the same treatment as the higher mountain species.

R. rutæfolius has Rue-like leaves and white flowers with dark yellow centres.

Coming from the highest parts of the Alps, it requires the same treatment as the choicest alpine plants. It should be in a fully-exposed spot in moist soil with plenty of grit in it.

R. Seguieri.—A native of the Southern, Eastern, and Western Alps : a handsome species with deeply-cut, dark-green leaves, and differing appreciably from R. glacialis, although it belongs to the same group. Flowers of a fine white colour, on erect stems in May and June. On the rock-garden with the alpine buttercups.

R. speciosus is a showy plant, with compact rosette-like flowers of bright yellow in May, succeeding in any light soil. In a full collection, R. gramineus, chærophyllus, illyricus, and fumariæfolius may be included.

The above is but a selection from a very large family in nature, many of which are little known in gardens, and many of no garden interest.

Raphiolepis ovata (*Japanese Hawthorn*).—A beautiful Japanese shrub, hardy in southern districts, and with a little winter-protection may even be planted in cold parts. Its thick evergreen leaves are of a dark colour, and its flowers, which are large, white, and sweet-scented, are in clusters terminating the young branches. It is a low spreading bush, somewhat open and straggling, and should not be crowded with other shrubs. Some of the other species, such as R. indica and R. salicifolia, both from China, are not hardy enough for the open ground, but make good wall shrubs.

Red Campion (Lychnis diurna).

Red Hawkweed (Boerkhausia rubra).

Red Valerian (Centranthus ruber).

Reed Grass (Arundo).

Rehmannia chinensis.—A handsome dwarf perennial of the Gesnera family. In summer with large tubular flowers of a purplish colour, striped with a darker hue ; not hardy, but succeeding in warm sheltered gardens. The best specimens of it we have seen grew in a moist peaty border under a wall running east and west. It is generally best to winter it under glass. China.

Reineckia carnea.—A dwarf Liliaceous plant of low tufted growth of which there is a variegated variety. The grassy foliage of the plant is dark shining green in the type, but in the variety is striped with creamy-yellow and green, this making a pretty edging plant, and succeeding in an open situation in an ordinary soil. Its flowers are not showy. China.

Reseda odorata (*Mignonette*).—The only species worth growing is the common Mignonette and its varieties, which is much admired everywhere on account of its fragrance. Seed sown in the open ground in March or April produces in a few weeks flowering plants, which continue to bloom till late in autumn, yielding an abundant supply of cut flowers. If, however, a few specially fine masses be wished for, the seed should be sown in pans about the end of March, the seedlings placed singly in 3-in. pots, and planted ou in good soil in an open position. A little attention should be given to thinning out the weak shoots and stopping the vigorous ones. Plants sown in autumn will survive mild winters and produce flowers in early summer, these being finer than those of spring-sown plants. There are many forms, as R odorata grandiflora, R. o. pyramidalis grandiflora, the compact strong growing variety Machet, with bold spikes of reddish flowers and broad abundant leaves, and dwarf varieties. Machet is the kind grown so largely in pots for the London markets, and it is also a good kind for the open air.

Rest Harrow (Ononis).

Retinospora.—This class of rather small-growing shrubs as a rule come from Japan. Several have golden-tinted foliage, but this depends to some extent on the position in which they are growing. In a clear and bright atmosphere the colouring is much richer than if the plants are partially shaded. Retinosporas are best when sheltered from strong winds in open loamy soil. They may be transplanted when young, for they recover quickly from any check. R. obtusa is one of the best kinds, and varies greatly from seed. Out of a number of seedlings many diverse forms might be selected. Some push away at once with a decided leader, and when 6 ft. or 8 ft. high form a graceful pyramid. R. pisifera is looser and more open, and gets shabby in aspect on rather dry and sandy soils. The golden-leaved variety (R. pisifera aurea) is one of the best of this colour. R. plumosa, usually considered a variety of R. pisifera, is a charming conifer, forming a clear-growing pyramid, whose short plume-like branchlets are clothed with grayish-green leaves. There are forms of it, as aurea, argentea, and alba picta. R. squarrosa is noticeable for the silvery hue of its long leaves, being very distinct from any of the others, but is regarded only as a variety of R. pisifera. R. filifera (the *Weeping Retinospora*) is one of the most beautiful as a single specimen on a small lawn. The branchlets are long, thong-

like, and mostly terminated by tufts of little shoots, like tassels, at the ends. There is a golden-leaved variety, little known yet. R. filicoides and R. lycopodioides are both considered forms of R. obtusa, and are not ornamental. R. leptoclada, R. ericoides, and R. tetragona aurea are important.

Rhaponticum cynaroides (*Swiss Centaury*).—A hardy perennial from the Pyrenees, 3 ft. or more in height, with large leaves covered underneath with silvery down, and its purple flowers are in very large heads. It thrives in a deep, moist but well-drained and free soil; and is suitable for borders, the margins or groups, and for isolation. R. pulchrum is another hardy perennial from the Caucasus, 2 ft. or more high, its leaves ashy or sea-green in colour, and the flowers small and purplish. It is suitable for dry, arid, rocky positions; for which purpose R. scariosum is also useful. Division.

Rheum (*Rhubarb*).—The Rhubarbs are of great vigour and picturesque aspect. They may be planted in any soil, and afterwards left to take care of themselves; and their fine leaves are well seen by the margins of shrubberies and in semi-wild places where luxuriant vegetation is desired. They like deep and rich soil. R. Emodi is a fine-leaved plant, for groups in the pleasure-ground, but requiring good soil. It grows about 5 ft. high, and is imposing with its wrinkled leaves and large red veins. R. officinale, however, as regards foliage, is the most effective hardy plant introduced for many years. All the old Rhubarbs are insignificant beside it. It is effective early in the year, and should be placed near the shrubbery, on the turf, or in the wild garden. In small glades with rich soil a bold effect might be produced by a good selection, embracing Ferulas, Heracleums, Rhubarbs, Acanthuses, Yuccas, the common Artichoke, Gunnera scabra, and many other vigorous hardy subjects. R. officinale is hardy and easily propagated. R. palmatum is a slow-growing plant, and smaller than its variety, R. p. tanguticum, which increases rapidly, has fine foliage, and will be welcome to those who grow the other hardy species. R. nobile is distinct, forming a dense pyramid of foliage. It is, however, one of the most difficult to cultivate, and in Europe has succeeded only in the Edinburgh Botanic Garden. Sikkim Mountains. R. Ribes is too rare and delicate for gardens. The common Rhubarbs, said to have sprung chiefly from R. Rhaponticum and R. undulatum, have been planted in Hyde Park, but there they are arranged in masses, which is not the proper way. Those worth notice are R. australe, R. compactum, R. rugosum, R. hybridum, Victoria Rhubarb (with very large leaves and long red stalks), Myatt's Linnæus, and Prince Albert. Scott's Monarch is the most ornamental of all the garden varieties.

Rhexia virginica (*Meadow Beauty*).—A northern representative of a beautiful South American family with vivid rosy flowers. It grows 6 or 8 in. high, in sandy swamps in New England and the Eastern States, and is found as far west as Illinois and Wisconsin, thriving only in a boggy or marshy place in peaty or sandy soil. R. Mariana is even scarcer in this country than R. virginica, and less important. It does not grow so far north in America, but is plentiful in the sandy fields of New Jersey, and would probably thrive in sandy heath soil. The Rhexias must not be divided too much. Good tufts should be obtained from their native localities, and planted in a sandy peat bed on a cool clay subsoil.

Rhinopetalum Karelini.—A bulbous plant of the Lily family, from Central Asia, 4 to 5 in. high, allied to Fritillaria and sometimes classed with it. It bears two or three broad stem-clasping leaves, and in late autumn or early winter a terminal raceme of slightly-drooping bell-flowers which are about 1 in. across, and pale purple with dark veins, and spots, with a yellowish-green pit at the base of each reflexed segment. According to Dr. Regel's experience, this bulb must be kept dry until November, and it should not be growing or showing bloom before spring. If planted in November, growth is retarded, and the plant blooms in spring, as it ought to do. Plants flowering in autumn invariably dwindle away, and do not produce any more new bulbs. It should have light soil in well-drained borders with a warm exposure.

Rhodanthe.—Charming half-hardy annuals from Australia, valuable as border flowers and for winter bouquets, as they are "everlastings." They are all of slender growth, 1 to 1½ ft. high, and have glaucous-gray foliage and showy flowers. The original species, R. Manglesi has fine rose-coloured blossoms with yellow centres, and of which there is a double variety. R. maculata has a deep crimson ring encircling the eye of the flower; and there is a pure white variety. R. atro-sanguinea differs considerably from R. maculata, being not only dwarfer, but more branched. The flowers, of a bright magenta colour, are rather smaller than those of maculata.

but average 1 in. in diameter. It is rather less hardy than maculata, but sufficiently hardy for the open air. All these kinds should be sown thinly in heat in pots in February or March. In the southern counties they may also be sown in the open air in May on warm borders in good soil. In frames, freely watered, and placed in a temperature of 65° to 70°, the seeds quickly germinate, but if insufficiently watered, will remain dormant for several weeks. The seedlings should be pricked while young, as they do not transplant well when large. Plant them in a warm open position, and a well-manured light soil—if peaty, the better. They ought to be protected for a few days after transplanting.

Rhodea japonica.—A Liliaceous plant from Japan, with thick broad deep green leaves. There is a variegated form, with leaves striped with white and green. R. japonica is hardy, and vigorous only in the most favoured districts, and seldom flowers in the open.

Rhodochiton volubile.—A beautiful slender plant, usually grown in greenhouses, but succeeds in the open in sheltered parts, forming a delightful festoon for arbours and trellises in warm localities. Strong young plants should be placed out in May in good soil.

Rhododendron (*Rose Tree*).—A noble family of shrubs, so popular that they are often over-planted; that is to say, we are sure to see Rhododendrons in large and often inartistic and ugly masses in many country places where no planting of any other kind worth speaking of is carried out. In districts where they do well, the soil and climate being perfectly suitable, monotonous effects are produced through their over-use, against which all who care for beautiful gardens should protest. There are many other shrubs as well worthy of a place as the Rhododendron. Even frequent misuse of a plant is, however, no reason against its artistic use; the flower has led people to ignore many things equally good: the charm of the evergreen leaf and the large and handsome flowers taking English planters by storm. The mild climate of our country and generally our rather mild winters

Rhododendron Nobleanum.

allow many more kinds to grow with us than on the Continent of Europe generally, or in N. America, though that is the home of the Rhododendron. In severe winters some kinds are touched by frost even with us, and therefore we must be on our guard against planting other than the hardy varieties, of which a selection is given here. The hardy American species should be grown more in lowland valleys, as I find that they stand winters which kill R. ponticum.

The vast range in our country over which the plant will grow well, alike in Ireland, England, and Scotland, makes the possession of the finest kinds most important. The proper arrangement of the plants as to colour deserves attention, and in a separate paragraph we mention the colours that go best together. Among the numbers of kinds that have been raised by English nurserymen, a good many poor, dull, or ugly in colour have been sent out, and therefore it is important to get good kinds in this respect and to group and arrange them better than has hitherto been done ; that is to say, not so much in flat areas and lumpy beds. A far better way is to break them up into bold and simple groups, holding the colours more together and not scattering them about in indefinite mixtures everywhere, but giving a distinct impression of their beauty in different parts of the grounds. It is important to get plants from layers where possible, and not grafted plants, as these are apt to perish and their places be taken by the common stock, of which we have already far too much. Hitherto it has been very difficult to get layered plants ; but if the public would let nurserymen know their wishes, layers would be forthcoming. It makes great difference in the end whether the kind has its own roots and is spread about into many plants, or is on some wretched stock on which it perishes.

Rhododendrons are of free growth in almost any soil except lime soil. In many loamy gardens free from lime the plants do perfectly well, although perhaps never so much at home as on a sandy peat. Over a large area of Ireland where the limestone prevails it is, I think, not worth trying to cultivate Rhododendrons. It is always better to grow things that do best on one's own soil. Given a peaty or limeless soil, the difficulty is to prevent their growing so quickly as to smother each other. They are often too closely planted, and after a few years of rapid growth such plantations cannot show their beauty. It would be much better to plant all the choice kinds rather thinly. Where from previous thick planting the bushes are too close together, thin them promptly and severely, leaving the choicer kinds and the finest-formed bushes. In this way we get light and shade among the plants instead of allowing them to form one flat level head. The excellent plan of placing lilies and the other fine handsome hardy flowers among Rhododendrons and like shrubs tends to keep them more open and delightful in every way, their forms as well as flowers being better shown.

The plants, forming generally close balls of earth, are more easily transplanted than most shrubs. This is often done in late spring and summer, as for the London flower-shows, where numbers of the finest kinds are brought in spring and taken away in summer. In the case of all choice and rare varieties remove the seed-vessels after flowering, thus saving the strength of the plants for future good growth and flowers.

Hardy Rhododendrons seldom flower profusely in consecutive years, but fine displays biennially are usually made. Established plants can take care of themselves and in strong loamy soil artificial waterings are not required. In very dry summers mulching the roots of a few single plants that occupy a rather dry position is often necessary, but where the beds are on level ground they succeed without this attention. This is not so in all cases, as drought in the early autumn months often kills many of the large plants on shallow soils. Rhododendrons are, as a rule, safe from overdryness at the root until August ; then, if the weather should be dry, a good soaking of water twice a week and a mulch over the roots of half-rotten manure, 3 or 4 in. in thickness, will maintain them in health.

THE EVILS OF GRAFTING.—Apropos of this subject, Mr. Scrase Dickins, who is a good grower himself, writes : "We have a large number of grafted Rhododendrons, planted over thirty years ago, from the base of which every year a thick growth of suckers springs up ; these require to be cleared off in the early summer, and again in the autumn, if the intended variety is to retain its claim to existence ; but the labour entailed is considerable, and many are overlooked or passed by for want of time. Occasionally one comes across a great bush of the common ponticum, with a small scraggy piece in the centre to show that once it was meant to be a hybrid variety of special beauty ; but the worst of the whole

business seems to be that the older the plant the larger is the base from which the suckers spring, and consequently the larger is the number of suckers. With Ghent Azaleas the trouble is nearly as bad ; the common yellow form on which they are grafted, being a strong grower, soon makes short work in ejecting the less vigorous intruder. It is very unfortunate when, after a certain number of years, the labour and money spent in an endeavour to obtain some specially beautiful effect results in a commonplace arrangement of lilac and yellow. When the snow has prostrated large Rhododendrons, those that are on their own roots will often raise themselves in a thaw without help ; whereas those that are grafted will most likely have broken off short at the base. If the union between the stock and the scion is so imperfect as to give way under these provocations, it follows that the flow of sap and consequent development of the plant must be seriously interfered with. In some cases this may prove beneficial in restraining a coarseness of growth and inducing fertility, but it is the reason why we do not possess in our gardens finer examples of graceful and well-developed natural specimens. In order to gain new and improved varieties, it is necessary to raise a large number of seedlings. If nurserymen were to give their attention more generally to raising seedlings and layered plants, it might with reason be expected that they would raise a large number of new and improved

Tree Rhododendron at Castlewellan, co. Down.

varieties. If planters, looking forward to the future, as planters as a rule must do, would insist on being supplied by the nurserymen with seedlings only, then our successors would have finer examples to thank us for, and we should be increasing our store of what is beautiful and of value among our treasures in garden and wood." The following is a list of the best hardy varieties :—

Achievement.
Adrian.
Agamemnon.
Album elegans.
Album grandiflorum.
Alexander Adie.
Alma.
Amphion.
Archimedes.
Atro-sanguineum.
Auguste van Geert.
Bacchus.
Barclayanum.
Baron Schrœder.
Beauty of Surrey.
Bertram.
Blandyanum.
Bluebell.
Boule de Neige.
Bouquet de Flore.
Brayanum.
Broughtoni.
Bylsianum.
Caractacus.
Catawbiense.
Catawbiense album.
Charles Bagley.
Charles Dickens.
Charles Thorold.
C. S. Sargent.
Chionoides.
Cœrulescens.
Concessum.
Congestum roseum.
Coriaceum.
Crown Prince.
Cruentum.
Cynthia.
Delicatissimum.
Delicatum.
Doncaster.
Duchess of Bedford.
Duchess of Connaught.
Duchess of Sutherland.
Duke of Connaught.
Elfrida.
Everestianum.
Fair Helen.
Fimbriatum.
Fleur de Marie.
Florence.
Francis Dickson.
Frederick Waterer.
Garibaldi.
George Paul.
Gloire de Bellevue.
Govenianum.
Guido.
Hamlet.
Hannibal.
Helen Waterer.
Hendersoni.
Hermit.
H. H. Hunnewell
H. W. Sargent.
Iago.
Ingrami.
Jack Waterer.
James Bateman
James Macintosh.
James Mason
James Nasmyth
J. Marshall Brooks.
John Spencer.
John Walter.
John Waterer.
Joseph Whitworth.
Kate Waterer.
Kate Alice Waterer.
Kettledrum.
Lady Annette de Trafford.
Lady Armstrong.
Lady Clementina Mitford.
Lady Clermont.
Lady Dorothy Neville.
Lady Eleanor Cathcart.
Lady Falmouth.
Lady Francis Crossley.
Lady Grey Egerton.
Lady Godiva.
Lady Olive Guinness.
Lady Tankerville.
Lalla Rookh.
Limbatum.
Lord John Russell.
Lord Palmerston.
Lucidum.
Madame Carvalho.
Marchioness of Lansdowne.
Marie Stuart.
Martin Hope Sutton.
Mason's White Seedling.
Maximum.
Maximum album.
Maximum Wellsianum.
Maxwell T. Masters.
Melton.
Memoir.
Meteor.
Michael Waterer.
Minerva.
Minnie.
Mirandum.
Miss Jekyll.
Miss Owen.
Mont Blanc.
Morion.
Mrs. Arthur Hunnewell.
Mrs. Charles Leaf.
Mrs. Charles Thorold.
Mrs. Fitzgerald.
Mrs. Frank Phillips.
Mrs. Fredk. Hankey.
Mrs. G. H. W. Heneage.
Mrs. Harry Ingersoll.
Mrs. John Clutton.
Mrs. John Kelk.
Mrs. John Penn.
Mrs. J. P. Lade
Mrs. John Walter.
Mrs. John Waterer.
Mrs. Mendel.
Mrs. Milner.
Mrs. R. S. Holford.
Mrs. Russell Sturgis.
Mrs. Shuttleworth.
Mrs. S. Simpson.
Mrs. Thomas Agnew.
Mrs. Thomas Longman.
Mrs. Thomas Wain.
Mrs. W. Agnew.
Mrs. William Bovill.
Neige et Cerise.
Nero.
Nigrescens.
Norma.
Notabile.
Novelty.
Odoratum.
Old Port.
Onslowianum
Othello.
Paradox.
Perfection.
Perspicuum.
Pictum.
Picturatum.
President van den Hecke.
Prince Camille de Rohan.
Princess Christian.
Princess Mary of Cambridge.
Punctatum.
Purpureum elegans.
Purpureum grandiflorum.
Purity.
Ralph Sanders.
Raphael.
Rosabel.
Roseum elegans.
Roseum pictum.
R. S. Field.
Sappho.
Scipio.
Sefton.
Seraph.
Sherwoodianum.
Sigismund Rucker.
Silvio.
Sir Charles Napier.
Sir Isaac Newton.
Sir James Clark.
Sir Robert Peel.
Sir Thomas Sebright.
Sir William Armstrong.
Snowflake.
Standard of Flanders.
St. Simon.
St. Blaise.
Stella.
Sultana.
Sunray.
Surprise.
Sydney Herbert.
Sylph.
The Cardinal.
The Moor.
The Queen.
The Warrior.
Titian.
Torlonianum, a hybrid between Azalea and Rhododendron.
Towardii.
Vandyck.
Vauban.
Verschaffeltii.
Vestal.
Victoria.
Vivian Grey.
William Austin.

RHODODENDRONS GROUPED FOR EFFECT OF COLOUR.—Reds, rose-colours, and pinks with a few whites, viz. Reds —James Marshall Brooks, John Waterer, Atro-sanguineum, Alexander Adie, Baron Schrœder. Rose and rosy-pinks—Mrs. Penn, Ingrami, Cynthia, Bianchi, Fair Rosamund. Whites—Mrs. John Clutton, Minnie, Pictum, Fair Helen, Madame Carvalho. Rhododendrons of salmon-red colour are best kept separate from others ; of these, good colourings are—Lady Eleanor Cathcart and Mrs. R. S. Holford. Purples must be kept away from reds, but group well with any whites ; some of the best for colour are—Everestianum, Album elegans fastuosum, Cyaneum, Lady Normanton, Reine Hortense, Lucifer.

DWARF KINDS.—There are some dwarf kinds which may be associated with alpine plants in the rock-garden—indeed, some are but a span high. One of the prettiest of these is R. Chamæcistus, which has tiny leaves, and in early summer exquisite purple flowers, of the same size as those of Kalmia latifolia. It is rarely seen in good health in gardens, and is best in limestone fissures, filled with peat, loam, and sand mixed in about equal proportions. A native of calcareous rocks in the Tyrol, and one of the most precious of dwarf rock-shrubs. The well-known R. ferrugineum and R. hirsutum both bear the name of alpine Rose, and often terminate the woody vegetation on the great mountain chains of Europe. They are easily obtained from nurseries, and are

well suited for the large rock-garden, where they attain, in deep peat soil, a height of about 18 in. R. Wilsonianum, R. myrtifolium, R. amœnum, R. hybridum, R. dauricum-atrovirens, R. Goveniannum, R. odoratum, and R. Torlonianum are dwarf kinds, which may be used in the rock-garden—the last two being sweet-scented. They should not be planted near minute alpine plants.

HIMALAYAN RHODODENDRONS IN BRITAIN.—There has been much interest taken in the Himalayan Rhododendrons, which, unfortunately, are not hardy enough for our country generally—certainly not for inland parts, though, no doubt, from time to time some of them, and also hybrids from them, will be found hardy here and there. Also there are many kinds very well worth growing in mild and favoured districts such as the south of England and Ireland. A correspondent in the south of Ireland, in Fermoy, sends to *The Garden* the following account of the kinds he has found to do well there—quite hardy without protection—and also of his failures :—

"As I have taken much pleasure in cultivating and hybridising Rhododendrons for about twenty-five years, especially with a view to acclimatise those of Sikkim and Bhotan, I think the results at which I have arrived may be interesting. In order to avoid occupying too much space, I shall first give the names, as furnished to me, of those varieties which I have found perfectly hardy trees without the slightest protection, although some of those which bloom early (about March) have their flowers occasionally spoiled by the spring frosts :—

"Alpinum ; Æruginosum ; Anthopogon ; Arboreum album ; Arboreum roseum, very beautiful ; Arboreum nepalense ; Barbatum, magnificent ; Calyculatum ; Camelliæflorum ; Campanulatum; Campbelli ; Campylocarpum ; Ciliatum ; Cinnamomeum ; Cinnabarinum ; Crispiflorum, not bloomed ; Eximium, fine, like Falconeri; Falconeri, grand ; Fulgens ; Falconeri superbum, not bloomed ; Glaucum ; Hodgsoni, grand, has not yet bloomed ; Hookeri ; Keysi ; Lanatum ; Lancifolium, not bloomed ; Metternichi ; Massangei, beautiful bloom this year ; Niveum ; Nobile, a grand plant, never bloomed ; Ochraceum ; Roylei ; Virgatum ; Wallichi, I think same as Niveum ; Wighti, I think not true.

"The following were more or less injured last spring (those marked * I have not yet succeeded in acclimatising) :—

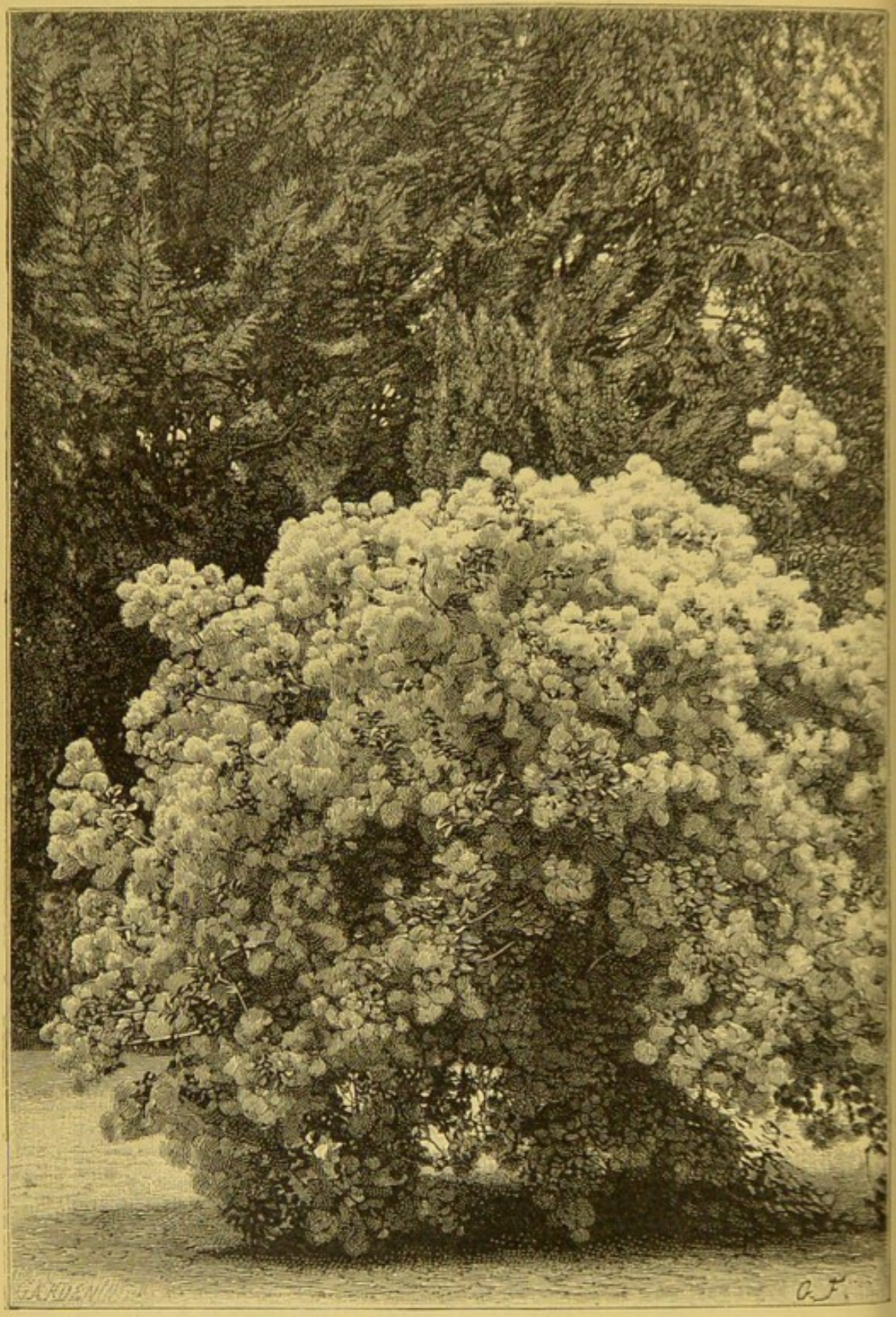
"Argentum, much injured, growing well, not bloomed yet ; Aucklandi, much injured, growing well, bloomed well in 1878-79-80 ; Calophyllum, apparently killed, but growing well ; * Dalhousianum, I do not give this up ; * Edgeworthi, I do not give this up ; Formosum Gibsoni, much injured, but growing well ; Jenkinsi, much injured, doing well, never injured in twenty years previous ; Kendricki, I doubt its name ; Longifolium, much injured, growing well, has never bloomed ; Lindleyanum, much injured, growing well ; Maddeni, much injured, growing well (I see no essential difference between this and Jenkinsi ; centre of Jenkinsi flower, rose, of Maddeni, yellow) ; Nilghiricum, not bloomed, much injured ; * Nuttali, many plants killed, I fear hopeless ; Thomsoni, much injured, but growing ; Windsori, very much injured, but growing well. The last two plants appear to me less hardy varieties of R. arboreum.

"I have not included any European hybrids in my list, of which, between Himalayan sorts alone, I know many, and have a great number of my own rearing also, and the reason I do not give up Dalhousianum and Edgeworthi is that I have seedlings from crosses of them which promise well to be hardy, one especially, between Edgeworthi and, I think, Calophyllum, which only lost its bloom-buds last spring, I am very proud of ; its fragrance is far beyond any I know—Rollisson's fragrantissimum and Lindleyanum being, so far, the best. I have named it the Empress of India in honour of our Queen.—H. H."

Rhodora canadensis (*Canadian Rhodora*).—A pretty deciduous bush, 2 to 4 ft. high, allied to the Rhododendron, a native of the swamps of Canada, hardy, and needing a moist light soil, though it prefers peat. In very early spring it has clusters of rosy-purple flowers before the leaves unfold.

Rhodotypos kerrioides (*White Jew's Mallow*).—A beautiful deciduous shrub from Japan, with a growth and foliage recalling the familiar old Jew's Mallow on cottage-walls, but with white flowers resembling single Roses. It is of slender growth, but makes a dense bush when well grown, and is usually 5 or 6 ft. high, though against a wall it reaches a height of 10 or 12 ft. It flowers in May, and keeps in bloom a considerable time.

Rhus (*Sumach*).—Several important ornamental shrubs are contained in this genus, and a few of them are indispensable to all gardens. They are mostly remarkable for their elegant foliage and picturesque growth, though the Venetian Sumach (R. Cotinus) and the Stag's-horn Sumach (R. typhina) are beautiful when in flower. The Venetian Sumach, Wig Tree, or Smoke Plant (R. Cotinus), is a remarkable late-flowering shrub, and, being different from all others, is of exceptional interest. Its flowers are inconspicuous, but the feather-like clusters that succeed them are of a reddish-purple and highly attractive, and they remain so for several weeks. This plant is a very old introduction from Southern Europe ; it is perfectly hardy, and thrives almost anywhere, but should always be allowed ample room to develop itself. The Stag's-horn



Rhus Cotinus (Venetian Sumach).

Sumach (R. typhina), also called the Vinegar Tree, is a beautiful autumn shrub or small tree. Its dense massive spikes of bright crimson fruits look like velvet and remain until destroyed by frosts; while the foliage is handsome, for the leaves are long and numerous, and the general growth, being open and irregular, is singularly picturesque when fully developed. R. typhina is, therefore, a striking tree whether as a single specimen on a lawn or when grouped with the dwarfer Sumachs. There are some distinct varieties of it, arborescens being of more tree-like growth and frutescens being dwarf. Crimson seed-clusters are characteristic of all the varieties except viridiflora, in which the seed-clusters are green. The popular name "Stag's-horn Sumach" points to the resemblance between the crooked downy branches and the young horns of a stag. N. America. The Smooth Sumach (R. glabra) has elegant foliage. In the variety coccinea the seed-clusters are velvety crimson, but are not so beautiful as those of R. typhina. The variety laciniata is one of the noblest of fine-foliaged plants, and young and vigorous specimens are most valuable for sub-tropical effect. It grows from 4 to 7 ft. high. It has finely-cut and elegant leaves, and the strongest is about 1 ft. long when the plant has been established a year or two. These leaves combine the beauty of the finest Grevillea with that of a Fern-frond. When unfolding they remind one of a finely-cut umbelliferous plant in spring; when fully grown the midribs are red; and in autumn the leaves themselves glow off into a bright colour after the fashion of American shrubs and trees. The variety in the shape, size, and aspect of the foliage makes the bush charming. Its chief merit is that, in addition to being elegant in foliage, it is hardy and very dwarf. R. vernicifera is distinct from the preceding. It has fine pinnate leaves, and is useful for grouping with laciniata or with hardy shrubs of like character. The foregoing comprise the best of the Sumachs, but there are others in cultivation that could be added, and these include R. semialata Osbecki, an elegant Japanese shrub, but not perfectly hardy, except in the south. The creeping or trailing Sumachs, such as R. Toxicodendron (which is known as Poison Ivy, Poison Oak, and Poison Sumach), R. venenata (Poison Elder), and R. radicans, should be excluded from a garden, as the sap of the bruised growth is highly poisonous.

Rhynchocarpa dissecta.—A plant with perennial tuberous roots and incised foliage, its fruits orange-red, terminated by a beak, requiring warm situations and light rich soils, and is more likely to succeed in the southern counties than in the northern. It may be grown under glass with more success than in the open. Cucurbitacæ. S. Africa.

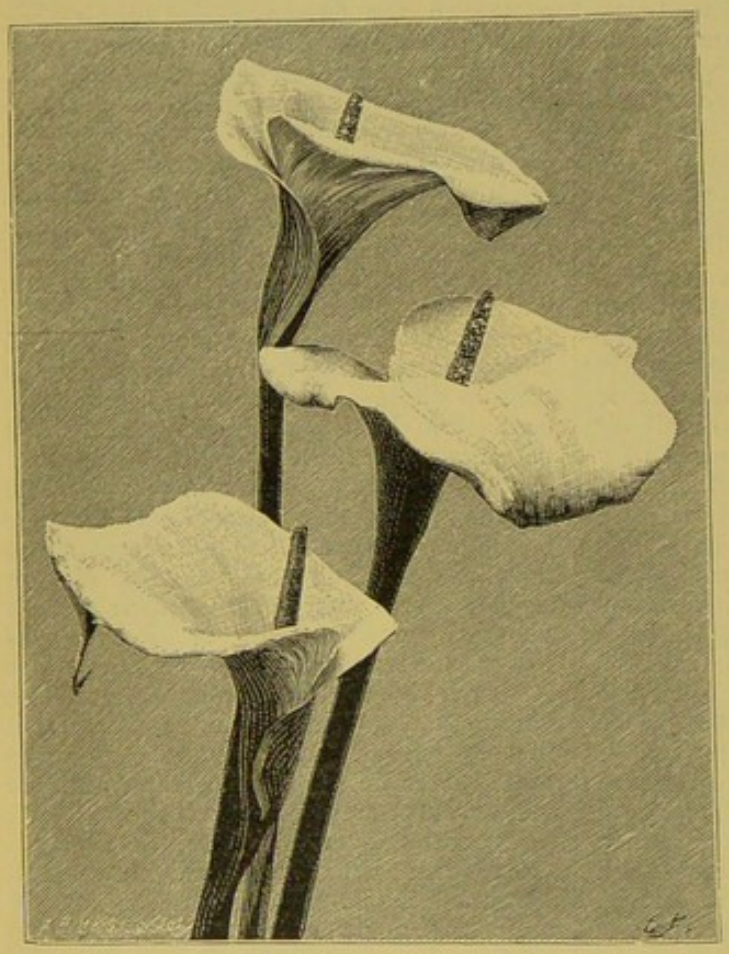
Ribbon Grass (Digraphis).

Ribes (*Currant*).—The favourite old Crimson-flowering Currant (R. sanguineum) is typical of the few species that can be called ornamental shrubs. This shrub is so common that I need only allude to the fine varieties of it that are to be obtained from the best nurseries. Deeper and richer in colour is the variety atro-rubens (called also splendens), though the flowers and racemes are smaller. The crimson-red of its blooms forms a striking contrast to the variety named albidum, whose flowers are almost white, though slightly suffused with pink. The double sort (flore-pleno) is an admirable shrub, with very double flowers, which last a long time in perfection, and, as they expand later than the common kind, prolong the season. The variety glutinosum is distinguished by clammy foliage and large pale rosy-pink flowers.

The Yellow-flowering, or Buffalo Currant (R. aureum), deserves to be more commonly grown. It is a different shrub from R. sanguineum, having larger flowers of a rich yellow, which appear about the end of April or beginning of May; the leaves also are smaller, more deeply lobed, and of a paler green. The variety præcox is so named because it flowers earlier than R. aureum, and is most desirable on that account, and the variety serotinum, because it flowers late. Serotinum is even finer than the type.

R. Gordonianum, a hybrid between R. aureum and R. sanguineum, is an old and tolerably common shrub—intermediate in growth as well as in flowers, which are an orange-red; it is distinct and showy. It is also known as R. Beatoni and R. Loudoni. Of the numerous other species there is none so fine as the Californian Fuchsia Currant (R. speciosum), whose flowers so much resemble miniature Fuchsia-blossoms that in some places it goes by the name of R. Fuchsioides. Its deep red blooms have protruding stamens, and hang from the leaf-axils in clusters of two or three. In growth and foliage it resembles a Gooseberry. A densely-flowered bush is extremely pretty and lasts in perfection a long time. Though quite hardy enough to be grown as a bush in the milder parts of England,

it is usually seen against a wall, and there are few more elegant wall shrubs. Grown thus it is 6 to 8 ft. in height. Most of the other varieties have inconspicuous flowers, but one or two are worth growing for the sake of their autumn foliage, which dies away in various shades of crimson. The Missouri Currant (R. floridum), also called R. missourense, is one of the best of these. It is a stock plant in some of the largest nurseries. The Flowering Currants are really an important group of shrubs and deserve the best attention, and instead of being crammed in the usual shrubbery-mixture, should be grouped by themselves.



Arum Lily (Richardia æthiopica).

Rice-paper Plant, Chinese (Aralia).

Richardia (Calla).—This name has been accepted by botanists for the last three-quarters of a century, although it is not yet generally used by gardeners.

The genus consists now of various species. They all have a perennial tuberous root-stock, not unlike that of Caladium, from which spring the annual leaves and scapes, the former with folding stalks, which form a kind of stem, bearing sagittate leaves, the latter erect, stout, and bearing a large spathe. There is a noteworthy difference between R. æthiopica and the others, the former having a rhizome and never naturally dying down.

R. æthiopica (*Lily of the Nile*) was first introduced into Europe from S. Africa in 1687. It is emphatically a Cape plant, and is not found within 1,000 miles or so of the Nile, although it is commonly known as the Lily of the Nile. In some parts of this country, for instance Cornwall, it has become naturalised in shallow water, spreading and flowering with the same freedom as in the ditches and swamps of the Cape. It varies considerably in the size of its spathes. I have seen them 10 in. long, and I am told that larger even than this have been grown by cultivators who cut off most of the leaf-blades when the spathes were developing. The plant is useful in ponds and fountain basins in the warmer parts of our country. *Syn.*, Calla.

Ricinus communis (*Castor-oil Plant*).—It is a much-grown plant in warm countries, growing out-of-doors in the warm months in ours, and used for bold and noble beds near beds of the more brilliant flowers, but it is not well to associate it closely with bedding plants, because of its strong growth and the shading of its leaves; it is a good plan to make a compact group of it in the centre of some wide circular bed and to surround this with a band of a dwarfer plant, say Aralia or Caladium, and to finish with flowering plants. A bold centre may be thus obtained, while the effect of the flowers is enhanced. It requires rich deep earth to form its finest leaves, and to raise the plants a brisk hotbed is needed in February or March, in which to plunge the pots in which the seeds should be sown. The pots should be well drained, and the soil pressed down firmly with a little sifted soil placed over the seeds. When the plants are large enough, pot them singly into 4-in. pots in soil composed of sandy loam and leaf-mould or rotted manure; keep them in a warm moist temperature, and give plenty of water at the roots; when the roots have

reached the sides of the pots, place the plants in 6 or 8-in. pots. About the end of May gradually inure them to a cool temperature, and after a few weeks place them in a sheltered position out-of-doors. By the end of June they may be planted out in the beds ; the more sheltered the situation the better. Dig out holes for them placing in the bottom a few forkfuls of manure, and, if this be taken from a warm manure-bed, so much the better. Plant and water them with soft rain water, and mulch the surface with manure. During hot weather manure-water will be of use.

The best varieties are sanguineus, borboniensis, Gibsoni (a very fine dark variety), giganteus, Belot Desfougères (a very tall and branching kind), viridis (of a uniform lively green), insignis, africanus, africanus albidus, minor, hybridus, microcarpus, macrophyllus, atro-purpureus, and sanguinolentus, all of which are forms of R. communis, a native of the East Indies.

Robinia (*False Acacia*).—Beautiful flowering trees for lawn or shrubbery. The common Acacia or Locust Tree (R. Pseudacacia) is of quick growth, hardy, and thrives almost anywhere. The ordinary form, with its white Pea-shaped blossom in full beauty about the end of July, is the most familiar. Of the numerous varieties the following are the best : Decaisneana, with delicate pink flowers ; semperflorens, flowering throughout the summer, and having white blossoms and bright green foliage ; and Bessoniana, the thornless branches of which form a dense globular head of deep green foliage, which is retained until very late in autumn, hence its great value as a town or a street tree. There are many other forms of the False Acacia more or less distinct, such as fastigata, of upright growth ; crispa, with curled foliage ; monophylla, with leaves entire instead of pinnate ; umbraculifera, with a spreading head ; macrophylla, with large leaves ; sophoræfolia, with leaves like the Japanese Sophora ; and inermis, with a small head of spineless branches.

The Clammy Locust (R. viscosa), known also as R. glutinosa, is smaller than the

Rodgersia podophylla.

ordinary False Acacia, but is elegant in foliage and beautiful in flower. It so much resembles R. Pseudacacia that the two, when out of flower, can only be distinguished by the clamminess of the bark on the young shoots of R. viscosa. The flowers resemble those of Decaisne's variety of the common Acacia, being of a pale pink colour, but the clusters are shorter and denser. It is a very beautiful lawn tree, valuable because it flowers while the tree is still small : fully grown it is of picturesque habit, from 30 to 50 ft. high, thriving best in a deep light soil in a sheltered spot.

The Rose Acacia (R. hispida) is, like the other two Robinias, a native of North America, and is one of the finest of small trees requiring little room, and not fastidious as to soil. It is naturally straggling in growth, 5 to 15 ft. high ; its foliage is much larger than that of the other Robinias ; the clear rose-pink flowers are also larger. A well-flowered specimen is a pretty sight. It flowers in June, but often continues at intervals till autumn. It may be known when not in leaf by the dense rusty hairs covering the young twigs. Its branches are brittle and apt to get broken by high winds, especially if it has been grafted high ; therefore choose a spot sheltered from high winds. If the branches become heavy, especially in flower-time, support them by stakes. It may be grown as an espalier, like a fruit tree, and this will protect it from winds, or it may be trained against a wall. There are several so-called varieties, but none is more beautiful than the type. The variety macrophylla (large-leaved) is of

Romneya Coulteri.

stronger growth and has finer foliage and flowers.

Rock Cress (Arabis).
Rocket (Hesperis).
Rocket Larkspur (Delphinium).
Rockfoil (Saxifraga).
Rock Rose (Cistus).
Rockwood Lily (Ranunculus Lyalli).

Rodgersia podophylla.—A handsome-leaved plant of the Saxifrage family, with bronze-green leaves measuring 1 ft. or more across and cleft into five broad divisions. The inconspicuous flowers are produced on tall branching spikes. R. podophylla is perfectly hardy, enjoying peaty soil and a shady situation. It is easily propagated by cutting the stoloniferous root-stock, and twenty plants can be obtained from a single root-stock in one year. Japan.

Romanzowia.—R. sitchensis and R. unalaschensis, Alaska, are small dwarf plants forming in summer a dense tuft of foliage studded with tiny white flowers. They are quite hardy, and will grow well in open positions in the rock-garden. They are interesting but not attractive plants. Hydrophyllaceæ.

Romneya Coulteri (*White Bush Poppy*).—Among plants of recent introduction perhaps none surpass in stately beauty this fine Californian Poppywort. In favourable localities it has flowered freely on lengths of the current year's growth, fully 7 ft. high, when with some twelve or fifteen flowers in bloom at the same time, the plant has a charming effect. The flowers are of a peculiarly delicate texture, the petals somewhat transparent, and yet enduring in a good state for days; their fragrance delicate, something like that of a Magnolia. It is perennial, subshrubby, and the deeply-cut glaucous foliage is retained throughout the winter. It does not appear to flower on the last year's growth, though that growth remains in good condition. The flowers are borne mainly on the points of the new shoots and on laterals nearest the points, more sparingly on the lower laterals. It is hardy in genial soils; enjoys best a warm sandy soil. One-year-old plants in a garden on clay have grown but poorly, while others from the same batch on a warm peaty sand, in an elevated position, have grown vigorously and flowered abundantly, blooming from the end of June to the end of September. Where it will not grow well in the open, it would do so in many places against a wall with a southern aspect. It does best on warm soils in very different parts of the country, so that no one need doubt the fitness of this noble plant for English gardens.

Romulea.—Bulbous plants of the Iris family. They are of dwarf growth, and have grassy foliage; but though their blossoms are showy, they are not perfectly hardy, and they require to be grown either in frames or in very warm sheltered borders, in light soil. The best known are R. Bulbocodium, ramiflora, and Columnæ, natives of South Europe, and R. rosea and R. Macowani from the Cape of Good Hope. The showy Crocus-like flowers of these open fullest in sunshine.

Rosa (*Rose*).—The flower of flowers has been ill treated in its literature! It would be difficult to imagine anything more confusing than the writings on the Rose and catalogues of the present day! Almost useless groups, like the Boursault, are dignified as classes, while more important classes like the noble Teas often receive no due notice; the confusion arising from the misleading term "hybrid perpetual" has effectually concealed the fact that the true perpetual bloomers are the Tea Roses, so keeping the noblest of all Roses out of gardens even in the southern counties. For many years Roses far superior to the many so-called "perpetual" in point of continuity of bloom have been raised, and yet, as a result of that ill-chosen name, one may go into some of the largest places in the country and hardly see a Rose in the Rose-garden in August. The set idea of the Rose-garden itself, as laid down in all the books, *i.e.* a place apart where one can only see flowers at a certain season, was unfortunate and harmful, as it led to the absence of the Rose from the flower garden itself, in which it is the most delightful of all known adornments. Instead of seeing the Rose in many different attitudes in a country place, we see a wretched mob of standards and half-standards rising out of the ground, generally in a miserable formal arrangement called the Rosery. Instead of forming beautiful Rose-gardens, many growers have distinguished themselves by growing Roses on tall Briers and other stocks, from which they get perhaps one or two flowers bigger than their neighbours' to send to a Rose-show. The Rose exhibitor's Rose-garden is even uglier than the so-called Rosery in the large country-seat. In this way, through the stupidities of books and the curious power for evil of words, the beautiful human and artistic side of the Rose-garden has been

forgotten. But there is the dawn of better things, and the following abstract of a paper, read by Mr. T. W. Girdlestone at the Rose Conference at Chiswick, gives a fairer view of the

ROSES FOR THE GARDEN.—It is curious how few people seem to consider the value or beauty of a Rose as a growing plant in the garden. Nearly every one, when supposed to be describing some particular variety of Rose, in reality describes an individual blossom. In almost every Rose catalogue it is the same; the individual flower is described, and only as a cut flower its beauty is dilated upon. The reason is easy to find, but hardly the justification. No doubt the Rose has always been the most popular of flowers for decorating our rooms and houses, a position from which it is never likely to be deposed, and from this it has probably come about that the Rose is generally estimated only as a cut flower. It is time that more attention should be paid to the Rose as a decorative garden plant.

One sees sometimes in catalogues collections of (say) 100 Rose trees in as many varieties. Such a miscellaneous assortment planted together would certainly not make an effective Rose-bed, nor a decorative display; and one is tempted to think that those who declare Roses to be always ineffective and untidy, and deserving only of cultivation in the kitchen-garden to supply cut flowers for the house, must have gathered their experience from Rose-growing of this kind.

Triomphe de Rennes.

A great source of failure in making a decorative display with Roses has, undoubtedly, been the frequent and perverse employment for particular purposes of varieties utterly unsuited thereto. The number of Roses suitable for standards is comparatively small, yet people persist in attempting to grow all varieties in this form; and when an army of gawky scarecrows is the result, the Roses are blamed. Similarly, effective Rose-pillars can only be made with a limited number of sorts, amongst which few of the ordinary Hybrid

Perpetuals are included ; yet who has not seen innumerable attempts made with varieties of this class, of which the outcome has been the production of a solitary shoot 1 or 2 ft. taller than the rest of the plant, which is carefully tied to the stake, and looks as though it were longing to hide behind the great Larch post it so vainly essays to cover?

It has often been urged that although Roses are gay enough while they are in full bloom, for the rest of the season they are dull and unsightly. Apart from this being only half true, and becoming annually less so, as more thoroughly perpetual Roses are raised, if the objection is to be admitted, it must apply equally to a great majority of herbaceous and bulbous plants ; and our gardens, hardly emancipated from the dreary tyranny of "bedding-out," must relapse into the inane monotony of ribbon borders and carpet beds, in the latter of which especially the enforced primness of the poor little plants is as unnatural as children that never have grubby fingers or rumpled collars. Those whose sympathies are so strangely arranged as to cause them to love carpet-bedding, are not likely to admit the claim of Roses to be considered as decorative plants ; but it may be hoped that those who underrate the attractions of the Rose in the garden will eventually be a small and constantly-decreasing minority.

There are four ways in which Roses may make a very decorative effect as growing plants in the garden—namely, in beds of dwarf plants ; as large isolated bushes or real tree standards ; for the formation of Rose-pillars ; and as climbers, whether on walls or over arches, &c.

In planting dwarf Roses in beds for the purpose of effective display, avoid too many varieties. If a bed of seventy-two dwarf Rose trees is to be planted, half-a-dozen varieties are ample, the twelve plants of each variety being grouped all together ; and these varieties should be selected for freedom of growth, abundance and continuity of flowering, handsome foliage, and for being as little liable to mildew as may be ; and, most important of all, for their sturdy habit and ability to carry their flowers erect, pendulous blooms being necessarily ineffective. The flowers should be substantial and of good quality, capable of enduring sunshine or shower without being burnt or getting all their petals stuck together.

It is also important that the plants of a particular Rose should be planted at the distance apart best suited to the habit of that variety. In old days it was commonly recommended to plant Roses 3 ft. apart each way ; and, no doubt, when the vigorous hybrid Chinas were in vogue, this amount of space was necessary. But there are now so many modern varieties, such as the races sprung from Victor Verdier and Baroness Rothschild, which, although possessing abundant vitality, make such compact sturdy growth, that to make the best display they should not be planted much more than one foot apart. Some of the modern Roses are as vigorous and strong in growth as many of the old sorts, and these will need to be planted greater distances apart; but if the distance be carefully proportioned to the habit of the variety, and a dozen or more plants of each variety be grouped together, there will be little fear of the display of bloom being ineffective, or of Rose beds not being decorative.

The cultivation for several years of almost every variety of Rose at all generally grown in this country has resulted in the selection of the following kinds as the best for planting in beds, in groups or masses, for the purpose of decorative display in the garden :—

Varieties of which the plants should stand about 1 ft. apart.—Baroness Rothschild, White Baroness, Merveille de Lyon, Marquise de Castellane, Earl of Pembroke, Alphonse Soupert, Marie Finger, Caroline Swailes, Mrs. Baker, Hippolyte Jamain, Captain Christy, Mme. Bois, Marguerite de Rohan.

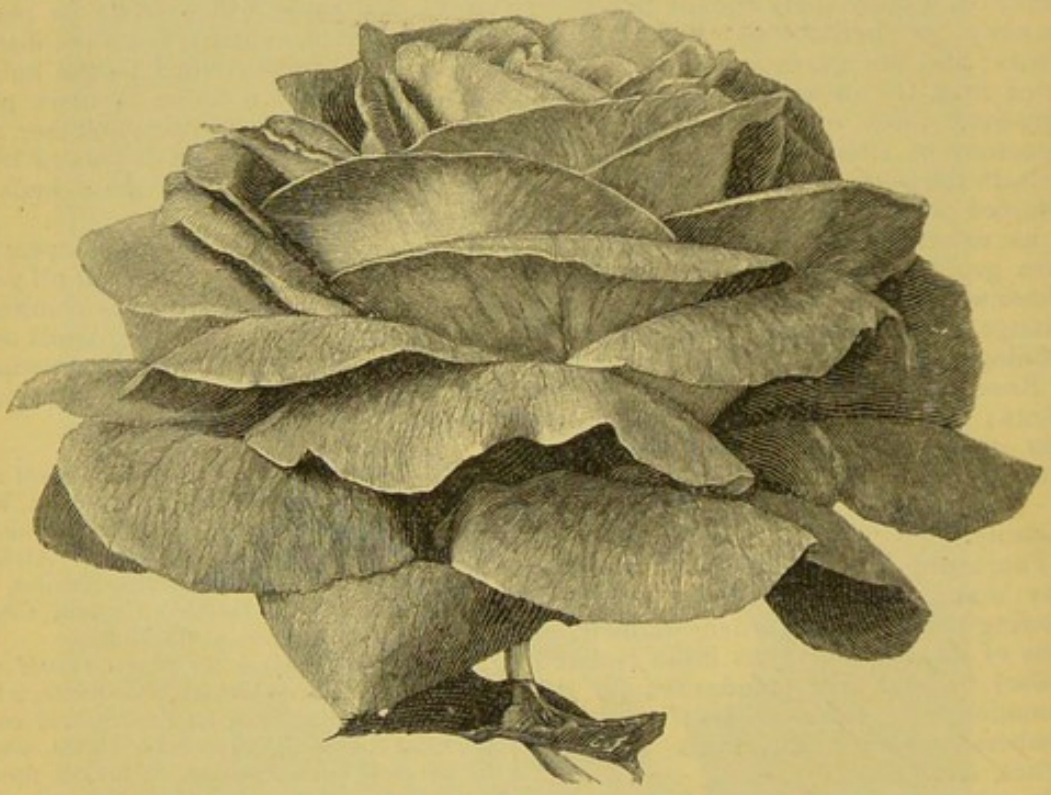
Varieties of which the plants should stand about 1½ ft. apart.—Cannes la Coquette, a flesh-coloured seedling from La France, and one of the most charming and useful of Roses, whether for massing, for exhibition, or for cut flowers ; Alfred K. Williams ; Comtesse de Paris (Lévêque, 1882), a very pretty rose colour, immensely free and perpetual ; Viscountess Folkestone ; Annie Laxton ; Duchesse de Vallombrosa ; Pride of Waltham ; Kronprinzessin Victoria ; Laurette Messimy, a China or Hybrid Tea of the most vivid and lovely rose colour ; Heinrich Schultheis ; Lady Helen Stewart ; Suzanne-Marie Rodocanachi ; Henri Ledechaux ; Sophie Fropot ; and of summer Roses, Rosa Mundi, the brightest and best worth growing of all the striped Roses, and commonly, though wrongly, called York and Lancaster, and the Scotch Roses in variety.

Varieties of which the plants should stand about 2 ft. apart.—Mme. Gabriel Luizet ; Charles Lefebvre ; Anna Alexieff ; Prefet Limbourg, a most useful dark crimson Rose of great freedom and effect ; Boule de Neige ; Mme. Machury ; La France ; Ulrich Brunner ; Jules Margottin, and his lovely daughter Violette Bouyer, freest and most charming of

white Hybrid Perpetuals; John Hopper; Julie Touvais, a very early and most distinct and attractive Rose, far too little cultivated; and Gloire Lyonnaise, a very beautiful Rose, both in plant and flower, and making always a most striking group.

It will probably have been noticed that, with half-a-dozen exceptions, the Roses best adapted for effective display in the garden are also among the best for exhibition, and the more they are cultivated with a view to producing exhibition blooms, the more decorative they will be. The plants should be fairly hard-pruned, liberally cultivated, and vigorously disbudded.

If the beds are large enough they may be margined or fronted with groups of the ever-blooming miniature Polyantha Roses, of which the best are Mignonette and Gloire des Polyanthas, pinks; Anne Marie de Montravel and Ma Pâquerette, whites; and Perle d'Or and Golden Fairy, orange-yellow.



Rose, A. K. Williams.

The best Tea-scented Roses for massing—that is to say, the varieties that can be relied on to be effective in any season—are Marie Van Houtte; Mme. Lambard; Hon. Edith Gifford; Comtesse de Panisse, a very handsome Tea that has been unaccountably overlooked by exhibitors; Anna Olivier; Mme. Charles; Mme. Chedane Guinoisseau, loveliest of yellow buds; Mme. Hoste, most free and constant, a great acquisition, which may also be said of Ethel Brownlow; Narcisse; Princesse de Sagan, a rich velvety maroon-crimson Tea, lacking size and fulness for exhibition, but ever-blooming and most effective in the garden; Rubens; Dr. Grill, Marquise de Vivens, Marie d'Orleans, R. indica (Lowe), a lovely single red Tea, of which a group of dwarf plants is charming throughout the entire season; and Jean Ducher, when the weather is not wet and cold.

To obtain large isolated bushes and genuine tree standards, the one thing necessary is the employment of suitable varieties. Of these the best are Anna Alexieff Mme. Alfred Carrière, Prefet Limbourg, Marie Van Houtte, Mme. Perny, Mme. Gabriel Luizet, Glory of Cheshunt, Mme. Nachury, Jules Margottin; and of summer-flowering Roses Persian Yellow, Harrisoni, White Provence, Chênédolle, Celestial, a Rose similar to, but of far greater beauty than, Maiden's Blush, and the double marbled Sweet Brier; of these, the first ten varieties named make especially fine large-headed standards.

A pillar Rose, so called, and a Rose-pillar worthy of the name, are not of necessity synonymous. The requirements to make a good Rose-pillar are, that it should be very vigorous, but not too long

and rampant a climber, very free-flowering —perpetual if possible—with handsome and abundant foliage, and a hardy constitution. The Roses that make the finest pillars will generally do so from a single plant, but of some varieties it is frequently a good plan to have two or even three plants at the base of each post for the better formation of a first-rate Rose-pillar. The best Roses for pillars are also the best for covering fences of from 4 to 8 ft. high, and for either purpose, were it only an autumnal, Mme. Plantier would be an ideal variety. Although it flowers but once a year, it makes a more beautiful pillar than almost any Rose, for its in-

Rose, Celeste.

variable profusion of bloom and the pure whiteness of its flowers, its hardiness and vigorous bushy habit, present all the qualities best adapted to the formation of a perfect Rose-pillar, with the sole exception of not being perpetual. In addition to Mme. Plantier, the following varieties are also first-rate Roses for the purpose: Ophirie, a delightful coppery-orange Noisette, making a pillar of extreme beauty; Mme. Alfred Carrière, whose large creamy-white flowers have a most delicious fragrance; Bouquet d'Or, and Rêve d'Or, both with the additional charm of conspicuously-beautiful foliage; Climbing Captain Christy, the freest and most valuable of all these "climbing" sports; Max Singer, a useful hybrid multiflora with well-formed cherry-red flowers of good size continuously produced in trusses of from three to seven blooms, in spite of the curious fact that it was described when sent out by the raiser Lacharme as "non-perpetual, and producing solitary flowers;" Bardou Job, an improved Gloire des Rosomanes, with very large semi-double deep crimson flowers with darker shades; the summer Roses, Blairi No. 2, and Souvenir de Pierre Dupuy, and Rosa macrantha, one of the most beautiful of all the single Roses.

Of climbing Roses grown against high walls and houses, or over arches of considerable span, not much is to be said, except to urge once more the employment only of varieties suited to the purpose and to the position they are to fill. It is not wise, for the sole reason that there is a blank wall or the bare side of a house, to plant against it Maréchal Niel or the tender Climbing Devoniensis, without regard to aspect, soil, or climate. There are abundant situations where such Roses will flourish, but to consider it necessary to attempt to grow Maréchal Niel in circumstances under which only an ineffective apology for a plant can be produced, merely because it has the reputation of being, when at its best, the most superb yellow Rose as well as the

grandest climber in the world, is absurd, and involves a waste of time and energy which, if only applied to the cultivation of Roses adapted to less favourable surroundings, would result in a decorative display affording the keenest pleasure. It is the case, that in spite of the unsurpassed beauty of perfect individual flowers of Maréchal Niel, it is less decorative as a climber, even fairly well grown, than many of the following: William Allen Richardson, Reine Marie Henriette, Reine Olga de Wurtemberg (a magnificent climber, very perpetual, producing bright crimson flowers, and deserving of very extended cultivation), Mme. Berard, Bouquet d'Or, Emilie Dupuy, Aimée Vibert, Celine Forestier, Lamarque, Princesse de Nassau (Musk), Mme. Trifle; and the summer Roses, Fortune's Yellow, Félicité-Perpétue, Laure Davoust, Splendens, Ruga, The Garland, Alice Gray, Flora, Claire Jacquier, the single Rosa multiflora, Rosa mult. grandiflora, and the deliciously fragrant Rosa Brunonis (*syn.*—moschata, Crepin).

Mention has been made of some of the most decorative single Roses in the selections given of the best varieties for certain purposes; but there are a few others which ought to be included in every Rose-garden. The rugosa Roses are so well known that it is only necessary to insist on the exceeding beauty of the white form; but among those far too rarely seen are the Austrian Briers, Rosa lutea, the yellowest Rose in the world, and its wonderful scarlet variety, R. punicea; R. rubrifolia, with its red leaves, red stem, red everything, including its immense clusters of hips in autumn; R. lucida, also beautiful in fruit at the end of the season, as in flower and glossy leafage during the summer; R. bracteata, the very distinct Macartney Rose; R. damascena, the crimson damask; R. Beggereana, the starry white Rose from Afghanistan, all blooming, and producing the most brilliant little hips imaginable; and last, but not least, a garden variety classed as a hybrid Sweet Brier under the name of Hebe's Lip, beautiful exceedingly, having large substantial creamy-white petals with a Picotee edge of purple. Nearly all these single Roses only require to be put into the ground and left to themselves to thrive and produce their myriad flowers and fruits.

The subject may be briefly summed up as follows:—

Only employ for particular purposes varieties well adapted thereto.

In the case of groups or masses of dwarf Roses in beds—

(1) Plant many plants of few varieties;
(2) Cultivate as highly, prune, disbud, and keep clear from insects, &c., as if every bloom were to be required for exhibition.

Then a display of bloom will ensue, well deserving the epithet decorative, and likely to be maintained more or less throughout the season.

PEGGING DOWN ROSES.—Instead of annually pruning back the long strong shoots of some of the vigorous Roses it is a distinct gain in beauty and gives a great increase of bloom if the shoots are pegged down. A group of six plants of Mme. Gabrielle Luizet treated thus made a wonderful display, quite hiding the ground, and over 300 buds and blooms were counted in various stages of expansion at one time. Gloire Lyonnaise is also good in this way, and many others that bear strong shoots ranging up to 6 or 8 ft. in length.

TEA ROSES FOR THE FLOWER GARDEN.—These are in many ways so superior to all other Roses, that we might place them first, yet there is room for a great extension of their culture in gardens, both large and small. We find even standard works on Rose-growing speaking of the Teas as tender and needing protection. Others say that only in a few instances can they be grown in the open ground; and to have them in full beauty, to ensure a constant succession of flowers, and to produce them in all their loveliness and purity of colour, they must be grown under glass. This is not so. Tea Roses may be grown in hundreds of gardens where they cannot now be found, and I would urge all who love Roses to try them fairly, for none are more worthy. The variety of lovely tints amongst Tea Roses, the delicate odour, the profusion of bloom, the long season over which it is produced, and their charming habit and foliage are great merits. Let us for ever give up the stupid notion of growing our Roses only in a Rosery, in some out-of-the-way spot. The grand Tea Roses now under notice are worthy of the best position in the garden. There are also many excellent kinds for clothing walls, fences, or any other erections about our homes, and we shall need much space if we want to grow all that are good. Here I name all the best Tea Roses, and if we would make our gardens sweet from June to November, these are what we should plant. Every kind is described from experience of it in a flower garden, where the climbing kinds wreathe the walls and the dwarfs are grouped in beds and borders solely for effect. The aim has

been to show what can be done with Tea Roses. They are amongst the most precious plants in existence, and beyond all others fitted to adorn our gardens, the variety of tint and freshness of leafage being a charm almost as great as their continuous blooming. None, with me, have ever been protected, but winter winds blow furiously over the garden, and on several occasions more than 20° of frost have been registered among the plants. They may be grown with every prospect of success over quite the southern

Roses in a Surrey Cottage Garden.

half of England and in many other favoured spots. As a race they are so beautiful in leaf when there is a temporary cessation of bloom. The dwarfer kinds prefer a soil more light and open than that usually chosen for other Roses. The plants should be either on the Brier Stock or on their own roots. The vigorous and perpetual blooming climbing kinds are the best Roses for walls and fences.

Many of the Dijon Teas may be grown away from walls, which for such hardy vigorous kinds only furnish support, shelter not being needed. Plant in groups of from three to twelve plants where they have room to develop ; a stake here and there is all the support needed, and they will make huge bushes and bear flowers by the hundred. In gardens where the dwarf Teas cannot be grown, the Dijon Teas are just the kinds for the place. It would be a gain to destroy a lot of common shrubs that over-run much ground, and plant bold masses of these Roses. One other good use they have is for pegging down. So treated they flower freely, and make fresh strong shoots to peg down another year.

Climbing Tea Roses.

Apricot or W. A. Richardson.—This is a popular Rose, classed as a Noisette, but it is more a Tea Rose than anything. The same will apply to one or two other kinds to be mentioned. It is hardy and vigorous, free in bloom, and unsurpassed in its deep orange-yellow shade. The flowers are borne in clusters, and are best in the bud state, being only semi-double when fully open.

BOUQUET D'OR is a grand Rose to cover high walls, and flowers abundantly. The flowers are a fawn-yellow, with deeper centre, the shape very good, and the buds longer and finer than those of Gloire de Dijon. For bold grouping in the open ground it has no equal.

CLIMBING DEVONIENSIS is not everybody's Rose, but in a sunny favoured spot it sometimes grows sufficiently to cover a cottage by itself and flowers proportionately.

DUCHESSE D'AUERSTADT is vigorous in growth, hardy, profuse in bloom, and has large deep rich yellow flowers.

EMILIE DUPUY is a vigorous and lovely kind, with flowers of great substance, the outer petals sometimes forming a kind of cup round the centre, like the guard petals of a Hollyhock.

GLOIRE DE DIJON is one of the first to bloom and last to cease, and does not fail us on walls facing any point, and therefore we may call it one of the great Roses. It is the type, and, in some cases, the parent of a little family called Dijon Teas, because they resemble it in vigour, freedom, and continuity of bloom.

HENRIETTE DE BEAUVEAU appeared in 1887, and has shown qualities that include it among the best Roses of to-day. On a warm wall with little pruning it flowers freely. They are fine, sweet, and of a clear canary-yellow.

LAMARQUE, one of the strongest growing and sweetest of climbing Roses, is unfortunately a little tender, but endowed with such vigour that in spring it soon outgrows all traces of winter injury, and from top to bottom covers itself with great clusters of flowers of pure cream white.

L'IDEALE.—One of the most distinct wall Roses yet raised, is akin to W. A. Richardson in all but colour, and is almost indescribable. The flowers, which must be seen to be fully appreciated, are yellow, and a peculiar shade of red, streaked with golden-yellow—a harmonious mingling of striking hues.

MARÉCHAL NIEL, though grown by thousands under glass, is sometimes good on warm walls outside, and will furnish early flowers. Encourage vigorous growth, lay in young strong shoots, and flowers will be abundant.

MME. BERARD, distinct in many respects, is vigorous, and one striking characteristic is that it is almost thornless. Its salmon colour is fringed with yellow and rose; the flower fine and well formed.

MME. CHAUVRY is like Mme. Berard in habit of growth, but distinct from any in its rich yellow colour, shaded with pink, deepening to buff at the base of the petals. Its merits are as yet hardly known.

MME. B. LEVET is a lovely kind; not quite so vigorous as most of the family, but in other respects good, especially in the rich yellow colour and delightful odour of its flowers.

RÊVE D'OR, a good wall Rose, will cover a great space. It must be allowed to do so before it will flower with any freedom; but once it has expended its vigour in growth, it settles down a free-blooming Rose, desirable in many ways.

The dwarf Tea Roses are very numerous:

ADAM is one of the oldest, having been in cultivation over fifty years. Half a century of Rose improvement has given us nothing that could fittingly take the place of this kind. It is not so vigorous in growth as most Teas, but is hardy and free in bloom, with large, globular, sweet-scented, salmon-rose-coloured flowers.

ADRIENNE CHRISTOPHLE is lovely, especially in hot years, vigorous in growth, most abundant in bloom, and its flowers are often quite indescribable in colour, being yellow, which deepens into apricot and copper-red, shaded with pink and rose.

AMAZONE.—One of the best dwarf yellow Teas, is most ornamental and useful for cutting. It makes a pretty compact bush, grows well, and flowers freely. Its buds are long, and of the pretty popular shape. They are a deep lemon-yellow.

ANNA OLIVIER is as vigorous as any Rose, hardy, strong, and free, making a great bush. In the bud state it is one of the most charming, the buds urn-shaped, flesh-coloured, deepening into buff at the base of the petals.

BOUGÈRE is one of the good old kinds now unfortunately neglected. It is as old as the Tea Rose Adam, flowers a rich salmon shade, globular in form, with petals of great substance.

CATHERINE MERMET is indispensable, for it bears flowers of matchless form. Its habit is rather thin, and in grouping should be thickly planted. It flowers freely, even slender twigs producing magnificent flesh-coloured blooms, deepening into pink.

COMTESSE DE FRIGNEUSE, of recent origin, is a decided gain. It is a good grower, with plenty of flowers of a rich canary-yellow hue, full, and very sweet-scented.

COMTESSE DE NADAILLAC.—Unfortunately, this is an uncertain grower, but generally does well in a sunny aspect at the foot of a wall. It is worth a select spot and special care. Yellow, deepening into copper, shaded with pink and rich rose, are the predominating hues.

COMTESSE RIZA DU PARC is very charming, and showy in the garden. It is strong in growth, lovely in foliage, and abundant in bloom. The flowers are large, open, and not so good in form as those of most kinds, but unlike any in its rich bright salmon-rose colour, shaded at the base with copper. The shoots are strong, erect, and terminated with large clusters of bloom.

DEVONIENSIS is a fine old Rose still, vigorous in growth and free in bloom. The flowers are creamy-white, flesh-tinted, and of great size when fully open.

DR. GRILL.—Comparatively new, and a

grand Rose for grouping. It makes a big bush, being vigorous, with lovely flowers and buds. Their colours are so varied and harmoniously mingled that it is hardly possible to properly describe them.

ERNEST METZ is well known. Its flowers are borne on a strong stalk, sturdily erect, very full and fine in shape, of the palest rosy-pink, but brighter towards the centre of the flower.

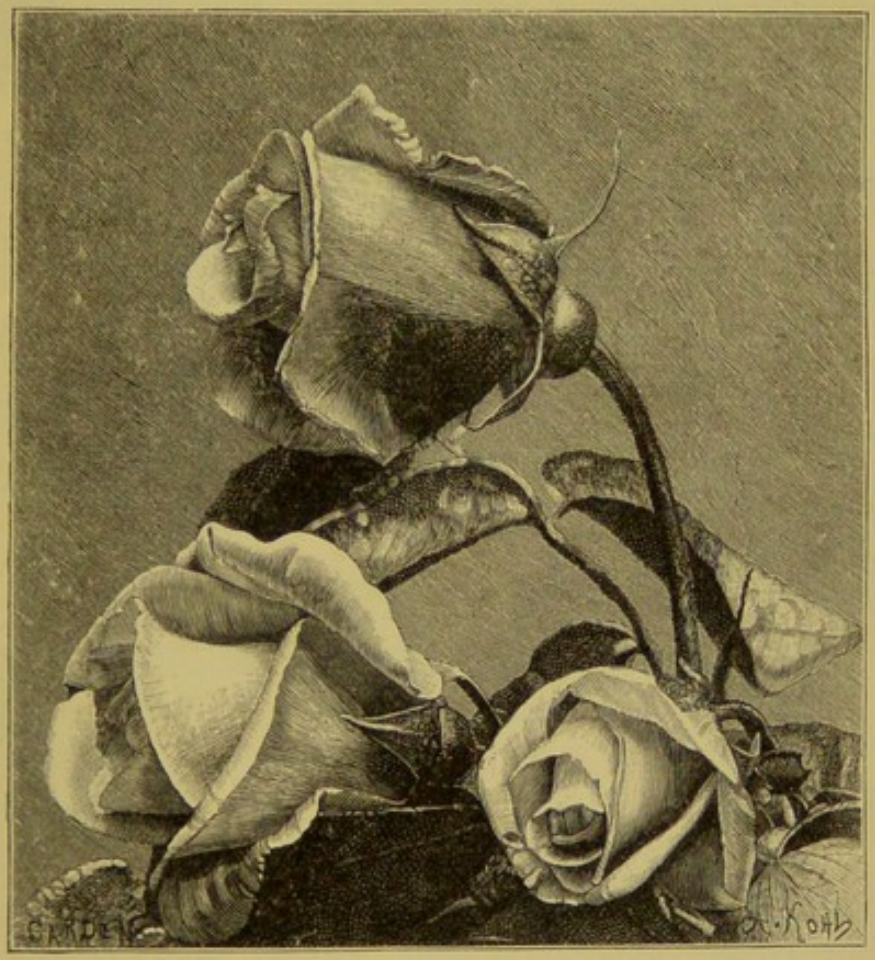
FRANCISCA KRÜGER is one of the freest-blooming Tea Roses. The buds come in such immense clusters that they cannot all open properly if some are not removed. Its colour is copper-yellow, shaded with peach, the form fine, large, and double.

GOUBAULT is an old kind, with rosy-pink flowers that might be forgotten in the present day, but for one great charm—their sweet scent. The buds are lovely in shape and rich in colour.

HON. EDITH GIFFORD.—The best dwarf Tea Rose for grouping. The old leaves are dark green, the young ones of a purplish-crimson, and even without a flower it is the handsomest group in a garden that has all the kinds here named. Then when the flowers come they almost hide the leaves in their profusion, open well, last long, and are good in form. In colour they are flesh-white, with salmon-pink centre.

INNOCENTA PIROLA is a good companion to the preceding kind, and one of the best white Teas. It grows vigorously, flowers freely, and is of lovely form. It is creamy-white, with the palest flesh shade, but is a slow grower on cool soil, at least on the Brier stock.

JEAN DUCHER is fittingly named in honour of its raiser, who raised so many first-rate kinds. It is a grand Rose, especially in a hot year. The flowers are very full and double, yellow, shaded with pink, deepening into buff in the centre of the flower.



Buds of Tea Rose, Anna Olivier.

JEAN PERNET bears the name of another noted raiser, and is a first-rate Rose, supposed to be tender, but really as hardy as the rest, strong in growth, and abundant in bloom, with flowers of lovely form. In colour it is a rich apricot-yellow, shading to pale yellow with age.

JULES FINGER is one of the best growers, and most free in bloom. The flowers are finely formed and of a clear rose colour, deepening in tint as they expand fully.

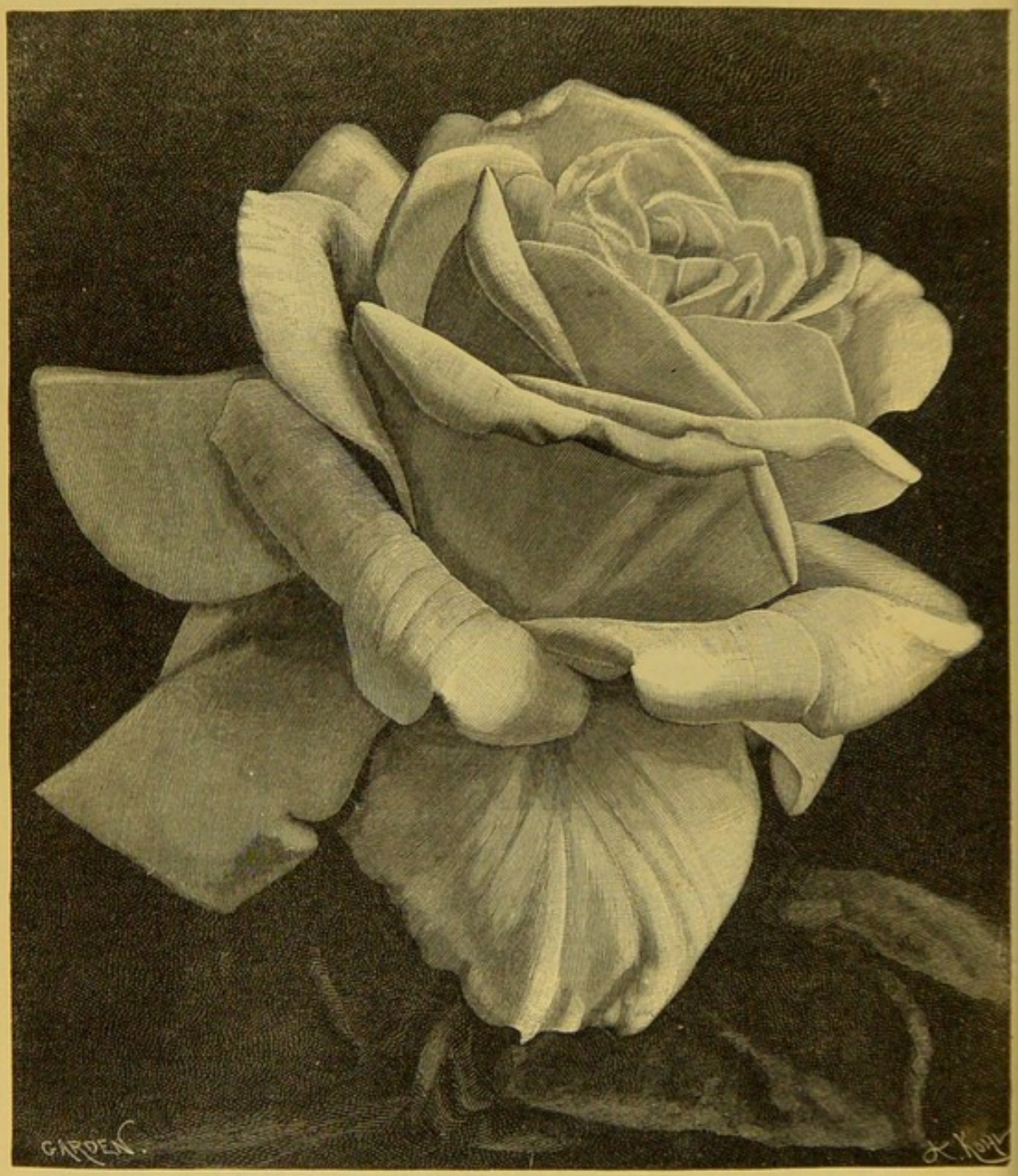
L'ÉLÉGANTE is valuable for its pretty buds, which open well at all times, and are useful for button-holes. In colour they resemble that of the Pink China Rose, but shade to pale yellow

at the base. The bush is dwarf, but flowers with great freedom.

LUCIOLE is of great merit; dwarf in growth, profuse in bloom, with long-pointed buds that attract attention by their shape and exquisite colouring. They are of the brightest rosy-carmine shade, with a suffusion of yellow, which shades into copper at the base of the petals.

MA CAPUCINE, like the preceding kind, concentrates all its charms in a bud of fine form. When fully open it is little more than a single Rose, but in the early days of the Rose season, long before the double kinds have perfected their buds, it is charming in colour, deep orange-yellow, with red sufficient to make the flower bright. It is a dwarf grower, but the smallest bushes flower freely.

MMES. CHEDANE GUINOISSEAU, Caroline Kuster, and Falcot may be mentioned together as a trio of lovely kinds when in the bud state. For cutting they are most valuable, and all grow freely. The two first-named kinds have pale yellow flowers, whilst those of the other kind are of a deeper yellow tint.



Tea Rose, Hon. Edith Gifford.

MME. CHARLES is one of the very best. When growth begins this kind is conspicuous, its shoots and leaves being of a purplish-crimson hue, not uncommon among Teas, but especially bright and effective. Then it flowers well; its colour apricot-yellow, with a deep buff shade internally at the base.

MME. DE WATTEVILLE grows strongly, and produces such a quantity of buds that some of them must be removed. Its great erect double flowers have been aptly compared to Tulips. The petals are broad, like shells, for effect in the garden. At the top of its erect shoots it produces great clusters of flowers, white, suffused with flesh and tinged with bright rose on the edges of the petals.

MME. LAMBARD is lovely, free in growth and bloom, and variable in colour. Generally its flowers are pale rose, but they shade to yellow and apricot, and also at times become very pale pink.

MARIE D'ORLEANS is a noble Rose, strong in growth, making a handsome group. It bears freely full, rosy, well-formed flowers.

Tea Rose, Madame Lambard. (Open air, Sussex.)

white in colour, with a faint salmon or pink shading, which deepens into clear rose at the edge of the petals, often forming a regular bordering.

MME. HOSTE.—Among the pale or straw-coloured Teas this is one of the best. It is a good strong grower, and the flowers are enduring, large, and of the most perfect form.

MME. JOSEPH GODIER is one of the newer kinds but not popular, although distinct and charming in colour—a bright rose suffused and shaded with coppery-yellow.

MME. JOSEPH SCHWARTZ is a Rose to group

MARIE VAN HOUTTE.—This is one of the best Tea Roses, vigorous, handsome in growth, and most profuse in bloom. In colour it is never more lovely than when grown in the sun outside.

MARQUISE DE VIVENS is sturdy and bushy in growth, and profuse in bloom, with long buds of most attractive colour. They are pale pink externally, shading to straw colour at the base, but as they open show a rich glowing shade of carmine-rose. It is a delightful Rose.

NIPHETOS is one of the great Tea Roses for

growing under glass, but it should be grown outside also. It is as hardy as any of the rest, as free in bloom, and truly lovely to see with its buds crowning every shoot. I always think that the open-air flowers are more enduring and have much more substance than those under glass.

PERLE DES JARDINS requires warm soil to open well. Its flowers are generally borne singly, open well, and vary from pale straw to canary-yellow in colour. It makes a strong bush.

PRINCESSE DE SAGAN is the darkest of Red Tea Roses, a vigorous and free-blooming kind. In the bud and half-open stages it is splendid, a rich dark maroon shade overlying the velvet-crimson colour of the body of the flower.

RUBENS is first-rate in every way, one of the earliest and most continuous bloomers, strong in growth, and lovely in form. The flowers flesh-white, shading into pink, large and full.

SAFRANO is a well-known button-hole Rose, hardy, free, and good, flowering profusely at all times. In colour it is apricot-yellow, deepening into buff.

SAPPHO is nearly new, and resembles Francisca Krüger, but distinct and very charming. Externally the flower is a pale fawn colour, but deep yellow in the centre, suffused throughout with pale rose.

SOUVENIR DE PAUL NERON is as hardy as any, with magnificent flowers upon small bushes, the form matchless, the colour creamy-white, edged and shaded with pale rose.

SOUVENIR D'UN AMI is one of the finest. It grows strongly, flowers freely, and has splendid foliage setting off the great drooping rosy flowers. These are large, double, and of fine globular form. Souvenir de S. A. Prince, or The Queen, is a white Souvenir, and has taken rank among the best.

SUNSET.—This is a sport from Perle des Jardins, producing flowers of a deep apricot-yellow shade. It is more vigorous than the type from which it sprang, and is fine during late summer and autumn.

THE BRIDE is a sport from Catherine Mermet, with the fine form of the parent and greater vigour, and almost pure white. It is one of the best; the flowers, of fine form and substance, lasting long either on the plant or when cut.—A. H.

HYBRID PERPETUAL ROSES.—The general name "Perpetual" to all the varieties of this class is a misnomer, as many are not at all perpetual; but some varieties, more especially some of our oldest Roses, keep on blooming until November. Amongst the old H.P. kinds one may instance especially La France and Charles Lefebvre, and amongst newer varieties, Viscountess Folkestone and Victor Hugo as true perpetuals; whereas Mrs. John Laing, Margaret Dickson, Gabriel Luizet, General Jacqueminot, and many other H.Ps. do not usually bloom after the month of August. One advantage which H.P. Roses possess over the Teas is that they appear to have no marked preference for locality or position. Give them a fair start by good planting, and they do equally well on heavy or light land, in warm or cold positions, on the side of a hill or on a dead level.

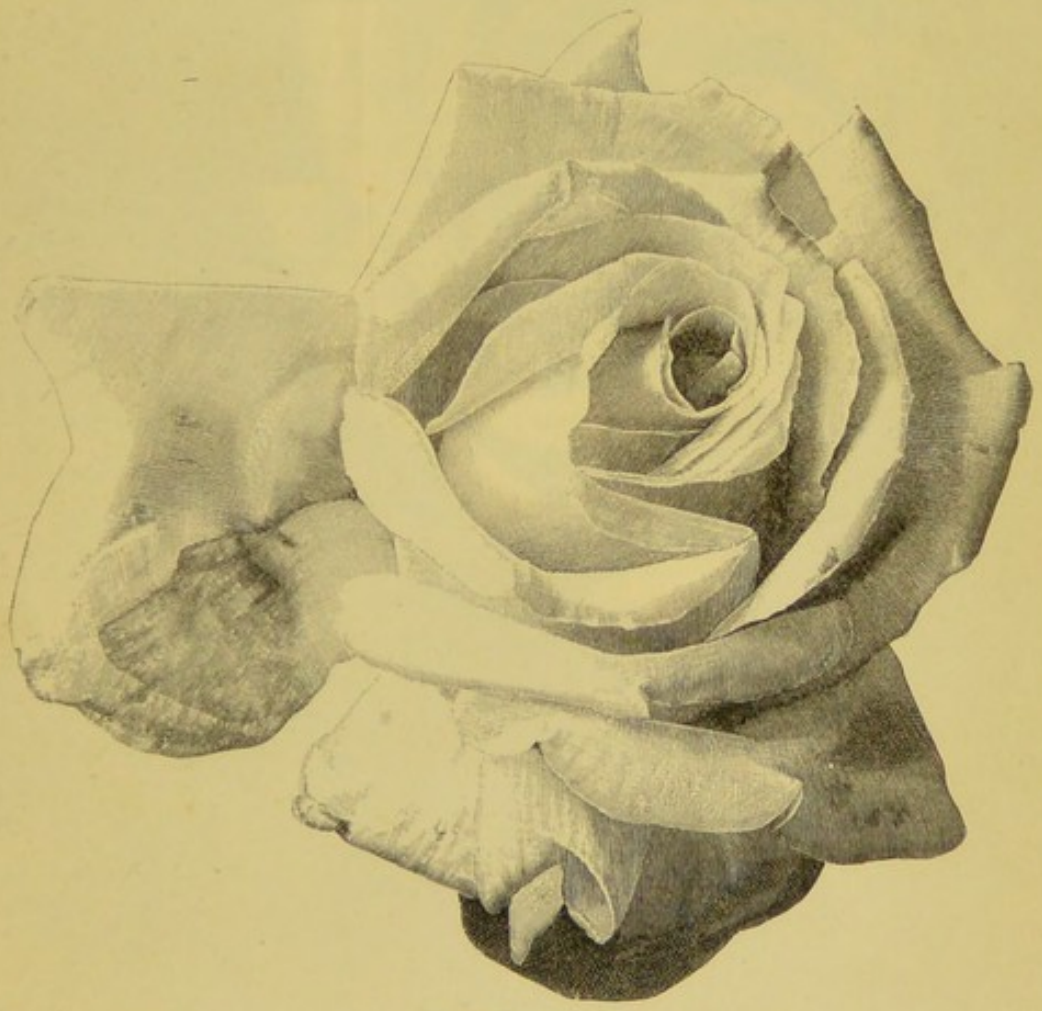
There is difference of opinion as to the best stock on which to grow Hybrid Perpetual Roses. My own experience is in favour of the Brier as the best of all stocks. Some consider that maidens on Briers develop their first blooms too late in the season, and therefore those who use this stock are handicapped when they grow maiden plants extensively for exhibition.

Now which are the best Hybrid Perpetual Roses to grow? The question might lead to controversy, as our Rose lists alter annually. Each year a few (very few) good, apparently new, Hybrid Perpetuals are brought out. Some last a year or two, some even longer, but the great majority go to the dust-heap or are given to friends who grow Roses in a casual sort of way. Few Hybrid Perpetual Roses have been brought out of recent years which can be said to excel our oldest favourites. No doubt many good ones have been produced, notably Mrs. John Laing, Gustave Piganeau, Jeannie Dickson, Sir Rowland Hill, Viscountess Folkestone (best of all), Her Majesty, and Margaret Dickson, most of which will permanently hold their positions. There is a marked peculiarity in the Roses newly brought out, for we seldom see a really first-class dark and distinct red Rose. In 1890, the late Henry Bennett exhibited a new red Rose called Captain Hayward. I think it is one of the few good dark Roses brought out of recent years, the others being Gustave Piganeau, Lady Helen Stewart, Salamander, and Sir Rowland Hill; the last being the most distinct of all, and a glorious velvety Rose of the darkest class. There are too many new Hybrid Perpetuals of various shades of light and dark pink, and too much alike, such as Jeannie Dickson and Mrs. W. J. Grant; but if we want new Roses rapidly introduced, we do not want these uncertain lighter colours, but decided shades of red, like the brilliant scarlet of Duke of Teck or Cheshunt Scarlet, or such whites as Margaret Dickson. We already have too many pink Hybrid Perpetuals similar in shade and shape, and between which at times even experts can hardly discriminate. Another point, which of late years has

not been carefully considered in producing new Hybrid Perpetual Roses, is scent. Surely scent is the crowning point in a good Rose, and the greatest defect in two such good Hybrid Perpetuals as Baroness Rothschild and Her Majesty. Who would prefer either even in their greatest glory to a really good La France or Mme. Gabriel Luizet, sweetest of all Hybrid Perpetuals? I think almost all the dark red Hybrid Perpetual Roses are sweet-scented, the want of fragrance being confined principally to some of the pink

journals to make strict selections of the most popular Hybrid Perpetual Roses, but we do not follow it here, as it is best not to be narrow in one's selection where there are so many beautiful and well-known kinds. It is otherwise with the Tea Roses, which have been unaccountably neglected as Roses for the open garden, even by the great Rose-growing nurserymen, and of these a careful selection has been given.

HYBRID TEAS.—The race of Hybrid Teas was obtained from crossing the



Rose, The Bride.

varieties, to Merveille de Lyon, Susanne Rodocanachi, and Duke of Edinburgh.

Hybrid Perpetuals can be well grown as dwarf plants—in fact those who grow Roses for exhibition have practically discarded standard Hybrid Perpetuals—but there are many varieties which do equally well on standard Briers; for instance, La France, Victor Hugo, Mme. Gabriel Luizet, A. K. Williams, Marie Baumann, Her Majesty, Charles Lefebvre, Merveille de Lyon, Le Havre, Mrs. John Laing, and several others.—C. J. G.

It has been a favourite practice in

beautiful Tea Rose and the Hybrid Perpetuals; and so we get a group intermediate in form and in colour, and often, as in the case of La France and its varieties, very charming and precious. They are also in some cases very enduring in bloom, which make them more useful than the usual red Roses of our gardens. The ordinary culture of the Rose-garden suits them well, and the finer kinds should, if possible, be got on their own roots as well as grafted. Among the kinds grown are: Annette Gamon, Antoine Mermet, Augustine

Guinoisseau (especially fine in the autumn), Camoëns, Cannes la Coquette, Cheshunt hybrid, Comte Henri Rignon, Countess of Pembroke, Duchess of Connaught, the leaves have a distinct fragrance ; Grace Darling, Jules Bassonville, Lady Alice, Lady Mary Fitzwilliam, La France, Madame Alexandre Bernaix, Madame André

Baroness Rothschild.

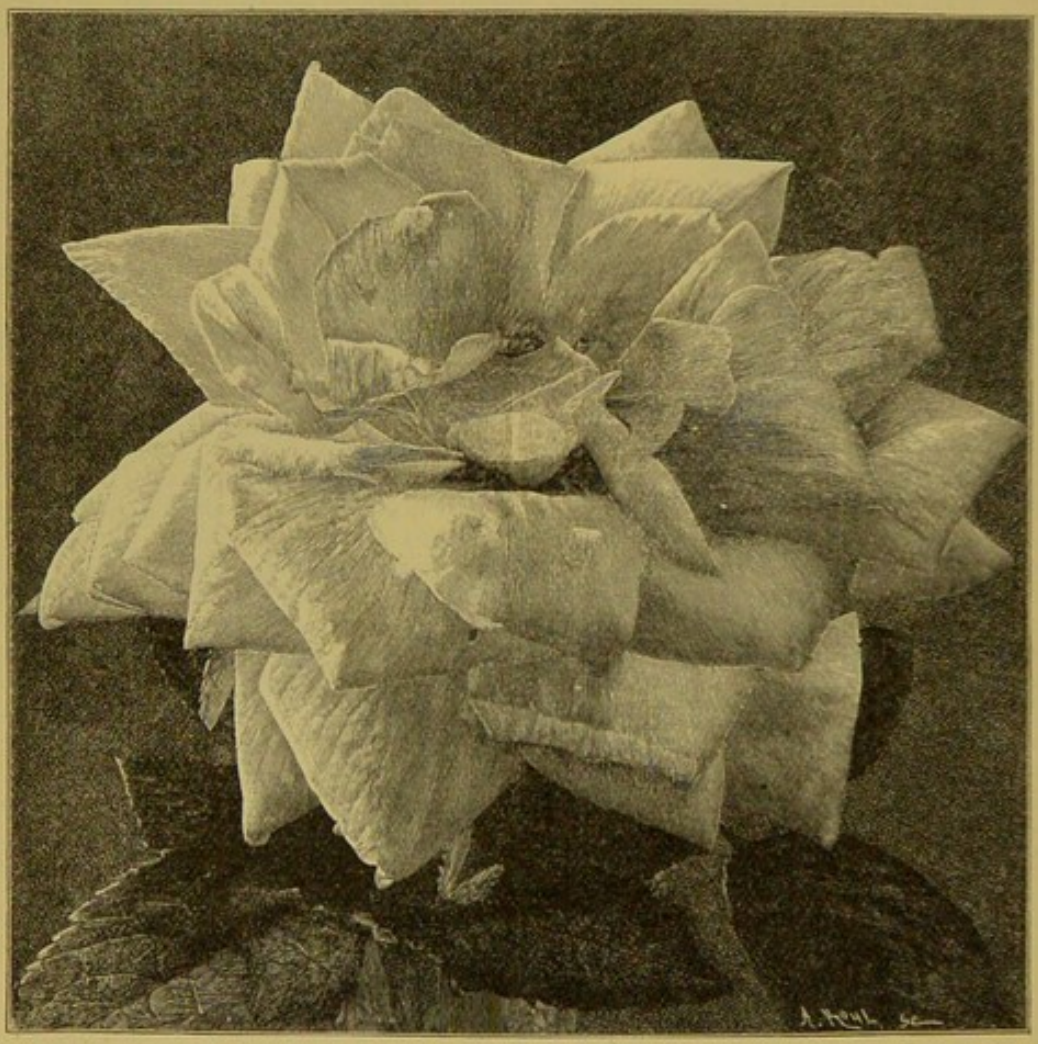
Duchess of Westminster, Esméralda. Gloire Lyonnaise, one of the best Roses for gardens, vigorous, with creamy-white, bold, hnadsome flowers, large and sweet ; Duron, Madame Carle, Madame Etienne Levet, Madame Moser, Marquise de Salisbury, with glowing crimson flowers and deep green leaves ; Michaël Saunders,

Pearl, Pierre Guillot, The Puritan, Waltham Climber, Viscountess Falmouth, Viscountess Folkestone.

CLIMBING ROSES. — If we look at southern Continental gardens, which have never received a tithe of the labour and care lavished on English gardens, but which enjoy the advantage of warmer climate and more constant sun, we shall see such arcades, bowers, pillars, and climbing masses of beautiful Roses on all sides as will put us out of humour with our own beautiful individual blooms, and will cause us to regret the absence from our gardens of these luxuriant masses that neither receive nor indeed require or obtain any special care from one year's end to the other. If it be unfortunately the case that Roses which produce such glorious effects in foreign gardens are not hardy enough for us, why not try to raise new varieties that will endure our cold and changeable season? Surely in a family that ranges from Kamtschatka to India, we may find at least one species that shall be the parent of hardy climbing varieties, as beautiful in our climate as the Noisette and indica major are in the south of France and elsewhere. We have R. sempervirens, and the several garden varieties, such as Félicité Perpetuée, that will climb a pillar or shade an arcade. The Ayrshire Roses, R. arvensis and varieties of the Boursault Rose (R. alpina), though very charming, bloom only in summer. They are all quite hardy and of vigorous climbing growth, but they do not satisfy those who love the Hybrid Perpetual, the Noisette, or the Banksian Rose. We have also the continuous blooming R. rugosa, the semi-double yellow R. Fortunei, and the beautiful R. sinica, the parent of the so-called large white Banksian Rose Fortunei. Cannot some hybrids be raised from these and the semperflorens, alpina, or arvensis species? Let us make use of what we have at hand; let us plant in the wilder parts such hardy climbers as are already mentioned, and make combinations of such red climbing Roses as can be found hardy—the excellent Gloire de Dijon and its progeny. The Cheshunt Hybrid, where the temperature does not fall below zero, is perhaps the best for this purpose. The old semi-double Bourbon Rose, Gloire des Rosomanes, will succeed anywhere, and light up an arch with its bright red blooms in autumn as well as in summer. For planting in a bold mass it has few equals and it is one of the sweetest. When a warm wall needs clothing, the Banksian Rose or the various hybrids of the Noisette and Tea Roses may be used, though they are liable to be cut down in cold situations and seasons. For sweetness as well as continuity of bloom Lamarque's clusters of lemon-white flowers must stand first. Maréchal Niel, though unrivalled for the splendour of its golden blooms, is only a shy bloomer in autumn. Climbing Aimée Vibert, which is thoroughly hardy, should be in every garden. Its white clusters are so continuously abundant and its foliage so persistent that it ranks high as a garden Rose. Rêve d'Or is a delightful climber, in a warm situation, and may be called a climbing Madame Falcot, so bright are its half-expanded buds. There are many other charming Roses in this section, but, as a rule, they do not succeed unless in exceptionally good situations. The new single carmine Rose also flowers well on pillars.

MONTHLY OR CHINA ROSES.—Monthly or China Roses have bright and varied colours, free growth, hardy constitution, and are most constant bloomers. They are the first to open in the early summer, and often continue to produce their buds and blossoms almost until winter has merged into spring again, a Monthly Rose bush in a warm nook being scarcely ever without at least a bud. They are perpetual and perennial in the fullest sense. They grow well either in light or heavy soil, preferring that which is light and warm, but not dry. Severe pruning is good for them, though on walls, when the earliest possible flowers are wished for, a few shoots may be left their full length. There are many varieties, all more or less distinct in colour or habit, from the lovely pumila alba, with its shell-like flowers, and the other pompon varieties which are suitable for the smallest beds or as edgings to small beds, up to the vigorous Crimson Queen or Cramoisie Grimpante, which will climb to the top of a two-storied house and bedeck it with rich crimson flowers during most of the year. The original single China Rose forms a bush 1½ to 2 ft. high; its crimson blossoms, like brilliant butterflies hovering about, are lovely. Then but once removed from these is the free-growing, semi-double, brilliant scarlet-crimson Gloire des Rosomanes. This for a large bed, interspersed with Fellenberg, equally free, and edged with Cramoisie supérieur or Louis Philippe, is effective. Alfred Aubert, Eugène Beauharnais, Nemesis, Prince Eugène, Prince Charles, and St. Prix de Beuze have crimson flowers of various shades. Beau Carmin de Luxembourg, Belle de Moutza, Confucius, Hermosa,

Hebe, and Sanglant are pink or rose-coloured. Lemesle is one of the most handsome of this colour, deep pink with crimson reverse, which gradually creeps over and suffuses the whole flower; the leaves of this variety have also great substance. Ducher and Rival de Poestum have white flowers. The latter is beautiful, the flowers abundant, not full, but of charming purity and form. Madame Laurette Messimy is perhaps the most distinct variety which has yet appeared, being unlike in colour any previously-known kind, of vigorous growth, and one of the most constant bloomers. Monthly Roses are also good cottage window-plants. Many are the instances of specimens, seldom repotted, having grown on from year to year until they had filled up all the space and become a living curtain. —T. S.

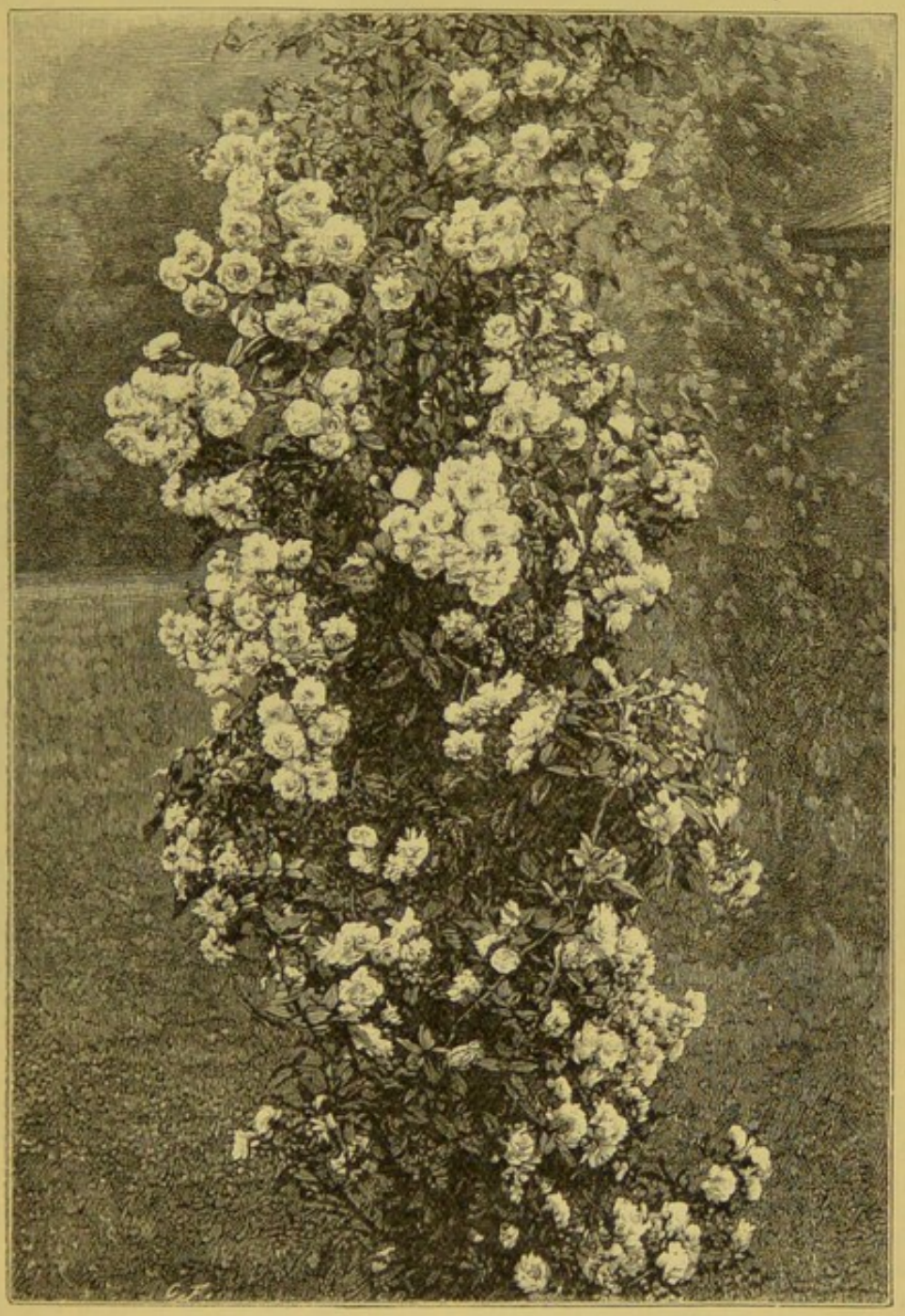


Rose, Gloire Lyonnaise.

MOSS ROSES.—These are divided into two sections—those which bloom only in summer—that is, during May, June, and July—and the so-called perpetual-flowering kinds. Among the early kinds, the old Common Moss Rose may be found, and beautiful it is. This charming Rose has been grown in English gardens for more than a century, and remains one of the best, although it is not seen nearly so much as it might be. In a few gardens I have seen this Rose grown as a standard, but it is not a success. Dwarfs or bushes on their own roots are much the best, sending out long vigorous shoots, if planted in rich soil, and these should be pegged down to the ground. Some of the other kinds may also be similarly grown with advantage.

In addition to the Common Moss, there is Little Gem, a charming miniature Rose, with small double crimson and well-mossed flowers. Crimson Globe has well-mossed buds, large, and of a deep crimson colour. Lanei, too, with large rosy-crim-

son buds, Crested Moss (pale rosy-pink), Marie de Blois (rosy-lilac), Celina (rich crimson), Reine Blanche (pure white), Luxembourg (crimson), Baron de Wassenar (bright red), and White Bath (paper-white), are all good. Other Moss Roses kinds are Madame William Paul, a fine variety with bright rose-coloured flowers, and Madame Moreau, rose-coloured, edged with white. Madame Edouard Ory, with large rosy-carmine flowers, and the Perpetual White Moss, which blooms



Climbing Rose, Aimée Vibert.

of note are classed separately as perpetual or autumn-flowering kinds, but there appears to be no need for this separation. Blanche Moreau, for example, is one of the best white Moss Roses, but only blooms once. Other so-called autumnal in clusters, are also worth mentioning. Other good kinds are Salet, and Soupert and Notting (bright rose). The last-named is sweet-scented, but not quite so free in blooming as other varieties. Zenobia is of satiny-rose colour. Con-

sidering their charms, it is curious how seldom Moss Roses are well grown in private gardens. They are usually seen at their best in small gardens, where the owner is kind to his soil. Success with Moss Roses cannot be had except in good rich soil. The Moss Rose is a form of the Provence Rose or "Cabbage," to which the same remarks as to cultivation apply.

SCOTCH ROSES.—Varieties of our hardy native Rose, they are as callous to frost and snow, wind and storm, as the proverbial Highlander in his plaid; and, if only the ground be well broken and manured when the plants are first put in, they are better able to take care of themselves than any other Rose of garden origin. If carefully planted at first, they will need neither pruning nor protection, training nor top-dressing, they are not victims of green-fly or mildew, and they may be trusted to thrive for a considerable number of years without special attention. Scotch Roses are not particular as to soil; and, if the soil is poor, a light mulching of short manure in November will keep them in good condition. They should be planted in a place by themselves, when they will throw up their spine-covered suckers freely from the base, soon entirely covering the ground; and as they do not grow more than 2, or at least 3 ft. in height, they make a very ornamental mass, flowering freely at every joint. Scotch Roses are only summer-flowering, but then their delightfully-fragrant flowers come so long before the generality of Roses that they are especially welcome. One of the prettiest and most sweet-scented varieties is a perpetual, blooming a second time in autumn. This variety was raised at Stanwell, and distributed by Mr. Lee under the name of the Stanwell Perpetual. In habit and appearance it differs little from the summer-flowering varieties, but its pretty globular blush flowers, of a most delicious fragrance, are freely produced both early and late, and are not uncommonly found in good condition during October.

Numerous varieties of the Scotch Rose have been distributed at various times. Max Singer catalogues about thirty named sorts, chiefly of Prévost and Vibert's raising, but probably few of these now exist, at any rate in this country. Mr. William Paul records some two dozen more named varieties, but these are now hardly ever referred to or even obtainable by name, being as a rule merely described according to colour, as white, pink, and yellow. There are, unfortunately, in cultivation many very dingy-coloured varieties, which have got these Roses a bad reputation from a decorative point of view. This may to some extent account for the fact stated by the authority above quoted, that Scotch Roses have never really been popular among English amateurs. When only delicately-coloured varieties are grown, nothing can be more charming than a mass of these dwarf, delightfully-fragrant, and very hardy Roses, the buds of which are in miniature the perfection of form—a quality which is maintained in the globular flowers of the more double varieties; while in soils and situations where the cultivation of most other Roses would be hopeless, flourishing plants and flowers in abundance may be had of the Scotch Roses.—T. W. G.

POLYANTHA ROSES.—These are often of a dwarf bushy habit, rarely exceeding a foot in height. The flowers naturally are very small, but delightfully fragrant. They are equally as hardy as the Tea Roses. They do well grown in pots in ordinary or unheated greenhouses, and make capital window-plants, providing they have proper attention. Rather small pots are best, and a good-sized plant may be grown in one 5 in. in diameter. A mixture of sandy loam and decayed cow-manure suits them well, and it is advisable to repot in the summer, immediately after the plants have flowered. After repotting, stand them in a sunny position outdoors until the end of September, when return them to a cool airy position in a greenhouse or frame, where they may remain at rest all the winter.

What pruning is required should be done early in the spring, just previous to starting the plants into growth, and it consists in cutting the shoots back to within two or three buds of their base. Comparatively little water will be necessary during the winter, but give more in summer, and when showing bloom occasional doses of weak liquid manure. Other many-flowered or Polyantha Roses are similar, or, at least, some varieties of them, and should be extensively grown in pots by amateurs.

They are, however, hardier than the Fairy Roses, and robust in growth. Besides being grown in pots they make charming masses in beds or borders, and are useful for edging Rose-beds. Some nurserymen make a speciality of these Roses, growing them as small standards in pots, and in this manner they are effective when laden with bloom. Among the best varieties are Anne Marie de Montravel, pure white, very free; Little Dot, soft pink; Mignonette, pale rose, very pretty; Perle d'Or, nankeen-yellow;

Paquerette, white; Blanche Rebatel; Clothilde Soupert; Georges Pernet; Gloire de Polyantha; Golden Fairy; Madame Allegatière; Marie Pare; Max Singer; Souvenir d'E. Chatelaine.

There is some danger in taking up seriously new classes of Roses of this kind, because there are very few that are not inferior in beauty to the lovely Tea and other Roses which are now obtainable. Roses that have not the finest forms, and are unfit for cutting for the house, are likely to take a back place, and really deserve it.

THE BANKSIAN ROSE (Rosa Banksiæ) is a native of China, named in honour of Lady Banks by the botanist Robert Brown. It was brought to England in 1807. The flowers are small, in clusters early in the season, and have a violet perfume, whilst the wood is smooth, slender, and of rapid growth. The leaflets, often but three in number, are long, dark, and lustrous. The best-known sorts are Alba Fortunei, white and yellow, and the Banksian Roses require a warm wall and dry border, with two or three years' growth to bloom in perfection. Merely cut out a few of the old already-bloomed shoots, and any late-growing sappy wood about July. They are very precious for covering house walls in many parts of England, but are not so good on wet and hilly shady places. Remove any growths that have been injured by severe frosts during the winter, but beyond that no spring pruning is needful.

NOISETTES.—Owing to some of the most important kinds in this group being often classed with the Teas, even in catalogues which class them as Noisettes, there is much confusion. We therefore omit Roses such as Bouquet d'Or, which we group among the Teas. They bloom long and well in clusters, grow freely, and are fragrant and useful for climbing or pillar Roses. The following are some :—Aimée Vibert, Celine Forestier, Cloth of Gold, Cornelia Koch, Desprez à Fleur Jaune, Fellenberg, Grandiflora, Isabella Grey, Jeanne d'Arc, Joseph Bernacchi, La Biche, Lamarque, Duchess of Mecklenburg, Madame Carnot, Madame Alfred Carriere, Madame Caroline Kuster, Madame Massot, Ophirie, Solfaterre, Triomphe de Rennes, Unique Jaune.

Rose Harrisoni.

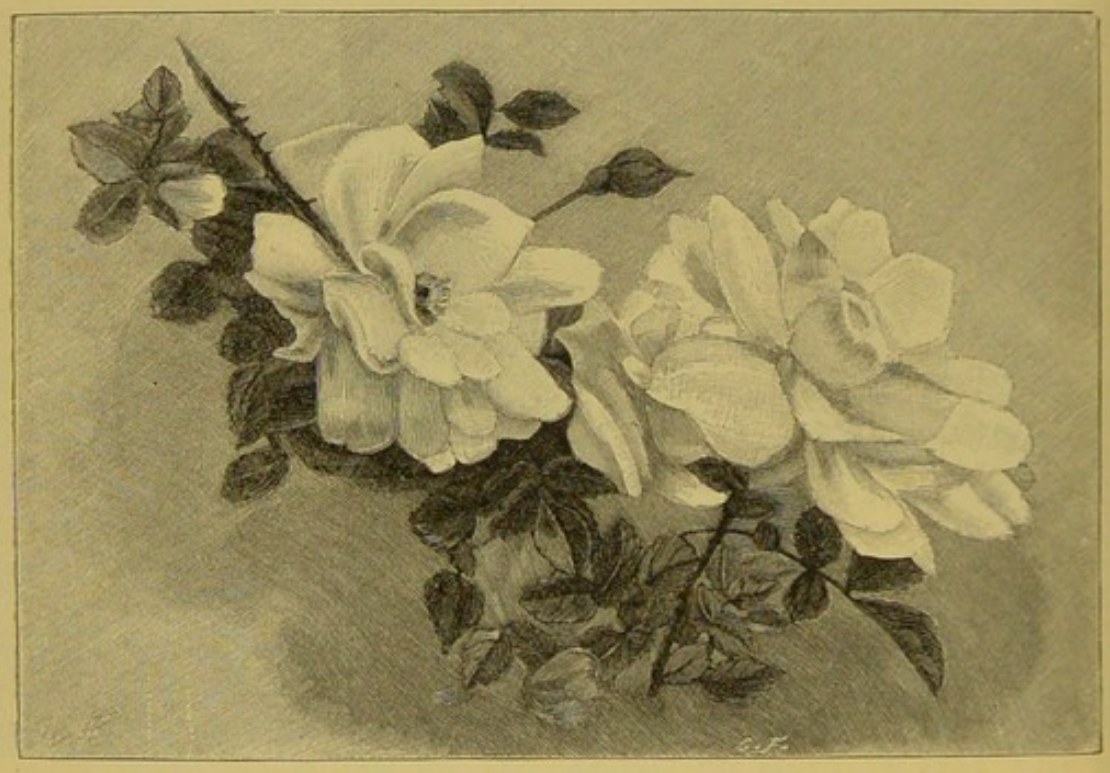
THE DAMASK ROSE (Rosa Damascena) is a native of Syria, whence it was brought to Europe about 1270 by Thibault IV., Count of Brie, returning from a crusade in the Holy Land. In Syria this Rose is so common that there is a valley called the "Valley of Roses." It is a parent of the Hybrid Red Roses. The Damasks have pale green leaves, green shoots, with numerous spines, are of free growth and

hardy ; the flowers are pretty in form, and very fragrant. They need but little pruning. Among the kinds, besides the common one, are La Ville de Bruxelles, Leda, Madame Hardy, Madame Stoltz, Madame Zoetmans, York and Lancaster (true).

THE PROVENCE ROSE or Cabbage Rose.—Of this the origin is not known, but growing abundantly in Provence, it has received that name, though the French themselves always call it *Rose à Cent-Feuilles*. "The rosarian should devote a small bed of rich soil, well manured, to the cultivation of this charming flower, growing it on its own roots, and pruning closely. The Double Yellow Provence Rose, of a rich, glowing, buttercup-yellow as to complexion, and prettily cupped as to form, full of petal, but of medium size, has almost disappeared from our gardens, and I have only seen it at the Stamford shows, sent there from Burleigh. Although common at one time in this country, it seems never to have been happy or acclimatised."—DEAN HOLE.

BOURBON ROSES are among the most useful of garden Roses. They seem somewhat capricious, with the exception of Souvenir de la Malmaison, which, however, is often placed among other Roses. There is no hard and fast dividing line between them. Among the best kinds are—Armosa, Gloire de Rosomanes, Madame Isaac Pereire, Queen, Sir Joseph Paxton, Souvenir de la Malmaison, Empress Eugénie, Kronprinzen Victoria, Madame Baron Veillard, Marquis Balbaino, Mrs. Bosanquet, President de la Rocheterie.

ALBA ROSES.—Two of the newer kinds are Mrs. Paul, a bold, sweet flower, almost white, touched with rose, and Lorna Doone, of a deep rosy shade. The Alba Roses are, from their delicacy of colouring, interesting, and thrive under ordinary cultivation. The moderate growers should be pruned closely, not the others. Blanche Belgique, Belle de Segur, Celestial Félicité (Parmentier), Madame Audot, Madame Legras, Maiden's Blush.



A Scotch Brier Rose.

EVERGREEN ROSES (R. sempervirens).—These are Climbing Roses, with large clusters of from ten to fifty blooms each, and holding their dark green shining foliage through a great part of winter; they are free growers and quite hardy. In pruning, the head should be thinned out, a few of the more pendent shoots being left their whole length. Donna Maria, Félicité Perpetuée, Flora, Leopoldine d'Orleans, Rosea plena.

GALLICA (R. Gallica).—This is an old group, that used to be important, but is no longer so because of the other kinds that have been raised. The many kinds

may be distinguished by their stiff erect growth ; and require close pruning whilst the flowers are fragrant and varied in hue. The striped varieties of this section (Rosa Mundi, etc.) are often called York and Lancaster. The following are the best known :—Boula de Nanteuil, Blanchefleur, Cynthie, D'Aguesseau, Duchess of Buccleuch, Kean, Œillet Parfait, Ohl, Perle des Panachées, Rosa Mundi, Village Maid.

AYRSHIRE ROSE (Rosa Arvensis vars.).—These roses, of native origin, are of rapid growth, often running 15 or 20 ft. in one season, and are of use in covering rough buildings, unsightly banks and trees. They do not require rich soil, and should be pruned very little, or not at all. Bennett's Seedling, Queen of Ayrshire, Queen of Belgians, Ruga, Dundee Rambler, Splendens, and Virginia Rambler, are the best-known sorts.

BOURSAULT ROSE (Rosa Alpina).—This is a distinct species, but its varieties form a worthless group, which receives its name from M. Boursault. Most of the varieties are free from thorns and have long reddish shoots. Amadis is most grown. It is one of the groups of roses not worth keeping up.

SYNONYMS OF GARDEN ROSES.—The following Roses bracketed together have been regarded as synonymous, according to the rule adopted by the National Rose Society ; and the name standing first in each case, being believed to be the original one, is considered as the true name of the Rose, and the one that should stand.

Charles Lefebvre.
Marguerite Brassac.
Paul Jamain.

Monsieur Boncenne.
Baron de Bonstettin.

Maréchal Vaillant.
Avocat Duvivier.

Eugénie Verdier.
Marie Finger.

Amadis.
Crimson Boursault.

Duchesse de Caylus.
Penelope Mayo.

Prince C. de Rohan.
La Rosière.

Marie Rady.
Comtesse de Choiseul.

Maurice Bernardin.
Ferdinand de Lesseps.
Sir Garnet Wolseley.
Exposition de Brie.

Thoresbyana.
Bennett's Seedling.

Devoniensis.
Climbing Devoniensis.

Adam.
President.

Madame Bravy.
Madame de Sertot.
Alba Rosea.
Josephine Malton.

Fortune's Yellow.
Beauty of Glazenwood.

In shrubberies, woods, and in the case of Roses isolated on turf the more the trees or bushes are left to themselves to wander as they list, the more artistic and beautiful is the effect ; but generally in gardens Roses must be pruned into form and kept in shape afterwards with the knife. No doubt many of them are over-pruned, and not a little of the beauty and all the grace are cut out of them. Still it need not be so. Pruning can heighten beauty as well as mar it, and then we prune for vigour as well as form. By cutting out exhausted branches we cause young and more vigorous ones to spring from their base, and thus we force the Rose to renew its youth. The removal of worthless, unsightly, and dead wood improves the appearance and health of our Roses ; and a branch that has failed should be pruned out before it becomes diseased.

ROSE HEDGES.—If the soil be naturally a good Rose soil, the work will be light. In that case mark out the position of the hedge 2 ft. wide, trench up that space 2 ft. deep, adding as the work proceeds a quantity of well-rotted manure. Where there is any doubt about the staple being of the right sort, remove it, and supply its place with a mixture of three parts loam and one of manure. There are, however, many gardens the soil of which, with the addition of one barrowful of loam to every yard length of hedge, and about half that quantity of manure, will grow Roses well. Plants on their own roots are indispensable, and if from 2 to 3 ft. high so much the better, as they will form a hedge the sooner. The time of planting must depend on the condition of the plants, but, if only small plants in pots are to be had it should be in April or May. In any case it should be done when the soil is moderately dry, and some finely-sifted mould should be placed round the roots, the ground being made moderately firm. Deep planting must be avoided. The crown should be about 2 in. under the surface, as the soil will afford it some protection during severe weather. As soon as the planting is done, give some support

to the branches ; a neat stake and a strong tie preventing them from being blown about by the wind. Place a layer of short rotten manure over the roots. This should be 3 in. thick, and 1 ft. wide on each side. During the first two years little pruning will be necessary, but the second spring after planting, any strong shoots that exceed 3 ft. in length should be cut back to that point. In the ground place a few neat sticks, to which tie some of the lower branches to form the base of the hedge and bring it into shape. After the second year the growth will gain more vigour and increase in length. Cut down the strongest shoots to 4 ft. the third year and from that time allow them to increase slowly in height so as to give the lower branches time to fill up the base. Some supports will be necessary to keep the growth in shape. The after-management consists in giving the roots a good dressing of rotten manure every winter. Rake away the soil from over the roots, lay the manure on them, and then replace the soil.

Wild and Single Roses.

There are many beautiful single Roses, and now that some interest has been awakened in them, we may expect to see them more freely planted. There are vigorous climbers which, allowed to have their own way and a branched tree to support them, will climb to a great height ; others, sturdy and bushy, are suitable for planting in bold groups and masses, and rare ones will merit special care. They are free from the pests that infest the double Roses, and above all things when single Roses are present in the garden a roseless June will not happen even in the worst of seasons. When Dog Rose and Sweet Brier toss from the hedges in early June our gardens might and should show some of the Wild Rose beauty, for the single Roses of many lands are at our disposal.

R. ACICULARIS (*The Needle Rose*) is a beautiful Wild Rose, which when leafless might well be mistaken for the Japan Rose, it is so armed with the sharpest needle-pointed spines, and it has the same stout, vigorous bushy habit of growth as rugosa. In flower and fruit it is quite different, and is a bright flowered kind, but early and long blooming ; and it is always one of the first to open. Its leaves are smaller than those of rugosa ; the flower large, rich red, with a sweet scent. It also has a showy fruit, which differs from that of the Japan Rose, for, instead of being roundish and smooth, it is long and Pear-shaped, of a bright red colour, with its apex covered with spiny bristles. It is a native of Siberia, as hardy as any kind known, but as yet uncommon in gardens.

R. ALPINA (*Alpine Rose*) is really more worthy of a place in the garden than the varieties of which it is the parent—the Boursaults. It grows to a great size, with long, thornless shoots ; does not make such a colour display as most kinds, but it is welcome for its earliness, and a bowl of its rosy-red flowers is pretty in the house in May.

R. BRACTEATA (*The Macartney Rose*) is a little tender, but it is so beautiful that it repays a little extra care, and is pretty for a low wall, which in a sunny aspect is needed to bring it out in its full beauty. The plant is almost evergreen ; leaves dark green and shining ; the flowers large, milk-white, sweetly scented, of a pretty cupped form. China.

R. BRUNONIS (*White Indian Rose*), a very handsome Rose and almost worth growing for the sake of its foliage alone. It is perhaps a little tender, but vigorous ; any injury that happens from winter frosts is quickly effaced. July is its month of blooming, the flowers in clusters, pure white, with a yellow centre. Alone it is capable of covering a house, and it must have plenty of room. Better still to let it ramble over trees or shrubs, as it does at Kew near the Cactus house. A single Rose named Pissardi also belongs to the Musk Rose type, and has fragrant Dog Rose-like flowers. Under this same name, however, comes one from Germany with large rose-coloured blooms.

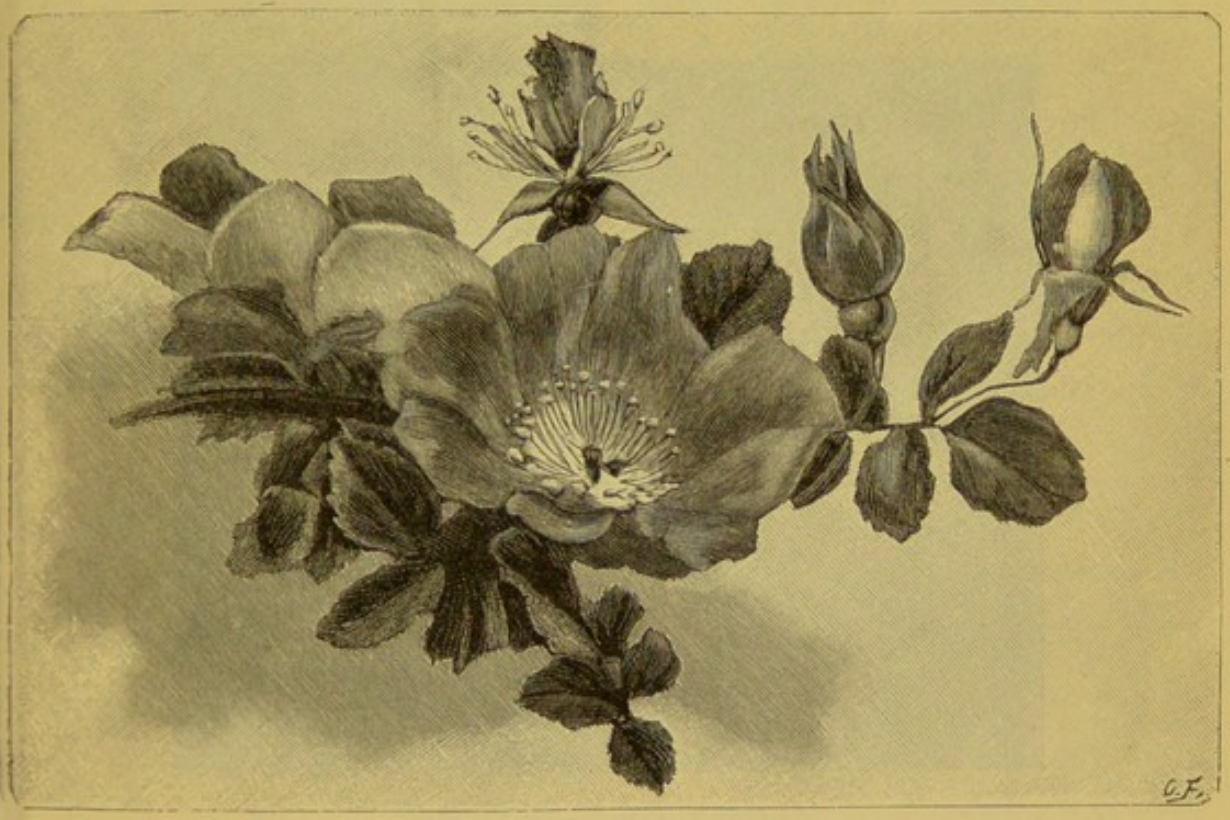
R. CAROLINA (*Carolina Rose*) is a very pretty Wild Rose, somewhat resembling R. lucida, but distinct, as it blooms during August, when most kinds are over, and it keeps flowering through September. It is a tall, upright grower, established bushes being 6 ft. high. Its wood is smooth, with few spines ; the leaflets are long and narrow, and the flowers come in clusters of a dozen or more among plenty of foliage, the buds when opening being rich crimson and the expanded flowers bright rosy-red, sweet-scented. The leaves when handled have a distinct and pleasant fragrance.

R. INDICA (*Indian Rose*).—This species appeals to all who love Roses, as a parent of the best races. In it we see those excellent qualities, and continuous bloom, that have been kept through numerous generations, and contribute so much to the charm of the Tea and Monthly Roses of the present day. Of this species there are two or three forms in cultivation. At Cheshunt, Mr. Paul grows a lovely form, with flowers of a flesh-pink colour ; another variety has a large crimson-red flower. Like the Tea Roses, this species is ever growing and blooming from early summer till late autumn.

R. LUCIDA (*Glossy Rose*).—One of the best Wild Roses has leaves of a shining green colour, and just when our native and other early single Roses are passing away this comes into bloom in July and goes on for several weeks. Its

flowers are large, opening flat, clear rosy-pink, sweet-scented, in clusters of from five to eight, but succeed one another, so that there is not usually more than one flower open at a time in a cluster. The heps are about as large as a Hazel-nut, deep red, and make a bright effect with the fading leaves, which assume autumn tints. The heps hang all the winter, the leafless wood becomes red, and through the dullest time of the year large groups of this Rose are pretty to see. A few plants soon spread into a thick mass as it runs freely underground, and it is so easily increased by its suckers, that it offers every facility for free planting.

R. LUTEA.—This very distinct Rose is better known through the forms derived from it than



The Austrian Copper Brier.

in its wild form, pretty as that is, and it would be charming to grow on warm banks. There are two garden varieties, commonly called Austrian Briers, one with yellow flowers, the other orange red, both beautiful for a sunny spot.

R. MACRANTHA is one of the early bloomers and a showy kind. The flowers are large and beautiful, chiefly white, but flesh-tinted round the edges and in the centre with a tuft of fine yellow stamens. In the open ground it makes a thick spreading bush, like R. arvensis of our hedges. Europe.

ROSA MOSCHATA NIVEA.—The old Musk Rose is supposed to have been introduced nearly 300 years ago, but the kind that bears the above name is of garden origin. It has a vigorous climbing habit, is hardy, not fastidious as to soil, with shoots like Willow wands, and sending up flowers in great clusters of thirty or more, and it is not uncommon to see from nine to twelve fully open at one time. The flowers individually are large, opening wide and flat, white, with a suffusion of pink towards the edges of the petals and a cushion of yellow anthers in the centre, which keep their colour whilst the flower lasts. The leaves have seven leaflets, are of a gray-green colour, and when young scented. The wood is chiefly smooth, but small spines are numerous towards the tips of the shoots. For cutting it is delightful, as the clusters have long stems, and in the house every bud opens in due course. The buds are of a lovely pink colour before they open. The true name of this Rose is uncertain as yet, but its value is very high.

R. NUTKANA, according to the *Garden and Forest*, is one of the most showy species of Western America, having the largest flowers and fruits. Its habit is described as stout, the leaves ample and broad, the flowers large, white, and the fruits bright scarlet, ½ in. in diameter.

PAUL'S CARMINE is a garden variety, and a welcome addition to single Roses because of its bright carmine-red flowers. Its vigorous growth makes it useful for walls, fences, and on pillars it does well.

PAUL'S SINGLE WHITE is a vigorous Rose of garden origin, and as we happen to have it growing beside moschata nivea think it not nearly so good. It is rampant, hardy, and has

large deep green leaves, the flowers in large clusters, scented, the buds of a tender pink colour, but the flowers do not open out like those of the Musk Rose, and the anthers turn black. It is nevertheless a useful single Rose if placed apart from the others, and it has one merit which they lack in flowering in succession. The vigorous shoots which grow up at the time of the first blooming usually produce a great cluster of flowers at the top when they have completed their growth.

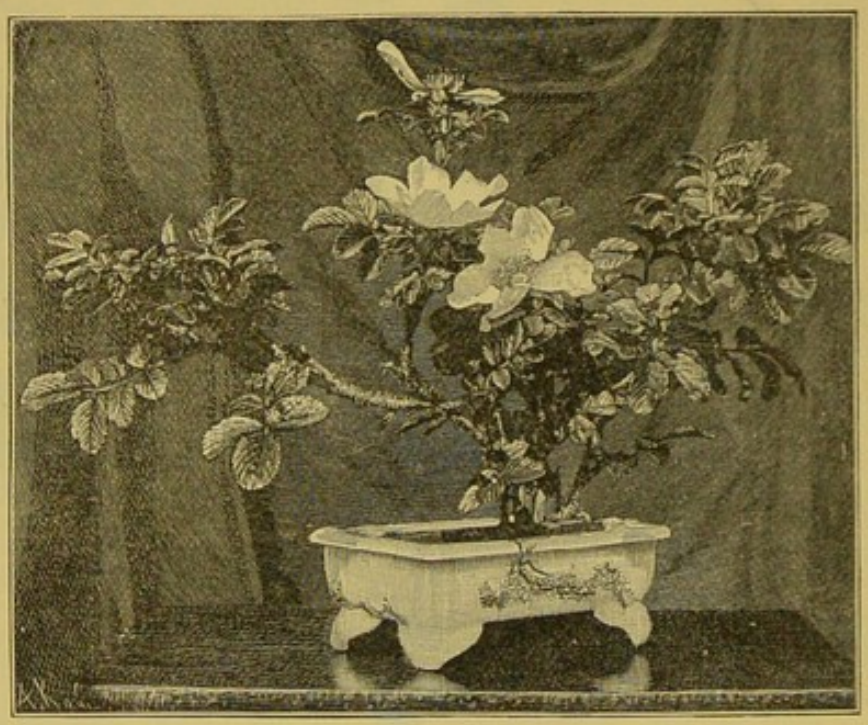
R. POLYANTHA (*Bramble Rose*).—A rampant climber, which will quickly climb a tree, cover a building, or, away from any support, spread into an enormous bush. It has long, spineless shoots clothed with glossy green leaves, blooming early in June ; a mass of white flowers crowded in a pyramidal truss, with a powerful scent. The variety grandiflora is an improvement, but as yet it does not seem to have been much planted. It has all the vigour of the type, and flowers much larger. They cluster in an immense truss, are pure white and sweetly scented.

R. RUBIGINOSA (*Sweetbrier*).—Perhaps as pretty as any Wild Rose in flower, fruit, and delightful fragrance. It is a native Rose, but also distributed through much of Europe and Asia, and, although often planted, is scarcely ever made enough of in country places. It is most useful for forming fences with Quick or even by itself on good banks, as it is so spiny that cattle, which do so much harm to almost every other kind of hedge plant, do not touch this, so that it swings careless in the field where they are. The plant ought to be grown by the thousand, and anybody with a few bushes of it can save the seed for this purpose. It is a delightful plant from the time its buds burst in early spring until the birds have eaten the brilliant berries in winter.

R. RUBRIFOLIA (*Red-leaved Rose*) should have a place for its lovely tinted leaves and shoots : it has a rambling or climbing habit, but also grows into a large self-supporting bush. The flowers are red and small, the fruits purplish-red with soft flesh. Its chief charm, however, is in the colour of shoots and leaves. The young, strong shoots are purple-red overlaid with a pale gray bloom, whilst the leaves are of a peculiar glaucous colour brightly tinged with red. North America.

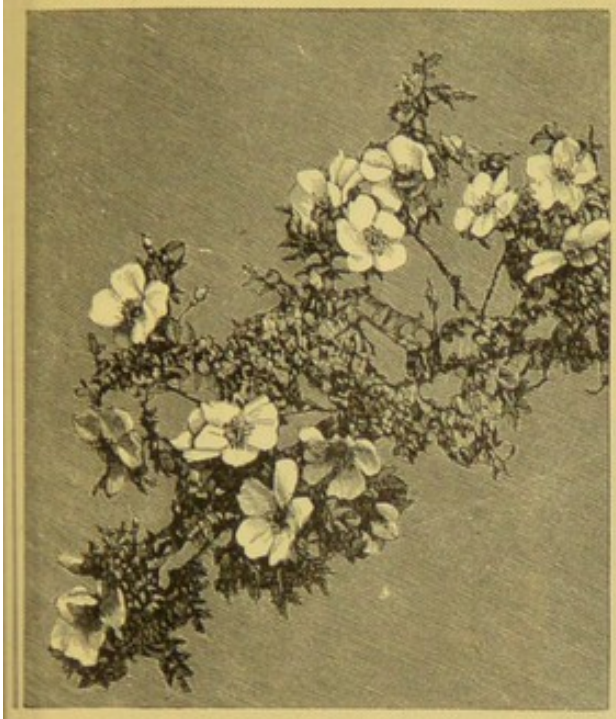
R. RUGOSA (*Ramanas Rose*).—A strong grower in any soil, it is one of the best, making a handsome bush when isolated, but large gardens should have great groups of it, and in leaf, flower, and fruit it is beautiful ; it is a long and persistent bloomer, and reaches the zenith of its beauty when the secondary flowers come with the glowing orange and red fruits that have succeeded the first flowers. Then a second crop of ripe fruit appears late in autumn, when the leaves turn yellow, showing the Rose in another pretty aspect. It makes a good hedge, and where pretty dividing lines are wanted, it is one of the best for the purpose. There are purple, pink, and white forms, this last being lovely, and quite the best single white Rose of the non-climbers. They are free enough to plant for covert. Rose Regeliana and R. kamtschatica are forms of this species. Japan.

R. SPINOSISSIMA (*Burnet Rose*).—A pretty native Wild Rose, which will grow and flourish



Japanese Rose (Rosa rugosa) in vase.

where many Roses fail in the lightest and hottest of soils. It is the parent of the Scotch Roses, some of which are so very pretty in like soils; the creamy white flowers of the wild plant are pretty and fragrant.



Sweetbriar. Rosa spinosissima.

R. WICHURIANA.—A distinct and charming Rose, perfectly prostrate in habit, every branch lying flat on the ground, a rapid grower making shoots 12 ft. long in a season, the leaves lustrous green, and flowers standing a little above the mass of creeping stems, pure white, 1½ to 2 in. across. For rapidly covering sunny banks nothing could be more charming than this beautiful Japanese Rose, also for the bolder kind of rock-garden drooping over the larger rocks. It is hardy so far as recent winters entitle one to judge, and easily propagated by cuttings or division.

R. sinica is a large, single, white-flowered, climbing species from China or Japan. R. gigantea, the giant of single white Roses, lately introduced from India, is of doubtful hardiness, otherwise it would be a great addition. R. Beggeriana, a North American kind, of lowly growth, has white starry flowers. R. Woodsi, a garden form of R. blanda, has rosy-pink flowers, and continues blooming till stopped by sharp frost. R. pisocarpa, from California, makes a straggling bush, with flowers of medium size and bright red. Are well worthy of a place in the rock-garden. R. berberifolia Hardyi has flowers like those of a Cistus, rich yellow in colour, with a crimson blotch at the base of each petal, but wants heat and bright sun. Hebe's Lip is a garden form, but a pretty single Rose with a stout bushy habit of growth, and large, creamy white blossoms that have a distinct Picotee edge of red around the petals.

The above is a selection mostly of the best Wild Roses known to us for the garden or shrubberies and fences near the garden. There are many Wild Roses inhabiting northern and temperate countries, and many that have never been in cultivation that are very beautiful and deserving of it. It is to be hoped now that the increased cultivation of these beautiful things will lead to further knowledge of them.

Rose Bay (Epilobium).
,, **Campion** (Agrostemma).
,, **Christmas** (Helleborus).
,, **Mallow** (Hibiscus).
,, **of Heaven** (Agrostemma cœli-rosa).
,, **of Sharon** (Hypericum).
,, **Rock** (Cistus).
Rosewort (Sedum Rhodiola).

Rosmarinus officinalis (*Rosemary*).—This well-known shrub is hardy enough to grow in any ordinary soil. In the embellishment of dry, warm, rocky banks it is useful; all like its fragrance, and the flowers are pretty and plentiful on dry soils.

Rosy Rock Cress (Arabis blepharophylla).

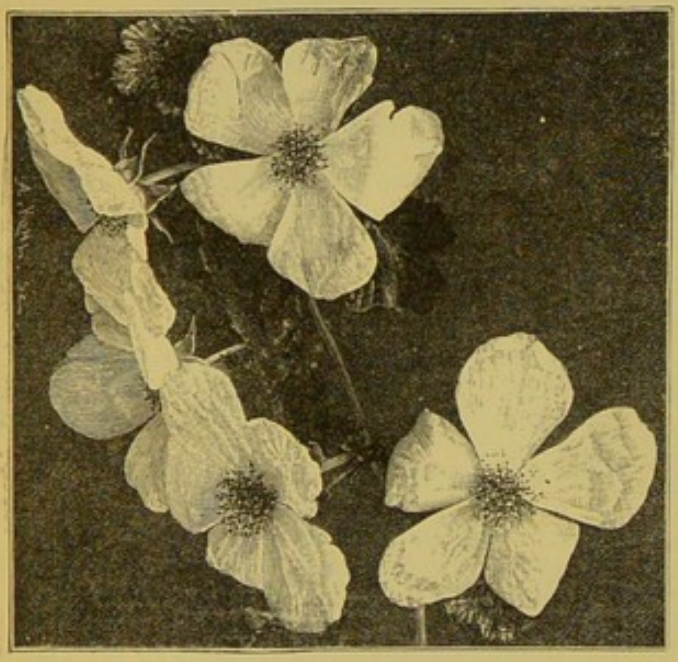
Rubia.—Weedy plants for the most part. Our native, R. peregrina, is as handsome as any from its deep vinous-purple foliage; its slender shoots are useful for arranging with flowers in winter.

Rubus (*Brambles*).—With the exception of our native Bramble, all the important garden Brambles are from North America; the finest of the American kinds is the Rocky Mountain Bramble (R. deliciosus), quite unlike an ordinary Bramble, being without spines or prickles, and more resembling the Black Currant. It makes a rounded spreading bush about 4 ft. high, and, in June, bears snow-white flowers about the size of Dog Roses, and like them in form. It is hardy in most gardens where the soil is light and in cold districts may be grown against a wall, which it quickly clothes with a beautiful growth, and flowers more abundantly than as a bush. Always select for it the sunniest and warmest place in the garden. One could have a group of it in an open part of a sheltered lawn, and beneath the bushes a crowd of Daffodils or Squills, so that when these are out of flower the shrub succeeds. By adding autumn Crocuses, Meadow Saffrons (Colchicums), Snowdrops, and winter Aconites the group would be attractive for three parts of the year.

R. odoratus is 3 to 8 ft. high, with large-

lobed leaves, and from June till August large clusters of rich purple flowers. It may be used in the rougher parts of the rock-garden, or in the wild garden and is very hardy. Like the garden Raspberry, it sends up strong annual shoots, which in rich soils reach 6 ft. The old shoots should be cut out every year, just as one does with the Raspberry. There is no finer shrub for planting under the shade of large trees ; but it must not be planted where these fill the surrounding ground with their hungry roots. Once planted in good deep soil, free from tree roots, it gives no trouble except the annual pruning of the old shoots.

R. nutkanus may be described as a white variety of R. odoratus. It is found



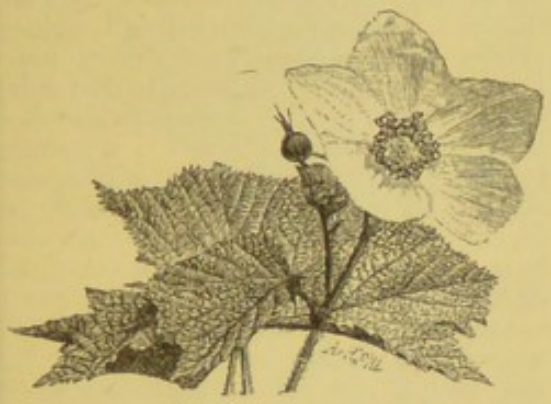
Rubus deliciosus.

wild from North California to Nootka Sound, and is rather taller in growth than R. odoratus and flowers somewhat earlier. The flowers, borne in much the same way, are pure white. These two species intermixed in a group have a beautiful effect. They are partial to a moist soil, as near the margins of a pond or stream. They are among the best shrubs for the wild garden, where in a short time they spread into large masses if in good soil and partial shade. The Salmon Berry (R. spectabilis), from North-west America, is not important, though its flowers are large and a bright red. It is best in the rougher parts of the rock-garden or for the wild garden. The White-washed Bramble (R. biflorus, or R. leucodermis), from the Himalayas, has tall wand-like stems often 10 ft. or more in height, whitened with a mealy substance on the bark. Its white flowers are not showy, and succeeded by edible-acid, Raspberry-like fruits. R. australis, from New Zealand, is without true leaves, and prickly. In warm situations on walls it grows several feet high. The beautiful R. rosæfolius (Rose-leaved Bramble), from the Himalayan region, is scarcely hardy enough for open-air except in favoured spots or against sunny walls. Its double variety (coronarius) has loose clusters of large white flowers, which are very double ; it is often grown as a greenhouse shrub. Almost the only native Brambles worthy of notice are the beautiful double varieties of R. fruticosus, which flower late in summer. There are the double pink and the double white kinds, both known under various names ; but the names of double pink and double white are sufficient. As they are forms of distinct species or varieties, they differ in habit, the double pink being much the stronger and more free flowering. When well placed the double pink makes a wide-spreading mass like the common Bramble, and produces from the middle of August till autumn an abundance of bloom, every flower being a perfect rosette of delicate pink petals. The double white is a form of R. tomentosus, and its flowers are larger than those of the double pink, but less double. The double white and the double pink should be planted near each other, and will clothe banks or associate with bold rocks. Another fine Bramble is the Cut-leaved, or Parsley-leaved Bramble, which has a profusion of white blooms, succeeded by large delicious fruits. Some of the so-called American Blackberries, such as the Lawton and Kittaninny, do not succeed in our country.

A few of the small kinds, such as R. arcticus (which grows a few inches high and bears numerous rosy-pink blossoms), the Cloud-berry, R. Chamæmorus (also dwarf and with white blossoms), and R. saxatilis, are pretty in partially-shaded spots in the rock-garden in moist peaty soil.

Rudbeckia (*Coneflower*). — North American Composites, with showy yellow flower-heads, usually with a dark centre cone. All are hardy except R. bicolor, but they are so much alike that the best only should be grown. One of these is R. speciosa, also called Obeliscaria speci-

osa and R. Newmani, with flowers of a rich orange-yellow, with velvety, maroon centre ; they are from 3 to 4 in. in diameter, and borne in dense masses from early August till late October. The plant is 2 to 2½ ft. high, and neat and compact in growth. It grows best in moderately rich, light, and well-drained soil. We have seen many bold beds of it, and to make up for its autumn-flowering, blue branching Larkspur, planted alternately in the same bed and pegged down, has a good effect. The Rudbeckia may be



Rubus nutkanus (the Nootka Sound Raspberry).

increased by division of the roots. When fairly established, give annual top-dressing, but, like all herbaceous plants, it enjoys good fresh soil. When crowded it should be broken up and replanted. Among other showy kinds are R. hirta, R. subtomentosa, R. pinnata, and R. laciniata, but R. speciosa is better than any. The annual R. bicolor is of dwarf branching habit with bright yellow rays and blackish-purple discs. It grows in any soil as a half-hardy annual, blooms in July, and continues till late autumn. R. purpurea is the same as Echinacea purpurea, but usually called a Rudbeckia. Its rosy-purple flowers are very welcome in autumn for their distinct colour.

Rue (Ruta).

Rue Anemone (Thalictrum anemonoides).

Rumex (*Dock*).—The only one worth growing is our great native Water Dock (R. Hydrolapathum), sufficiently striking for a place amongst ornamental subjects by the water-side. Its leaves, sometimes 2 ft. or more in length, form erect and imposing tufts ; while its flowering stem, frequently 6 ft. in height, has a dense, pyramidal panicle of an olive-fawn or reddish colour. In autumn the leaves change to a lurid red, a colour they retain for some time. A root or two deposited in the mud near the bank of a pond or a slow stream will require no further attention.

Ruscus (*Butcher's Broom*).—These are distributed throughout Europe, North Africa, and temperate Asia. All the hardy kinds may be planted under the drip and shade of trees where few other evergreens could exist. Propagate by division of the roots. The R. aculeatus (Common Butcher's Broom) is a native of our copses and woods, with curious prickly leaves, or rather substitutes for leaves, and small greenish flowers which appear in April, and succeeded by bright red berries about the size of Peas. This dense, much-branched Evergreen rarely grows more than 2 ft. high, and its thick, white, twining roots strike deep into the ground. The Alexandrian Laurel (R. racemosus) is an elegant shrub with glossy dark green leaves. Its stems are valuable for cutting from either in winter or at any other season. It is one of the best plants for partial shade, and should have deep loamy soil, but thrives on chalk. S. Europe. R. Hypophyllum, a very dwarf kind, and R. Hypoglossum are not important.

Rush (Juncus).

Rush, Flowering (Butomus).

Rush Lily (Sisyrinchium).

Ruta (*Rue*).—The common Rue (R. graveolens) is not ornamental, but R. albiflora is a graceful autumn-flowering plant about 2 ft. high, with leaves resembling those of the common Rue, but more glaucous and finely divided. The small white blossoms, borne profusely in large terminal drooping panicles, last until the frosts. In some localities it is hardy, but, unless planted against a wall, should generally have slight protection in severe weather. It is also known as Bœninghausenia albiflora. Nepaul. Another pretty plant is the Padua Rue (R. patavina), 4 to 6 in. high, with small golden-yellow flowers of the same odour as the common Rue, and the plant is about as hardy as R. albiflora.

Sabbatia (*American Centaury*).—Pretty N. American plants of the Gentian family. The species introduced are—S. chloroides, with large pink flowers ; S. campestris, with light rose flowers ; and S. angularis, with purplish-red flowers. S. chloroides, being found in bogs, requires a very moist spot ; S. campestris, an open and drier place ; S. angularis, a sheltered situation and partial shade, in imitation of that afforded by the vegetation amongst which it grows wild. The soil should consist of equal parts of good fibry loam and finely-sifted leaf-mould, with enough sand to

make it open. Seed, which should be sown in summer. The seedlings should be potted off before they become in the least drawn, or they will make weak plants, and they should be wintered in a cold airy frame. In spring repeatedly stopping the shoots will induce them to form bushy plants before flowering. All these kinds are biennial, and plants should be raised annually.

Saccharum ægyptiacum.—A vigorous perennial Grass, forming tufts of reed-like downy stems, 6 to 10 ft. high, and clothed with graceful foliage. It is suited for the margins of pieces of water and for pleasure-grounds, and requires a warm position. In our climate it does not flower, but even without its fine feathery plumes it is a good plant from its leaves and habit. It is easily and quickly multiplied by division in spring, and the offsets should be started in a frame or pit: in May or June they may be planted out. N. Africa. S. Maddeni is a quick-growing hardy perennial, about 5 ft. high. It has graceful leaves, and is well worthy of growing with other large Grasses.

Sacred Bean (Nelumbium).

Sage (Salvia).

Sagina (*Pearlwort*).—The only species worthy of culture is the Lawn Pearlwort (S. glabra), a plant very generally known in consequence of being much talked of a few years since as a substitute for lawn Grass, though it has not answered the expectations formed of it. It is none the less a pretty little alpine plant, forming on level soils carpets almost as smooth as velvet, and these in early summer are starred with pretty little white flowers. It is multiplied by pulling the tufts into small pieces and then replanting them a few inches apart, when they soon meet and form a carpet. Although S. glabra does not generally form a permanent or satisfactory turf, yet by selecting a rather deep sandy soil a turf may be made, but it must be kept perfectly clean and well rolled, and this is rarely worth attempting. When the plant begins to perish in flakes, it should be taken up and replanted. *Syn.*, Spergula pilifera. Corsica.

Sagittaria (*Arrowhead*). — Water plants of the Water Plantain family (Alismaceæ), the most familiar being our native Arrowhead, known by its arrow-shaped leaves and tall spikes of white blossoms. Its double variety is handsome, and its blossoms last longer. There are one or two handsome double kinds, the origin of which is not clear, but they are worth growing in ponds; they grow best in water 1 ft. deep, if their tubers are planted in mud.

St. Bernard's Lily (Anthericum Liliago).

St. Bruno's Lily (Anthericum Liliastrum).

St. Dabeoc's Heath (Menziesia polifolia).

St. John's Wort (Hypericum).

Salisburia adiantifolia (*The Maidenhair Tree*).—Beautiful as is the Maidenhair Tree in all stages and at all seasons, it is perhaps most attractive during the autumn, just before the leaves drop, since the foliage assumes then a bright golden-yellow hue. Although it differs much from the Conifers, it belongs to that order, and is one of the few deciduous members of it. Probably its scarcity is accounted for by its not being readily propagated, and by its making slow progress during its earlier stages: since, on this account, it is not popular in nurseries. A rather deep, fairly moist soil of a loamy nature seems to meet its requirements, but it is not very particular as to soil; for a fine specimen grows on the shallow gravelly subsoil of Kew. As a lawn tree S. adiantifolia is beautiful. Its fruits are said to be eaten in China and Japan, but they are rarely produced here. There are two or three varieties of the species, and, when raised from seed, there are individual differences. The Salisburia is also known as Ginkgo biloba.

Salix (*Willow*).—There are no trees in the world more beautiful for our country than our own Willows, such as the white Willow, the Osier, and its scarlet-barked variety called the Cardinal Willow, and also the Weeping Willows of various kinds; all of which, though they cannot be grown with flowers, should often come into the garden picture, not only beside water, but in other situations not too near the flowers. Some minute alpine Willows are interesting for the rock-garden or the margins of beds of dwarf shrubs, but they are more suited for botanical collections. The dwarf creeping kinds grown in gardens are—S. herbaceæ S. lanata, S. reticulata, S. retusa, and S. serpyllifolia, all natives of the northern parts of Europe and America. They grow well among stones in ordinary garden soil.

Salpiglossis sinuata. — A beautiful plant of the Solanum family, and one of the finest of half-hardy annuals; it is slender, and has an erect stem, 1 to 2 ft. high, bearing large funnel-shaped blossoms that have dark veins on a ground which varies from white to crimson, yellow, orange, or purple, and intermedi-

ate shades. As the colour of the blossoms is so variable, the plant is known as S. variabilis, and its varieties have Latin names according to their tints. It is difficult to make a selection, but a packet of mixed seeds will produce a pretty variety of colours, and will yield a fine display, lasting from late summer till

Salpiglossis sinuata.

autumn. S. sinuata thrives in light, rich, sandy loam, and should be treated as a half-hardy annual. Chili.

Salvia (*Sage*).—The Sages are found in almost all sub-tropical and temperate countries, but principally in the mountains of Tropical America and in the countries bordering on the Mediterranean Sea. The best hardy sorts are from the Mediterranean region, and the showiest kinds are from the mountains of Tropical America, especially those of Mexico. Few of the Mexican species are really hardy, but many of them are among the best autumn and winter ornaments of the conservatory and the greenhouse, while, during summer, others are pretty in beds and borders. Few of the Sages require special treatment. The herbaceous perennials may be rapidly propagated by division or seed, and the half-shrubby species by cuttings of the young soft shoots in heat. The hardy perennial species require only a little care in the selection of a suitable situation and soil, but they are few in comparison with the half-hardy kinds. One of the handsomest of the hardy sorts in S. pratensis, a native species sporting into several varieties, which differ from each other in colour, and are called alba, rubra, bicolor, and S. sylvestris is even handsomer, and has long showy spikes of deep purple flowers. The well-known S. Sclarea and its variety bracteata are good plants for a mixed border, and so is S. Forskohlei, a species similar to them in habit and in colour. The finest of all is S. hians, which is, however, rarely seen. Some of the forms of the common garden Sage (S. officinalis), especially the variegated-leaved kind, are pretty; and so are the blue-flowered North American S. Pitcheri, and its white variety. The pretty purple red-topped Clary (S. Horminum) is a South European annual of easy culture. The tufts of coloured bracts which terminate its stems make it useful for cutting as well as for border decoration. The silvery Clary (S. argentea) is also an excellent border plant. It has silvery leaves, 6 to 12 in. long, which are handsome when well grown. S. candelabrum, a native of the south of Spain, is a half-shrubby species like the kitchen Sage, and has similar foliage, with ample panicles of rich violet and white flowers, borne on long stalks clear of the leaves. S. taraxacifolia is equally handsome.

Of the half-hardy species, S. patens is the most brilliant, being equalled by few flowers in cultivation. Although not hardy, it is easily preserved through the winter, and it is readily increased from cuttings. In some districts, in light warm soils, it survives an ordinary winter, but as a rule it is safer to lift the plants. S. cacaliæfolia is a beautiful plant similar to S. patens, but of the same hardiness as those mentioned below. S. porphyranthera is a dwarf close-growing species with rich crimson flowers. It rarely fails in the open border. S. farinacea is a beautiful kind bearing light lavender blossoms with a white lip, and having a flower-spike covered with white powder. S. interrupta, a very fine species from Morocco, has large white and light blue flowers. S. Grahami, a very old Mexican kind, has a distinct habit and bears bright carmine blossoms. S. angustifolia and S. azurea are blue kinds, worthy of open-air culture, as are also several of the sorts usually grown in greenhouses, such as S. Heeri, S. fulgens, S. gesneræfolia, S. elegans, S. tricolor, S. rutilans, S. splendens, and their varieties; for, though some of them do not flower till autumn, their use for indoor decoration is improved by their being planted out during summer.

In summer some tender kinds have a fine effect in the open border, and are all easily propagated by cuttings. In August and September they should be raised in a close cold frame, and in spring they should be treated like Heliotropes or Ageratums. When large plants are required, the old ones can either be potted, or put close together in deep boxes ; and, if potted, they should be cut down to within 6 in. of the soil. Both old plants and potted cuttings are easily

Salvia patens.

wintered in any dry place where frost is excluded. The tender Sages are not particular as to soil, thriving in any good garden soil.

Sambucus (*Elder*). — The common Elder (S. nigra) is not generally admired, but its cut-leaved, golden, and variegated varieties are often planted. A large Elder with branches sweeping the turf is no mean object on a lawn at midsummer, when covered with its flower-clusters, or when in berry. The golden Elder (foliis aureis) is becoming very common—too common, in fact,—for, like all conspicuous objects, it requires to be employed with caution, or a spotty effect will be produced. The same remark applies, but in a less degree, to the variegated golden-leaved and silver-leaved Elders. The Parsley-leaved or cut-leaved Elder (laciniata) is a most elegant shrub, and should be preferred to the common Elder, as it is ornamental even in a small state. It should be allowed to form itself into a small tree or a round symmetrical bush. A pretty shrub is the Scarlet-berried Elder (S. racemosa), which resembles the common Elder in habit, save that instead of bearing black berries it has clusters of brilliant scarlet fruits. Unfortunately, it is capricious in English shrubberies, and is seldom seen in perfection of berry. Its natural home is in alpine valleys, where in August and September it rivals the Mountain Ash in splendour. In hill districts it may be grown and fruited, but it must have a cool moist spot. Its cut-leaved variety (serratifolia) is an elegant shrub, with pinnate leaves deeply cut. S. Ebulus is a herbaceous Elder, having spreading foliage, cut into elegant leaflets, that may be planted in coverts, dry banks, and rough shrubberies ; scarcely suitable for border culture. It is hardy, and may be readily increased by division.

Samolus littoralis.—A pretty trailing plant, with long slender stems, and small evergreen foliage, and in summer, with numerous pink blossoms. It is suitable for the bog-garden or for moist spots in the rock-garden, as it delights in plenty of moisture, and a peaty soil suits it best. New Zealand. Primulaceæ.

Sand Verbena (Abronia).

Sandwort (Arenaria).

Sanguinaria canadensis (*Bloodroot*). A pretty and distinct hardy plant, its thick creeping root-stocks sending up glaucous leaves about 6 in. high, the flowers, borne singly on stems as high as the leaves, are 1 in. across, white, with a tassel of yellow stamens in spring, in good-sized tufts having a pretty effect. It grows well in any border, but under the branches of deciduous trees on lawns it spreads about, and, without attention, becomes a charming wildling, in moist soil. It may be increased by division in autumn, but its fleshy stems must not be kept long out of the ground. Papaveraceæ.

Santolina (*Lavender Cotton*).—Dwarf half-shrubby plants, of neat habit and pretty hoary foliage. One of the most distinct and useful of them is S. incana, a small gray shrub, with close habit and narrow leaves covered with dense white down. The pale greenish-yellow flowers are small, not showy, but the plant is useful from its form and silvery hue, for groups and edgings, growing readily in ordinary soil on the level border, or on

slopes of the rock-garden. It is considered a variety of the better-known S. Chamæcyparissus (Lavender Cotton), which is pretty for banks and rock-gardens, forming silvery bushes 2 ft. high, but it is not suited for association with very dwarf alpine plants. Other species of Santolina suited for rock-gardens are S. pectinata and S. viridis, which form bushes something like the Lavender Cotton. S. alpina is of more alpine habit, forming dense tufts close to the ground, from these arising slender stems bearing yellow button-like flowers. S. alpina grows in any soil, and may be used in the less important parts of the rock-garden. It is easily increased by division. Cuttings of the shrubby species strike readily in spring or autumn.

Sanvitalia procumbens. — A hardy annual from Mexico, with trailing branches and bright yellow flowers. In the single-flowered kind the blossoms have a dark purple centre, but in the double (S. procumbens fl.-pl.), which is by far the showier, they are a bright yellow. S. procumbens flowers from July till late in September, and owing to its dwarf compact growth, it is useful for masses in beds or for the front rows of borders, or in suspended baskets, as the slender branches droop gracefully over. It may be sown in any ordinary garden soil—in autumn for spring flowering, or in March and April for summer flowering. Compositæ.

Saponaria (*Soapwort*). — This genus of the Pink family has a few garden plants.

S. cæspitosa is a neat little alpine perennial, good in the higher regions of the Central and Eastern Pyrenees, flowering in August, but in the lowlands its beautiful rose-coloured blossoms appear towards the end of June. It forms rosettes of linear leaves, thick, glabrous; the flowers, forming a thick cluster, are supported by short stout stems. This graceful little plant is valuable for the rock-garden. A sandy soil suits it best, and it endures our winters.

S. calabrica is a pretty prostrate hardy annual, 6 to 9 in. high, its slender stems covered with small pink blossoms all the summer. There is a white variety. S. calabrica is much used for beds and edgings. Seeds may be sown in the open border in April, or earlier in heat if bloom is required early in the season. The plant thrives best in rich sandy loam.

S. ocymoides is a beautiful trailing rock-plant, with prostrate stems, its rosy flowers completely covering its leaves and branches in early summer. It is most valuable for clothing arid parts of the rock-garden, where a drooping plant is desired, as the shoots fall over the face of the rocks, and become masses of rosy bloom. It is also excellent for old walls, and the seed should be sown in mossy chinks where a little soil has gathered. It thrives in ordinary soil, and is often a good dwarf border plant. Seeds and cuttings. Stony and rocky places in Southern and Central Europe.

S. officinalis (*Soapwort*).—This is a handsome native plant about 2 ft. high, with large blossoms, usually rose-pink. The double variety is the best. It is a rambling plant, and soon spreads rapidly; therefore it should not be planted in select borders, but is pretty for rough places in the pleasure-ground and wild garden, as it grows in any soil. Division.

Sarana kamtschatica (= Fritillaria).

Sarracenia purpurea (*Huntsman's Horn*).—This singular plant belongs to a family of Pitcher-plants, natives of North America, it being the hardiest, and handsome when well grown. Its curious leaves, hollowed like a horn, are blood-red in colour, and form a compact tuft 1 ft. or more in height and the same in breadth; the flowers, singular in shape, are not very showy. It is a good plant for the bog-garden or for damp spots in the rock-garden, in an open and fully-exposed position with the choicer bog-plants, in fibrous peat well mixed with Sphagnum Moss, which is common in marshy places. A layer of living Moss should be placed round the plant to keep it moist, and the soil must be kept always moist. The plant is hardy under these conditions, but precautions should be taken to prevent birds from disturbing the soil and exposing the roots. It is not easy to propagate, but may be raised from seed. Some of the hybrids between it and others may be hardy. S. flava, the hardiest species next to S. purpurea, is rarely satisfactory in the open air.

Satyrium.—Beautiful terrestrial Orchids, natives of the Cape of Good Hope, and therefore scarcely hardy enough for open-air culture. With attention, however, they succeed fairly well in sheltered and warm localities if protected in winter, but they thrive best under glass. The handsome S. carneum and aureum are in cultivation.

Saussurea.—These Composite plants have a Thistle-like aspect, and are suitable mainly for botanical collections. Some, such as S. pygmæa, grow only a few inches high, and may be cultivated

in the rock-garden. The leaves of S. discolor are white underneath, and contrast well with the light purple blossoms. S. alpina is a native species. All grow well in any soil.

Saxifraga (*Rockfoil*).—This genus includes, perhaps, more true alpine flowers than any other. In the Arctic circle, in the highest alpine regions, on the arid mountains of Southern and Eastern Europe and Northern Africa, and throughout the length and breadth of Europe and of Northern Asia, they are found in many interesting varieties of form and colour. One might expect them to be as difficult of cultivation as most alpine plants, but they are the easiest to grow of all. They were common in collections of alpine flowers where few other families were represented. Of late years many pretty species have been introduced, and the variety of the family is now so great that a very interesting garden might be made of Saxifrages alone. For the purposes of cultivation some rough division is convenient, as Saxifrages are very different in aspect and uses. The most ordinary form is the Mossy or hypnoides section, of which there are many kinds in cultivation. Their delicate Moss-like spreading tufts of foliage, so freshly green, especially in autumn and winter, when most plants decay, and their countless white flowers in spring, make them very precious. They are especially suited for the tasteful practice of carpeting the bare ground beneath taller plants. They are also admirable for the fresh green hue with which they clothe rocks and banks in winter. Next to these we may place the very extensive silvery group. These have their grayish leathery leaves margined with dots of white, so as to give to the whole a silvery character. This group is represented by such kinds as S. Aizoon and the great pyramidal-flowering S. Cotyledon of the Alps. Considering the freedom with which they grow in all cool climates, even on level ground, and their beauty of flower and foliage, they are perhaps the most precious group of alpine flowers we possess. Anybody with a cottage garden can grow them. The London Pride section is another of great beauty, the plants thriving under ordinary conditions in lowland gardens, and soon naturalising themselves in lowland woods and copses. But the most brilliant, so far as flower is concerned, are found in the purple Saxifrage (S. oppositifolia) group and its near allies. Here we have tufts of splendid colour in spring with dwarfness and perfect hardiness. The large leathery-leaved group, of which the Siberian S. crassifolia is best known, is also of much importance; the plants thriving in ordinary soil and on the level ground. There are various minor groups. Such of the smaller and rarer alpine species as require any particular attention should be planted in moist sandy loam mingled with grit and broken stone, and made very firm. Very dwarf and rather slow-growing kinds, like S. cæsar and S. aretioides, should be surrounded by half-buried pieces of stone, to prevent their being trampled on or overrun. Stone will also help to preserve the ground in a moist healthy condition in the dry season, when the plants are most likely to suffer. Very dry winds in spring sometimes have a bad effect when such precautions are not taken. Established tufts are apt to throw out stem-roots into their own cushions, so to say. These cushions are frequently moist during the autumn and winter months. When the tufts are suddenly dried, the plants suffer if the ground-roots be dried too.

The following are among the most important cultivated kinds, though the list excludes many species that are difficult to grow or to procure, and which are found only in very full collections.

S. aizoides.—A native plant, very abundant in Scotland, the north of England, and some parts of Ireland, and generally found in wet places and by the sides of mountain rills or streams. At the end of summer or in autumn it has an abundance of flowers, ½ in. across, bright yellow, dotted with red towards the base. It forms dense masses of dwarf bright green leaves, and has leafy branched flower-stems, which distinguish it from other yellow Saxifrages. Although a mountain plant, it is easy to grow in lowland gardens in moist ground. Wherever a rill or streamlet is introduced into the rock-garden or its neighbourhood, S. aizoides may be planted to form wide-spreading masses, as it does on its native mountains. Easily propagated by division or by seed. S. autumnalis is similar.

S. Aizoon is a good rock, border, and edging plant. Plants established for two or three years form gray-silvery tufts, which do not flower so freely as the wild plants, but this need not be regretted, as it is the silvery mass, and not the flowers, that is sought. This Rockfoil is often grown in pots, but it flourishes as freely as any native plant, and is best perhaps when exposed to the full sun. There are several named varieties. S. pectinata,

S. Hosti, S. intacta, S. rosularis minor, S. australis, S. cartilaginea, and others are only slight variations from the type. Division in spring.

S. Andrewsi.—Among the green-leaved Saxifrages there is no better kind than this. Its flowers are freely produced, prettily spotted, and larger than those of S. umbrosa. The plant is finer in the rock-garden than London Pride, grows as freely on any border soil, and merely requires to be replanted occasionally, when it spreads into very large tufts, or to have a dressing of fine light compost sprinkled over it annually. The variety Guthrieana is distinct from the Pyrenees.

S. aretioides.—A real gem of the encrusted section, forming cushions of silvery rosettes about ½ in. high, and almost as small and dense as those of Androsace helvetica. It has rich golden-yellow flowers, in April, on stems a little more than 1 in. high, and remind one of the flowers of Aretia Vitalliana. S. aretoides requires a moist and well-drained soil, and being so tiny, must be protected from coarser neighbours. Seed and careful division.

S. Burseriana.—None of the Rockfoils surpass S. Burseriana in vernal beauty. It is almost Moss-like in habit, forms broad patches, and spreads rapidly over the earthy interstices of warm moist sandstone, if planted where it will not suffer from stagnant moisture. The blossoms are borne singly on slender red stalks, which rise 2 or 3 in. above the general surface of the plant, and are pure white, the margins of the overlapping petals elegantly frilled or crisped. They appear freely in January and February. Before they are expanded, their crimson-brown unopened buds have a cheerful effect as they emerge from the compact silvery tufts of foliage, while interspersed among full-blown flowers they enhance the pearly whiteness of the petals. S. Burseriana soon forms good-sized tufts in the open border or in the rock-garden, but prefers a dry sunny situation and calcareous soil. All lovers of hardy spring flowers should possess it. There are two or three distinct forms which differ from each other chiefly in habit, one being much more tufted than the others. There is also a form with larger flowers than those of the type, but not more desirable; it is called grandiflora. Large panfuls of this early Rockfoil are pretty in the greenhouse. Austrian Alps.

Saxifraga Burseriana.

S. cæsia resembles an Androsace in the neatness of its tufts. On the Alps it covers the rocks and stones like a silvery Moss; and on level ground, where it has some depth of soil, develops into beautiful little cushions 2 to 6 in. across. It has pretty white flowers in summer on smooth thread-like stems, 1 to 3 in. high. Though a native of the high Alps and Pyrenees, it thrives in our gardens in very firm sandy soil, if fully exposed and well watered in summer. It may also be grown in pots or pans in cold frames near the glass; but, being very minute, should always be kept distinct from coarse neighbours, as even the smallest weeds will injure or obscure it.

Seeds or careful division. Of similar character are S. calyciflora, S. luteo-viridis, S. Kotschyi, S. valdensis, S. squarrosa, and S. diapensoides, all dwarf, and, for the most part, difficult to grow, though their beauty amply repays the trouble bestowed on them. They should be grown in the same way as S. cæsia.

S. cæspitosa.—A dwarf kind forming dense carpet-like masses of foliage, arranged in neat tufts, studded in summer with white blossoms. It succeeds in almost any situation in any garden soil; is useful for margins to herbaceous borders, and makes a beautiful covering for moist banks. It is one of the most variable of all Saxifrages, and of its numerous varieties the most distinct are palmata and grœnlandica.

S. ceratophylla (*Stag's-horn Rockfoil*).—An ornamental species of the mossy section, with dark, finely-divided leaves and numerous pure white flowers in loose panicles in early summer. It quickly forms strong tufts in any good garden soil; and is adapted for any kind of rock-garden, whether grown in level tufts on the flat portions, or in sheets overhanging the brows of rocks. Spain. Seed or division. Similar to this species are S. paniculata, ladanifera, Wilkommiana, geraniodes, irrigua, ajugæfolia, and aquatica.

S. ciliata.—One of the broad-leaved or Megasea section with large broad leaves, covered with soft hair, and carried on creeping stems. The flower-stems are 6 to 9 in. high, and bear numerous large flesh-coloured flowers in spring. A native of North India, S. ciliata is suitable for open-air culture in the south of England only, but is so handsome and distinct that it should be tried wherever it can be grown. A sheltered nook in the rock-garden, partially shaded, suits it best.

S. cordifolia.—This Siberian plant differs in aspect from the ordinary dwarf Rockfoils, having ample heart-shaped leaves on long and thick stalks. Its clear rose-coloured flowers are arranged in dense masses, and in early spring half concealed among the great leaves, as if hiding from the cutting breath of March. S. cordifolia and its varieties flower in any soil and position; but to encourage early-flowering, place them in warm sunny positions, where their fine flowers may be induced to open well. These Saxifrages are perhaps more fitted for association with the larger spring flowers and herbaceous plants than dwarf alpines; and may be naturalised on bare sunny banks, in wild sunny parts of the pleasure-ground, or by wood walks. They may also be used with effect near cascades, or on rough rock- or root-work, or on the rocky margins of streams or artificial water; in fact, they are the fine-foliaged plants of the rocks. There are several handsome varieties of S. cordifolia, the finest of all the group being one called purpurea.

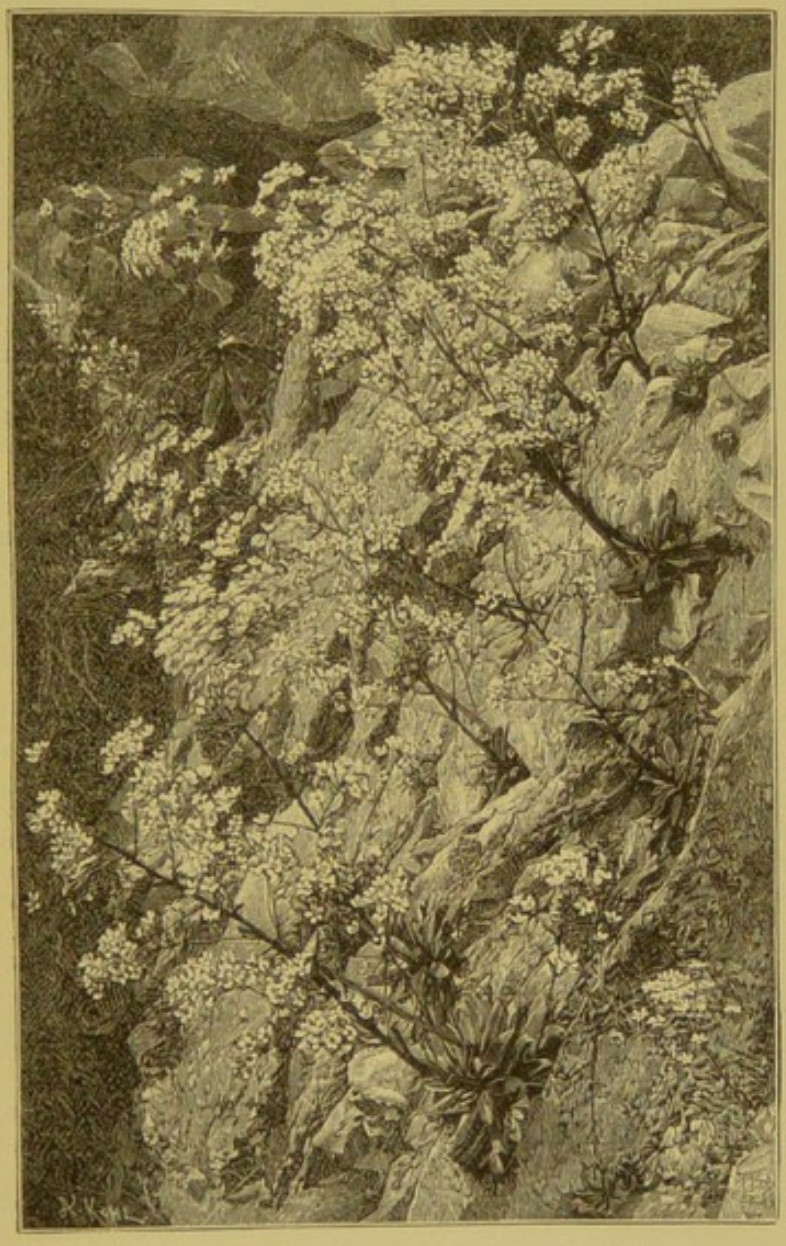
S. Cotyledon (*Pyramidal Saxifrage*).—This beautiful kind embellishes with its great silvery rosettes and elegant pyramids of white flowers many parts of the great mountain ranges of Europe, from the Pyrenees to Lapland. It is the largest of the cultivated Saxifrages, and also the finest, except S. longifolia, the linear leaves of which it does not possess. There is considerable difference in the size of the rosettes, which when grown in tufts are generally much smaller than in isolated specimens. The flower-stem varies from 6 to 30 in. high, and about London, in common soil, often reaches 20 in. In cultivation the plant usually attains a greater size than on its native rocks. A variety more pyramidal and more robust is known in gardens under the erroneous name of S. nepalensis, and sometimes by the more appropriate one of S. pyramidalis. To get good specimens, denude the parent plant of the offsets as they appear. Many market growers have large stocks of this Rockfoil in pots. It is superb thus grown, but will succeed well in the rock-garden or ordinary border.

S. crassifolia.—A well-known Siberian species of the Megasea section, with large broad leaves. The flowers rise from the terminal shoots in showy pendent masses and are pale rose with a suspicion of lilac. The plant fulfils the same purposes as S. cordifolia. The chief varieties are ovata, which carries its deep rose-coloured flowers well above the foliage; rubra, similar to the last, but with flowers of a deeper tinge of rose; orbicularis, producing an abundance of light rosy flowers, well above the foliage, and sometimes considered a species, but in reality only a smaller form of ovata, with rather broader leaves and a more branching habit; and media, a distinct variety, with large dark, shining green leaves and clusters of bright rosy-pink flowers on strong stems. There is also a variety called aureo-marginata, with variegated foliage.

S. Cymbalaria.—Little tufts of this Rockfoil form in early spring masses of bright yellow flowers set in light green, glossy, ivy-like leaves, the whole not above 3 in. high. Instead of fading, it preserves its little rounded pyramids of

golden flowers until autumn, when it is about 12 in. high. It is an annual or biennial, sows itself abundantly, and is suitable for moist spots on or near the rock-garden or on level ground, and in large pleasure-grounds ; is readily naturalised on the margins of a rocky stream and elsewhere.

S. granulata (*Meadow Saxifrage*).—A lowland plant, with several small scaly bulbs in a crown at the root, and numerous white flowers three-quarters of an inch across. It is common in meadows and banks in England, its double form being very handsome ; also useful as a border plant in the spring-garden or in the rougher parts of the rock-garden.



Saxifraga pyramidalis (the great alpine Rockfoil).

S. flagellaris is distinct and free in growth. Like its ally, S. Hirculus, it has large bright yellow blossoms. Each rosette throws off thread-like stolons, which root at the tips, and in moist, peaty, and gritty soil quickly form new rosettes. One of the most arctic of plants.

S. Fortunei has large panicles of white blossoms which rise in profusion from rosettes of dark green rounded leaves. It is a desirable plant, for it flowers in autumn and is not particular as to treatment.

S. hypnoides (*Mossy Saxifrage*) is a very variable plant as regards stems, leaves, and flowers, but usually forms

mossy tufts of the freshest green, and no plant is more useful for forming carpets of glistening verdure in winter. For this reason it is suited for the low rocky borders frequent in town and villa gardens. It thrives in the rock-garden or on level ground, either in half-shady positions or when fully exposed to the sun. When so exposed it forms the fullest tufts, flowering profusely in early summer. It is also suitable for dwarf verdant carpets in the flower garden or the rock-garden with a view to placing plants above it. Nothing can be easier to grow or to increase by division. Under this species may be grouped S. hirta, S. affinis, S. incurvifolia, S. platypetala, S. decipiens, and several others, all showing differences which some think sufficient to mark them as species. They are as free as S. hypnoides, and appear to suffer only from drought or drying winds. If when first planted a few rather large stones are buried in the earth round each, the plants will soon lap over them and preserve the moisture in the tufts. S. densa and S. Whitlavi are the best free-growing species, and, being compact and always green, are suitable for a margin.

S. juniperina (*Juniper Saxifrage*) is one of the most desirable with spine-pointed leaves, densely set in cushioned masses. The yellow flowers appear in summer, and are arranged in spikes on a leafy stem. S. juniperina thrives in moist, sandy, firm soil in the rock-garden, and in every collection of alpine plants ; should be grown in pots. Caucasus. Seed and careful division.

S. lantoscana.—One of the finest of the incrusted-leaved section. Though similar to the pyramidal variety of S. Cotyledon, it is smaller, its leaves narrower and more crowded in the rosette, whilst its flower-spike, which is not erect but slightly drooping, is more densely furnished with flowers. It is easily grown in a fully-exposed position in a well-formed rock-garden, in a well-drained gritty soil. It remains long in flower, and is one of the best of rock-garden plants.

S. ligulata.—This Nepaul Rockfoil has broadly obovate leaves, bearing flowers in small cymose panicles. The flowers are white, with a rosy tint towards the margin of the petals ; and the anthers before expansion are deep crimson. Its tendency to early spring growth makes it liable to injury from frosts, which, occurring in three or four consecutive seasons, will ultimately prove fatal. It should therefore be given a sheltered situation and a little shade also. The varieties rubra and speciosa, particularly the latter, are in every way finer than the type. S. ligulata may be associated with others of the Megasea section.

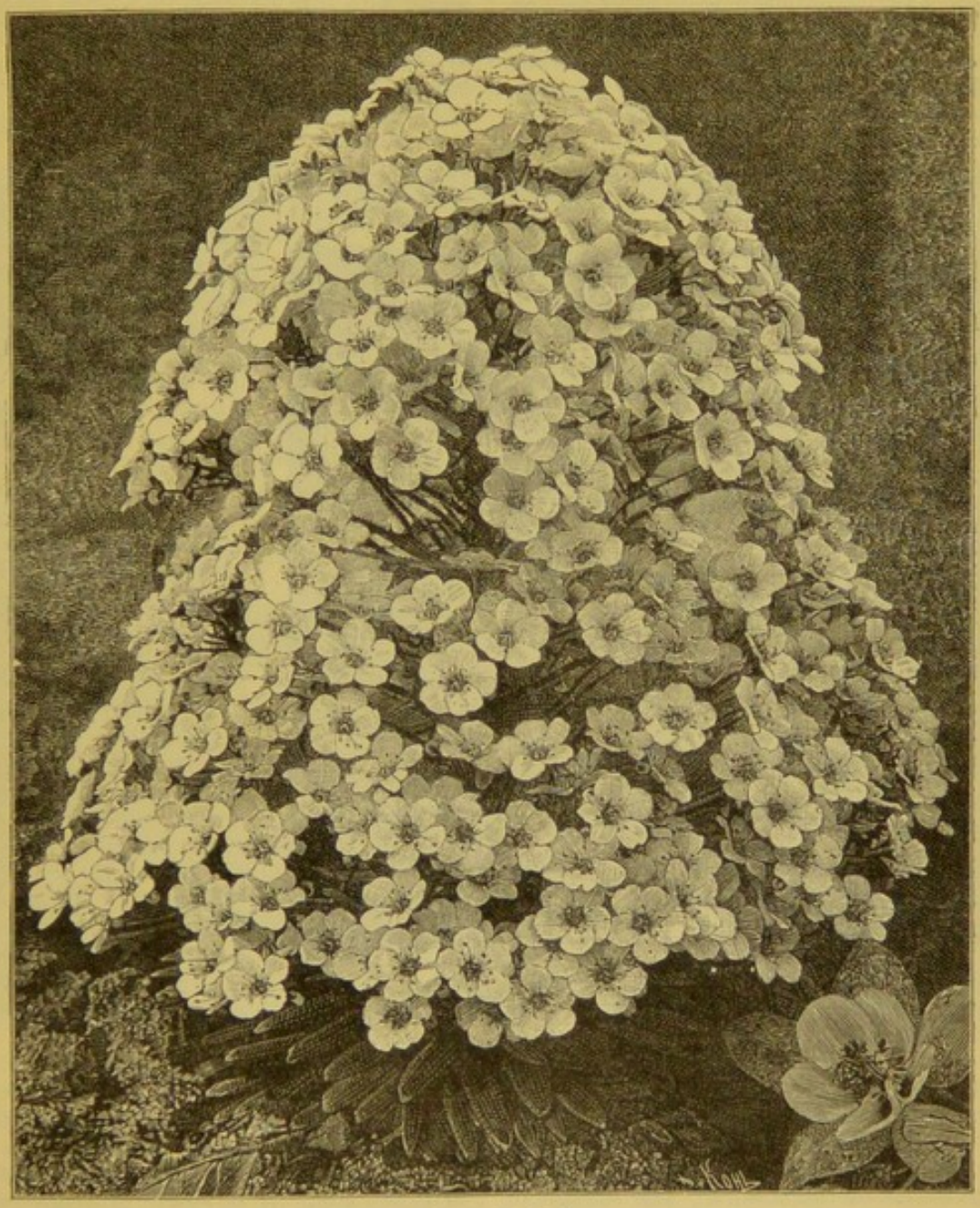
S. longifolia.—This Pyrenean plant has single rosettes often 6, 7, and 8 in. in diameter. Its grayish leathery leaves are beautifully dotted with white on the margins, and in early summer it pushes up fox-brushlike columns of white flowers, from 1 to 2 ft. long, the stems covered with short, stiff, gland-tipped hairs. It is perfectly hardy, and may be grown in various ways. On some perpendicular chink in the face of a rock-garden, where it can root deeply, it is very striking when the long outer leaves of the rosette spread away from the densely-packed centre. It may also be grown on the face of an old wall by first carefully packing a very small plant of it into a chink with a little soil. The stiff leaves will, when they roll out, adhere firmly to the wall in the form of a large silver star. S. longifolia will thrive on a raised bed or border if surrounded by a few stones to prevent evaporation and injury, also in a greenhouse or frame, and perhaps the best way to develop a weak young nursery plant into a sturdy rosette is to put it in a 6-in. pot well drained and filled with a mixture of sandy loam and stable manure. Place it in a sunny pit or frame, giving it plenty of water in spring, summer, and autumn. S. longifolia is propagated by seeds, which ripen from the bottom of the stem upwards, so that the lower seed-vessels should be cut off first, leaving the unripe capsules to mature. Visit the plant every day or two to collect the seeds as they ripen. S. lingulata chiefly differs from this kind in having smaller flowers and shorter stems. It is a charming rock-plant, and will succeed in the same position as S. longifolia. S. crustata is considered a very small variety of S. longifolia ; but being much smaller should be associated with dwarfer plants.

S. Maweana is a handsome species of the cæspitosa section, and larger than any other in foliage and flowers. The latter, about the size of a shilling, form dense white masses in early summer. After flowering, this species forms buds on the stems, which remain dormant till the following spring. Though rare, it is of easy culture. Similar, but finer, is S. Wallacei, which is far more robust, earlier, and freer as regards flowering, but which does not develop buds during summer. It is a most desirable plant for the border or the rock-garden, and easily propagated. Pot-

fuls of this are pretty as the flowers are large, and so free as to form a mass of white.

S. muscoides (*Mossy Saxifrage*).—A beautiful little plant, forming a dense bright green carpet like S. hypnoides and S. cæspitosa. There are several forms of it, but the best is atro-purpurea, which produces a dense mass of deep red-purple blossoms on stalks a few inches high. The varieties pygmæa and crocea are pretty, also the allied kinds S. exarata, S. pedemontana, S. Rhei, S. aromatica, and a few others; they grow in almost any soil.

S. oppositifolia.—It is impossible to speak too highly of the beauties of this bright little mountain-plant, in colour and in habit so distinct from the familiar members of its family. The moment the snow melts, its tiny herbage glows into solid sheets of purplish-rose colour. Of the several varieties that known as splendens has flowers of far greater brilliancy, though slightly smaller than those of the type; in bud especially the colour is almost carmine and exquisitely beautiful. In density of bloom it approaches the typical form, but rarely equals it. This



Saxifraga longifolia.

variety was obtained many years ago on the mountains of Scotland. S. o. major has flowers twice the size of the type, clear rose, inclining to cherry, and has less of a purple tinge. In S. o. pyrenaica the shoots are twice as robust as those of any of the preceding kinds, and the flowers larger. Its finest form is S. o. p. maxima, which has lovely light rose blossoms as large as a shilling. S. o. alba has white flowers, in pleasing contrast to the other varieties. S. Rudolphiana has a more spreading habit of growth, and its rosy-purple flowers are sometimes borne singly, and sometimes (though rarely) in pairs. It is allied to S. biflora, the beautiful

Group of Silvery Rockfoils.

dwarf species of loose habit, the flowers of which, on clusters of two to four, vary from a bright rose to a deep blood-red, the petals narrow and wide apart. S. Kochi is similar in habit to this, and its rosy-purple flowers are in twos and fours at the extremities of the shoots. The foliage of S. retusa is very short, firm, dense, and compact, the small flowers being borne in clusters at the extremity of erect stalks; and their narrow petals are usually a pale rose colour, sometimes brighter. It blooms rather later than the varieties of S. oppositifolia. S. Wulfeniana is closely allied to S. Kochi. S. oppositifolia and its varieties succeed in deep, open, rich, loamy soil, and are finest in a fissure or on a ledge of the rock-garden, where the roots can ramble backwards or down to any depth. For the soil, a rich light loam mixed with fragments of limestone or grit, small fragments of any rock, and a little river sand will do. S. oppositifolia must have sunshine; for though it will grow in the shade, it will not flower freely. The same treatment, with the addition of a little peat or vegetable mould, suits S. retusa and S. Wulfeniana. The Tyrolese species (S. biflora, S. Rudolphiana, and S. Kochi) are less easy to please. They grow wild on the moraines of glaciers, where light vegetable soil, sand, and débris of every kind blend with massive rocks, coating the surface, and filling the interstices where water drips or oozes around, and frequently flows in volume within 2 or 3 ft., so as to soak the bases of the rocks on which their rosy carpet is spread. They will grow in pots, but rarely with the same freedom as the varieties of S. oppositifolia.

S. peltata. — The shield-like leaves of S. peltata make it unique among Saxifrages; and on this account some have referred the plant to a section under the name Peltiphyllum. From a thick and fleshy creeping root-stock rise stout erect leaf-stalks, at the ends of which grow the target-like leaves, 1 ft. or more in diameter. The white or pale pink flowers appear in spring, a little before the leaves, on stalks 1 to 2 ft. high, and in loose clusters, 3 to 6 in. in diameter. It is found in the neighbourhood and in the beds of quick-running streamlets throughout the Sierra Nevada of California, and is best in a deep moist border of peaty soil. It is easily propagated by division, or seeds, which in some seasons are produced in abundance.

S. purpurascens is the finest of the Megasea section. The stem is 10 to 12 in. high, and the flowers are produced in pendent masses of red and purple. Succeeds best in a moist peaty soil in a rather sheltered spot. High elevations about Sikkim.

S. Rocheliana (*Rochel's Saxifrage*).—A compact and dwarf kind, forming dense

silvery rosettes of tongue-shaped leaves, with white margins and distinct dots. In spring appear large white flowers on sturdy little stems. There is no more exquisite plant for the rock-garden, pans, and for small rocky or elevated borders. Any good, free, moist, loamy soil suits it, and in London it thrives on borders, but should always be exposed to the full sun, associated with the choicest spring flowers and alpine plants. Austria. Seeds or careful division. S. coriophylla is similar but not so valuable.

wild on banks or rocks in the cool greenhouse or conservatory. In mild parts of England it lives in the open air, and may be used in graceful association with Ferns and other creeping plants. China. Flowers in summer. Closely allied to S. sarmentosa is the delicate Dodder-like Saxifrage, S. cuscutæformis, with its thread-like runners similar to the stems of a Dodder, and distinguished from S. sarmentosa by smaller leaves and more uniform petals. It may be used in much the same way as S. sarmentosa, but being

Saxifraga Wallacei.

S. sancta.—A beautiful species, forming a dense carpet-like mass of deep green foliage, studded in early spring with numerous bright yellow blossoms on stems an inch or so high. It seems to grow freely in any position in the rock-garden.

S. sarmentosa (*Mother of Thousands*).—A well-known plant, with roundish leaves and numbers of creeping, slender runners, producing young plants Strawberry fashion. It grows freely in the dry air of a sitting-room, and may often be seen gracefully suspended in cottage-windows, but is most at home running

more delicate and fragile, requires more care. It is a beautiful plant for growing in Moss in a cool fernery, for it is perfectly at home, and the delicate markings of its leaves show up against the green of its surroundings. The plants grown in gardens, as S. japonica and S. tricolor, are varieties of S. sarmentosa.

S. Stracheyi is a strong plant with leaves nearly as broad as long. Its flowers, produced on broad branching panicles, are of a light pink with a shade of lilac. It is hardier than its closest ally S. ciliata, blooms in March, and

should be sheltered against bleak winds. It is suited for borders and rock-gardens.

S. tenella.—A handsome plant, forming tufts of delicate fine-leaved branches, 4 or 5 in. high, which root as they grow. The flowers, which appear in summer, are numerous, whitish-yellow, and arranged in a loose panicle. Similar in growth are S. aspera, S. bryoides, S. sedoides, S. Seguieri, S. Stelleriana, and S. tricuspidata, all suitable for clothing the bare parts of the rock-garden and slopes, but require moist soil and cool positions. Division in spring or the end of summer.

S. umbrosa (*London Pride*).—This al-

Saxifraga sarmentosa.

most universally-cultivated plant is abundant on the mountains round Killarney, though it has long been grown in our gardens. In old gardens it is much used for edging, and, being a pretty evergreen, should be freely used in the rough parts of rock-gardens, the fringes of cascades, etc. It is naturalised in several parts of England, and grows freely in dwarf herbage, or in rocky parts of woods. There are several varieties, for example, S. punctata, S. serratifolia, and Oglevieana, which is a most distinct form of this species, with pinkish blossoms in dense dwarf panicles not over 6 in. high. S. rotundifolia and similar kinds are related to S. umbrosa, but are unimportant. This plant and its forms will thrive in the cold shade of high walls where few other things will live.

There are other good kinds, but less important than the foregoing, such as S. mutata, S. florulenta, very difficult to grow, the London-Pride-like S. Geum, the native S. Hirculus, and the small gray tufted S. aspera.

GIANT ROCKFOIL HYBRIDS. — The Giant Saxifrages of our gardens, known as Megaseas, are so variously beautiful at all seasons that the wonder is they are not even more popular than they now are in all good gardens. From all the other Saxifrages they are known by their massive size and breadth of leaf, while, as a general rule, they are of evergreen habit, and so are effective at all times. Most of them are beautiful when in blossom during the earlier months of spring. Now and then, it is true, their flowers become nipped in the bud by spring frosts; but even if this occasionally happens, general results are enough to justify their culture. Besides, it is so easy to pot up the plants in autumn and give them the shelter of a cold frame or an awning of mats, since plants so treated bloom freely and form handsome plants for cool greenhouse or conservatory decoration.

One of the best for pot and tub culture is M. crassifolia, which has large clusters of its peach or almond-tinted blossoms on tall stalks, its fragrance on a warm day being like that of Hawthorn. Another fine variety is cordifolia purpurea, which bears its pendulous bell-shaped flowers on vivid red scapes 18 in. or 2 ft. in height, the blossoms being darker in colour than those of crassifolia.

Other very fine species are purpurascens, Stracheyi, cordifolia, and ciliata, the last with large hairy leaves, but it is the most tender of the whole group, and its leaves succumb to the first sharp frosts. Its flowers are whitish with a rosy-red centre, and effective in warm sheltered localities under cold frame culture in pots or tubs, as above recommended.

The following species and varieties are given in books: Megasea cordifolia, c. purpurea, crassifolia, ligulata, l. ciliata purpurascens, Stracheyi, S. alba, S. Milesi, hybrida splendens.

Numerous hybrids have been reared in this section of Saxifrage from time to time. One of the first which became popular in London nurseries about ten years ago is the seedling from cordifolia, now known

as cordifolia purpurea, a noble plant, and luxuriant as seen at its best. Milesi is dwarf growing, and nearly if not quite deciduous, its presumed parentage being ciliata crossed with pollen of Stracheyi. As seen in its early bud stage of blossoming it is a distinct and beautiful plant, and is lovely grown in pots in a cold house or sunny frame. Its scapes are so short that its rose and white flowers are apt to be splashed and spoiled by rains unless protected.

A very varied and robust series of hybrid Megaseas is that reared some years ago by Mr. T. Smith, of Newry. They are the result of crosses between cordifolia × purpurascens, and possess in some degree the good qualities of both parents. The plants are all robust, although varying much in colour of flower and in stature. Hybrida splendens is one of the finest in the group, but the following named kinds are also very remarkable in habit and in colour.

M. CORDIFOLIA × PURPURASCENS VAR. BRILLIANT.—Leaves large, richly tinted in autumn and winter; flowers purple; calyces and pedicels crimson; fine.

M. CORDIFOLIA × PURPURASCENS VAR. CAMPANA.—Very neat dwarf crowded foliage; scape 1½ ft. with bell-shaped head of rosy-lilac flowers.

M. CORDIFOLIA × PURPURASCENS VAR. CORRUGATA.—Dwarf habit; large rough leaves; flowers pink.

M. CORDIFOLIA × PURPURASCENS VAR. DISTINCTION.—Dwarf crowded habit, with enormous head of pale pink flowers.

M. CORDIFOLIA × PURPURASCENS VAR. NANA.—A miniature of hybrida splendens.

M. CORDIFOLIA × PURPURASCENS VAR. PROGRESS.—A free growing plant, with tall scapes of rosy purple; bell-shaped blossoms, which are 1¼ in. across; extra fine.

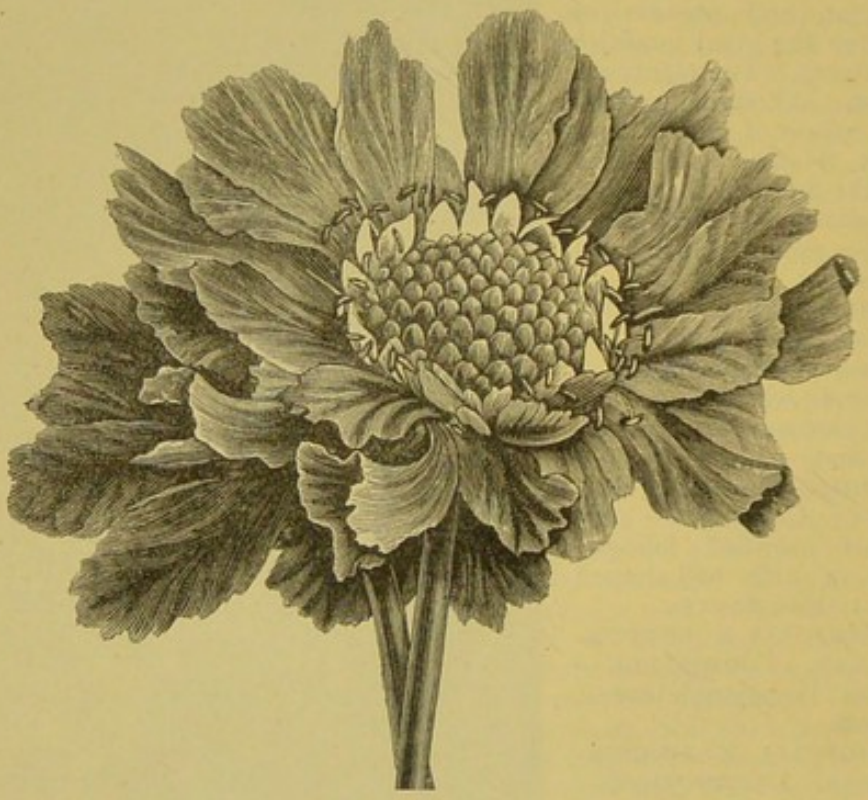
M. CORDIFOLIA × PURPURASCENS VAR. STUDY.—Compact habit, with short stout scape of rose-coloured flowers.

One charm of these great Rockfoils is their rich autumnal and winter colouring. M. Stracheyi and M. purpurascens are especially good in this way, and many of Mr. Smith's hybrids are effective when planted in exposed positions; with other fine-leaved plants they show to advantage, some having leaves suffused with crimson, red, and soft yellow, while others are of the most vivid colour—crimson and brown. We have here a group of fine-leaved and flowering plants worthy of every attention, for we do not believe that the hybrids now known, fine as they are, will remain long the best now that it is seen that the species and varieties seed so freely and give such good results when crossed. The result promises to be a group of plants free from all cultural difficulties—plants that a cottager may grow in his garden, or a townsman in his window boxes, and handsome enough to be worthy of care and attention in the garden of a queen.—F. W. B.

Irish Rockfoil.

Scabiosa (*Scabious*).—Annual, biennial,

and perennial plants, forming by far the largest proportion of the Teazle family cultivated in our gardens. The old English name of Pincushion Flower, from the resemblance of the flower-heads to that useful article, is perhaps a little more appropriate than it is elegant, although it serves its purpose very well, and, indeed, we have been told these plants are known by no other name in the country. Although comprising a large number of species, very few are found outside the botanic garden, and were all the known kinds hunted up, the sorts really worthy of the gardener's attention would certainly not amount to a dozen.



Scabiosa caucasica

S. atro-purpurea (*Sweet Scabious*), the most common Scabious, which when grown in distinct varieties, as it is now sold by our florists, adds much to the beauty of our mixed flower borders, as well as being largely used for greenhouse and conservatory decoration. The normal colour is said to be deep crimson, but under cultivation all shades of crimson, purplish-yellow, and white, may be seen. Many varieties have double flowers and are preferred by some growers, but I think the single varieties are best, and they are also extremely useful for cutting. Under the name Saudade the flower-heads of the Sweet Scabious (S. atro-purpurea) are used for funeral wreaths by the Portuguese and other nations; indeed, the white varieties have attained such purity that they might well be employed in our own country, as they may be had at almost any season of the year by being sown and grown under glass. Those desirous of having gay groups for the flower borders can order mixed packets from their seedsmen, and the seeds should be sown in the reserve ground along with other annuals in May, or even later, to bloom the following year. If sown earlier, however, the Scabious will bloom the same year, for though considered a biennia by many growers we have always looked upon it as a hardy annual. By sowing the seed in the open towards the end of March and thinning out as required, the plants will bloom well towards the latter end of summer. To get earlier bloom, those sown the previous autumn may be transplanted in early spring to their flowering quarters; the succession will then be continued from early summer until late autumn. The Scabious is a native of South-western Europe, and was known to Clusius, Parkinson, Miller, and indeed all the old gardeners.

S. maritima (*Sea Scabious*).—Another species near the above is the Sea Scabious (S. maritima); it is equally beautiful, a

hardy annual, yielding abundance of purple-crimson flowers, which we have found invaluable for cutting.

S. caucasica (*Caucasian Scabious*) is the handsomest and most useful. It flowers from early summer to late autumn, a true perennial on warm soils, but often perishes on cool soils. It forms dense tufts, which yield large quantities of blue flower-heads, each usually from 3 to 4 in. in diameter, on long foot-stalks, and are useful for cutting, as they last a long time in a warm room. Caucasus. There is a white variety. Division and seed.

S. graminifolia (*Grass-leaved S.*)—A graceful Scabious from 1½ to 2 ft. high, with pale blue flowers and silvery white leaves; it is very useful for the rock-garden. Southern Europe. June to October. Division and seed.

S. pterocephala (*Wing-headed S.*), known also as S. Parnassi and Pterocephalus Parnassi, is a very dwarf-tufted hardy perennial, rarely exceeding 4 in. or 6 in. in height even when in flower; flower-heads pale purple in summer. We find it very useful and less troublesome than most of the other species. Greece. Division.

S. Webbiana is another useful species for the rock-garden or border, forming neat little masses of hoary leaves, which are attractive, especially when the plant is grown in poor soil. Its creamy yellow flowers, borne on long stalks, are pretty from July to August. Division.

Other kinds are succisa, arvensis, Portæ, suaveolens, Columbaria, gramuntia, but the above will be found a fair selection for most gardens. In addition to the annual species given above, S. stellata will no doubt find a place in many gardens. It grows about 2 ft. in height, the large florets spreading open like a star, of a pale purple colour, perhaps more curious than beautiful. A near ally of the above is S. palæstina, a little taller, flowers larger, but paler; both are hardy annuals, but not to be compared with the Sweet Scabious and its varieties.—D. K.

Scabious, Giant (Knautia).

Scaly Fern (Ceterach officinarum).

Scarborough Lily (Vallota purpurea).

Scarlet Painted Cup (Castilleja coccinea).

Scarlet Twin-flower (Bravoa geminiflora).

Schistostega pennata (*Iridescent Moss*).—This Moss is so small that it would hardly be noticed by the naked eye but for the iridescent gleams of beautiful colour which it displays in suitable positions. Some of the stones and sods on which it grows look as if sown with a mixture of gold and the material that forms the wings of green humming-birds. It was supposed to require a particular kind of rock; but its wonderful coruscations have lately been seen to spread over sods of turf and masses of peat, as well as over chips of rock brought from its native place. Messrs. Backhouse have it in perfection in the open air, in a quiet deep gorge of rocks, where it obtains sufficient moisture without being washed by rains, and also in their underground fernery, which was constructed for the rarer filmy Ferns. This proves that there is no insurmountable difficulty in establishing it in such positions.

Schivereckia podolica.—This small hardy alpine from South Russia is nearly allied to Alyssum. It has, in early summer, a profusion of small white blossoms, and is suited for the rock-garden or the margins of borders, in any ordinary soil.

Schizandra.—Of this family of climbing shrubs S. chinensis and S. coccinea are hardy enough for the open-air, and may be used for clothing walls, arbours, and the like. S. chinensis is a native of Northern China, and S. coccinea an old introduction from N. America. Both have tall, slender, twining stems, large leaves, and inconspicuous flowers, which in S. chinensis are succeeded by small scarlet berries. Neither kind is important, and both are difficult to obtain.

Schizanthus.—Pretty annuals of elegant growth, which bear in summer many showy and curiously-shaped blossoms. There are in cultivation a few species, and these have yielded numerous varieties. S. pinnatus is a hardy annual, 1½ to 3 ft. high, and its rosy-purple and yellow blossoms are copiously spotted. Its chief varieties are—papilionaceus (purple spotted), Priesti (white), atro-purpureus (deep purple with dark eye), and Tom Thumb (a dwarf compact variety). S. porrigens is similar to S. pinnatus, but has larger flowers. These kinds are hardy, and may be sown in spring or autumn in light sandy loam in the open border. The half-hardy kinds are S. retusus (deep rose and orange flowers with crimson tips), Grahami (lilac and orange), and Hookeri (pale rose and yellow). These are also beautiful, and worthy of being grown well. If treated as half-hardy annuals, the seed should be sown in heat in spring, but if treated as biennials, the seed should be sown in August, the plants preserved in the greenhouse till May, and then planted out. Like the hardy kinds they prefer a good, rich, sandy loam. Chili.

Schizocodon soldanelloides.—The introduction of this plant is due to Captain Torrens, who in 1891 found the plants growing beside sulphur springs in the mountains of Japan, and, after carrying them hundreds of miles, succeeded at last in bringing home three or four living plants. The flowers of the Schizocodon are like those of a large Soldanella, prettily fringed, deep rose in the centre, passing into blush or almost white towards the edges. It evidently requires much the same treatment as Shortia.

Captain Torrens, in whose garden at Baston Manor, Hayes, Kent, the drawing for the plate in *The Garden* was made, sends the following note about the subject of the plate :—

"The plant I found in an overhanging bank surrounded by Moss and moisture. Since I brought it home I have kept it in a pot with peat and sand. It is a hardy plant, and I have had it out two winters in a cold frame, and it seems to have stood the climate well."

Schizopetalon Walkeri.—A curious Cruciferous half-hardy annual from Chili, about 1 ft. high, with slender stems, and numerous white almond-scented elegantly fringed blossoms. If sown in April or May, in light, warm, rich soil in the open border, it flowers in July and August, and may also be sown in pots, but the ball of earth must not be broken as the plant does not well bear transplanting.

Schizophragma hydrangeoides (*Climbing Hydrangea*).—A Japanese climbing shrub allied to the Hydrangea, with tall slender stems that send out roots which will fix it to a wall. Its wood is of a soft character, resembling that of the slower-growing Ivies, and it annually gives off fresh sets of roots along its branches, by means of which it clings to rocks, stone, stucco, bricks, and even wooden palings. Its leaves are less in size than those of the common Hydrangea, of a lovely shade of green, which contrasts prettily with the reddish tinted young wood. It is deciduous, of free growth, and flowers freely in sunny positions. I know one case where it has been planted at a sunny corner of the house near French windows, up the sides of which there is lattice-work, and so charmed were the owners with the tender foliage, feathering the coign of the window, that they made more lattice-work in front of the window so that the creeper could extend and form a natural sunshade before the glass. In a few years a plant had grown 11 ft. high, and as much in width.

Schizostylis coccinea.—A handsome bulbous plant from Caffraria, with the habit of a Gladiolus, from 2 to 3 ft. high. The flowers appear late in the autumn on a one-sided spike opening from below upward. They are of a bright crimson colour, and resemble in form those of Tritonia aurea. S. coccinea should be well grown wherever cut flowers are desired in winter. It is hardy, and in a mild autumn will flower out-of-doors, but should have some protection. A good row planted close to a wall or fence, with some temporary protection against severe frosts, will give many spikes for cutting. S. coccinea loves moisture both in the air and in the soil. "When residing close to the sea in Dorset," says West Dorset, "I could grow this winter Flag splendidly. I used to grow it in a shallow trench in good rich soil. In summer it was deluged with water when the weather was dry, and in autumn a splendid crop of strong spikes of bloom resulted. In North Hants, with a hot, dry, light soil, I never could grow it well, although I always kept it watered at the roots during summer."

Scilla.—Beautiful spring flowers and bulbs, mostly natives of the colder parts of Europe or the Alps, and some precious for our gardens. These all flower in spring, and are of the simplest culture.

In early autumn, when the plants are at rest, they should be planted a few inches deep in any good garden, not too heavy, soil. When established, they need not be disturbed for years, except, perhaps, for a slight yearly top-dressing of manure. Some kinds, especially the many-coloured varieties of the Spanish Scilla, are suited for planting by the sides of woodland walks, or on the margins of shrubberies, and in the wild garden. Offsets may be taken from established clumps during summer.

Raising Scillas from seed is interesting, though slow. In some seasons the seeds are produced plentifully, and many varieties of merit, both as regards size and colour, have been obtained in this way, but there is room for improvement. We retain the name Scilla as far prettier than the English one of "Squill."

The following are best kinds :—

S. amœna (*Star Hyacinth*). — This flowers in early spring, opening about three weeks after S. sibirica. It is less ornamental than any other kind, for its flowers have none of the grace of S. campanulata and the varieties of S. nutans, nor the dwarfness and brilliancy of S. sibirica. The leaves, usually about half an inch across, are about 1 ft. high, and

easily injured by cold or wind, so that a sheltered position is best suited for the plant. S. amœna is not exactly suited for the choice rock-garden, though it is worth growing on sunny banks in semi-wild spots. Tyrol. Seeds or separation of the bulbs.

S. bifolia.—Although not nearly so well known or so popular as S. sibirica, it is quite as welcome. In the very dawn of spring, and indeed often in winter, it bears rich masses of dark blue flowers, and forms handsome tufts. The flowers are four to six on a spike; and the plant varies from 6 to 10 in. high, according to the soil and warmth and shelter of the position. It thrives in almost any position in ordinary garden soil, the lighter the better, but must be left undisturbed to seed and increase as it likes. Although it blooms earlier than S. sibirica, it does not so well withstand the cold rains and storms of winter and spring, and therefore some tufts of it should be placed in warm sunny spots of the rock-garden or of the sheltered border. Southern and Central Europe. Of all Scillas, S. bifolia has produced the greatest number of varieties. Most of the forms known in gardens are better than the type. S. præcox is a stronger grower, the flowers larger, more abundant, and earlier. In purpureo-cœrulea the ovary and base of the segments are rosy-purple, gradually merging into blue, which becomes intense towards the tips, harmonising with the black and gold-banded anthers. It is a free flowerer, and the blooms individually are nearly as large as a shilling. In the Taurian variety, S. b. taurica, the flowers are much larger than in S. bifolia, and, with the exception of the white base, greatly resemble those of some of the forms of Chionodoxa Luciliæ. They vary from ten to twenty on each scape, and the leaves are larger and broader than those of S. bifolia. The white form of S. b. taurica is very scarce. S. b. alba, a pretty ivory-white form, has flowers not larger than those of the type.

S. hispanica (*Spanish Scilla*).—One of the finest of early summer bulbs, and, though a more southern species than most of the others, coming from Portugal and Spain, is the most robust of the family. It is easily known by its strong pyramidal raceme of pendent, short-stalked, large, bell-shaped flowers, usually of a clear light blue. A variety major is larger in all its parts, and is a noble flower; while the white variety (alba) and the rose-coloured variety (rosea) are also welcome, the white kind being much grown for market. S. hispanica is never better seen than peeping here and there from the fringes of shrubberies and beds of Evergreens. The shelter it receives in such positions protects its large leaves from strong winds, but it is sturdy enough for any position. It deserves to be naturalised by wood-walks and in the grassy parts of the pleasure-ground. S. Europe. *Syn.*, S. campanulata.

S. italica (*Italian S.*)—This kind, with its pale blue flowers, intensely blue stamens, and delicious odour, is the most brilliant of the Scillas. It grows from 5 to 10 in. high, the flowers small and spreading in short conical racemes, which open in May. S. italica is hardy, in almost any soil, but thrives best in warm and sandy ones sheltered from east winds. Division should be done only once every three or four years, and the bulbs then planted in fresh positions. Italy and S. Europe.

S. maritima.

S. nutans (*Wood Hyacinth* or *Bluebell*).—Though the Bluebell abounds in every wood and copse, its beautiful varieties are not too well known. Amongst the best are—the white variety, alba; the rose-coloured variety, rosea; the pale blue variety, cœrulea; and a pleasing "French-white" variety. The variety bracteata has long bracts, and cernua is a Portuguese form with reddish flowers. S. patula is closely allied to the Bluebell, its flowers being of a pleasing violet-blue, but are not sweet or arranged on one side like those of the Bluebell. They are larger and more open, and have narrow bracts. All these kinds should be planted here and there in tufts among common Bluebells, along the margins of shrubberies, near the rock-garden, or for borders or woods.

S. sibirica (*Siberian S.*)—A minute gem among the flowers of earliest spring, and no rock-garden, or garden of any kind, is complete without the striking and peculiar shade of porcelain-blue which distinguishes this plant from all other Scillas. S. sibirica has many other names, but, unlike S. bifolia, it has sported into few varieties, S. amœnula being the chief—though not really distinct, is desirable, because it flowers a fortnight earlier than the type. Varieties with larger flowers, and with one on a stem instead of two or five, are preserved in herbariums and sometimes cultivated, but the difference between these and the type is trifling, arising often from the conditions in which the plants are placed. S. sibirica is hardy, and thrives best in a good sandy soil.

Bulbs that have been used for forcing should never be thrown away; for they thrive well if allowed to fully develop their leaves and go to rest in a pit or frame, afterwards being planted out in open spots in warm soil, where in a year or two their usual vigour will be restored. They may then be lifted again and forced as before. It is unnecessary to disturb the tufts, except every two or three years for division, when they grow vigorously. S. sibirica flowers a little later than S. bifolia, but withstands the storms better, remaining also much longer in bloom. In places where it does not thrive freely, whether from the coldness of the soil or from other causes, give it a sheltered position to prevent injury to its leaves. The Siberian Squill may be used as an edging to beds of spring flowers or choice alpine shrubs.

Scilla nutans (Bluebell).

OTHER CULTIVATED KINDS.—Amongst Scillas not generally found in gardens, but hardy in dry situations, may be named S. peruviana, a large species, with beautiful broad leaves, Yucca-like and very distinct; it stands well in sheltered nooks, or even in the open border in southern districts. The numerous fine blue flowers are in a superb umbel-like pyramid, which lengthens during the flowering period. There are varieties, one named alba, and there are reddish varieties, such as elegans, also whitish and yellowish forms. Tufts of the Peruvian Scilla should be taken up every three or four years, when it is at rest. Divide the bulbs and replant immediately. The variety Clusi also succeeds. S. maritima is properly a greenhouse species, but in the places indicated for S. peruviana it may be grown outside without hurt, though it rarely flowers. S. lilio-hyacintha is hardy, whilst S. hyacinthoides, S. pratensis (amethystina), S. obtusifolia (an Algerian species), autumnalis, Aristidis, patula, and its various forms, including cernua and others, differ little from one another.

Scirpus.—Sedge-like plants for fringing artificial lakes and ponds. There are numerous native species that might be readily transplanted, and the best are S. triqueter, S. atrovirens, and S. lacustris. S. lacustris (Bulrush) is 3 to 8 ft. high, and effective on the margins of lakes or streams with other tall and imposing aquatic plants.

Scolopendrium vulgare (*Hart's-tongue*) is one of the best known of hardy evergreen British Ferns, and broken into numberless interesting forms and varieties, some being very beautiful. It prefers shade, and though sometimes met with on dry stone and brick walls, its favourite place is by the side of a stream in a shady ravine. Fine specimens have been seen between the joints of brickwork at the tops of old wells, the fronds developing fine proportions. A suitable soil consists of equal portions of fibrous peat and loam, good sharp sand being added, together with broken oyster-shells or limestone. Scolopendriums should be associated with Lastreas, Polystichums, and Lady Ferns, or be placed in groups on the rock-garden with some flowering plant that will thrive in the same spot. During hot dusty weather in summer a daily afternoon syringing will much refresh and invigorate the plants. All the Hart's-tongues

thrive in pots, and are useful for rooms and tables.

No fewer than 400 varieties of the Hart's-tongue were described thirty years ago, and since then this number has been much increased. Most of these, however, are deformities—vegetable cripples, so to speak. A few of the characteristic forms of each group might be used where collections of hardy Ferns are being formed, being evergreen and diversified in form. Of the following selection, commencing with simple forms and ending with much-divided ones, S. latifolium is a fine bold variety, having wavy spreading fronds, 8 to 10 in. long, and 2 to 3 in. broad. S. reniforme has oblong, roundish, or kidney-shaped fronds. S. cornutum is interesting, the point of the frond being prolonged into a horn-like appendage. S marginatum is very distinct, with fronds crenated at the margin. Some of the best forms of S. pinnatifidum are attractive, and S. crispum is an old favourite, its fronds retaining the habit of the type, but the margin is frilled. A form of it called grandidens has the margin deeply incised. Stansfieldi has curled incisions, and Wrigleyi is a luxuriant form with erect fronds upwards of 3 ft. in length. S. laceratum has broad flat fronds, deeply cut into lobes of variable length and breadth, whilst S. sagittato-cristatum has fronds with wavy margins and crested lobes. S. acrocladon has a narrow frond slightly widened at the base, and divided at the upper end into several wedge-shaped divisions, the upper margins deeply incised. The fronds of S. patulum are cut down near to the base into two or three divisions, each having a narrow wing and a broad terminal crest. S. digitatum has pleasing fronds 1 ft. or more in length, with the divisions terminated by a forked and twisted crest. S. Kelwayi is a handsome form, the fronds terminating in a large crest 6 to 10 in. broad. S. ramosa-marginatum resembles it in form of frond, but has a broad-winged stalk. Its crest is nearly flat and not unlike the tasselled frond-extremity of the maximum form of Pteris serrulata cristata. The base of the frond of S. corymbiferum is like the type, but the upper half has innumerable contorted and twisted incisions and looks like the leaf-ends of some of the ragged Kales. S. Coolingi is very similar to S. corymbiferum, but the divisions form an intricate mass of slender segments, curled and twisted in various ways so as to form a globular head. This kind of division represents the extreme form of variation. —J. M. S.

Scolymus (*Oyster Plant*). — Large coarse Composites with Thistle-like leaves and bright yellow flowers. The plants are not suitable for the ordinary border, but in the rougher parts of the garden are effective in bold masses. S. hispanicus, a perennial, is the best known, and S. grandiflorus is the handsomest. Both grow well in an open position in light sandy soil. S. maculatus is an annual with silvery blotched foliage, but is scarcely worth attention.

Scrophularia (*Figwort*).—The only kind worth mentioning is the variegated-leaved variety of the common native S. nodosa. This is useful as an edging to tall perennials, and in summer its green and white foliage is showy. It requires a good soil, and should be frequently pinched to prevent its flowering. The flowers are inconspicuous. Cuttings in autumn or division in spring.

Scutellaria (*Skullcap*).— Hardy perennials, several in cultivation, but few are good garden plants. These few are handsome flowers for the border, and on account of their dwarf neat growth may be given a place in a large rock-garden in an open sunny situation in any soil. S. macrantha, a native of Siberia, is the finest of all the species. It is an excellent alpine perennial. It forms a hard woody root-stock, is 9 in. high, and produces an abundance of rich, velvety, dark blue flowers, much finer in colour than those of S. japonica. S. japonica is, however, a handsome plant. The alpine Skullcap (S. alpina) is a spreading plant with all the vigour of the coarsest weeds of its Natural Order, but neat in habit and ornamental in flower. The stems are prostrate, but so abundant that they rise in a full round tuft, 1 ft. or more high in the centre. The leaves are ovate, roundish or heart-shaped at the base, and have very notched and very short stalks, while the flowers are borne in terminal heads, short at first, but afterwards elongating. These flowers are purplish, or have the lower lip white or yellow. The variety bicolor, with the upper lip purplish and the lower white, is very pretty. S. lupulina is a very ornamental kind with yellow flowers. Pyrenees, Swiss and Tyrolese Alps, and many other parts of Europe and Asia. Division. Flowering free in summer. These kinds are admirably suited for borders, the margins of shrubberies, and the rougher parts of the rock-garden. S. japonica, S. orientalis, S. scordiifolia, S. altaica, S. galericulata, S. peregrina, and the British S. minor, an interesting little plant for the artificial bog,

are among the best of the other cultivated kinds, but it is doubtful if they are worth a place in any but a very large collection. Division or seed.

Scypanthus elegans (*Cup-flower*).—A beautiful slender climber, 5 to 8 ft. high, with forked stems, and valuable for trailing over a trellis or against a wall. Its leaves are deeply cut and enhance its graceful appearance. The flowers come singly in the forks of the branches. They are cup-like in shape, and are of a bright golden-yellow, with fine red spots inside. They appear profusely from August till October. S. elegans is easily cultivated in rich light soil, and should be treated as a half-hardy annual. Chili. Loasaceæ.

Sea Bindweed (Convolvulus Soldanella).

„ **Heath** (Frankenia lævis).

„ **Holly** (Eryngium maritimum).

„ **Lavender** (Statice).

„ **Pink** (Armeria).

Sedum (*Stonecrop*). Rock and alpine plants which thrive in our gardens in nearly every soil. They may be grown in the ordinary border, in the rock-garden, on walls, and on ruins, and, indeed, in any place where the roots can obtain a foothold. Like the Saxifrages, they represent a great diversity of habit, some, like S. acre, being humble and creeping; while others, like S. spectabile, are stately plants for the border. A great many are in cultivation, and we mention the most desirable of the hardy kinds, which are nearly all easily-cultivated perennials.

S. acre (*Wall Pepper*).—This little plant, with its small, thick, bright green leaves and its brilliant yellow flowers, grows abundantly on walls, thatch, rocks, and sandy places. The variegated variety (aureum) has shoots with tips of a yellow hue in early spring, and the tufts or flakes look quite showy. The silvery tones of the variety elegans are not so effective; nor is the plant so vigorous as the variety aureum. This is beautiful in the winter garden; its golden tips peep out in November, and only vanish with the heat of May. S. sexangulare is similar to S. acre.

The Japanese Stonecrop (Sedum spectabile).

S Aizoon is 1 ft. or more in height, with erect stems terminated by dense clusters of yellow flowers. It is an old garden plant for the border or large rock-garden, and requires open positions and a light soil. Siberia and Japan. S. Maximowiczi and S. Selskyanum are similar.

S. Ewersi.—A neat little hardy plant, rarely more than 3 in. high, with broad

glaucous silvery leaves and corymbs of purplish flowers. N. India and Asia.

S. glaucum.—A minute species of a grayish tone, forming dense spreading tufts of short stems, densely clothed with thick leaves and inconspicuous flowers. Other Sedums are nearly allied to it; for instance, S. dasyphyllum, S. glanduliferum, S. farinosum, and S. brevifolium; but though hardy on walls and rocks, they have not the vigour of many Stonecrops.

S. Lydium.—A pretty little plant from Asia Minor, scarcely an inch high, similar to S. glaucum, except that the tiny crowded leaves are greenish and tipped with red. For edgings, or slopes bordering footpaths it is not excelled, and likes plenty of moisture. It roots on the surface with great rapidity, and may, therefore, be speedily propagated. Very small pieces put in the soil in spring soon form a mass of rich verdure, scarcely an inch in height, and as level as a turf. In spots where turf will not thrive S. Lydium will do well. It is known also as S. lividum, S. pulchellum, and S. anglicum.

S. maximum, like S. Telephium, is variable, there being no fewer than a dozen named varieties. Of these by far the most important for the garden is hæmatodes, or atro-purpureum as it is commonly called, from the vivid purple of the stems and large fleshy leaves. It grows from 1 to 2 ft. high, and though the flowers are not showy, it is bold, stately, and admirably suited for massing. It should be planted in the poorest, stony, gravelly soil, and smoke will not injure it. On white calcareous rocks it is at home.

S. pulchellum (*Purple American Stonecrop*).—A pretty species, with purplish flowers, arranged in several spreading and recurved branchlets, bird's-foot fashion, with numerous spreading stems. It is abundant in North America, and in France is a good deal used for edging. It is also appropriate for the rock-garden or the front margin of a mixed border, growing in any soil, and flowering in summer.

S. rupestre (*Rock Stonecrop*). — A densely-tufted native plant, with rather loose corymbs of yellow flowers, and numerous spreading shoots generally rooting at the base, but quite erect at the top. It is frequently used as an edging or border plant. There are several similar kinds, such as the glaucous-leaved S. pruinatum, commonly known as S. elegans; S. Fosterianum, with light green leaves; and S. reflexum of which there are several varieties, including cristatum, a curious crested variety, sometimes known as monstrosum or fasciatum. S. album, another native kind, has brownish-green leaves and white or pinkish flowers. Like the Stonecrop it occurs on old roofs and rocky places in many parts of Europe. All these kinds are worth naturalising on walls or old ruins, in places where they do not occur naturally, also on the margins of the pathways and the less important surfaces of the rock-garden.

S. sempervivoides (*Scarlet Stonecrop*).—This beautiful Stonecrop has rosettes of leaves like those of the common Houseleek (Sempervivum tectorum). The brilliant scarlet flowers form a dense head similar to the well-known Rochea falcata. It is strictly biennial, as it flowers from seed freely in the second year, then dies, and is not hardy, but during summer grows freely on a dry bank. In winter it stands frost if the weather is dry, but frost and wet combined are fatal to it. Seeds germinate freely, and should be sown in January in gentle heat, plunging the pot in water before sowing, so that the soil may not get dry. As soon as large enough pot off singly. If well watered while growing, they ought, by the end of the summer, to be as large as a crown-piece. During autumn and winter the plants must only be just kept moist enough to prevent their leaves from shrivelling. Asia Minor and the Caucasus. Erroneously called Umbilicus Sempervivum, this being quite a distinct plant.

S. Sieboldi. — A well-known kind frequently grown in pots. Its roundish leaves are glaucous, and in late autumn often assume a lovely rosy-coral hue. They are in whorls of three on numerous stems, which in autumn bear soft rosy flowers which look pretty in pots, small baskets, or vases. The plant is hardy, and merits a place in the rock-garden, especially where its branches may fall without touching the earth and its graceful habit may be well seen; but, except in favoured places, it does not make strong growth. Japan. Division. There is a variegated variety, more tender than the ordinary form.

S. spectabile.—This is distinct and beautiful, erect, and with broad glaucous leaves. Its rosy-purple flowers appear in dense broad corymbs about the middle of August, and remain in perfection for two months or more. The glaucous foliage, even before the flowers, is a pleasant relief to any high-coloured plant that may be near it. It withstands extreme cold, heat, or wet, and unlike most plants will grow and flower to perfection in shaded places. It thrives in nearly any soil.

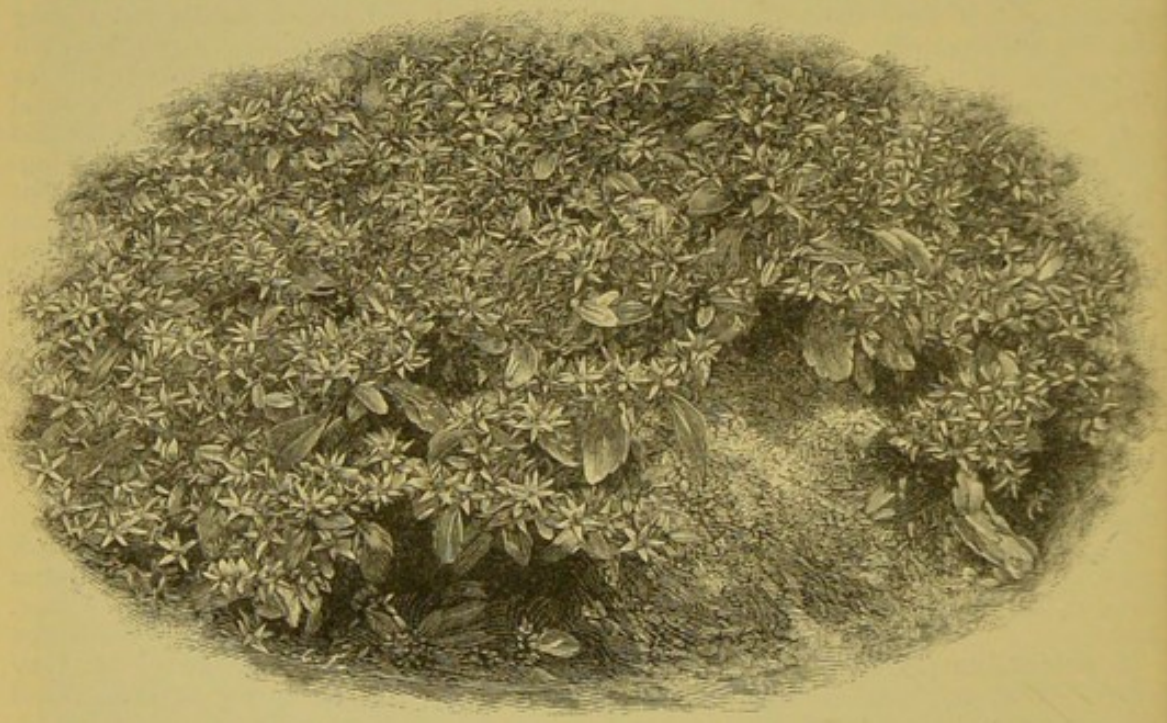
Japan. Known also as S. Fabaria. S. erythrostichum, or albo-roseum, is a similar plant, but scarcely so handsome.

S. stoloniferum (*Purple Stonecrop*).—The best of the Sedums with large flat leaves is the Purple Stonecrop. It flowers late in summer, and often through the autumn, makes a bright display, and is suited for edgings, the margins of mixed borders, and for the rock-garden. It is also known as S. spurium and S. denticulatum. Caucasus. Other species are S. oppositifolium, S. trifidum, S. dentatum, and S. ibericum, the last-named kind having white flowers.

S. Telephium.—This is the most variable Stonecrop. No fewer than twenty forms have received names either as subspecies or as varieties, but our native form is as showy as any. It is 1 to 2 ft. high, the stout erect stems furnished with fleshy leaves, and in late summer and autumn bearing dense broad clusters of bright rosy-purple, but sometimes white flowers. S. Telephium is distributed about the country, usually in hedgerows and thickets. Like all other kinds about the same size, it is useful for dry borders and the rough parts of the rock-garden, but when well grown will flower the more vigorously. Cut blooms last a long time; hence are often called Everlasting Livelongs.

The Sedums mentioned are the most distinct. The pretty S. cœruleum is an annual; and S. carneum variegatum is not hardy enough for our winters. The Orange Stonecrop (S. kamtschaticum) has dark orange-yellow flowers in summer, and is hardy in almost any soil, but is best in warm rich loam. There are in cultivation many kinds of the easiest culture.

Selaginella.—A few hardy kinds of this large family of Lycopods are valuable for carpeting the fernery, or clothing shady spots in the rock-garden. These kinds are S. denticulata, S. helvetica, and S. rupestris, small trailing plants of a delicate green, mossy growth. S. Kraussiana, generally known in plant-houses as S. denticulata, is also hardy in many places, and in Ireland grows and thrives better than any of the kinds mentioned. All these plants require a well-drained peaty soil and shaded and sheltered position.



Sedum kamtschaticum.

Sempervivum (*Houseleek*).—Succulent plants, many of them hardy perennials, of which the common Houseleek (S. tectorum), often seen growing in patches on old roofs and walls, is the most familiar. There is a strong family likeness throughout, and they form rosette-like tufts of fleshy leaves, which chiefly differ in the colour of the foliage, some deep red, others pale green. The flowers of most of them are of a reddish tinge, and several are

yellow. All the hardy kinds will grow well in dry sandy parts of the rock-garden where few other alpines thrive ; or on old walls, ruins, and the like, merely requiring to be placed in chinks with a little soil. Most of them thrive on any border, if the soil be not too stiff and damp, but they prefer a dry elevated position, and full exposure to the sun. Nearly all are easily increased by offsets, which, as a rule, are abundantly produced. Of late years some of the larger kinds, such as S. calcareum, have been used for beds. Europe and W. Asia.

S. arachnoideum (*Cobweb Houseleek*).—One of the most singular of alpine plants, with tiny rosettes of fleshy leaves covered at the top with a thick white down, which intertwines itself all over the leaves like a spider's web. It is rarely seen in our gardens except in a frame, but thrives in moist sandy loam and exposed spots in sunny arid parts of the rock-garden. Its sheets of whitish rosettes look as if a thousand spiders had been at work upon them, and in summer send up pretty rose-coloured flowers. About London it sometimes suffers from sparrows plundering the "down." Division. Similar to this species are S. tortuosum (or Webbianum of gardens), S. Fauconneti, S. heterotrichum, and S. Laggeri, which have the rosettes of leaves united by a web of white threads.

S. arenarium (*Sand Houseleek*).—Grown in dense patches, this plant has a lovely effect. It is much smaller than its ally S. globiferum, and, unlike the latter species, the leaves of the rosettes are not incurved. The flowers are small, yellow, pretty, and the leaves usually rich crimson. S. Heufelli, a similar species, has in autumn almost chocolate-crimson foliage, the flowers being yellow. Other species of similar character are S. hirtum, S. Neilreichi, and S. soboliferum, which is often confused with S. globiferum.

S. calcareum (*Glaucous Houseleek*).—No finer Houseleek has ever been introduced than this, sometimes called S. californicum. It is as easily grown and as hardy as the common Houseleek (S. tectorum), and thrives in any soil. Planted singly, its rosettes are sometimes nearly 5 in. across, the leaves glaucous, and tipped at the points with chocolate. It is deservedly popular for edgings in the flower garden and also admirable for the rock-garden. Other cultivated kinds are S. glaucum, S. Camollei, S. Lamottei, S. Verloti, and S. juratense, and these are all desirable for a full collection.

S. fimbriatum (*Fringed Houseleek*).—One of the most profusely blooming kinds, the dark rose-coloured flowers appearing in summer on stems 6 to 10 in. high. The leaves, which are in small rosettes, are smooth on both sides, strongly fringed, and terminate in a long point, being marked at the end with a large purple spot. S. Funcki, S. Powelli, S. barbatulum, S. atlanticum, and S. piliferum are similar.

S. globiferum (*Hen-and-chicken Houseleek*).—This grows in firm dense tufts, its little round offsets being so abundantly thrown off that they are pushed clear above the tufts, and lie on the surface in small brownish-green balls. The small leaves of the young rosettes all turn inward and appear of a purplish colour, but in the full-grown rosettes are light green, the tips of the under side being of a decided chocolate-brown for nearly one-third of their length ; the flowers are small and yellow. This kind is well-suited for forming wide tufts in the rock-garden, and on banks below the eye. It grows freely in any soil, and is also known as S. soboliferum, but this is the name of another kind similar to S. arenarium.

S. montanum (*Mountain Houseleek*).—A dark green kind, smaller than the common Houseleek, the leaves forming neat rosettes, from which spring dull rosy flowers in summer. It is suitable for edgings or for the rock-garden, grows in any soil, and is easily propagated. Alps. S. assimile and S. flagelliforme are similar.

S. tectorum (*Common Houseleek*).—Though a native of rocky places in the great mountain ranges of Europe and Asia, the common Houseleek, having been cultivated from time immemorial on house-tops and on old walls, is well known to everybody. It may be used in flower-gardening, but it would be better to select some of the rarer species for edgings and other purposes. It varies somewhat, and a glaucous form called rusticum is one of the most distinct. Other similar varieties are Royeni, Rœgnerianum, Sequieri, calcaratum, and Greenei. Greenei resembles the common Houseleek, but is smaller.

S. triste is distinct from other Houseleeks, as its rosettes of leaves are of a deep dull red, which makes it a handsome plant. It is about the size of S. tectorum, and in light warm soil is quite as vigorous and rapid a grower. Its singular colour makes it a valuable contrast to other plants, but at present it is not much known.

Besides these kinds there are several

tender species which are now largely used for summer gardening. The most popular of these are—S. tabulæforme, a singularly handsome kind, with broad rosettes of leaves that lie flat on the soil ; S. Bolli, with leaves that form a dense cup-like tuft from 3 to 6 in. across ; and S. arboreum, a tall, straggling plant, with stout branches terminated by a rosette of foliage. Propagated by quantity in heat in spring or autumn from offsets.

Senecio (*Groundsel*).—Most of these Composites are troublesome weeds, but a few are worthy of cultivation. The following are among the most desirable :—

Senecio Balbisianus.

S. argenteus (*Silvery Groundsel*).—A minute but sturdy silvery-leaved plant, resembling on a small scale the popular Centaurea Ragusina. It is only 2 in. high when fully developed, and its leaves are from ½ to 1½ in. long. It will stand any weather, and live in sandy soil in any well-drained border. It is valuable for the rock-garden, and makes a beautiful dwarf edging. Similar to this, but inferior, are S. incanus, S. uniflorus, and S. carniolicus, which are good rock-garden plants. They may be increased by division.

S. artemisiæfolius is a neat little perennial, with broad clusters of showy clear yellow flowers, on stems 1 to 1½ ft. high. The deep green leaves are finely divided, and give the plant an elegant feathery appearance. S. abrotanifolius has similar foliage, but its orange-yellow flowers are larger and are fewer in number. Both kinds are hardy European plants and thrive in ordinary soil either in the rock-garden or in the border.

S. Doronicum is one of the showiest and most useful of Groundsels. It is 1 ft. to 3 ft. high. In summer it produces stout stalks of numerous large bright yellow flowers. It is perfectly hardy and is of easy culture in any soil. Seed or division. Central Europe.

S. elegans (*Purple Jacobæa*). — This beautiful half-hardy annual has for generations been a favourite garden plant. It has a dwarf strain (nana), about 1 ft. in height, and there are varieties with single and double flowers, the latter being the showiest and most desirable. The colours of these varieties vary from white to deep crimson. S. elegans grows best in rich sandy loam. It flowers from July to October, according to the time of sowing, and looks best in good-sized masses. Cape of Good Hope.

S. japonicus. — This is one of the finest of the large kinds. It is about 5 ft. high, and its leaves are nearly 1 ft. across, and are divided into about nine divisions. The flower-stems are slightly

branched, the flower-heads are about 3 in. across, and the outer narrow florets are a rich orange colour. S. japonicus is a hardy moisture-loving plant, and should have plenty of water in summer. It should be grown in a rich and moderately stiff loamy soil, by a lake or a pond, so that its roots may have plenty of moisture. Japan. *Syn.*, Erythrochæte palmatifida.

S. pulcher.—One of the handsomest of perennials, 2 to 3 ft. high, and bearing in autumn rosy-purple flowers 2 to 3 in. across, on tall stems. S. pulcher is hardy, but its beauty is somewhat impaired by the late season of its flowering. It succeeds best in a deep moist loam. It rarely ripens seed in this country, but it may be freely propagated in spring by cuttings of the roots, 1 in. long, and sown like seeds in a pan of light sandy earth, placed in a cool frame or put on a shelf in the greenhouse. Buenos Ayres.

S. saracenicus.—In moist situations in some parts of the west of England S. saracenicus grows wild, and attains a height of 4 to 5 ft. It is a showy plant, suitable for the margins of ponds or streams in semi-wild places, where it spreads rapidly, and if associated with the Willow Herb (Epilobium angustifolium) produces a beautiful contrast, as the habit of the growth and the colour of the flowers of each are distinct and effective. Coarse species similar to this are S. Dorio and S. macrophyllus. These are suitable for the wild garden, but not for border culture.

S. spathulæfolius is a rare hardy species, and an interesting and pretty plant. The pleasing orange-yellow flowers are about the size of a shilling, and are borne in terminal clusters 6 to 12 in. high, A similar species is the Piedmont Groundsel (S. Balbisianus), from elevated districts in Northern Italy, particularly Piedmont. It is 3 to 9 in. high, and has hoary root-leaves. The golden-yellow flowers, when contrasted with the foliage, have a remarkably bright appearance. S. spathulæfolius and the Piedmont Groundsel flourish in light rubbly soil and an exposed dry situation in a well-drained rock-garden.

Serapias.—Terrestrial Orchids from S. Europe, worthy of a collection of hardy Orchids, as the flowers are always singular and in some kinds beautiful. The most desirable are S. cordigera, with large showy flowers, chiefly of a blood-red colour; S. lingua, with peculiar brownish-purple flowers; and S. longipetala, with large rosy-red flowers. These are all 9 to 12 in. high, and their flowers are densely arranged on broad erect stems. The plants succeed best in a soil composed of two parts of peat, one of loam, and one of sand and leaf-mould. The position should be partially shaded, and well sheltered from cold winds.

Seseli gummiferum (*Gum Seseli*).—A handsome plant, 1½ to 3 ft. high, with elegantly-divided leaves of a peculiarly pleasing glaucous or almost silvery tone. Though a biennial, it is so distinct that some may like to grow it. The best position for it is on dry and sunny banks, or in raised beds or borders.

Shamrock Pea (Parochetus communis).

Sheep's Scabious (Jasione).

Sheffieldia repens.—A hardy little New Zealand creeper, with small leaves, small slender stems, and tiny white flowers which appear in summer. It is interesting for the rock-garden, and grows in any good well-drained soil. Primulaceæ.

Shortia galacifolia.—This is an interesting and beautiful plant. It was first discovered over a hundred years ago by Michaux in the mountains of North Carolina, and rediscovered in 1877. It was found growing with Galax aphylla, and forms runners like this plant, being propagated by this means. The plant is of tufted habit, the flowers reminding one of those of a Soldanella, but large, with cut edges to the segments, like a frill, so to say, and pure white, passing to rose as they get older. There is much beauty, too, in the leaves, which are of rather oval shape, deep green, tinged with brownish-crimson, changing in winter to quite a crimson, when it forms a bright bit of colour in the rock-garden or border. A correspondent writing in *The Garden* says: "The cultural directions given in catalogues to keep the plant in a shady situation and grow it in Sphagnum and peat, deprive us of its chief charm—*i.e.*, the handsome-coloured leaves during the winter and spring months. Instead of choosing a shady spot I selected a fully exposed one, and here two plants have been for over a year, one in peat and the other in sandy loam. Both are vigorous." It succeeds well in various soils as described, and is hardy. It is also a delightful plant in a pot, as the flowers on their crimson stems are pretty, and one gets also the prettily tinted leaves. N. America.

Sibbaldia.—Small plants of the Rose family, resembling some of the dwarf Potentillas. S. cuneata, one of the few species in cultivation, is a dwarf alpine with small yellow flowers, and is suitable for open spots in the rock-garden.

Sibthorpia europæa (*Moneywort*).—A little native creeper with slender stems and small round leaves. In summer it forms a dense carpet on moist soil, and should always be grown in the bog-garden. The variegated form is prettier

Sibthorpia europæa variegata (Moneywort).

but more delicate than the type, and rarely succeeds in the open, but thrives in a cool house or frame. Shady banks and ditches suit it. The flowers are inconspicuous.

Sida.—S. dioica and S. Napæa are stout vigorous plants, suitable chiefly for the wild garden and shrubbery borders.

Silene (*Catchfly*).—A large family containing few showy plants; but among the perennials there are species of great beauty. Southern and Central Europe is the home of the Silene, though a few species extend westward to America, a few eastward to Siberia, and a sprinkling of them will be found on the southern shores of the Mediterranean and in Asia Minor. The following dwarf kinds are suitable chiefly for the rock-garden :—

S. acaulis (*Cushion Pink*).—A dwarf alpine herb tufted into light green masses like a wide-spreading Moss, but quite firm. In summer it becomes a mass of pink, rose, or crimson flowers barely peeping above the leaves. Many places on the mountains of Scotland, Northern Ireland, North Wales, and of the Lake District of England are sheeted over with its firm flat tufts of verdure, often several feet in diameter. In cultivation it is as beautiful as when wild, and grows freely in almost any soil in the rock-garden, not shaded, or in pots and pans. There are several varieties : alba ; exscapa, with flower stems even less developed than in the type ; and muscoides, dwarfer still ; but none of them are far removed from the typical form or are of greater importance for the garden.

S. alpestris (*Alpine Catchfly*).—A very dwarf and compact alpine plant, hardy, and beautiful when in bloom. It succeeds in any soil and is 4 to 6 in. high. Its white flowers appear in May. It should be used abundantly in every rock-garden. Some forms are quite sticky with viscid matter, while others are free from it. S. quadridentata and quadrifida are similar. All the alpine Silenes are propagated either by division in spring or by seed.

S. Elisabethæ.—A remarkably beautiful alpine plant, the flowers looking more like those of some handsome but diminutive Clarkia than of the Silenes commonly grown. They are very large, bright rose with the claws or bases of the petals white. One to seven flowers are borne on stems 3 to 4 in. high. It is considered difficult to cultivate, but if strong plants are secured, is as easy to manage as the Cushion Pink. It is rare in a wild state, but occurs in the Tyrol and Italy, amidst shattered fragments of rock, and sometimes in flaky rocks without any soil. It thrives freely in a warm nook in the rock-garden, in a mixture of about one-third good loam, one-third peat, and one-third broken stones, and should be planted where its roots can penetrate 18 to 24 in. back, into congenial soil. Flowers rather late in summer. Seeds.

S. maritima.—The handsome double variety (S. maritima fl.-pl.) of this British plant is noteworthy, not only for its flowers, but for its dense spreading sea-green carpet of leaves, pleasing on the margins of raised borders, the front edge of the mixed border, or hanging over the faces of stones in the rougher parts of the rockgarden. The flowers appear in June, and those of the double variety rarely rise more than a couple of inches above the leaves, which form a tuft about 2 in. deep. There is a pretty rose-coloured variety, less rambling than the type.

S. pendula.—There are several varieties of this fine biennial, notably compacta, compacta alba, Bonnetti, ruberrima, and variegata, all improvements on the original. The compacta varieties are mostly used for spring-bedding, and form compact rounded tufts about 4 in. high. The other forms are 6 to 12 in.high. To obtain the finest plants for spring-flowering,seed should be sown in the reserve garden in autumn, and afterwards transplanted to permanent beds. Flowers appear from May to August, according to the season of sowing. Italy and Sicily.

S. pennsylvanica.—The wild pink of the Americans is a dwarf and handsome plant, forming dense patches, and from April to June has clusters of six or eight purplish-rose flowers, about 1 in. across, on stems from 4 to 7 in. high. It succeeds best in rather light sandy soil, but is not fastidious, and is a native of sandy, gravelly places in many parts of N. America. It will occasionally flower the first year from seeds, but it does not generally do so till the second season, and may also be readily increased by cuttings.

S. Pumilio.—A beautiful species, resembling our own Cushion Pink in dwarf firm tufts of shining green leaves. The leaves of S. Pumilio, however, are a little more succulent and obtuse. The rose-coloured flowers are also much larger, handsomer, and taller, though scarcely more than 1 in. above the flat mass of leaves, so that the whole plant seldom attains a height of more than 3 in. It thrives in rock-gardens as well as the Cushion Pink, and should be planted in deep sandy loam on a well-drained and thoroughly-exposed spot, sufficiently moist in summer, facing the south. Place a few stones round the neck of the young plant to keep it firm and prevent evaporation. Once it begins to spread, it will take care of itself. There is a white variety which is not cultivated. Tyrol.

S. Schafta.—A much-branched plant from the Caucasus forming very neat tufts, 4 to 6 in. high, covered with large purplish-rose flowers. It is hardy. As it flowers late (from July to September, or later), it should not be used where spring or early summer bloom is chiefly sought, but in summer is more suitable than most alpines for edgings to permanent beds, or for the front margin of the mixed border. It grows, however, in the rock-garden in almost any position. Seed or division of established tufts.

S. virginica (*Fire Pink*).—A brilliant perennial, with flowers of the brightest scarlet, 2 in. across, and sometimes more. The somewhat slender stalks lie flat on the soil and the flowers are borne a few inches above it. The Fire Pink succeeds in a well-drained rock-garden; but requires careful attention, particularly in winter, as at that season excessive moisture is hurtful. It is a native of open woods in America, from New York southwards, and flowers there from June to August. Division or seed. The strongest plants, however, are obtained from seed, as it does not bear division well. S. rupestris, a sparkling-looking white species, little more than 3 in. high when in bloom, reminding one of a dwarf S. alpestris, is better worthy of a place; and so is S. Hookeri, a dwarf and rare Californian species.

Silkweed (Asclepias).

Silphium (*Rosin Plant*). — Coarse North American Sunflower-like plants, of stately habit, and among those which suggested the idea of the "wild garden" to me. There they are at home among the most vigorous growers, as they thrive and flower freely on the worst clay soils. S. laciniatum is a vigorous perennial with a stout stem, often 8 ft. in height, and fine yellow-coloured flowers, on drooping heads, which have the peculiarity of facing the east. S. perfoliatum (Cup Plant) is 4 to 8 ft. in height, and has broad yellow leaves 6 to 15 in. long and flower-heads about 2 in. across. S. terebinthinaceum (Prairie Dock) has stems 4 to 10 ft. high, panicled at the summit, and bearing many small heads of light yellow flowers. A variety (pinnatifidum) has leaves deeply cut or pinnatifid. S. terebinthinaceum has a strong turpentine odour. Other species are S. trifoliatum, S. integrifolium, and S. ternatum. If planted in numbers in bold masses, these plants produce a stately effect in the wild garden, especially in autumn.

Silybum marianum (*Milk Thistle*).—A robust and vigorous native biennial, 5 ft. or more in height, well worth associating with other large fine-foliaged plants. Its large leaves are variously cut and undulated, and tipped and margined with scattered spines; they are bright glistening green, and variegated with broad white veins. The Milk Thistle is easily raised from seed, and thrives in almost any well-drained soil. The foliage is more vigorous if the flower-stems are pinched off as soon as they appear. A few plants raised in the garden and planted out in rough and somewhat bare places or banks, will soon establish themselves. S.eburneum is much like the above, but with spines like ivory. = Carduus.

Sisyrinchium.—Iridaceous plants from North-West America, only one species of which is worth growing, namely S. grandiflorum, a beautiful perennial that flowers in early spring, and with narrow, Grass-like leaves ; the flowers, borne on slender stems 6 to 12 in. high, are bell-shaped and drooping, rich purple in the type and transparent white in the variety album. No garden should be without them. They are charming for the rock-garden or borders, but like best a light peaty soil or sandy loam. Propagated by division.

Skimmia.—Beautiful dwarf evergreen shrubs from Japan, distinct, compact, and

Skimmia fragrans.

charming for peat beds or large rock-gardens.

The only ones worth cultivating are S. japonica and S. Fortunei. There has been much confusion between these two species, the plant universally known in gardens as S. japonica not being Japanese at all, but a native of China. Mr. Fortune discovered it in 1848 in a garden at Shanghai, but originally the plant came from a high mountain in the interior called Wang Shang. The proper name of this species is Skimmia Fortunei. The true S. japonica is a Japanese plant, introduced by Fortune. Unlike S. Fortunei, it is diœcious. Both sexes have received specific names. S. fragrans, for instance, is simply the male of the true S. japonica. The first plant of S. japonica which flowered in this country was named S. oblata, but has been proved to be identical with the one named S. japonica by Thunberg. That name has been transferred to it, and the one called S. japonica in gardens is now called S. Fortunei. The Skimmias thrive as well in strong clay as in poor sandy soil and peat. S. japonica is one of the very best town Evergreens we possess. Other forms of S. japonica are S. Foremani, S. Rogersi, S. oblata ovata, S. o. Veitchi, and S. fragrantissima. To produce beautiful berried species, plant specimens of the two sexes near to each other. Of S. Fortunei (the S. japonica of gardens) S. rubella is a seedling form. S. japonica argentea is a seedling or sport, only differing from the type in having the leaves bordered with white. S. Fortunei is much dwarfer than S. japonica, and does well as a pot-plant for window decoration.

Sloe (Prunus spinosa.)

Smilacina.—Of the eighteen or twenty species of this genus known, few, so far, as I know, have as yet been brought into cultivation. They are easily managed plants if not disturbed too often, and the North American species will be found useful for mixed herbaceous borders. They have rich green foliage and white feathery flower-heads in May and June.

S. oleracea is a native of temperate Sikkim, and has been in cultivation for many years at Kew. It has the reputation of being difficult to manage, and this may be the case where the plants are disturbed periodically. It may also in a way be accounted for by the fact of its being a slow grower, slow to increase, and a shy seeder. It is the most striking of the few species of this genus in cultivation, and in the south at any rate it will be found hardy, succeeding best in a rich peaty soil with a northern exposure. It is called Chokli-bi by the natives of Sikkim, where the young flower-heads, sheathed in their tender green covering, form an excellent vegetable.

S. racemosa and **S. stellata** are natives of North America, both white-flowered and hardy. They may be cultivated with ease in the mixed flower border, where in May and June they are very attractive. —D. D.

Smilax (*Green Brier*). — Interesting plants, some of them handsome. A few are useful for garlanding rocks, and make valuable evergreen climbers as a relief to the monotony of Ivy and other common Evergreens, while they may be planted singly on lawns or banks in a dry soil. The N. American species, S. rotundifolia, S. herbacea, and S. tamnoides, are among the best, and S. aspera, from S. Europe is good. S. mauritanica is a pretty kind of rapid growth. Among the handsomest is S. latifolia. We have found them do best in dry or free soil.

Smoke Plant (Rhus Cotinus).

Snake Plant (Arum Dracunculus).

Snakeroot (Liatris).

Snake's-head (Fritillaria).

Snapdragon (Antirrhinum majus).

Sneezewort (Achillea Ptarmica).

Snowball Bush (Viburnum).

Snowberry (Symphoricarpus).

Snowdrop (Galanthus).

Snowdrop Tree (Halesia).

Snowflake (Leucojum).

Snow Gem (Chionodoxa).

Soapwort (Saponaria).

Solanum.—A family of many species that are graceful when young and free-growing, but too ragged for a tasteful garden; some kinds require a warmer clime than ours. Most of the Solanums may be raised from seed or from cuttings, the latter making good plants by May. The kinds named may be associated with the larger-leaved plants, but do not as a rule attain the height and vigour of those of the first rank like Ricinus. As a rule, they require a temperate house in winter, and about the middle or end of May should be planted out in a warm sheltered position in rich light soil. The Potato tree (S. crispum), a native of Chili, is the only ornamental Solanum hardy enough for the open air. In the south and in coast districts it may be grown without any protection, but elsewhere it needs the shelter of a wall. When fully grown, it is 12 to 16 ft. high, and in late summer has large clusters of fine purple-blue flowers, which, in the most favoured spots, are succeeded by small whitish berries.

Smilacina bifolia.

When grown against a wall, it should be pruned vigorously in autumn, or it will be injured by frosts ; but when it thrives as a standard this is unnecessary. S. jasminoides is the most beautiful of the family we know of in England, and a lovely hardy climber. With its delicate white and starry flowers and trusses, it is one of the most delightful things for planting against the walls of the house in borders of peat or other light soil. It is frequently grown in greenhouses, but appears hardy in Kent and Surrey and southern England generally. Other Solanums of note are the South American S. betaceum, quite a small tree with oval pointed leaves like those of the Beet, and deep green colour. It is suitable for grouping in round beds with dwarfer plants or shrubs at its base, but is much more suitable for isolation on slopes, etc. A rich soil is best. In the variety purpureum the leaves are green, tinged with violet, and in other varieties the flowers are tinged with purple, the fruits being striped with brown. S. crinitum, from Guiana, is fine in medium-sized groups in the south of England, and one may mention also the late mauve-flowered S. lanceolatum ; S. macranthum, which grows in one year nearly 7 ft. high, the elegant leaves deeply cut ; S. robustum, and the ornamental S. Warscewiczi, resembling S. macranthum, but dwarfer, more thickset, and with small white flowers. The stem is armed with slightly recurved strong spines. It is one of the best and most handsome of the Solanums.

Soldanella.—Diminutive and charming alpine flowers, at one time considered very difficult to grow, but not really so if grown in peaty or sandy and moist soil, and coarse vigorous plants are kept away from them. They should always be in the rock-garden, and also in the part of the regular garden devoted to dwarf-plants. So long as the idea prevailed that the rock-garden was to be a heap of burnt bricks and other like rubbish piled up so that the first dry wind thoroughly dried up every root and plant upon it, these things could not be grown. S. alpina is one of the most interesting of the plants growing near the snow-line on many of the great mountain-chains of Europe. It is not brilliant, but has beautiful pendent pale bluish flowers, bell-shaped, and cut into narrow strips. Three or four are borne on a stem 2 to 6 in. high, springing from a dwarf carpet of feathery roundish shining leaves. The plants thrive best in moist districts, and in dry ones evaporation may be prevented by covering the ground near them with Cocoa-fibre which is mixed with sand to give it weight. The most suitable position is a level spot in the rock-garden near the eye. S. alpina is increased by division, though being usually starved and delicate from confinement in small worm-defiled pots, exposed to daily vicissitudes, it is rarely strong enough to be pulled to pieces. S. montana is allied to S. alpina, having larger leaves and purer blue flowers. Like S. alpina it inhabits several of the great Continental chains, and thrives under the same treatment. It is readily increased by division, but the cause that usually renders S. alpina too weak to be divided, renders S. montana weak also. S. pusilla has kidney-shaped leaves, with the corolla not deeply cut into fringes. The very small S. minima, with its minute round leaves and its single flower, fringed for a portion of its length only, is rare. Both of these plants thrive under the same conditions as the others ; but, being much smaller, require more care in planting, viz. in a mixture of peat and good loam with plenty of sharp sand, and associated with minute alpine plants. They require plenty of water in summer. S. Clusii and S. Wheeleri are similar to those mentioned above.

Solidago (*Golden Rod*).—These N. American Composites in borders exterminate valuable plants, and give a coarse, ragged aspect to the garden. They are also such gross feeders as to impoverish any good border. They hold their own, however, in a copse, or a rough open shrubbery among the coarsest vegetation. For a full collection the best are S. altissima, S. canadensis, S. grandiflora, S. nutans, S. multiflora, S. rigida, and S. Virgaurea.

Solomon's Seal (Polygonatum).

Sonchus (*Sow Thistle*).—The Marsh Sow Thistle (S. palustris) is a noble native plant, 6 ft. high, with broad deeply-cut foliage, but unattractive yellow blossoms. In damp parts of the wild garden it takes care of itself, and soon develops into fine proportions.

Sophora tetraptera (*New Zealand Laburnum*) has been aptly called the New Zealand Laburnum. It is a large tree in its own country, and makes a charming wall-plant here. The variety grandiflora has larger flowers and is more robust, while the variety microphylla is remarkable for finely-divided leaves and smaller flowers. In sheltered gardens against walls in the southern and the mild parts all may be grown, though they may need extra protection in severe winters. Another species in cultivation

is Edwardsia chilensis, which also needs protection. *Syn.*, Edwardsia.

S. japonica (*Pagoda Tree*).—One of the finest of flowering trees, elegant in foliage, and, in September, covered with clusters of white bloom. It is one of the largest of trees, and when old has a wide-spreading head with huge limbs. Its long pinnate leaves retain their deep-green colour until autumn. Where space is limited it may be kept in bounds by hard pruning. There are several varieties—a drooping kind, which is one of the best of all pendulous trees, and a variegated-leaved kind, which is not satisfactory, as the variegation is seldom good.

Sorghum halepense.—A handsome hardy Grass, coming from S. Europe, N. Africa, and Syria, with an erect stem 3½ ft. high, and broad flat leaves more than 1 ft. long, chiefly collected round the base of the plant. S. halepense is most attractive at the end of summer, when it bears a dense panicle of purplish awned flowers. Suitable for isolation, for groups, or for borders.

Sowbread (*Cyclamen*).

Sparaxis.—Charming bulbous plants from the Cape of Good Hope. The many varieties come chiefly from S. grandiflora and S. tricolor. They are about 1 ft. high, of slender growth, and bear large showy flowers which vary from white to bright scarlet and deep crimson, usually having dark centres. Sparaxis are valuable for early summer-flower, and should be treated like Ixias. S. pulcherrima (the Wand-flower), a native of the Cape, is so distinct from other Sparaxis that its claim to be a Sparaxis has often been made the subject of comment. Its tall and graceful flower-stems rise to a height of 5 or 6 ft., and wave in the wind, but, though slender, are so tough and wiry that they are never broken in a storm, like the much stouter and much stronger-looking stems of the Pampas Grass. For six or seven weeks S. pulcherrima has lovely Foxglove-shaped bells on almost invisible wire-like lateral foot-stalks. Though the flowers of the type are usually rosy-purple, there are forms which are nearly white, and forms of almost every intermediate shade, while some forms are beautifully striped. S. Thunbergi is an allied species, but S. pulcherrima is finer and more elegant, the former being stiffer and much dwarfer—its erect flower-stems being seldom more than 2½ ft. high,—and its flowers have very short stalks, whilst they are not pendulous. The best position for S. pulcherrima is in clumps among sheltering shrubs. In such a position it might be associated with Tritonia aurea, as the two plants flower together. S. pulcherrima

Sparaxis pulcherrima (Wand Flower).

is about as hardy as Tritonia, Montbretia Pottsi, and similar plants, and, though more difficult to establish, well repays a little care during the first year or two. It has a great objection to removal, and, if necessary, this should be done as soon as the flowers begin to fade. It succeeds in dry as well as damp positions, if it has a rich friable soil, or if when beginning to grow it is well watered.

Sparganium.—British water-plants of the Reed Mace family, resembling the common Flag, and suitable for fringing

artificial water where they are not plentiful.

Spartium junceum (*Rush*, or *Spanish Broom*). — A South European shrub, blooming in July, August, and September, when shrubberies are usually flowerless. It is thin-growing, 8 or 10 ft. high, and its Rush-like shoots have so few leaves as to appear leafless. It bears erect clusters of fragrant bright yellow flowers shaped like Pea-blossoms, is perfectly hardy, and useful for dry, poor soils, where, like the common Broom, it does well. As it grows rapidly, small plants may be used.

Sphenogyne speciosa.

Specularia (*Venus's Looking-glass*).— These are similar to Campanulas, and often placed with them, though distinct enough for garden purposes. S. Speculum, with numerous open bell-like bright violet-purple flowers, is one of the showiest of our annuals. Besides the large-flowered form called grandiflora, sometimes purple and sometimes white, there is a double-flowered kind which comes true from seed, also a dwarf, compact form with violet-blue flowers. S. pentagonia is another favourite, its flowers larger, but less abundant than those of S. Speculum. They are purple, with a deep blue centre. S. Speculum and S. pentagonia generally scatter seed, which germinates year after year, and no trouble is necessary, except to prevent the plants getting too plentiful. Both kinds are perfectly hardy.

Speedwell (Veronica).

Spergula (Sagina).

Sphenogyne speciosa. —A beautiful half-hardy Mexican annual Composite of slender, much-branched growth, about 1 ft. high. The flowers, produced from July to September, are yellow with a brownish centre encircled by a conspicuous black ring, the centre being orange in the variety aurea. S. speciosa will succeed if sown in the open in spring, but it does better as a half-hardy annual, sown in early spring in heat. Any ordinary light soil suits it. S. anthemoides, introduced last century, and also called sometimes Arctotis anthemoides, differs from S. speciosa in having the underside of the florets purplish instead of yellow. Though a large and varied family, these are the only kinds to our knowledge in cultivation. We retain the older-known, but the sphenogyne is usually called Ursinia pulchra.

Spider-wort (Tradescantia).

Spigelia Marilandica (*Worm Grass*).—A beautiful native of North America distinct from all other hardy plants. It forms a dense tuft of slender stems about 1 ft. high, each being terminated by long tubular flowers which are deep red outside and deep yellow inside. The plant is rare in gardens, being considered difficult to cultivate. In its native country it grows in sheltered situations, the roots finding their way deep down into a body of rich vegetable mould. These natural conditions should be imitated ; and if the soil be not good, take it out 2 ft. in depth

and fill up with a well-sanded mixture of loam, leaf-mould, and peat. Partial shade in summer, with abundance of moisture in hot weather, is essential, whilst it is suitable for borders, the lower parts of the rock-garden, or for margins of beds of American plants.

Spiræa (*Meadow Sweet*). — Beautiful plants in nature, and important for the garden, of easy culture, distinct habit, and often of fine form. They grow well in rich soil in borders, and are also excellent for the margins of water. There are also a number of shrubby species of the highest value.

S. Aruncus (*Goat's-beard*) is a vigorous perennial, 3 to 5 ft. high, beautiful in

Spiræa Aruncus.

foliage and habit as well as in flower. Its flowers are freely produced in summer in large gracefully-drooping plumes. S. Aruncus is as good in midsummer as the Pampas Grass is in autumn. It is valuable for grouping with other fine-foliaged herbaceous plants. It thrives in ordinary soil, but succeeds best in a deep moist loam. Division. Various parts of Europe, Asia, and America.

S. astilboides is a new species, and of unusual merit for borders. It is a moisture-loving plant, and will be found more satisfactory in every way on the banks of a stream or pond. It is quite distinct, the inflorescence much branched, and the flowers of a creamy white closely packed on the stems.—K.

S. Filipendula (*Dropwort*).—A British species, 1 to 2 ft. high, with loose clusters of yellowish-white flowers, often tipped with red. When the flower-stems are pinched off, S. Filipendula forms an effective edging plant, its Fern-like foliage being distinct for edging. The double variety (S. Filipendula fl.-pl.) is useful in the mixed border. Division.

S. gigantea, recently introduced, may be described as a gigantic Meadow Sweet, growing from 6 to 10 ft. high, with huge palmate leaves and large fleecy bunches of white flowers terminating the tall stems. Its place is in rich bottoms or by water in deep soil.

S. lobata (*Queen of the Prairie*) is one of the handsomest of the hardy Spiræas, and from 18 to 36 in. high, with deep rosy carmine flowers in large terminal cymes. It does best in sandy loam in the mixed border, on the margins of shrubberies, or in beds among groups of the finer perennials. *Syn.*—S. venusta. Similar to S. lobata are the handsome S. Humboldti and S. digitata.

S. palmata is a beautiful herbaceous species, and among the finest of hardy plants. It has handsome palmate foliage, and in late summer broad clusters of lovely rosy-crimson blossoms. When well-grown it is 4 ft. high, but often less, and being considered tender, is grown largely in pots; but it is hardy, succeeding in moist deep loam well enriched by decayed manure. It is a fine plant for many positions in large rock-gardens, in borders, or on the margin of shrubberies; and may be naturalised, as it is quite vigorous enough to take care of itself. It looks best in masses. The variety elegans is said to be a hybrid; the flowers pale pink, and altogether inferior to the best forms of S. palmata. A good effect is got by planting the species by the edge of streams or ponds: a mass of lovely colour is presented to the eye, and too-often bare spots are clothed with beauty.

S. Ulmaria.—This common British Meadow Sweet is seldom cultivated, but worse things are often seen in borders. It deserves a place, if only for the sake of variety, in the mixed border, on the margins of shrubberies, or in the rougher parts of pleasure-grounds, where it may be planted with other subjects which do not require much looking after. Almost any soil will suit it; if the soil be moist so much the better. The variegated-leaved form is ornamental, the creamy-yellow and green variegation being effective.

SHRUBBY MEADOW SWEETS.

S. ariæfolia (*Spray Bush*), a lovely shrub 8 to 10 ft. high, and I have seen it

much higher grown on walls. This is one of the shrubs of proved merit and hardiness, and we should seek to give full expression to its singular beauty by careful planting and grouping in the full sun—and taking care not to let it get destroyed in the horrible jumble that nurserymen and most other planters give us when they plant a "shrubbery." It is a kind often met with, but mostly in shrubbery thickets, while to show off its beauty to advantage it requires an open position. When isolated it forms a large bush of good

S. Douglasi and **S. Nobleana** are so similar in growth and flower that they may be conveniently coupled, though as they flower at different times it is well to have them both. They are of vigorous growth, and they bear dense erect clusters of deep red flowers. Both are from N. America. S. Douglasi succeeds in every part of the British Isles, but S. Nobleana is less hardy.

S. japonica (*Rosy Bush Meadow Sweet*) is easily recognised by its slender stems 3 or 4 ft. high, surmounted by broad

Spiræa Filipendula (Dropwort).

form laden during summer with spray-like panicles of small whitish flowers.

S. cantoniensis (*Cantons*) is a slender bush, about a yard high, bearing an abundance of small clusters of white flowers. There is also a beautiful less common double variety. The Plum-leaved Spiræa (S. prunifolia) is represented in gardens by the double variety (flore-pleno), a beautiful shrub, with flowers like tiny snow-white rosettes, in early summer wreathing every twig. S. media, better known in gardens as S. confusa, resembles S. cantoniensis, and therefore need not be included in a selection but its variety rotundiflora is pretty.

flat clusters of deep pink flowers. The varieties splendens, rubra, superba, and atro-sanguinea are richer and deeper than the type, while the variety alba bears white flowers in small clusters. It is a variable species, and has numerous synonyms. All the varieties in catalogues ranged under the names S. callosa and Fortunei belong properly to S. japonica. S. bella is dwarfer and denser than S. japonica. S. Bumalda is a variety of S. japonica, very dwarf and compact, rapid in growth and hardy, about 2 ft. high, with broad clusters of deep rose-pink flowers. A fine new variety is A. Waterer. Even in such a beautiful family it outshines in

brilliancy of colour. It is a variety of S. japonica, which for the last thirty or forty years has been known in gardens under other names, such as S. callosa, Fortunei, the name S. japonica having been erroneously applied to a totally different plant, in fact—Astilbe or Hoteia japonica. The parent of A. Waterer is the variety of S. japonica named S. Bumalda, which is distinguished from the type by its dwarfer growth and persistent bloom throughout the summer and autumn. From S. Bumalda the A. Waterer variety does not differ except in brilliancy of colour.

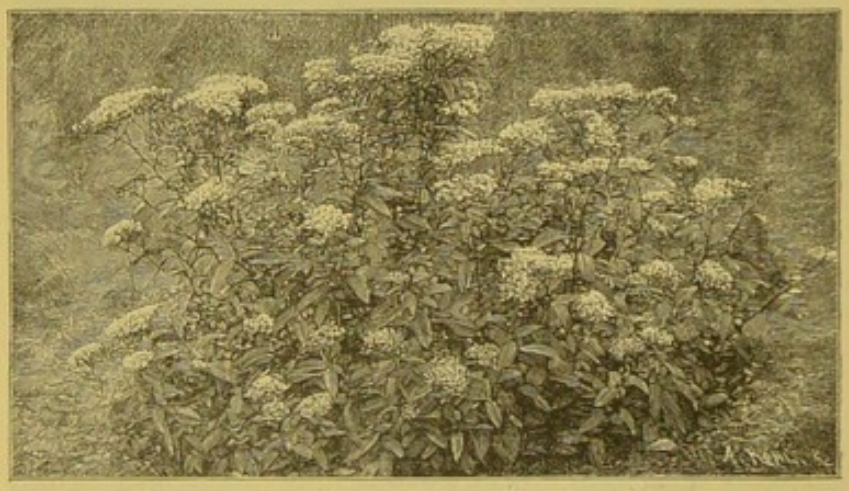
S. Hypericifolia, from Asia Minor, is the type of a small group, all elegant in growth and pretty in flower. The tall slender stems arch over gracefully, and in good soils and sheltered spots reach a height of 8 ft. In the flowering season the branches are wreathed with small clusters of small white flowers. S. flagelliformis and S. acuta are forms superior to the type.

S. Thunbergi (*Thunberg's Meadow Sweet*) is a favourite shrub for forcing into early flower. It is a dense bush, with small bright green leaves, and in early spring a profusion of tiny white blossoms. It is hardy, and especially suitable for planting in a bold rock-garden or on a raised bank among tree-stems. Few shrubs are so fine in autumn, its small leaves changing to brilliant crimson.

S. Lindleyana (*Plume Meadow Sweet*) is a noble shrub, sometimes 10 ft. high its

Spiræa ariæfolia.

graceful foliage divided, and delicate green, the flower clusters large, white, and plume-like, being at their best about the middle of August. The other pinnate-leaved Spiræas, such as S. sorbifolia and S. Pallasi, are less desirable. It thrives best in warm deep soil, not too light or too heavy, and always the better for shelter from cold winds, which injure its young growth in spring. Like many other plants it has in some soils peculiar ways, and in others, especially of a chalky and warm nature, it blooms well enough to deserve the epithet superb. In cool soils I have noticed it does not always attain the grand flowering state which is shown by the great long plumes of flowers it bears on warm soils. Where the soil is too cool it seems to spread more at the root, but in all cases is beautiful for its foliage and habit. Himalaya. Division.



Spiræa japonica, A. Waterer.

There are so many confusing names applied to these plants, and so many useless varieties, that the following remarks by Mr. Goldring are worth attention. There is no family I know which is so overladen with confusing names and wretched varieties. In a large genus like Spiræa, numbering half a hundred reputed species and encumbered with almost twice the number of names and synonyms, how perplexing it must be to single out the choice few required for the garden, and when there is absolutely no information given in nursery catalogues as to the respective merits of the kinds enumerated.

The bush Spiræas are all beautiful; none are worthless in the sense that many other shrubs are, so that there is naturally a tendency among those who know them best to eulogise every kind; but how few are the gardens where there is need for more than a dozen kinds in proportion to the host of other beautiful shrubs, unless it be in those where the object is to collect as many sorts as possible!

The fact is, we have now too great a number of Spiræas and too great a similarity among many of them, and flowering much about the same time. As an instance of this I count in a Continental catalogue no fewer than twenty varieties of the common North American S. salicifolia, and the synonyms of these number half as many. No collection of Spiræas need number more than a dozen kinds to represent the finest types of beauty of flower and growth. Good grouping of this select dozen kinds in a garden would produce better effect than the too common way of dotting about single plants of many kinds which, when crowded by other shrubs of diverse habit, never display that free growth which constitutes one of the charms of the shrubby Meadow Sweets.

My dozen would include the following kinds, which are placed according to their average heights, beginning with the tallest:—S. Lindleyana, ariæfolia, Douglasi, trilobata var. Van Houttei, prunifolia fl. pl., japonica superba, confusa, canescens var. flagellata, cantoniensis, bella, Thunbergi, and japonica Bumalda.

The above selection includes types of all the sections, and is sufficient for any garden in a general way, but should more be required, a second dozen may be selected to include the following:—S. opulifolia, salicifolia grandiflora, Nobleana, sorbifolia, japonica paniculata, cana, Blumei, japonica ruberrima, tomentosa, crenata, japonica alba, and bullata (crispifolia).

From these selections I have excluded that fine shrub Exochorda grandiflora, which is sometimes known as Spiræa grandiflora.

Let me plead on their behalf against the baneful practice of planting such graceful shrubs in the "mixed" shrubbery, where the delicate have to fight the strong, and where one seldom sees a healthy shrub. Such is not the place for these elegant plants, which being for the most part surface-rooters cannot bear to be encroached upon by ravenous Laurels and the like. The place for Spiræas is an open, sunny spot, away from the roots of big trees and shrubs, yet connected with the main masses of shrubbery by intelligent grouping. If a garden were large enough, I should always have isolated groups (good bold masses from 10 to 15 ft. across), of the taller-growing kinds, such as S. Lindleyana, ariæfolia, Douglasi, and others, and lesser groups of the dwarfer kinds, or these may form masses at jutting-out portions of a main tree and shrub group. The small kinds, such as Bumalda, should always be planted in a group. This does not necessarily imply that one must plant a hundred of a sort at the outset, but a definite plan should be made in one's mind as to where the bold groups of good colours shall be, and then a dozen plants can in the course of a few seasons be made to extend throughout the projected group by propagating.

Contrast a Spiræa—any of them—growing in a deep moist loam with one growing in a poor, gravelly, or sandy soil. One would scarcely at first think they were of the same kind. The fact is, shrubs and ornamental trees require cultivating in order to get their beauty. Even if the soil is good and deep, the site for Spiræas and suchlike shrubs should be thoroughly and deeply trenched at the outset if good results are expected.

It should be remembered that Spiræas generally are lovers of moisture, and I have noticed where I have seen them growing wild in Japan and America that they like moist places. If they were not near streams or boggy places, they were growing best where plenty of moisture reached them. Some grow actually in boggy places, and the finest Spiræas I have seen in English gardens have been on the margins of lakes and streams. Wherever there are moist spots in a garden, such as near a pond, lake, or stream, there should groups of Spiræas be planted. Spiræa Lindleyana is a grand shrub for the water-side planted in bold groups, and masses of others might be made to fringe a lake or stream in a beautiful way.

Spiræa Bumalda (from a photograph by Mrs. Newman).

For a full account of the Spiræas I refer the reader to *The Garden* (Vol. XII.), where the late Mr. Gordon described in detail about fifty kinds, and to the notes on Spiræas scattered through every one of the many volumes of *The Garden*.—W. G.

Spleenwort (Asplenium).

Spraguea umbellata.—A singular and pretty plant, allied to Claytonia 6 to 9 in.

high, with fleshy foliage, and spikes of showy pinkish blossoms. If seeds are sown early in February in a warm frame, and the seedlings are afterwards pricked out singly in small pots, and planted out in May, the plants will bloom in August and September; but if sown in May, the plants will not flower till the following summer. In light soils S. umbellata will resist an ordinary winter, but is best protected by a frame. Like most tap-rooted plants, it does not bear transplantation well, except while small. If seeds are plentiful, they may be sown in the open ground; but, as seeds are usually scarce, they should be sown in pots, in a moderate temperature. California.

Spring Beauty (Claytonia virginica).

„ **Snowflake** (Leucojum vernum).

Stachys (*Woundwort*).—Few of these Labiates are worth cultivating, the common S. lanata, the woolly-leaved plant, being used for edging. It thrives in any soil, and may be easily propagated by division in autumn or spring. S. coccinea is a rather pretty perennial, about 1 ft. high, and if planted in a partially-shaded border succeeds in any soil. It has spikes of red flowers.

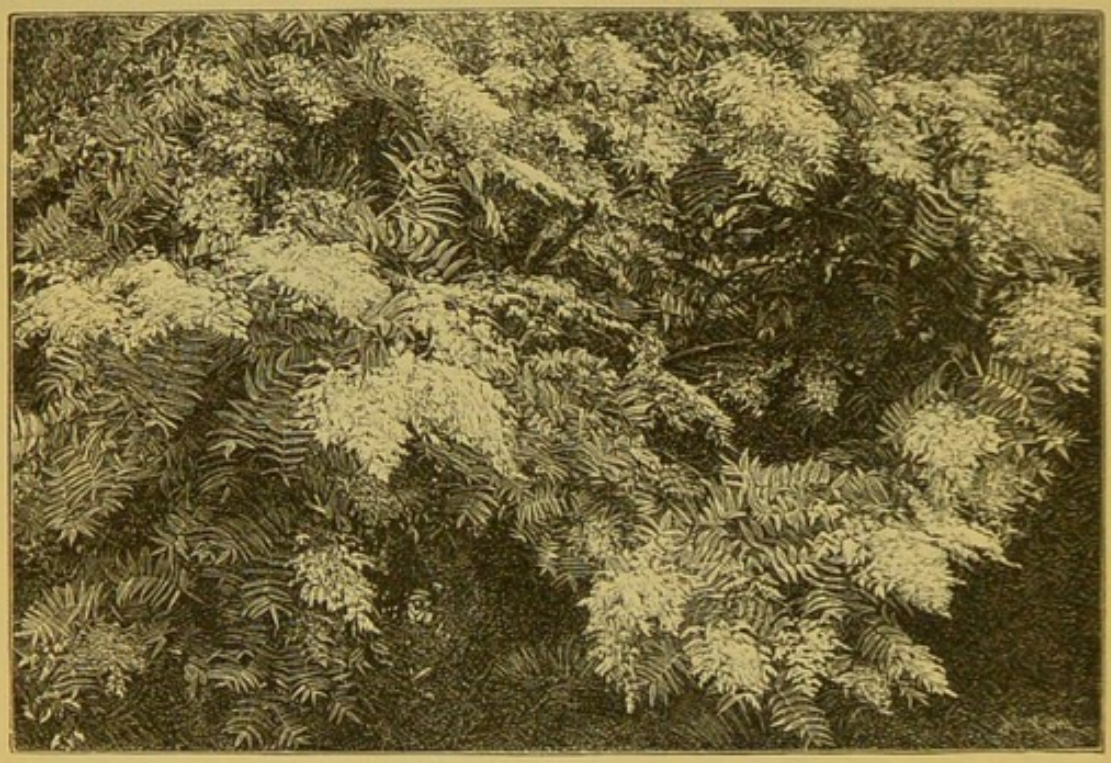
Staphylea (*Bladder Nut*).—Only S. colchica is important, this being a beautiful shrub with pinnate leaves, and in early summer large terminal clusters of snow-white flowers. It is hardy, and grows well in any good soil, preferring partial shade; but it is commonly forced into flower for the greenhouse in early spring.

Starflower (Trientalis europæa).

Star of Bethlehem (Ornithogalum).

Starwort (Aster).

Statice (*Sea Lavender*).—Plants of the Leadwort or Plumbago family, all dwarf perennials or annuals, chiefly natives of shore and mountain districts. Most of them bear large twiggy flower-stems covered with myriads of small flowers, which are for the most part dry and membraneous, and long retain their colour after being cut, so that they are frequently mixed with other everlasting flowers for vase decoration in winter. The larger species require least care when in an open exposed bed of sandy soil, while many of them are admirable for the rock-garden. The best of the larger kinds are S. Limonium, of which there are several varieties; S. latifolia, the finest of all, with wide-spreading flower-stems with a profusion of small purplish-blue flowers; and S. tatarica, a dwarfer species, with distinct red flowers. The smaller species, such as S. minuta, S. minutiflora, S. caspia, S. eximia, are good rock-plants. Among the half-hardy annuals and biennials the



Spiræa Lindleyana.

best are: S. Bonduelli (yellow), a biennial if protected in winter; S. spicata, with spikes of small rosy flowers; Thouini (violet), very free flowering; and sinuata (purple and white), pretty, and easy to grow. There are several varieties of S. sinuata hybrida which have varied colours, and make pretty border flowers. All the annual and biennial Statices should be raised from seed in early spring, and planted out when large enough. The half-hardy biennials need protection during winter, and should not be planted out until the spring after they are raised.

Stauntonia hexaphylla.—A fine evergreen twining pinnate-leaved shrub from China, hardy enough in the south and in the warmer parts of these islands for wall-culture. Its small flowers are whitish, fragrant, and produced in early summer. It must have a sheltered sunny wall, and during severe frosts be protected in a simple way.

Stellaria (*Chickweed*).—The golden-leaved form of the Grass-leaved Chickweed (S. graminea aurea) is used for bedding, and the wild kinds are pretty, but rare.

Stenactis (Erigeron).

Sternbergia (*Autumn* or *Winter Daffodil*).—Pretty and very interesting hardy bulbs, which deserve to be better known. The autumn Crocuses help to carry us through the dull months, but the flowers of the Sternbergias, being of much firmer texture, are able to withstand a far greater amount of bad weather than those of the Crocuses, and are thus better adapted for our climate. One source of failure with Sternbergias and other bulbs is moving them at the wrong time or before growth has fully developed. What they want is thorough ripening in summer and a slight protection, such as dry litter, during the winter. In sandy loams, and fully exposed to the sun, the bulbs will get the necessary ripening without being lifted, and the best plan will be to leave them undisturbed until they attain flowering size. We have even known the plants thrive on stiff soils without moving.

Sternbergia lutea.

S. COLCHICIFLORA.—This is one of the old garden plants, having been cultivated by Clusius and Parkinson. It is described as fragrant, and perfuming, with its Jessamine-scented flowers, the fields of the Crimea about the Bosphorus. The leaves are narrow, and come with the fruit in spring: and the sulphur-yellow flowers appear in autumn at about the same time as those of S. lutea. It is found on dry exposed positions in the Caucasus and Crimea, and is hardy in this country. S. dalmatica and S. pulchella are varieties.

S. FISCHERIANA is nearly allied, and has the habit of S. lutea, from which it differs chiefly in flowering in spring

instead of autumn, and by its stalked ovary and capsule. It is a native of the Caucasus, hardy in this country.

S. LUTEA.—This is the great autumn or winter Daffodil of Parkinson, and a very pretty hardy plant, best on some gravelly soils. The absence of seed on this bulb in a cultivated state is remarkable, seeing how plentiful it is and also how well it flowers in many parts of the country.

My experience tells me that the bulbs must be large before they will flower freely, and imported bulbs are generally small, and will take a year or two to attain flowering size. S. lutea has five or six leaves, each about half an inch broad, about a foot long, and appearing at the same time as the flowers in autumn. It is supposed by some writers to be the Lily of Scripture, as it grows abundantly in the vales in Palestine. S. angustifolia appears to be a narrow-leaved form of S. lutea. It is very free-flowering, and grows rather more freely than S. lutea.

S. GRÆCA, from the mountains of Greece, has very narrow leaves and broad perianth segments.

S. SICULA is a form with narrower leaves and segments than the type, while the Cretan variety has considerably larger flowers.

S. MACRANTHA.—This, introduced by Mr. Whittall from the mountains of Smyrna, is a really handsome species, the leaves blunt and slightly glaucous, about an inch broad when fully developed about midsummer; flowers bright yellow in autumn. Asia Minor.—D. D.

As for some time these plants are not likely to be common, the rarest of them should have a place in our bulb borders, or on rocky borders in gritty or open soil, associated with the rarer Narcissi and the choicer hardy bulbs.

Stevia.—Composites, for the most part of shrubby growth and somewhat tender, therefore scarcely worth attention, except in large collections.

Stipa (*Feather Grass*).—None of the stipas is so elegant as the S. European S. pennata. In bundles its beauty almost equals that of the tail of a bird of paradise. S. pennata is hardly to be distinguished from a strong stiff tuft of common Grass, except in May and June, when the tuft is surmounted by numerous gracefully-arching flower-stems, nearly 2 ft. high, and covered with long, twisted, feathery spikes. It loves a deep sandy loam, and may be used either in an isolated position or in groups of small plants, but its flowers are too short-lived except for borders. Division or seed. S. calamagrostis, S. capillata, and S. elegantissima are other good Feather Grasses

Stobæa purpurea.—A Thistle-like South African plant, 2 to 3 ft. high, with numerous large bluish-purple flowers in autumn. It is hardy in any soil, but succeeds best in a deep and rich one, and may be readily increased by detaching the running underground stems that push up in spring. Seeds are ripened sparingly except in favourable seasons.

Stock (Matthiola).

Stokesia cyanea.—A handsome hardy American perennial, 18 to 24 in. high, and of stout free growth, with, in September, large showy blue flowers somewhat similar to those of a China Aster. It grows freely in good warm soils, but from its late flowering does not always expand its flowers well. In damp localities, place a hand-light over the plants at the flowering season, but so arranged as to allow free admission of air. S. cyanea is useful for the conservatory in autumn and winter. Division in spring. Insert the slips a few inches apart in a warm border or a frame, in sharp sandy soil. As soon as they get well rooted and begin to grow, transplant them. A little river sand and leaf-mould should be mixed with the soil.

Stonecrop (Sedum).

Stork's-bill (Erodium).

Stratiotes aloides (*Water Soldier*).—An interesting native water-plant with a compact vasiform tuft of leaves, from the centre of which arises in summer a spike of unattractive blossoms. In artificial lakes or ponds it will take care of itself.

Strawberry, Indian (Fragaria Indica).

Strawberry Tree (Arbutus).

Struthiopteris (*Ostrich Fern*).—The fronds of these fine hardy exotic Ferns are not unlike ostrich feathers. They are of two kinds, fertile and sterile, the former being always grouped in the centre of the plant, and the latter forming a cordon round them. Struthiopteris can be increased by division of the creeping underground stems, which run for some distance round well-established plants. Good well-drained peat and loam is necessary, and group the plants in bold slightly-sheltered spots, where their noble appearance will tell. As they are deciduous, plant among and around them, for winter effect, some Polystichums or other robust evergreen Ferns, while, for effect at other seasons, some of our finer Lilies would form a useful mixture. The kinds suited for gardens are S. germanica and S. pennsylvanica. The former is one of the most elegant of hardy Ferns, having fronds nearly 3 ft. long, and well suited for the

slopes of pleasure-grounds, cascades, grottoes, the rough rock-garden, and for the margins of streams and pieces of water; it will thrive either in the full sun or in the shade. S. pennsylvanica closely resembles it, but has narrow fertile fronds. Both kinds add much beauty of form to a garden, and should not be confined to a fernery.

Stuartia. — Among the rarest and choicest of hardy-flowering deciduous shrubs. They are allied to the Camellia, and S. virginica and S. pentagyna are both natives of N. America, being introduced during the last century. The former is the best known, and fine specimens may be found in several old English gardens. It is a rounded and spreading bush, 6 to 10 ft. high, and in early summer, usually about May, bears creamy-white flowers with crimson-red stamens, about 3 in. across, in shape like those of a single Rose. In the neighbourhood of London and in gardens of Sussex and other coast counties S. virginica is perfectly hardy, the finest specimens we have seen being in a rather moist light soil in situations well exposed to the sun, but sheltered on the north and east by trees and shrubs. S. virginica and S. pentagyna (labelled in some gardens Malachodendron ovatum) are both of slow growth, but the latter is rather larger and taller than the former, and with similar white flowers. Its native habitat is said to be more northern than that of S. virginica, and it is therefore considered the hardier. S. pseudo-Camellia resembles the other two in growth, foliage, and habit, but its flowers are larger and whiter, and have yellow stamens instead of red. It has withstood full exposure for some years in the Coombe Wood Nursery in Surrey. These Stuartias are so beautiful when in bloom that they should be well grown, and though sometimes thought capricious, there must be numerous gardens where the exact conditions suited to them could be found.

Stud-flower (Helonias bullata).

Stylidium.—Interesting New Holland plants, sometimes cultivated in the open air and frames, but too tender for the open air generally.

Stylophorum diphyllum.—A handsome Poppywort, which somewhat resembles Celandine (Chelidonium majus), but is a much finer plant. Its foliage is grayish, and its large bright yellow flowers are freely produced in early summer. S. diphyllum is 1 to 2 ft. high. N. America. *Syns.*—S. ohioense and S. japonicum.

Styrax (*Storax*).—The Styraxes are deciduous shrubs, the Japanese kinds being pretty when in flower, and, though rare in gardens, are likely to become generally cultivated. S. serrulata (also called S. japonica) is beautiful. It is now becoming common in some of the best nurseries, but has not been introduced long enough to show what size it will grow to in this country. Though in Japan it is said to be a tall tree, here it is known only as a dense shrub of neat habit. Its white flowers have a tuft of yellow stamens about three-quarters of an inch across, and are shaped like a shallow bell. They are profusely borne singly on thin stalks, on the under sides of the flattish branches, and, with the foliage, look pretty about midsummer. The variety S. virgata is also in cultivation. Both the type and the variety grow freely in the open border, in a light position in good soil, and seem thoroughly suitable for the southern parts of England and warm districts. The N. American kinds, S. americana and S. pulverulenta, are not important, as they flower less freely, and are rarer. S. officinalis, which yields the Storax of commerce, is not so pretty as S. serrulata.

Sumach (Rhus).
Summer Snowflake (Leucojum).
Sundew (Drosera).
Sunflower (Helianthus).
Sun Rose (Helianthemum).
Sweet Alyssum (Koniga maritima).
,, **Brier** (Rosa rubiginosa).
,, **Cicely** (Myrrhis odorata).
,, **Fern Bush** (Comptonia).
,, **Flag** (Acorus Calamus).
,, **Gale** (Myrica).
,, **Pea** (Lathyrus odoratus).
,, **Sultan** (Centaurea moschata).
,, **Verbena** (Aloysia).
,, **William** (Dianthus barbatus).

Swertia perennis (*Marsh Swertia*).—This has slender erect stems, 1 to 3 ft. high, terminated by erect spikes of flowers, which are grayish-purple spotted with black, and produced in summer. It is not showy, but interesting for the bog-garden, or for moist spots near the rock-garden, and may be naturalised in damp places in peaty soil. Seed or division.

Symphoricarpus (*Snowberry*). — The common Snowberry (S. racemosus) is a familiar shrub, but we would exclude it from a choice selection; also the Wolf Berry (S. occidentalis); and S. vulgaris, the Coral Berry, or Indian Currant, which has small purplish berries in clusters. The flowers of these kinds are not showy, their growth is not neat, and they smother choicer things. Their chief value is for pleasure-grounds, for undergrowth in woods, or for ornamental covert (as birds

eat the berries), and they all flourish under almost any circumstances. A pretty variety of S. vulgaris has its foliage variegated with green and yellow. It is now common, and, being hardy and vigorous, is one of the best of variegated shrubs.

Symphyandra. — Campanula-like plants, S. pendula being a showy perennial from the rocky parts of the Caucasus, with branched pendulous stems and large cream-coloured bell-like flowers, almost hidden in the leaves. It is hardy, and rarely more than 1 ft. in height. It likes to be associated with most Bell-flowers, but is best seen at the level of the eye in the rock-garden; it is also a good border plant in ordinary garden soil. Seed. The Austrian S. Wanneri rarely exceeds 1 ft. in height, with deep mauve flowers borne freely on branching racemes. Like S. pendula, it prefers a light, warm, rich soil and a partially-shady situation. Both plants are short-lived, and duplicates should be kept at hand.

Symphytum (*Comfrey*).—These Borage-worts are chiefly bold, but somewhat coarse plants, suited for naturalising in rather open sunny places, since, when well developed, their foliage has a fine effect in masses. The largest and best kinds for the wild garden are S. asperrimum and S. caucasicum. The Bohemian Comfrey (S. bohemicum) is a handsome perennial, about 1 ft. high, with in early summer erect twin racemes of brilliant reddish-purple flowers. The variegated-leaved form of the common Comfrey (S. officinale) has striking variegation. S. officinale is effective in a garden of hardy flowers, although generally seen only in mixed collections of hardy variegated plants. Like S. bohemicum it succeeds in any ordinary garden soil in open sunny borders.

Symplocarpus fœtidus (*Skunk Cabbage*).—A curious North American plant of the Arum family, whose bronzy-purple cowls marbled with green are not without beauty when closely examined. Its leaves are very large, and it is worthy of a corner in moist deep soil.

Syringa (*Lilac*).—Most of the common Lilacs may be classed in three species, viz. the common Lilac (S. vulgaris), the Chinese Lilac (S. chinensis), and the Persian Lilac (S. persica). There are several sorts of the first two. Of the white varieties the best are Marie Legrange, Alba grandiflora, Alba magna, and Alba virginalis. If only one white kind is selected, it should be Marie Legrange. The finest of the coloured sorts is Souvenir de L. Spath, which has massive clusters of large richly-coloured flowers. Charles the Tenth is a first-rate sort, and usually forced into early bloom, when its flowers are white. Other kinds of good colour are Alphonse Lavallée, Louis Van Houtte, Rubra de Marley, Le Gaulois, and Aline Mocquery. Some double sorts have recently come into cultivation, the chief ones being Lemoinei, Ranunculiflora, Renoncule, Hyacinthiflora plena, and Rubella plena. These have denser flower-clusters, and usually last longer than the single varieties. An indispensable Lilac is the small Persian (S. persica) which is distinct from the others, and, being dwarf and erect, is well suited for the outskirts of a group of Lilacs or a shrubbery. Its small flower-clusters are of a pale lilac, or are nearly white. The pretty variety, with deeply-cut leaves (laciniata), must not be overlooked. The Rouen or Chinese Lilac (S. chinensis), also known as S. dubia and S. rothomagensis, is intermediate between the common Lilac and the Persian Lilac, and, like the latter, is desirable. The large S. Emodi, from the Himalayas, is coarse in growth, and not remarkable for its flowers, which are pale purple. They come after those of the common Lilac are past. There is a variegated form. The Hungarian Lilac (S. Josikæa) is a pretty shrub, different from other Lilacs. It reaches a height of nearly 6 ft., and bears erect spikes of small pale mauve flowers. S. japonica, known also as S. amurensis and Ligustrina amurensis, bears in summer large dense clusters of creamy-white flowers, which somewhat resemble those of the Japanese Privet. Though a native of Japan, it is suitable for English gardens. Though deep loamy soil best suits Lilacs, they will grow in almost any ground. Attention should be given to pruning, especially to removing root-suckers as they appear. The shrubs are often grafted on the Privet, but die on it. All who care for Lilacs should get plants from layers of all the finer sorts.

Tagetes. — The beautiful half-hardy French and African Marigolds have been for centuries favourite garden annual flowers. There are also perennial Tagetes, but they are not hardy enough to make satisfactory plants out-of-doors, though one or two, such as T. lucida and T. Parryi, are desirable. The annuals in cultivation are all natives of Mexico. The following are the most desirable:—

T. erecta (*African Marigold*) is easily known by its stiff, erect habit, and massive double yellow blooms. A peculiarity of

the African Marigold is that one-third of the seeds saved from the finest double flowers always produce single ones, while the rest are invariably double. The plants are occasionally grown for exhibition, but less so than formerly. One must not overlook their beauty in the garden in striving to get big blooms for show. A bed of them on the turf is finer when the deep orange and pale yellow forms are in association. Sow seed under glass in April, for then, even without bottom-heat, they will germinate freely. When the young plants are 3 in. in height, dibble them out again either into a frame or under hand-lights, as slugs are partial to the young plants. Where very large flowers are desired, the soil must be rich, and the buds on the branches should be thinned out.

Syringa Bretschneideri.

T. patula (*French Marigold*) is a charming summer annual, at one time exhibited largely, especially at southern and midland shows, but the hard-and

fast rules of the florists favour only the striped flowers, which though beautiful are monotonous. The colours, however, are not so limited as in the African Marigold. There are many varieties striped, mottled, and coloured with yellow, orange, chestnut, and other tones. The older forms are coarser, spreading yet tall, and in good soil make huge plants, carrying scores of flowers of medium size, and if good, are double, rounded, sometimes partly reflexed, and invariably pretty. The striped forms can be kept true only by growing them free from other sorts, but even in the best strains the flowers vary. Sometimes one plant has striped blooms, and at other times self-yellow or maroon flowers. The unpleasant odour of annual Marigolds unfits them for cutting. Of more recent introduction are the compact forms of the French Marigold, usually 12 to 15 in. high, with dense heads of perfect flowers. They make effective masses, and answer well as edgings for beds of tall African Marigolds. There is little to add to the directions for cultivation already given. Well harden them before being planted out, and put them singly, not in clumps.

T. signata is allied to the French Marigold, but has much smaller flowers, either double or single. It was formerly largely used for summer bedding, its elegantly-cut leaves being perhaps its most pleasing feature. As it needs a little starving to induce it to bloom freely in beds and masses, the soil must be rather poor. Like all other Marigolds, it stands drought well. T. s. pumila is a dwarf form.

Tamarix.—The common British Tamarisk (T. gallica) is a graceful shrub, with its feather-like growth and clouds of pinkish bloom in late summer. It grows on the shore, but, like the Sea Buckthorn, also thrives well in inland places. It is a good shrub for planting on a dry sandy bank where few other tall shrubs would grow; and, in fact, thrives under almost any conditions. Plant it when small, as in poor soil it has a better chance of getting a strong root-hold. In very windy places a little artificial shelter should be given at the outset. T. gallica grows fast, 6 to 10 ft. in height. T. parviflora, T. Pallasi, T. indica, and T. tetrandra have the Heath-like aspect of the common Tamarisk, but are not so desirable.

Tamus communis (*Black Bryony*).—A common and handsome climber in hedges and copses.

Tanacetum vulgare (*Tansy*).—An elegant variety of the common Tansy, much dwarfer in stature than the type, is the var. crispum. Its emerald-green leaves are smaller, and have a crisped appearance. It is quite hardy, will grow anywhere, and if the shoots are thinned in spring to give them room to suspend their graceful leaves, the plant looks much better than if the stems are crowded. The flowers should be pinched off before they open.

T. Herderi, a silvery species, is a characteristic plant for the rock-garden; the leaves abundant on thick forked stems, which rise a few inches from the surface. The bright yellow flowers have a pleasing effect on the silvery foil. Increased by division in autumn.

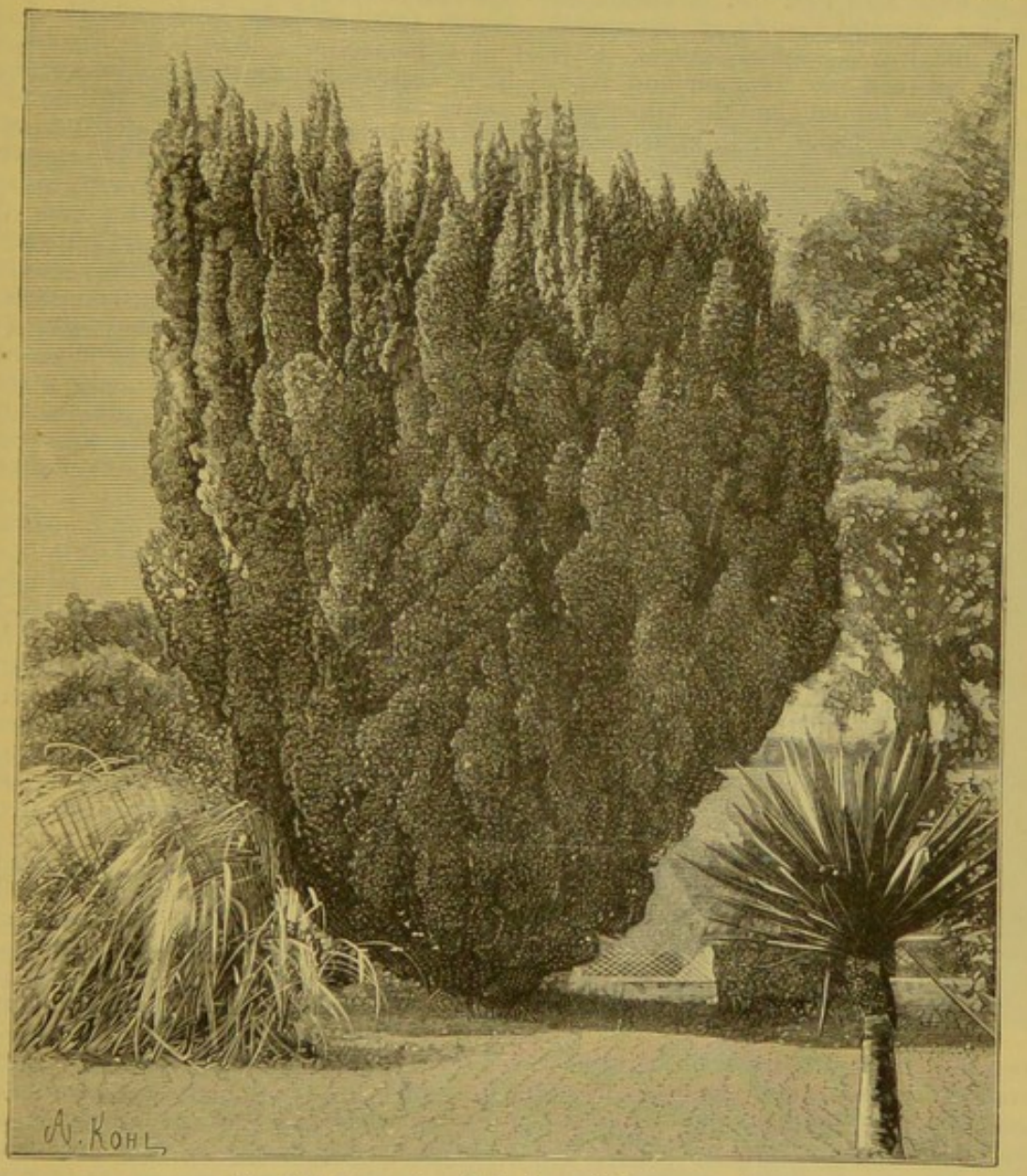
Tansy (Tanacetum vulgare).

Taxus (*Common Yew*).—This, one of the most beautiful of evergreen trees, has been much used in our flower-gardens for many years, clipped and distorted in what is called "topiary" work. Evelyn is said to have introduced the practice with the Yew, and we should be glad if it had no earlier authority, but probably it originated with very old gardens, in which the Yew tree stood by the door or gate and had to be clipped if it was not to overshadow the house or garden. In such a case clipping was necessary, but in modern gardens much clipping of a less profitable kind is often resorted to, so that the Yew is seldom seen in all its stately grace. As a hedge its use in gardens is frequent and often good, but its misuse is evident in many of the great gardens of the world, such as Versailles, where nothing is more ugly than the Yews cut hard against the sky-line, many of them distorted, diseased, and ugly from constant clipping for years. Their effect at Versailles is bad, either against the palace, the landscape, or the trees around. Although intimately connected with the flower garden, it need hardly be said that the Yew, being a gross feeder, should be kept as far as possible from the flowers of the garden. Indeed, in many cases hedges are used where walls would be better, as the walls have not the defect of robbing the good soil near. It is more as shelter, and as fine evergreen trees for groups seen from the flower garden, that the Yew is precious. As a shelter-belt there is perhaps no tree known to us quite so good in all stages of its life. Unlike many other fine evergreen trees, it is not at the mercy of heavy snowfalls and winds, and we have rarely seen it injured by them. A precious shelter from the north and east may be created round the flower garden, or any

choice garden, by its means, if allowed to grow naturally and planted not too thick. Delightful shaded bowers may be formed under old Yew trees; and alcoves and arches for seats under clipped Yews occasionally. Lines of hedging Yews should never be formed without good reason.

The Golden Yews and variegated kinds will form striking groups of colour; but are better held together than dotted about at regular intervals, which is fatal to all artistic effect. The Golden Yew, and every Yew worth having of variegated sorts, is most striking in colour in bold picturesque groups. The Irish Yew, a plant of striking form, has been very much over-used by those who do not consider the effect of things on the landscape. I have seen houses with rows of Irish Yews on every side, destroying all possibility of good effect from other and far more beautiful trees, and all the variety and life that should be in an English garden. Variegated and other interesting forms often come from seed.

Of the recognised forms sold in nurseries the following is an abstract of a classification by Mr. William Paul:—

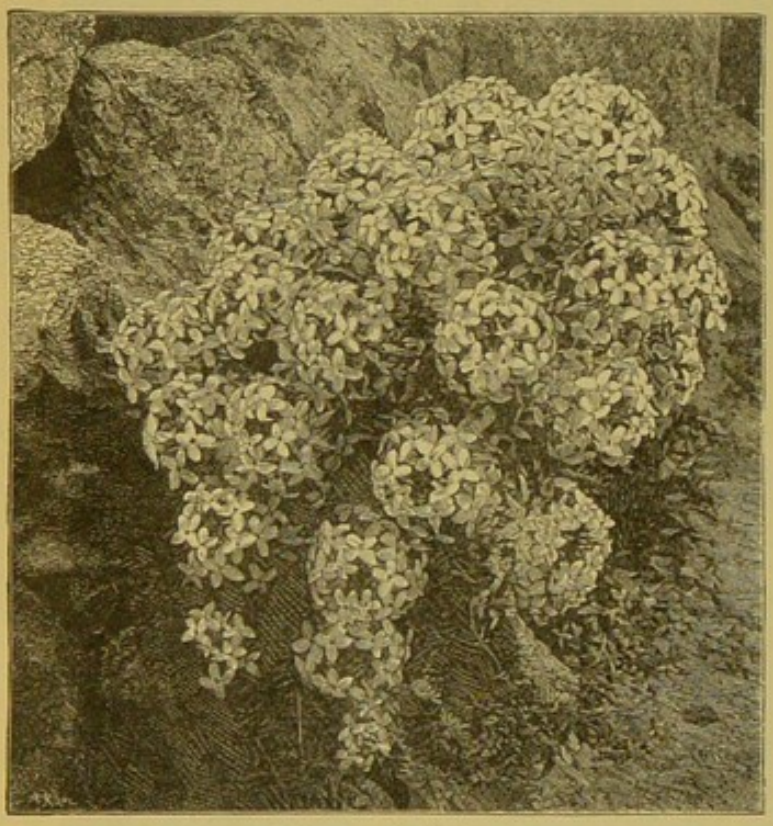


The Irish Yew. One of the forms of the common Yew.

VARIETIES OF SPREADING HABIT.—T. baccata, common Yew. T. b. fructuluteo (yellow-berried Yew) is one of the most elegant; the fruit yellow instead of red; growth vigorous. T. b. nigra is a striking plant of bold upright growth; leaves bluish-green. It is effective in the

landscape, forming a somewhat sombre, but massive tree. T. b. procumbens forms a spreading bush with bright green leaves, the plant having a reddish tint.

VARIETIES OF ERECT HABIT.—T. b. fastigiata (Irish Yew) is a plant of rigid growth, columnar in form; leaves dark green. Seeds of this variety produce for the most part the common Yew, but some vary in form and tint. T. b. cheshuntensis is a graceful variety, of pyramidal growth, the leaves a glossy green. It is midway between the common and Irish Yew, but less formal than the latter and grows twice as fast. T. b. pyramidalis resembles cheshuntensis in form; but the leaves are broader, and the bark of the young shoots is reddish. T. b. nidpathensis (Nidpath Yew) resembles cheshuntensis, but is of stiffer growth, being columnar rather than pyramidal, with a disposition to spread at the top. T. b. stricta is similar, but has smaller and paler green leaves, is almost as erect as the Irish Yew, and forms a dense tree. T. b. nana, is a neat dwarf plant of compact upright growth, with leaves of a dark and more glossy green than the common Yew. It is equally suitable for a single tree on the lawn, for planting in masses, or for a dwarf hedge. T. b. erecta is similar, but of larger growth, with smaller leaves. T. b. erecta Crowderii is of compact pyramidal growth, and resembles erecta, but has smaller branches, and will probably not grow to so large a size. It is of more regular growth than erecta, and may perhaps be considered an improved variety of it. T. b. ericoides (empetrifolia) is a neat plant of dwarf growth, closely set with branches; the leaves small and the bark reddish.



Tchichatscheffia isatidea.

VARIETIES OF WEEPING HABIT.—T. b. Dovastonii is a picturesque weeping variety, the branches shooting horizontally to some distance from the main stem, and drooping at their points. The foliage is ample and of a dull dark green. T. b. Jacksonii is a distinct weeping variety, with small light green curled leaves. T. b. recurvata is a handsome variety, with leaves of a pale green. The habit is diffuse and rather drooping, the leaves curled in the way of Picea nobilis.

VARIETIES WITH VARIEGATED FOLIAGE.—T. b. variegata (Golden Yew) is a well-known plant of great beauty, suited for planting in masses, and relieving the monotony of large surfaces of green. It is said, on good authority, that the Golden Yew is a male plant, but there are two or more varieties of too close an external resemblance to be distinguished; moreover, the offspring from seed retain the variegation of the parent, though differing slightly among themselves. T. b. elegantissima is paler, more erect and uniform in growth than the last-mentioned. Both varieties, if grown entirely in the shade, quickly become green, but regain their golden appearance on re-exposure to the sun. T. b. fastigiata variegata (variegated Irish Yew) is a sport from the Irish Yew, with occasional silver leaves; of slow growth, and hardly striking enough to become a general favourite. T. b. fastigiata variegata (Handsworth variety), one of the best variegated Yews, is most useful, growing freely and standing the sun well.

Tchichatscheffia isatidea.—This beautiful alpine is a native of Asia Minor,

perfectly hardy, and not particular as to soil or situation, but prefers growing among rocks. From a tuft of spathulate oblong leaves which is formed in the first year, appear the flowers in the second season ; the leaves are dark green, thickly beset with shining silky hairs, from amongst which rises the thumb-thick flower-stalk showing a combined thyrsus of Syringa-like bright rosy lilac flowers, which are fragrant like vanilla. The bunch is over a foot across, and is in great beauty throughout the month of May.—M. L.

Teasel (Dipsacus Fullonum).

Tecoma.—The hardy Tecomas are described under the name of Bignonia.

Tecophylæa cyanocrocus. — A beautiful spring-flowering bulbous plant from Chili, of dwarf growth, and bearing large open deep blue flowers. The variety Leichtlini has a white centre and a sweet perfume. This variety is not thoroughly hardy, except in very mild localities, but it succeeds well under frame-culture. About August, bulbs of flowering size should be planted 3 in. deep, in rich soil in a frame. If potted a depth of 2 in. is sufficient, and plunge the pots. They should be kept cool, and have as much air as possible. The lights must be taken off in February and March, when the weather becomes warm, and the pots should remain exposed until the flowers begin to expand. The plants may then be transferred to the greenhouse.

Telekia speciosa.—A bold free and showy perennial, hardy, and growing in any soil, with large heart-shaped leaves in great tufts, and, in summer and autumn, handsome heads of showy yellow flowers with dark centres. An excellent plant for shrubberies and covering the ground here and there in bold masses, as it grows so close that it keeps the weeds down and in such ways also gives a better effect than in small tufts in the mixed border. Central Europe. Division. *Syn.*—Buphthalmum.

Telekia speciosa.

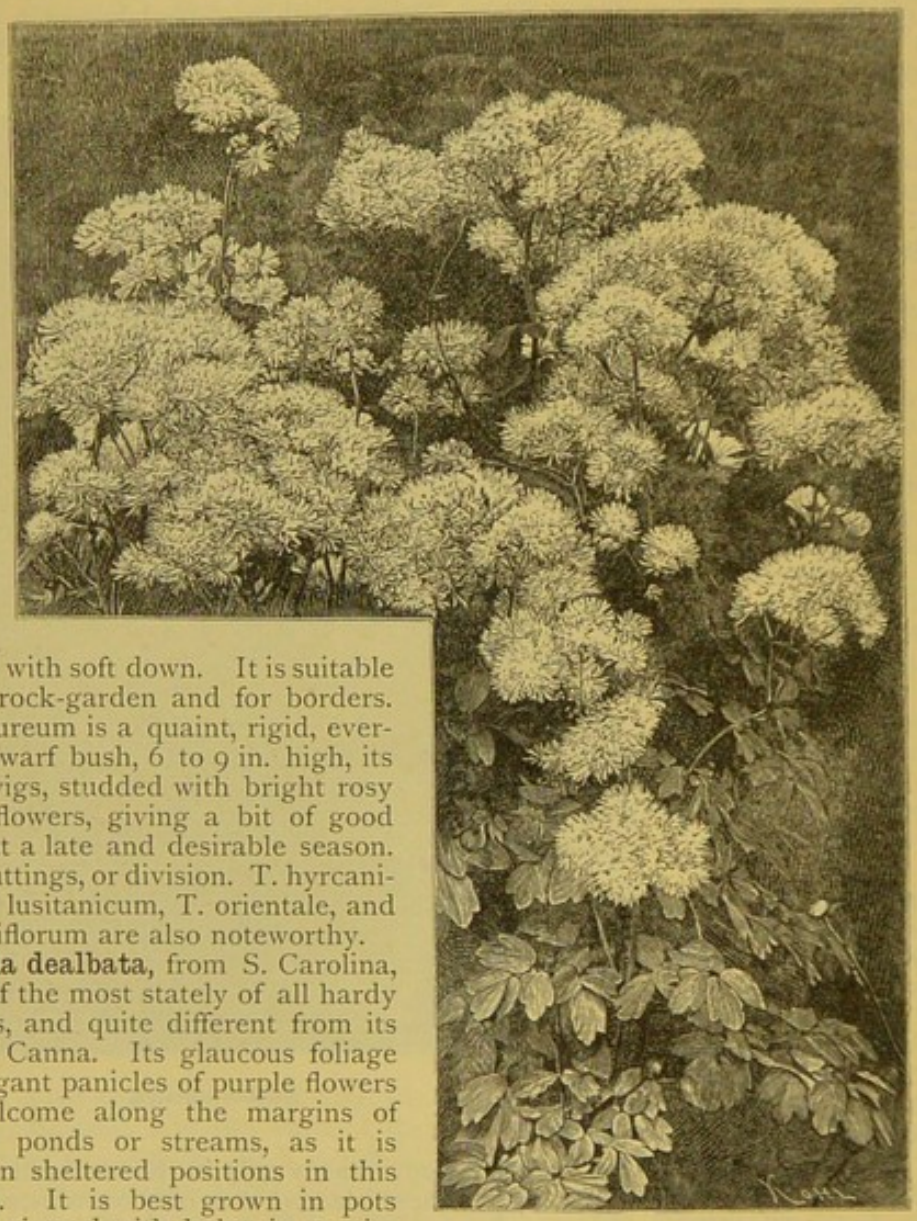
Tellima.—Plants of the Saxifrage order, from N. America, resembling Heucheras. T. grandiflora has leaves prettily coloured and veined like Heuchera Richardsoni, and spikes of small yellowish bell-like flowers. T. parviflora is not so desirable. Both grow in tufts, and thrive well in any soil. Division in autumn.

Teucrium (*Germander*).—A few of these Labiates are of neat dwarf growth. T. Chamædrys (Wall Germander) is 6 to 10 in. high, with shining leaves and reddish-purple flowers in summer. It is found throughout Europe on walls and rocks, and is suitable for borders and naturalisation on ruins, stony banks, etc., in any light soil, whilst as an edging plant it is useful. T. Marum (Cat Thyme) has somewhat the habit of the common Thyme, with bright red flowers in summer. Being a Spanish plant, it is likely to prove hardy only in the southern parts of these islands ; then only on ruins, old walls, or in dry chinks in chalk or gravel pits. If planted out the soil should be brick rubbish, etc., with sand and a little poor dry loam. The Cat Thyme should be placed where cats cannot get to destroy it. Propagated by cuttings. The South European T. Polium (Poly Germander) is a curious dwarf whitish herb, 3 to 5 in. high, with small pale yellow flowers densely covered with short yellow down, and appearing in summer. It is suited for sunny spots in the rock-garden, and for

light free soil, but is not hardy except in the milder southern districts and in favourable spots in the rock-garden, where it grows freely. Seed, cuttings, and division. T. pyrenaicum (Pyrenean Germander) is a dwarf hardy perennial, 3 to 7 in. high, with purplish and white flowers in dense terminal clusters. The leaves, branches and stem are thickly covered with soft down. It is suitable for the rock-garden and for borders. T. purpureum is a quaint, rigid, evergreen dwarf bush, 6 to 9 in. high, its erect twigs, studded with bright rosy purple flowers, giving a bit of good colour at a late and desirable season. Seed, cuttings, or division. T. hyrcanicum, T. lusitanicum, T. orientale, and T. multiflorum are also noteworthy.

Thalia dealbata, from S. Carolina, is one of the most stately of all hardy aquatics, and quite different from its ally the Canna. Its glaucous foliage and elegant panicles of purple flowers are welcome along the margins of shallow ponds or streams, as it is hardy in sheltered positions in this country. It is best grown in pots or tubs pierced with holes, in a mixture of stiff peat and clayey soil, and river mud and sand. In winter, the receptacles may be submerged and the plants are thus protected. The plant attains fullest development in warm places in the southern counties, where alone it may be planted out. Propagated by division.

Thalictrum (*Meadow Rue*). — The Meadow Rues have elegant foliage, but not showy flowers. A few of the smaller species rival in delicacy of form and colour some of the charming Maiden-hair Ferns, and may be associated with flowering plants, or those of fine or characteristic foliage. T. anemonoides (Rue Anemone) is usually only a few inches high, its white flowers being nearly 1 in. in diameter, and open in April and May. It is best suited for the rock-garden in deep moist soil and partial shade. The double variety may be preferred to the type. N. America. T. minus forms compact slightly glaucous symmetrical tufts, 12 to 18 in. high. May be grown in any soil, but the slender flower-stems, which appear in May and June, should be pinched off. Not only in aspect does this bushy little tuft resemble the Maiden-



Thalictrum aquilegifolium.

hair Fern, but its leaves when mingled with flowers are pretty; stiffer however, and more lasting than Fern fronds. They are well suited for mingling with flowers in vases. T. minus would look well isolated in large tufts as an edging, in borders, or in groups of dwarf subjects. Division. T. adiantifolium is similar. T. tuberosum is about 9 in. high, with graceful foliage, and abundance of yellowish cream-coloured flowers. It is hardy in a deep peat soil. S. Europe. Beside these dwarf kinds there are about two dozen other species, ranging from 3 to 6 ft. in height. There is a great sameness among them, as all have finely-cut foliage. A good kind with fern-like foliage is T. aquilegifolium, which is about 4 ft. high, and grows vigorously in any soil. There are two or three varieties of it, one (atro-purpureum) with dark purplish stems and leaves. All the Thalictrums do well naturalised.

Thermopsis.—Showy plants, 2 to 3 ft. high, slender in growth, and with long terminal spikes of attractive yellow Lupine-like blossoms. T. montana is said to be a variety of the older T. fabacea or rhombifolia, but is distinct in aspect, of graceful growth, and as it flowers at the same time as the perennial Lupine, may be associated with it and other border plants of the season. It grows best in good soil in an open situation, and is a native of California, also other parts of Western North America. T. fabacea occurs farther north. Divides badly, and should be propagated by seeds. T. barbata is a beautiful Himalayan species with purple flowers.

Theropogon pallidus.—A pretty Liliaceous plant, 6 to 12 in. high, with grassy foliage, similar to that of an Ophiopogon, and flowers resembling the Lily of the Valley, but larger, pink in colour, and appearing later. It is presumably hardy, as it inhabits high elevations in the Himalayas. Found on mossy rocks and at the bases of old trees, where its roots spread superficially in loose soil.

Thistle, Blessed (Carduus benedictus).
,, **Fishbone** (Chamæpeuce).
,, **Globe** (Echinops ruthenicus).
,, **Stemless** (Carlina acaulis).
,, **Woolly-headed** (Carduus eriophorus).

Thladiantha dubia.—A handsome creeping perennial of the Gourd family, from N. China and India, with long climbing stems bearing a profusion of bright yellow flowers. As the plant is very hardy, it may be used to cover trellises, arbours, etc. In the neighbourhood of Paris it survives the winter in the open air.

Thlaspi latifolium.—A dwarf vigorous perennial from the Caucasus, 6 to 12 in. high, with large root-leaves, and flowers something like those of Arabis albida, but larger. Suitable for borders, the spring garden, beds, and naturalising with the dwarfer flowers of spring and early summer. It thrives in ordinary garden soil. Division and seed. T. rotundifolium is the same as Iberidella.

Thorn (Cratægus).
Thrift (Armeria vulgaris).
,, **Prickly** (Acantholimon).

Thunbergi alata.—These beauuful half-hardy annuals, so common in greenhouses, are elegant dwarf climbers of the easiest culture, and in summer are valuable for draping dwarf trellises. The flowers of the type, a native of the East Indies, are yellowish-buff, but there are other varieties: alba is pure white; aurantiaca, bright orange; Fryeri, orange with a white eye; Doddsi has variegated foliage; and others with yellow and sulphur flowers. T. alata and its varieties grow 4 to 5 ft. high, and from July till October their slender stems are covered with bloom. Seeds should be sown in heat in early spring, and the seedlings potted separately when large enough. In May plant them out in good light soil.

Thymophylla aurea.—A neat little Composite plant, from Colorado, forming a branching tuft about 4 in. high and from 6 to 9 in. in diameter. The flowers are in terminal heads, about ½ in. across, resembling a miniature single Marigold, with a bright yellow ray and disc. The plant is easily grown as a hardy annual, and prefers a rather dry soil. = Lowellia aurea.

Thymus (*Thyme*).—Of the many Thymes in cultivation only a few are important, these being suited for arid parts of the rock-garden and where many other plants will not thrive. They spread quickly into wide dense cushions, and ought not to be placed near delicate or minute alpine plants. Nothing can be more charming than a sunny bank covered with the common wild Thyme (T. serpyllum) and the white variety. T. lanuginosus, though usually considered a very woolly variety of our common wild Thyme, is pleasing at all seasons, forming wide cushions in any soil, provided it be thoroughly exposed to the sun. Another desirable plant is the variegated form of the Lemon-scented Thyme (T. citriodorus aureus), which is more robust than the

green-leaved kind, and retains its beautiful foliage through the winter. Consequently it is more useful for the garden than the common variety. The Golden Thyme is 9 in. high, dense and compact, and used for edging. It may be increased by cuttings, which strike readily in September, either in hand-glasses or in cold frames, and should be planted out in spring. Those cuttings which are best variegated should be chosen, as others may revert to the normal green type. Various other Thymes are worthy of the dry arid slopes of a large rock-garden, and of old ruins. The minute, creeping, and Peppermint-

Tiarella cordifolia.

scented T. corsicus, with flowers so small as to be almost invisible, should be planted in every rock-garden, where it will soon become one of the welcome weeds. Other kinds in cultivation are T. azoricus, T. azureus, T. bracteosus, T. Zygis, T. thuriferus, T. Chamædrys, and T. Mastichina.

Tiarella cordifolia (*The Foam Flower*).—While many plants of doubtful value are widely distributed in gardens, some real treasures, for no apparent reason, are overlooked. Such has been the fate of the lovely little Foam Flower, a hardy plant of rapid increase, flourishing in almost any soil and position, but not often seen. It is of great beauty; the little starry flowers creamy-white, the buds delicately tinged with pink; a good mass of them seen a few yards off have a close likeness to a wreath of foam. The young leaves are tender green, spotted and veined with deep red, while the older ones at the base of the plant are of a rich red-bronze. All the care it needs is division every two years, the plants being at their best the second year after divsion.

Tickseed (Coreopsis).

Tick Trefoil (Desmodium).

Tigridia pavonia (*Tiger Flower*).—This is a gorgeous flower from Mexico that gives us in the open garden a splendour such as we are wont to associate with flowers from the tropics. The flowers of T. Pavonia are about 6 in. across, brilliant scarlet, thickly spotted with crimson, borne on a stem about 2 ft. high, each lasting only a day, but a succession of flowers from one stem is maintained for six weeks. Several distinct varieties are now grown, the best being grandiflora, with flowers larger and brighter in colour than those of the type; conchiflora, yellow, heavily blotched with red at the base; alba, ivory-white with carmine-red base; lilacea, rosy carmine, shading to white; and rosea, which is rose-coloured, variegated at the base with yellow. T. Pringlei, a newly introduced species, grows 18 in. high and has large scarlet flowers. In the garden Tigridias associate well with Lilies, Gladioli and similar choice things. The culture of Tiger Flowers requires no great consideration, though care and attention at certain periods are necessary. They are not hardy generally; in some of our most southerly counties they would be tolerably so in light soil and a warm position, but it is safer to treat them as one would the gandavensis Gladioli and tender bulbs of a similar nature. The annual lifting, storing, and spring planting are not great undertakings, and the bulbs are better for having the bulblets of the past season's growth separated. In some warm gardens the bulbs are left in the ground all the winter, well protected with ashes, and the results are satisfactory. Choose the sunniest spot in the garden, where there

will be no cutting winds, as these spoil the great delicate flowers. Soil that is light and the subsoil gravelly are the most favourable conditions for these bulbs. A sandy loam lightened and enriched by leaf-mould is the best to ensure a strong and rapid growth. The bed should have at least 18 in. of good soil, and when this is dug up and allowed to settle, plant the bulbs the second or third week in April 3 in. deep and 6 in. apart, putting a little sharp sand round each before filling in the holes. If a dry time sets in when the foliage is half grown, the bed should be well watered occasionally. From about midsummer onwards till September, or even later, the plants will be in bloom ; and the stronger the plants the more flowers will the sheaths yield. In October the foliage generally begins to turn yellow, a sign that the bulbs are ripening. Lift by November, bunch them, and hang in an airy shed till they are dry.

Toadflax (Linaria).

Tofieldia.—A family of Liliaceous plants, not valuable in the garden. T. palustris is a native perennial, found in marshy places.

Tolmiæa Menziesi is a curious rather than handsome Saxifrageous plant from Oregon, related to Tiarella. It propagates naturally by adventitious buds, produced at the junction of the leaf-stalk with the blade in the manner of Begonia.

Toothwort (Dentaria).

Tovaria oleracea.—A handsome Liliaceous perennial, nearly related to Smilacina, with gracefully arched stems. The flowers are borne at the end of the stems in broad racemes about 4 in. across, and are pure white, which contrasts well with the purplish hue of the stems and the flower-stalks. Native of Sikkim, but quite hardy.

Tournefortia heliotropoides. — A modest half-hardy plant from Buenos Ayres with heliotrope-like clusters of pale lilac flowers. It should be treated as a half-hardy annual, being sown in heat in early spring, and the seedlings planted out in May. It likes a good deep loamy soil, an open position, and as it is of spreading growth, the seedlings should not be placed near to each other.

Trachelium cœruleum (*Blue Throatwort*).—This much-branched perennial, 1 to 2 ft. high, comes from the Mediterranean region, and bears in summer broad clusters of small blossoms, which are blue in the type and white and lilac in the varieties. It can be grown only in the warmest situations in dry borders, rocky banks, and old ruins or walls. It is an elegant plant for vases, etc. Seed or cuttings.

Tradescantia virginica (*Virginian Spiderwort*).—Some of the hardy Tradescantias are pretty plants, but T. virginica is by far the best, and with its varieties represents all the beauty of the family. It is 12 to 30 in. high, and has showy purple-blue flowers in summer. There are several varieties, one with double violet, one with single rose-coloured, one with single lilac, and one with single white blossoms. These grow in any soil, and are suitable for the mixed border, margins of shrubberies, the rougher parts of extensive rock-gardens, and for the

Tigridia pavonia.

wild garden. Division in spring. T. Barclayana, T. iridescens, and T. subaspera are of note.

Trapa natans (*Water Chestnut*).—An interesting S. European aquatic plant of doubtful hardiness with us.

Tree Mallow (Lavatera arborea).

Tree of Heaven (Ailantus).

Trichomanes.—Beautiful filmy Ferns, but not suited for open-air culture, requiring a special place under glass, so that they can at all times be kept shaded and growing in an atmosphere heavily charged with moisture. In the mildest parts, perhaps, the Killarney Fern (T. radicans) and similar kinds would succeed, but only in shady caves under waterfalls and in like positions.

Trichonema (= Romulea).

Tricuspidaria hexapetala.—This lovely flowering shrub from Chili, which is better known as Crinodendron Hookerianum, has flowered in the gardens at Castlewellan several years, and appears to be hardy there. It is planted in a shady border near a large Yew hedge, in peat, leaf soil, and loam in equal proportions. It flowers twice a year, in the spring and in autumn, the colour of the flowers being a deep rich crimson. The plant the photograph was taken from is now carrying sixty flower-buds. Being near the sea we get very little frost in ordinary winters, and the Crinodendron requires no protection, but in a less favoured climate it would be well to pot it and winter it in a cool greenhouse.

Tricyrtis hirta.—An interesting Japanese perennial, about 3 ft. high, with slender erect stems terminated by a few curiously-shaped pinkish blossoms, spotted with purplish-black. It is perfectly hardy, but flowers so late that it is invariably damaged by frosts. The variety nigra flowers three weeks earlier, and is therefore better, whilst the flowers are more attractive. T. pilosa is dwarfer, but is otherwise a similar plant, though rarer. They all thrive in a moist peat border, partially shaded, and if somewhat protected, so much the better.

Tricuspidaria hexapetala. From a photograph sent by Lord Annesley.

Trientalis europæus (*Star-flower*).—A delicate and graceful plant found over Europe, Asia, and America, which in-

habits shady, woody, and mossy places. It has erect slender stems, rarely more than 6 in. high, bearing from one to four flower-stems, each supporting a white or pink-tipped star-shaped flower. Healthy well-rooted plants are not difficult to establish among bog-shrubs in some half-shady part of the rock-garden, or in the shade of Rhododendrons and American shrubs, in peat soil. T. europæus is suitable for association with Linnæa, Pyrolas, and Pinguiculas, among mossy rocks. Flowers in early summer. Division of the creeping root-stocks.

Trifolium (*Trefoil*).—There are very few garden Trefoils, and these not generally known. Among them are some dwarf and desirable creeping alpines, the best being T. uniflorum, a neat trailing plant with pink and white flowers, larger than those of any other Trefoil, borne singly, and studded profusely over the plant. T. uniflorum delights in an exposed position on the rock-garden, with an open space on which to creep. T. alpinum is a stout spreading kind, 3 to 6 in. high, bearing large, but not brilliant flowers in summer, the upper petal flesh-coloured and streaked with purple. It is suitable for the rock-garden and margins of borders. T. rubens is a stout perennial, about 1 ft. high, with large dense heads of carmine flowers in early summer. It grows almost anywhere, but prefers dry, calcareous, marly or gravelly soil, therefore is specially suited for naturalisation on arid declivities with a southern aspect. T. pannonicum, with creamy-white flowers, is ornamental. All the Trefoils may be propagated by division or seed.

Trillium (*Wood Lily*).—Perennials of low growth, which inhabit the shady woods of N. America. The finest of all is T. grandiflorum (White Wood Lily), one of the most beautiful hardy plants, 6 to 12 in. high, with on each stem a lovely white three-petalled flower, fairer than the white Lily, and almost as large. The size of the flower, however, depends on the vigour of the plant. T. grandiflorum is a free-growing plant of goodly size in a shady peaty border in open air ; but in a sunny or exposed position its large soft green leaves do not develop. Depressed shady nooks in the rock-garden or the hardy fernery suit it admirably. T. atro-purpureum, T. erythrocarpum, T. sessile, and T. pendulum are not equal to T. grandiflorum, but some of them are pretty, whilst all are interesting.

Trillium grandiflorum (White Wood Lily).

Triteleia uniflora (*Spring Star-flower*).—A delicately-coloured, free-flowering, hardy, bulbous plant, 4 to 6 in. high ; the flowers white, with bluish reflections, and marked on the outside through the middle of the divisions with a violet streak, which is continued down the tube. They open at sunrise, and are conspicuously beautiful on bright days, but close in dull and sunless weather. The plant comes into flower with or before Scilla sibirica, and, during April, remains in effective bloom.

T. uniflora flowers profusely in pots, and even in an unfavourable position in clay. There are several forms, which differ in the shade of their flowers. Associated with the best Scillas, Leucojum vernum, Iris reticulata, dwarf Daffodils, and the like, T. uniflora is delightful, and is equally useful for the rock-garden, borders, or edgings. Native of Mendoza in S. America. T. (Leucocoryne) alliacea is nearly allied, less pretty, and thrives under similar circumstances. For other species see BRODIÆA.

Tritoma (Kniphofia).

Tritonia aurea.—This beautiful South African bulb often seen in a greenhouse is a useful plant for the open air. It grows about 2 ft. high, and has branched spikes of rich yellow flowers 2 in. across. Two fine forms of it are—maculata, with flowers deep orange colour stained with brown, 3 in. across, borne on spikes 4 ft. in height; and imperialis, equally tall, with large flowers, narrower in the petal and of a brighter orange shade. In the garden T. aurea succeeds in any soil except clay, but prefers moist peaty beds associating well with and under conditions favourable to choice peat-loving shrubs. In the warmer parts of England it may be left in the border all winter protected with a layer of leaves or if under the shelter of a south wall. It spreads rapidly, becoming almost a weed in warm borders. Though tolerably hardy, the lateness of flowering is an objection to leaving the bulbs out all the winter, and besides this, they are liable to be killed in severe winters unless well protected. It is better, therefore, to lift them about the middle of November. If necessary, many of them may be potted together, and separated when planting-out time comes. This lifting must be carefully managed, for in October, although the tops are not dead, the shoots that form the new bulbs next year are already growing again. The old bulbs, distinguished by having no stalks, may be pulled off and thrown away. Anything like drying off or storing the roots in a dry place is fatal; they should not be uncovered for a single day.

Trollius (*Globe-flower*).—Few garden plants are more desirable than Globe-flowers which vary considerably in height, but are of compact habit, never requiring support. They may be grown in beds or borders, or naturalised by ponds, streams, or in any wet place, as they flourish well among the natural vegetation and give delightful effects. They are of a dense habit of growth, and both foliage and flowers rise from an underground crown. The roots are numerous and deep-searching, especially in a border where drainage removes the water-level to a considerable depth. The flowers vary from a pale yellow to a deep gold, almost bordering on vermilion. The Globe-flowers bloom in spring or in summer, and are at their best in April, May, and June. Occasionally old-established plants develop a few flowers in September and October; but these flowers depend alike on the season and the strength of the plant itself. They may be readily increased by division of the root, in September or in March; the former is to be preferred, as then the plants can make fresh roots during the rest of autumn. If divided in March, a few bright dry days will injure the foliage, and the blossoms are certain to be puny and short-lived. Another way to propagate is by seeds, but Globe-flowers rarely vegetate in the year they are sown, coming up vigorously in the following spring, and, if carefully attended to, making fine flowering plants the second season; not, however, attaining their full development until the fourth year or even later. They grow freely in any soil, and are partial to a good stiff loam overlying a cool moist subsoil, but, if in a dry situation, should have plenty of manure partly to retain moisture, for the mountain meadows where they grow are almost invariably supplied with cool springs below, which enables them to withstand the burning heat of a day's uninterrupted sunshine.

There are numerous forms of Globe-flower in gardens, but the chief species are:—

T. acaulis.—A native of the higher Himalayan Mountains, and one of the most charming dwarf bog-plants, rarely exceeding 4 to 6 in. in height, its bright golden yellow flowers suffused with purple-brown on the outside, and usually as large as those of the smaller forms of T. europæus. It is hardy, has been many years in cultivation, and will be found most useful for the low or moist spots in the rock-garden, growing best in a fine peaty soil.

T. asiaticus, which also includes chinensis, Fortunei, and other forms, has rich orange-yellow flowers and bright orange-red anthers. It is widely distributed in China and Japan, is hardy even in the most exposed positions, and differs from the European Globe-flowers chiefly in its orange flowers of less globular form, small finely-divided foliage and taller growth. This and its varieties form a valuable group, having flowers of the most brilliant orange.

T. europæus (*the Mountain Globe-*

flower) grows about 15 in. high, has lemon-yellow flowers and is an extremely variable plant, so widely spread that almost every locality has its particular form. Raised from seed it also gives much variety, in habit, flowers, and foliage. T. europæus has innumerable names in gardens, such, for instance, as pumilus, giganteus, dauricus, pallidus, americanus, albus, aurantiacus, and napellifolius. A few of these are distinct varieties, dauricus being noted for its great development of bloom and large much-divided leaves on long olive-green footstalks, and napellifolius one of the most showy with large orange-yellow flowers.

Tropæolum (*Nasturtium*).—The Tropæolums are almost confined to the mountainous region extending from New Granada to Chili, seldom descending into the tropics, and, therefore, do not require great heat. This indeed is rather unfavourable to them, but, on the other hand, the first frost cuts most of them down to the ground. They love a half-shaded situation, and succeed in the open air in the summer. There are annual and perennial species, and the perennials may be divided into two groups, one with fibrous roots, and the other with tuberous roots. The rapid growth of the annuals T. majus and T. minus is proverbial, and their hardiness in a temperature above freezing-point, as well as their indifference to soil, should recommend them where anything unsightly is to be hidden. The following are the most fitted for the open air :—

T. aduncum (*Canary Creeper*).—Undoubtedly the favourite among Tropæolums ; and almost unrivalled for elegance among yellow flowers. The precise home of the Canary Creeper is uncertain, as the plant occurs all over the west of S. America, from Mexico to Chili ; but it has doubtless spread from the Andes. It thrives in sun or shade, but is best in a position with a north aspect, festooning trellises, arbours, shrubs, etc. It rarely fails to produce a profusion of pretty yellow blossoms even in town gardens. Seeds should be sown in April in the open ground in sandy loam. The Canary Creeper is also known as T. peregrinum and T. canariense.

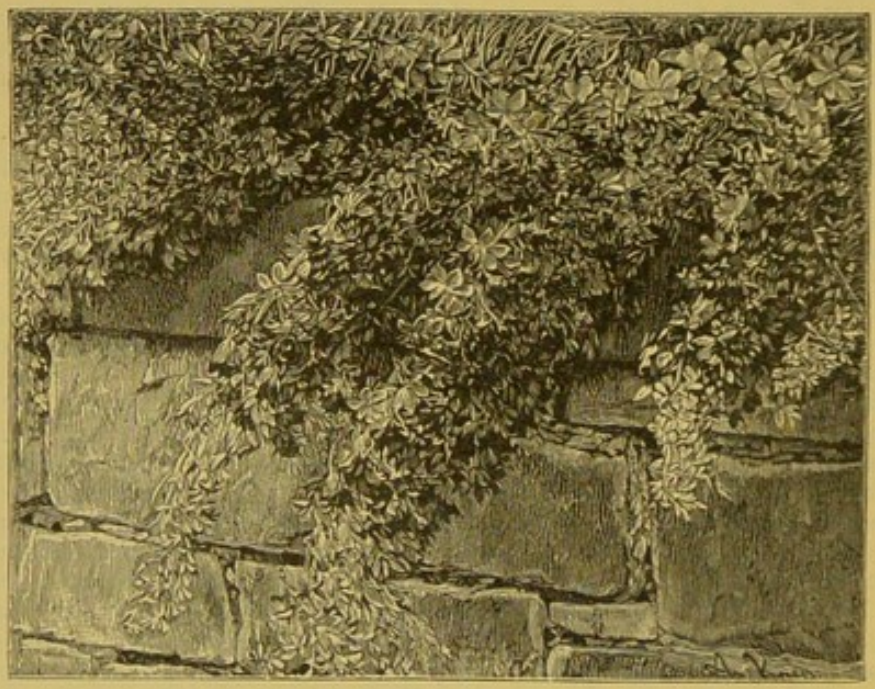
T. Lobbianum.—This beautiful annual is of vigorous climbing growth, and easily known from the Old T. majus by more or less hairy foliage. The varieties of it differ chiefly in the colour of the blossoms which are mostly yellow, scarlet, and crimson. The plant will clothe unsightly spots, or provide temporary shelter during summer. Seeds should be sown about the middle of April. All the after-culture needed is guiding the leading shoots in the direction in which they are to grow. T. Lobbianum has a pleasing effect when sown here and there amongst shrubs in the back of a border. As the plants grow, they attach themselves to the bushes, and climbing over or through them, throw out wreaths of lovely blossoms which retain their beauty until cut down by frost. Temporary floral fences may also be made with this plant, all that is required being a row of Pea stakes for the shoots. It will also assume a pyramidal form by being allowed to overrun the dead tops of young Fir trees. In short, there is no end to the uses to which the climbing Tropæolum may be put.

T. majus (*Large Indian Cress* or *Nasturtium*) differs from T. minus in being larger, and from T. Lobbianum in the absence of hairiness. There are many beautiful varieties of it, mostly hybrids. The climbing sorts are useful for the same purposes as T. Lobbianum, and require the same treatment, the most important varieties of T. majus being the dwarf or Tom Thumb strain, which includes many sorts. Few annuals come into flower more quickly than these dwarf Nasturtiums, and few bloom longer or more constantly. In poor soil the compactum forms bloom best. Their rich, bold colours are superb in masses, and they are never without flowers from first to last. The compactum forms can be had good from seed, and seedlings usually come true ; but actual truthfulness can only be ensured by cuttings, which strike freely anywhere under glass if put in about the middle of September. A few dozen plants in store pots will yield a large number of cuttings in spring, these making the best plants for summer. The other Tom Thumb kinds may be sown in the open ground in spring, but the compactum race grows so freely, if raised in this manner, that it is best to sow under glass and then plant out. If sown under glass the plants bloom earlier, and are more compact. All who love rich masses of colour will find these dwarf Nasturtiums worth cultivating. The varieties are so numerous and beautiful, that it is difficult to make a selection ; and the catalogues of the seedsman abound with names of favourite sorts.

T. pentaphyllum.—A rapid growing climber, 6 to 10 ft. high, with yellowish-red flowers. It will cover pillars, walls, chains, bowers, and revels in sunshine, succeeding well on the south wall of a

greenhouse or in any warm aspect. It does best in light and warm loams or calcareous soils. Division or seed. Chili.

T. polyphyllum.—This is one of the most valuable hardy plants ever introduced. While its foliage may form a dense carpet on a bank, its wreaths of flowers usually throw themselves into irregular windings and groupings. It is very distinct whether in or out of flower. Its leaves are glaucous, almost Rue-like in tone, and cut into fine divisions or leaflets. In a warm rock-garden the stems creep about, snake-like, through the neighbouring vegetation, sometimes extending to a length of 3 or 4 ft. The flowers are deep yellow, and as profuse as the leaves. The plant is tuberous-rooted, and quite hardy in dry situations in the rock-garden, also on sunny banks, but should not often be disturbed. It springs up early, and dies down at the end of summer. Chilian Cordilleras.



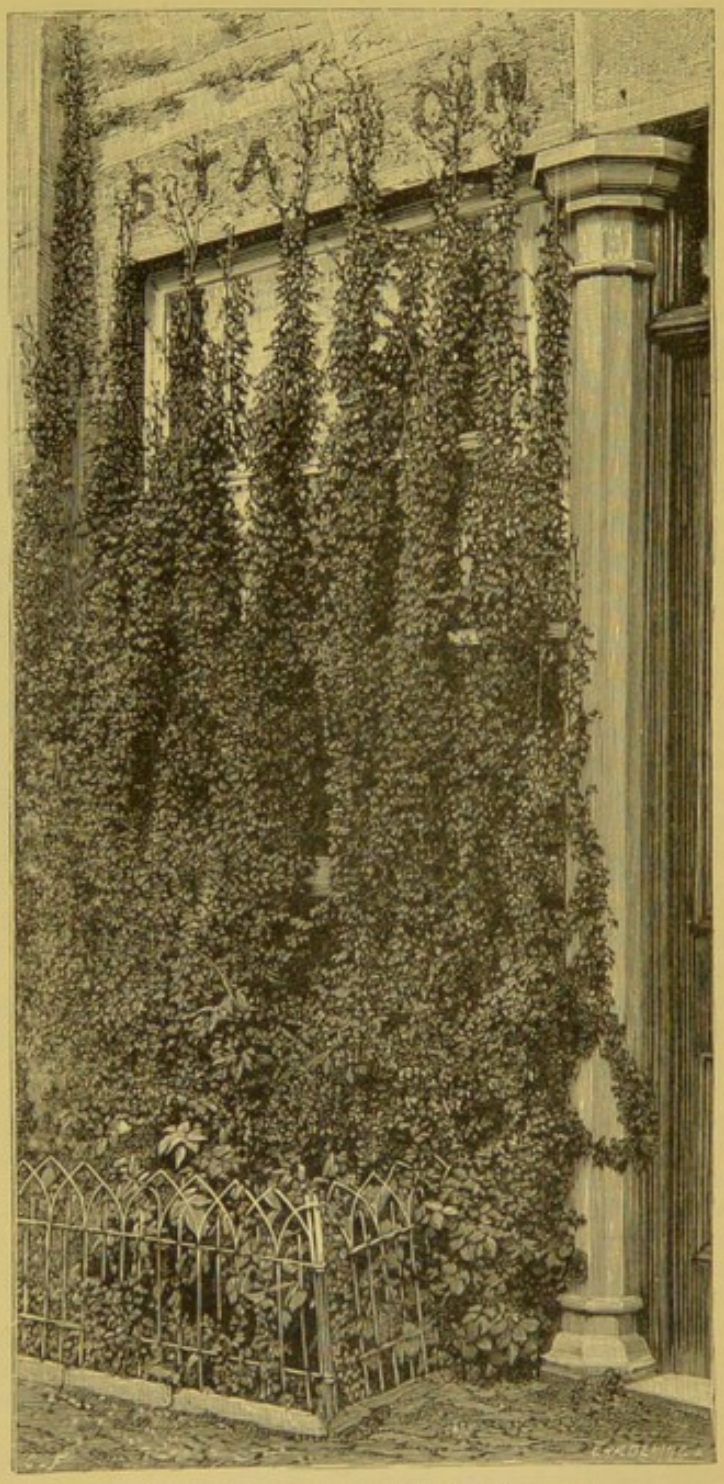
Tropæolum polyphyllum.

T. speciosum (*Flame Nasturtium*).—A splendid creeper, with long and elegant annual shoots, gracefully clothed with leaves from the axils of which spring such brilliant vermilion flowers, that a long shoot is startlingly effective, especially if seen wandering among Ivy leaves or in verdure of any kind. It has been long introduced from S. America, but, notwithstanding its graceful beauty and hardiness, is little known, especially in the south of England. It is impossible to find anything more worthy of a position where its shoots may fall over or climb up the face of some high rock or bank in the rock-garden; while it is suited for an open spot in the hardy fernery, or for any other position where its peculiar beauty may be well seen. It is very beautiful when clambering through evergreen shrubs, and enjoys a deep, rich, and rather moist soil, in cool places, or near the sea. No pains should be spared to establish it in a vigorous condition.

A correspondent writes to *The Garden:* This beautiful climber evidently dislikes hot sun and a dry atmosphere, and the great portion of the failures in growing it are due to a want of a cool and comparatively moist atmosphere. Several years ago a friend who knew nothing of the nature of this plant received some roots from the fine old specimens that grow on Lismore Castle. By my advice some of the roots were planted against a west wall, in front of which grow some good-sized Nut-bushes and a few tolerably large Apple trees, so that in the hot summer weather the sun could only reach the plants for a couple of hours daily. The remaining roots were planted against a north wall, where scarcely any sun came, and at the west end of the dwelling-house, where the full force of the afternoon sun was felt. In all these cases the soil was

alike. The plants behind the Nut-bushes and Apple trees grew remarkably well and bloomed as freely as could be expected in the first year of planting. On the north wall the growth was good, but the flowers were not so numerous ; but in the sunny position, although the roots made a growth of a foot or so, this growth gradually withered away as soon as the power of the sun made itself felt. There could be no better proof that the successful growth of the Flame-flower is simply a matter of position, and that, even in the southern counties, there are probably few gardens where the requirements of the plant may not be met.

When a position is selected, the soil should be made light, deep, and free by leaf-mould, peat, fibry loam, and sand, according to the nature of the ground. Mulch in summer with an inch or two of leaf-mould or manure to prevent excessive evaporation ; and whatever manure is used, it must be well decayed. The young plants should be planted in spring, the roots being inserted 6 or 8 in. in the soil and well watered. The Flame Nasturtium is best where the shoots may ramble among the spray of shrubs, Ferns, or trailers, but as it must be placed on a cleared spot, it is well to put a few branchlets over the roots for the young shoots to crawl over. It is much better to let them have their own wild way than to resort to any staking or support, except that of other subjects growing near. Division or seed. Seeds should be sown as soon as ripe, in a pan or box, in light loam, leaf-mould, and sand. Place in a pit or a frame, and keep the soil moist, but not wet, until the plants make their appearance in spring. The careful division of the old roots is, however, much the best way to propagate.



Tropæolum speciosum (Flame Nasturtium).

T. tuberosum.—A distinct and beautiful tuberous-rooted climber from Peru, with slender stems 2 to 4 ft. high, and in summer a profusion of showy scarlet and yellow flowers on slender stalks. It should be grown in open spots in the poorest of soils, with its branches supported or allowed to trail along the ground. As it is not hardy in all soils, lift the tubers in autumn, store in a dry place through the winter, and plant out in spring.

Truffle Sunrose (Helianthemum Tuberaria).

Trumpet-flower (Bignonia).

Trumpet-weed (Eupatorium purpureum).

Tuberose (Polianthes tuberosa).

Tulipa (*Tulip*).—Few flowers surpass the finest self Tulips for brilliant effect in the garden. The main point is to obtain and plant the best kinds in quantity, for exquisite as a single flower of the striped or flaked Tulip may be, it is only the self-coloured species and varieties that give the best display. Tulips have been so long grown and are so variable in character that considerable confusion exists among them. The popular garden forms may, broadly speaking, be separated into two classes, early and late flowering. T. suaveolens from Southern Russia is now regarded as the type of the numerous early-flowering varieties, of which Duc van Thol is a familiar example ; but these, though commonly planted, are of less value for the garden than the finer later forms which open in May. These have all come from T. Gesneriana, and whilst possessing infinite variety of colour, all have the same fine form and stately character of the parent. These late Tulips coming in succession to the Daffodils are precious garden flowers of easy culture, but not grown to anything like the extent that they should be. For about three centuries they have been grown by the florists who have raised numerous varieties, which form an enormous class divided into four sections—viz. breeders or self-flowers, bizarres, bybloemens, and roses. When a seedling flowers for the first time, it is usually a self, and in a few years (but occasionally not until thirty years) it will break into the flamed or feathered state. A feathered Tulip has the colour finely pencilled round the margin of the petals, the base of the flower being pure, and in a flamed flower stripes of colour descend from the top of the petals towards the base. In the bizarres the colours are red, brownish-red, chestnut, and maroon, the base being clear yellow ; in the bybloemens the colours are black and various shades of purple, the base being white ; and in the roses, rose of various shades and also deep red or scarlet, the base being white again.

We want however more Tulips of the same stately character as the florists' forms in pure self-colours. At present Bouton d'Or, rich yellow, Golden Beauty, self yellow, and Golden Eagle, yellow, edged with red, are good kinds ; but little attention appears to have been given to the production of large, late, self-coloured Tulips. The Parrot Tulips, with curiously cut petals, are self-coloured and valuable in the garden, as they make a bright display.

Tulips are easily grown, the rich soil of old gardens suiting them best. They may be planted from October to the middle of November, and the old Tulip growers used to put a little sand at the base of each bulb, but this is not essential. It is well to lift the bulbs every two or three years, or they become too crowded and give small flowers. When the old flower stems are turning yellow, the bulbs may be taken up, dried, and stored till planting time or replanted at once if convenient, as nothing is gained by keeping them out of the ground a long time. They can be increased by means of their little offsets. Some species rarely or never increase in this way, and recourse must be had to sowing seed, which if sown when ripe germinates the following spring, but the bulbs do not attain their full size for six or seven years. Beds of Tulips may be carpeted with small tufted or creeping plants, and there are many hardy flowering and pretty leaved plants suited for the purpose. The White Rock Cress (Arabis albida) and its variegated form, Aubretias Hepaticas, Primroses, Cowslips, Silene pendula, Pansies and Violets, Saxifrages, Iberis, corifolia, Ajuga reptans rubra, and many others make excellent carpets.

Among the wild Tulips there are beautiful kinds distinct from the garden varieties ; the larger kinds, noble flowers for free planting, and the smaller sorts gems of bright beauty for nooks in the rock-garden or in beds and borders of choice bulbs.

T. ACUMINATA is curious, but its petals too long and thin to create a display.

T. ALBERTI, from Turkestan, is rather low-growing, with undulated leaves of a glaucous green colour trailing on the ground ; the flowers red, somewhat resembling those of T. Greigi in shape, but the petals are marked at the base with a blotch of yellow margined with black.

T. AUSTRALIS is variable in colour, but always pleasing, allied to T. sylvestris, not, however, so robust in habit, whilst the flower is more funnel-shaped, flushed on the outer side with red. T. Celsiana of gardens is synonymous.

T. BATALINI is a small-growing species, seldom exceeding 4 in. in height, with leaves trailing on the ground, and rather large flowers (nearly 3 in. in length) of a pale yellow colour.

T. BIFLORA, from the Caucasus, a species known very long ago, is not very

striking with its small pale yellow flowers, which, however, are borne in a cluster of three or four at the top of the flower-stem instead of being solitary, as is the case with the flowers of every other species of Tulip.

T. CLUSIANA, the dainty Lady Tulip, came from the Mediterranean region as long ago as 1636, has small flowers, and the whole plant is not more than 1 ft. or so in height. The flowers are white, with a flush of rose on the outer surface, and purplish-black at the base. T. stellata is a near ally. It requires a deep vegetable soil and warm sheltered position.

T. DIDIERI, a May flowering kind from the Alps, grows tall, and has large bright red flowers with black blotches inside at the base. A variety of T. Didieri named Billetiana, equally handsome, has yellow flowers.

T. EICHLERI, a native of Georgia, is another superb and robust-growing species with large leaves and broad flowers of an intense scarlet-red colour, the petals roundish in shape, having at the base a black blotch margined with yellow.

T. ELEGANS, a graceful bright-coloured kind, opens late in April, the flowers bright red with yellow eye, the petals long, tapering to a point slightly reflexed.

T. FLAVA, a bright pleasing yellow, has a distinct bar of green down the centre of the petals, which also detracts from its beauty, but has one redeeming point—viz., its flowers continue quite a fortnight after those of all other Tulips are past.

T. FRAGRANS is a doubtful species, and given in some books as a synonym of T. sylvestris, our wild Tulip, from which it differs in its very sweet fragrance. In habit and size of flowers it is the same, the latter yellow, and very pretty. The

Old garden Tulips.

warmest spots must be selected for this kind, which sometimes fails during the winter unless under especially favourable conditions.

T. FULGENS, a form of T. Gesneriana, has that graceful aspect characteristic of the race, the flowers rich crimson, borne on tall stems.

T. GESNERIANA.—This the noblest and handsomest of all Tulips, the parent of the large late-flowering race, should be grown in every garden, and being obtainable in quantity, planted in bold groups or broad masses.

In Sussex I saw one or two very fine pictures made by planting the large crimson Tulipa Gesneriana in quantity. In one case a large oval Erica bed had been thickly planted with some few hundreds of this kind, and formed a solid shield-like mass of colour, more brilliant than a soldier's coat, and very picturesque it was as seen through the soft gray trunks of Scotch Fir trees.

In another instance the bulbs had been planted in a solid, but not quite regular line, on a dry, rich and warm hedge-bank of turfy loam, and just through and above the great crimson blooms the common Quince had thrust its soft leafy branches, thickly set with small white or delicate rose-flushed flowers.—F. W. B.

It has an immense bright red flower borne on a tall stem, sweetly scented, with a black zone inside at the base ; cut and taken whilst in the house, the flowers last admirably, and by artificial light at night, they open as widely as in the sun by day. In the open garden it lasts for nearly eight weeks. The finest form is that called spathulata. Eastern Europe and Asia.

T. GREIGI, which was introduced about the year 1871, has not yet received all the attention it deserves. It is low-growing, the flower-stem seldom exceeding 8 in. in height, the leaves marked with purplish blotches, and the large-sized flowers (from over 3 to nearly 4 in. in length, of a dazzling vermilion-red colour faintly marked at the base with a dark spot. It is hardy, comes into flower about the middle of April, and few things can equal the brilliant display produced by a bed of Tulipa Greigi in full bloom.

T. HAGERI, a native of Attica, has red flowers tinged with yellow on the outside and marked with small black blotches.

T. KAUFMANNIANA, from Turkestan, is undoubtedly one of the finest known. It grows from 8 to 12 in. high, has broad, flat leaves, flowers very large (nearly 4 in. in length), generally white, or pale creamy-yellow tinged with pink on the outside, the petals marked with a broad orange blotch. This fine species is hardy, and comes into flower in April.

T. KOLPAKOWSKYANA, also from Turkestan, is a brilliant species, does not exceed 1 ft. in height ; the flowers, which are large (3 in. or more in length), are of a lively red colour, sometimes yellow with very small blotches or spots at the base.

T. LANATA, a low-growing species with red flowers, is remarkable for the little woolly point which forms the apex of each of the petals.

T. LEICHTLINI, from Cashmere, grows 1½ ft. high with a flower always erect, the three outer petals bright purple, with a broad white margin, the inner ones yellowish-white, much shorter than the outer, and obtuse at the apex.

T. LINIFOLIA has glaucous leaves deeply undulated and flowers of a dazzling red colour, with small black spots at the base. T. Dammanniana, a native of Syria, much resembles, but is somewhat more sensitive to cold than T. linifolia.

T. MACROSPEILA, closely allied to Gesneriana, flowers late in May, has large bright crimson flowers, with a distinct black yellow-bordered blotch at the base of each petal, and stamens also black about one third the length of the flower.

T. MACULATA is a well-marked form with a hairy stem and bright red flowers, having a black blotch at the base, flowering towards the latter end of May.

T. MONTANA, distributed over a considerable area in Armenia, Persia, and Afghanistan, is a small-sized species seldom exceeding 6 in. in height, with flowers resembling those of T. Oculus-solis of the south of France, usually red, but sometimes yellow.

T. OCULUS-SOLIS is very distinct, its flowers brilliant scarlet, with an eye-like blotch at the base of each petal, of a shining black colour, bordered with yellow. T. præcox is apparently an early form of this, but more robust in growth.

T. ORPHANIDEA, from Greece, a fine species, is closely allied to T. sylvestris, and has large yellow flowers, tinged with red on the outside.

T. OSTROWSKYANA, one of the newer species from Turkestan is allied to T. Oculus-solis, and has bright red flowers with black blotches at the base.

T. PULCHELLA, from the alpine regions of the Taurus range, has flowers of a purplish-red colour, with black and yellow markings.

T. RETROFLEXA, probably a hybrid between acuminata and Gesneriana, is a truly beautiful kind, growing 2 ft. in height ;

with recurved flowers of a pure soft yellow, striking, distinct, and one of the easiest to grow.

T. SAXATILIS, a native of Crete, is a fine species, growing from 12 to 16 in. high, with flowers a peculiar mauve tint, passing to yellow at the base.

T. SYLVESTRIS, a British species everybody ought to grow, is pale yellow, with casual edgings of red, and frequently the

T. VIOLACEA, a recent introduction, is also one of the first kinds to flower, and is of a deep self-red colour and welcome for its earliness.

T. VITELLINA has large finely-shaped flowers of a lovely delicate yellow tint, and open with the earliest of the Gesneriana section. It is a splendid Tulip, its dwarf sturdy habit fitting it to withstand heavy rains and winds.

Late Dutch Tulips.

scapes carry two flowers, but the most valuable property of all is its aromatic perfume.

T. UNDULATIFOLIA, a native of Asia Minor, does not exceed 10 in. in height, has glaucous leaves deeply undulated at the margin, and flowers of a brilliant crimson-red, with black blotches margined with yellow at the base. It flowers in May and is closely allied to T. ciliatula.

Tulip Tree (Liriodendron tulipifera).

Tunica Saxifraga.—A small plant with narrow leaves, and a profusion of wiry stems that bear numerous elegant little rosy flowers. It forms tufts a few inches high, does best on poor soils, but thrives without particular care anywhere. It is a native of arid stony places on the Pyrenees and the Alps; but it often descends into the lowlands, where it is

found on the tops of walls. There can be no doubt that it will grow in such positions and on ruins in this country. It

Tunica Saxifraga.

is a neat plant for the rock-garden and for the margin of the mixed border. Seed.

Tussilago (*Coltsfoot*).—The variegated form of the common Coltsfoot (T. Farfara) is perfectly hardy, increases itself by running underground, like the Nettle or the Couch Grass, and, being of spreading habit, is not easily got rid of when established. It may be used with good effect in shady positions where other plants will not thrive, and does well as an edging to a clump of Ferns, or as a groundwork to plants with graceful foliage. T. fragrans (Winter Heliotrope) is desirable for the fragrance of its purplish flowers. It spreads almost as freely as the Coltsfoot, and is quite hardy. A waste corner cannot be better occupied than by this delicious flower. It grows well in the shade, but is best in rather sunny places. A good spot is the home wood or the wild shrubbery, but it rarely blooms freely if overhung by evergreen trees or shrubs. In mid-winter its flowers are useful for the house.

Twin-flower (Linnæa borealis).

Typha latifolia (*Reed Mace*).—A native aquatic plant, growing in tufts of two-rowed flat leaves, 18 to 24 in. long and 1 or 1½ in. wide. From the centre of each tuft springs a stem 6 or 7 ft. high, terminated in the flowering season by a close cylindrical spike 9 in. long, which is of dark olive, but changes to brownish-black as it ripens. T. latifolia is one of the most ornamental of our British water-plants, especially if grouped with such things as the Great Water Dock. T. angustifolia is like it except in the size of the leaves and spike, and of the two is perhaps the more graceful.

Uhdea bipinnatifida.—A sub-tropical plant of good habit, with handsome leaves of a slightly glaucous hue. U. bipinnatifida is suited for planting with fine-leaved plants, and is used in the London parks planted in large beds with the Polymnia, Ricinus, and Cannas. It has a good effect when isolated on turf. It is easily propagated by cuttings taken from old plants. These cuttings should be kept in a cool stove, greenhouse, or pit during winter, and in early spring placed in heat so that the plants may afford cuttings freely. Under the ordinary treatment of cuttings on hotbeds, or cuttings in a moist warm propagating house, it grows as freely as could be desired, and may be planted out at the end of May or the beginning of June. Pyramidata has been less cultivated in England than bipinnatifida. It is of a lighter and fresher green, and is inclined to grow larger, having more of the aspect of a Malva in foliage. It is useful for the same purposes as bipinnatifida, but is not so valuable.

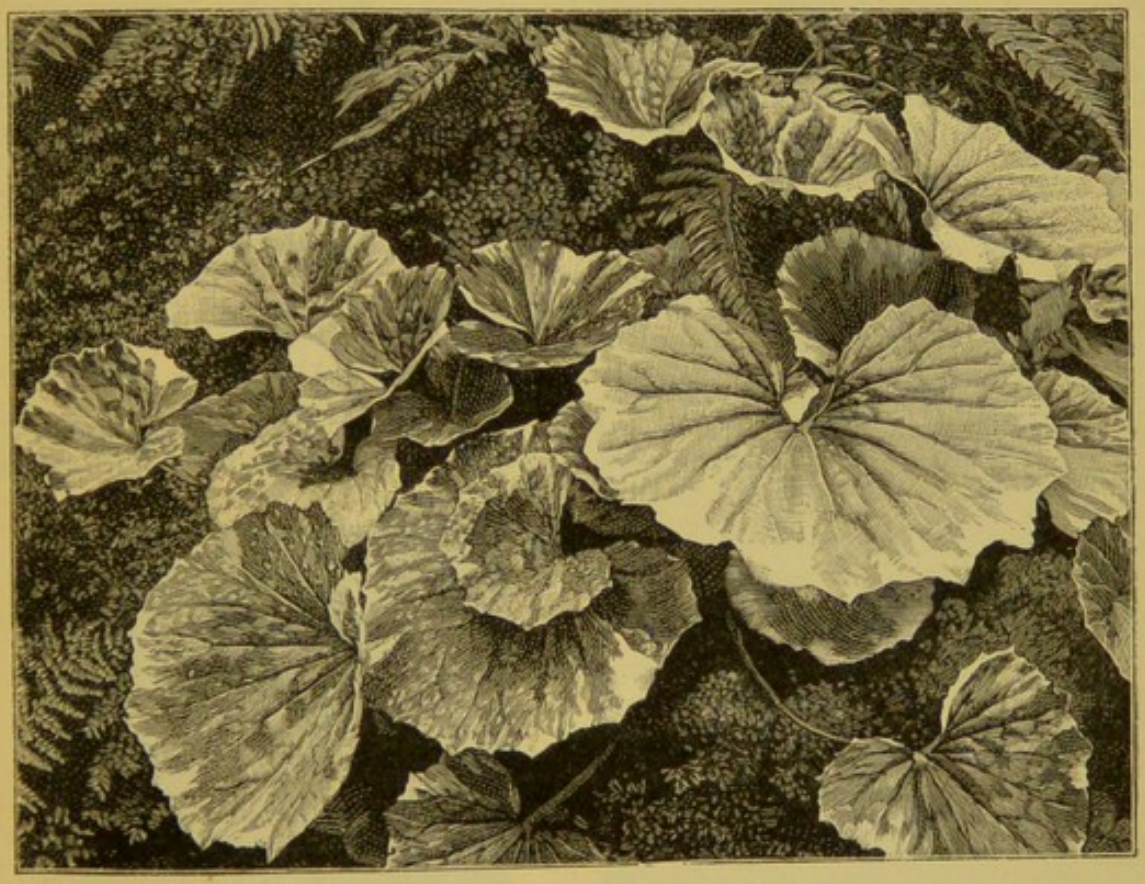
Ulex (*Furze*).—The native Furze is so beautiful and is so well suited for clothing dry banks and the like, that it should be included among flowering shrubs. Where the common Furze grows wild, the double variety is well worth planting, as it is more effective in bloom than the single kind, and lasts longer. There is also a dwarf sort named nanus, which deserves a place, as it flowers at midsummer when its commoner relative is past flowering. This is also a native, and in places where it flourishes it makes a dense prickly bush 2 ft. high. The Irish Furze (strictus) is an uncommon variety of europæus, sometimes met with in botanical collections. As all the kinds of Furze are difficult to transplant when large, the best plan is to get small plants of the double and of the dwarf kinds, and to sow seed of the common single kind. In most nurseries the stock of double Furze is in pots, so that at any time the plants may be had and planted. There are few finer sights than a bank of double Furze in full bloom, and it fortunately may be grown in every garden. Vigorous pruning when its bushes become straggling is all the

attention it needs. In severe winters all forms of these plants are liable to perish.

Umbilicus.—Succulent plants similar to Houseleeks. Spinosus is a very singular-looking plant, somewhat resembling a small Apicra or Haworthia. Its leaves form a rosette something like that of a Sempervivum, each leaf bearing a spine at the apex. The yellow flowers appear early in summer, and form a cylindrical spike on the top of the flower-stem. It is a good plant for dry sunny spots in the rock-garden, and is tolerably hardy, but slugs destroy it whenever they have a chance. Siberia, China, and Japan. Chrysanthus is about 4 in. high, and resembles a small Houseleek; it has short panicles of yellowish flowers. Suitable for the same positions as spinosus. Sempervivum strongly resembles some species of Sempervivum. It forms a rosette-like tuft of succulent leaves, and produces in the second year of its growth a large cluster of pink flowers on a stem about 6 in. in height. It is useful for carpet-bedding, and when used for this purpose the flower-stems must be pinched out. Kurdistan. Hardy in the rock-garden or in well-drained soils.

Uniola latifolia.— A handsome perennial Grass from N. America, 2 to 3 ft. high, with a large loose panicle, bearing large flattened spikelets. A clump, placed in rich garden soil, gathers strength from year to year, and when well established is a beautiful object. The loose drooping panicles have a graceful expression when living, and also in a winter bouquet.

Urospermum Dalechampi.—A rather handsome composite from S. Europe; of dwarf tufted growth, with large heads of lemon-yellow blossoms. It thrives in an open position in any light soil, and is hardy.



Tussilago Farfara variegata (Variegated Coltsfoot).

Uvularia. — Graceful dwarf plants, allied to Solomon's Seal, bearing yellow blossoms. There are four cultivated species, chinensis, grandiflora, puberula, and sessilifolia. Of these grandiflora is the finest; and the only one worth growing generally. It attains a height of 1 to 2 ft., and its numerous slender stems form a compact tuft. Its flowers are long and yellow, drooping gracefully, and pretty in early summer. It is a good peat border plant, thriving best in a moist peaty

soil. North America, except chinensis. Division.

Vaccinium (*Whortleberry*).—A few of the best Vacciniums may be planted for ornament in peat soil, though no Vaccinium stands in the first rank of flowering shrubs. One of the most desirable is V. corymbosum, the Blue Berry of the North American swamps. It is a rather large shrub, bearing a profusion of small pinkish flowers in dense clusters. The Pennsylvanian Blue Berry (V. pennsylvanicum) is, about October, usually a mass of scarlet and crimson. Though not remarkable for flower or berry, its decaying foliage assumes in autumn brilliant tints. Canadense, erythrinum, nitidum, and ovatum, with our native Vitis-idæa, Myrtillus, and uliginosum give interest to a plantation of peat-loving shrubs. V. Vitis-idæa (Red Whortleberry) is a dwarf British Evergreen, with Box-like foliage and clusters of small pale flowers, in summer, these being followed by berries about the size of Red Currants, and borne on wiry stems 3 to 9 in. high. The plant forms a neat little bush in the rock-garden or in beds of peat soil. The Marsh Cranberry (V. Oxycoccos) is a native of wet bogs in Britain, with slender creeping shoots and drooping dark rose flowers. It requires wetter soil than Vitis-idæa. The American Cranberry (V. macrocarpum), a much larger plant, deserves a place with bog shrubs. It fruits profusely in beds of peat soil. V. hirsutum is showy late in summer when it becomes a brick-red colour in the leaves, which is most persistent, lasting many weeks.

Valerian, Greek (Polemonium).

Valerian, Red (Cetranthus ruber).

Valeriana (*Valerian*).—The only Valerian worth cultivating in a general way is the golden-leaved variety of V. Phu—an effective plant in spring, when its foliage is young; it is of neat tufted habit, and grows freely in any soil. A few dwarf alpine Valerians are sometimes grown, but they are not attractive. The flowers, too, are unpleasantly scented. Some of the larger species are pretty in rough places.

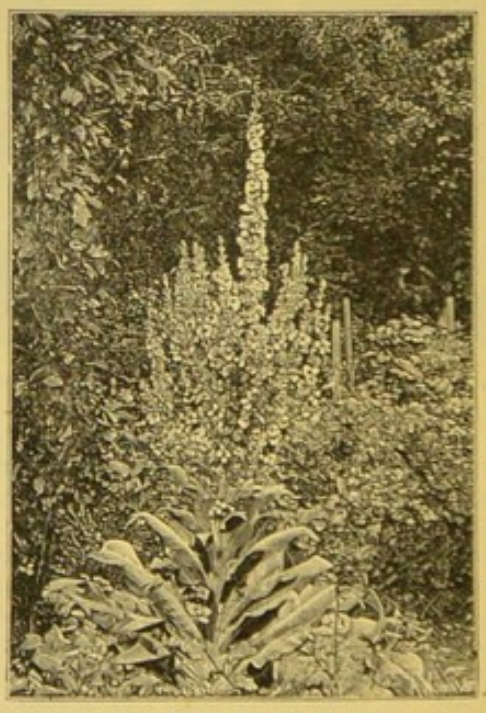
Vallota purpurea (*Scarborough Lily*).—This brilliant flower, so well known in gardens, is hardy in mild climates. It requires a warm situation in light soil, for instance, at the foot of a south wall, and in such positions it often thrives better than in pots under glass, but the bulbs must be protected during severe frosts. The outdoor culture of this plant deserves more attention than it has hitherto had. Some flowers sent us by Mr. Kingsmill, grown in his garden, were superb. Offsets detached from the parent bulbs. Cape of Good Hope.

Vancouveria hexandra.—A most graceful and distinct plant, 10 to 18 in. high, with light fern-like leaves and slender spikes of pale flowers. It is a charming plant for the fernery and rock-garden, best in peaty soil. It is absolutely distinct in aspect from any other plant, and grown in broad tufts and groups it is charming. Vancouver. Division.

Venidium calendulaceum.—A beautiful half-hardy Cape perennial of dwarf spreading growth, with in summer showy yellow Marigold-like blossoms. A good effect is gained by putting out several plants on a warm sunny border. Cuttings inserted in August root freely, and may be potted and kept in the greenhouse through the winter, when they must not have much water, or they will damp off. Plant them out in May. Seeds germinate freely in a hot-bed in early spring; the seedlings should be planted out in May, in friable soil, in a warm exposure.

Venus's Looking-glass (Specularia Speculum).

Veratrum album (*White Hellebore*).—A handsome erect pyramidal perennial,



Verbascum olympicum.

3½ to 5 ft. high, with large plaited leaves and yellowish-white flowers in dense spikes on the top of the stem, forming a large panicle. The leaves are handsome, and

most effective when the plant is in small groups, either in the rougher parts of the pleasure ground or by wood walks. It thrives in peaty soil, and is best multiplied by division, as seed is slow and capricious in germinating, sometimes not starting until the second year, and some years elapse before the seedlings are strong enough to flower. The root is exceedingly poisonous. V. nigrum differs from V. album in having more slender stems, narrower leaves, and blackish-purple flowers. V. viride resembles V. album, except that its flowers are green. A native of France.

Verbascum (*Mullein*). — These are stately plants, mostly only of biennial duration, but the best so handsome and long flowering as to be quite essential in the garden, where in many cases once introduced they take care of themselves and come year after year like the Foxglove. The finer kinds however merit good treatment and free planting in bold groups.

V. Chaixi, or V. vernale (*Nettled-leaved Mullein*), is a perennial species, attains 10 ft. in height, and when well grown forms a most imposing group. The bright green leaves come up early ; the flowers are large, yellow, with purple filaments, and last a long time. It is a native of Europe. V. Crassifolium, a charming species, with yellowish tomentose woolly leaves and robust spikes of large yellow flowers, is a native of Portugal. V. cupreum is nearly allied to V. phœniceum, hardy, a true perennial with copper-coloured flowers, quaint and interesting, flowering from May to August. V. nigrum, a native of Britain, is pretty, a true perennial like V. Chaixi in flower, but rarely more than 3 ft. high. A handsome form of it, now grown in gardens, with pure white flowers, is a good plant. South Europe.

V. olympicum is one of the grandest of the family, the flower-stems in strong specimens attaining 6 to 10 ft. in height, the flowers rich yellow, the leaves woolly forming bold rosettes. A biennial from the Orient. V. phœniceum (Purple-leaved Mullein), one of the best perennials for borders in small gardens, is very variable, there being white, violet, lilac, rose, and purple-flowered varieties. It is a native of South Europe, flowers from May to August, and when well grown is a striking plant.

V. phlomoides, also from South Europe, is the best of all Mulleins. It varies in height from 5 to 9 ft. according to the richness of soil, its flowers rich yellow opening successionally over a prolonged period, the display lasting in beauty nearly the whole season through. It will grow in almost any soil, and should be grouped boldly in picturesque ways among shrubs and the larger hardy plants.

V. pyramidatum (*Pyramidal Mullein*), from Siberia with candelabrum-like branches of bright yellow flowers, is a good plant, perennial on warm rich soils, and effective with its towering flowering-

Verbascum phlomoides.

stems and huge rosettes of crisped leaves.

Other Verbascums of interest are macrurum, longifolium, virgatum, Blattaria, niveum, Boerhavi, sinuatum, and orientale.

Verbena. — The beautiful garden varieties of the Verbena have long been favourite plants. Of late years, however, they have not been so popular, probably on account of the disease that attacks them. Verbenas bloom profusely out-of-doors till quite late in the autumn ; and if the lustre of the flowers happens to be-

come dimmed by a storm, a burst of sunshine quickly restores their beauty. From the Continent have come many fine varieties, and some excellent kinds are the produce of English-saved seed.

Verbascum phœniceum.

A pretty bed may be gained by mixing a few good varieties together. The Verbena should have a dry open border, and trench the ground, well dressing it with spent hot-bed manure and leaf-soil. Put out the plants about the end of May, and as they grow peg the shoots securely over the bed keeping them well thinned. The named sorts are propagated either in autumn or spring, but spring is the better season. The best way of ensuring good cuttings for spring propagation is to keep a few store plants in pots all the summer, and in the autumn cut them pretty close. Give them a shift then into larger pots of rich soil. Soon afterwards set these store plants in a cool house, or a pit from which frost is excluded. In this way cuttings will be obtained in spring, and these will be better than those taken from autumn-struck plants. Of late years Verbenas have been most successfully raised from seed like other half-hardy annuals. The seeds should be sown about the middle of January, in light soil in a warm frame or pit. The seedlings should be pricked out, when a few weeks old, in 2½-in. pots, and when the plants are fully established, they should be placed near the glass in a pit which is well ventilated, in order to induce stout hardy growth. About the end of March the seedlings should be potted singly in 2½-in. pots, and a month later they should be transferred to 3-in. pots. About the middle of May the plants should be planted out about 2 ft. apart in a sunny border, and in a short time they will be aglow with flower. Verbenas raised from seed are valuable for garden adornment in summer, and need not be cut for propagation, while they run little risk of disease or of insects. Keeping the plants free from insects and disease in winter is a troublesome matter; but with seedlings under fair conditions insects would be avoided and the seedlings would certainly have a vigour that would get over the so-called disease. In any case it is an interesting fact that Verbenas in any number and of the greatest vigour may be raised from seed in the same year that they adorn the garden, or, in other words, may be treated as annual plants. The wonderful diversity and brilliancy of colour and the profusion of the flowers combine to place Verbenas grown from seed among the most valuable plants we possess. Verbena seed is sold in colours—scarlet, blue, white, carnation, flaked, and other forms, and all kinds come remarkably true. The scarlet kind is a fine reproduction of the old scarlet Defiance—that prince of scarlet bedding

plants of some years since—and its growth and the quantity of its bloom is marvellous. The compact purplish-red kermesina is very pleasing and effective.

V. venosa is a perennial kind, 12 to 18 in. high, with heads of purple-violet blossoms. It is much hardier than ordinary Verbenas, not so liable to mildew, and looks all the brighter for drenching rains. When all the ordinary varieties of Verbena fail, V. venosa is sure to give satisfaction, and it lasts late in the season. It is easily kept through the winter, and if its fleshy roots are stored thickly in boxes, plants may be propagated in spring from the young shoots thrown out. Plant it rather thickly, and peg it down until the ground is covered; as it will then continue to flower until the last of the summer flowers is removed or destroyed by the frost. V. venosa is easily raised from seed which frequently takes long to germinate. It should be sown four months before the plants are wanted. When the roots have to be lifted in autumn, place them at once in the boxes where they are to start, keeping them in a cool place until the time for putting them in heat. In herbaceous borders they may be allowed to remain for years, but should be protected through the winter, lest injured by severe frost. Being of a branching habit, V. venosa is effective in large patches, bound round with some contrasting colour.

Verbena, Sand (Abronia).

Verbesina encelioides.—A half-hardy annual, 1 to 2 ft. high, with broad clusters of golden-yellow blossoms. California, Texas, and Mexico. V. gigantea from Jamaica is about 6½ ft. high. When young it is very pleasing, its round green stems being covered with large, winged, glistening, delicate green leaves. It is suitable for rich beds or groups, and should be planted out at the end of May or early in June. V. pinnatifida is a rough half-shrubby species, with larger leaves than those of V. gigantea. Both V. gigantea and V. pinnatifida require hothouse treatment in winter. Young plants got from cuttings in early spring are to be preferred for effect, and will be all the better for the most sheltered position, also the richest and lightest soil that can be given them.

Vernonia (*Ironweed*).—Coarse North American Composites, of which some half-a-dozen species are in cultivation. They bloom so late, that they are scarcely worth a place in the border; but V. prælta is a fine stately plant for the wild garden. Even if its flowers are injured or escape us, it may be grown in a copse, ditch, or open spot in a wood. All may be easily propagated by division.

Veronica (*Speedwell*).—The Speedwell family is very large, comprising dwarf and shrubby plants, some trailing or carpeting in their growth. They are mostly natives of New Zealand, the flowers being generally of a blue shade, but like many blue flowers, often imperfect in colour, varying from rose to a dull white. Plants of the same species vary much in form,

Shrubby Speedwell.

therefore it is not surprising to find that the naming of the different Speedwells is difficult and perplexing. The more shrubby kinds are important in mild districts, where they do not get much hurt in ordinary winter, and for seaside gardens are especially valuable, as they withstand wind and spray better than most shrubs. V. speciosa is the commonest in seaside places. It is of dense growth, with broad leaves and erect feathery spikes of deep purplish-blue flowers. The variety

imperialis has flowers of a rich red-purple, and in rubra they are inclined to red or to rose-pink. V. speciosa is but half-hardy, in cold localities requiring protection in winter, but is a good shrub for a light, airy, and cool greenhouse. V. salicifolia (the Willow-leaved Veronica), called also V. Lindleyana, is about 2 ft. high, with long narrow leaves, and spikes of white or purplish flowers. V. ligustrifolia has narrower leaves, and white flowers in feathery spikes. V. elliptica, known also as V. decussata, is something like V. speciosa, but smaller both in foliage and growth ; and V. Andersoni, said to be a hybrid, also resembles V. speciosa, having spikes of bluish-violet flowers. The variegated form of Andersoni is a half-hardy bedding plant, but though fine in itself used too much in parks and gardens. Many well variegated things are spoilt through being planted anywhere and everywhere. All the foregoing are half-hardy, but suitable only for walls and warm spots in the mildest districts and at the seaside. Of the larger kinds only one is thoroughly hardy in all parts of England, V. Traversi, a neat shrub, forming a round-headed bush about 4 ft. high. In late summer it is very beautiful when crowded with spikes of pale mauve flowers. Among dwarfer kinds, V. verbenacea, V. fruticulosa, V. alpina, V. aphylla, V. Nummularia, V. Guthrieana, V. austriaca, V. incisa, V. bellidioides, and V. Dabneyi, are of good dwarf habit, and suited for a rock-garden. Nor should the pink variety of V. officinalis be omitted, as it forms when established dense patches of pink-coloured blossoms, sometimes raised 3 in. above the ground. We cannot do more than mention a few of the more distinct forms. Propagation by division of the roots is usually so easy that little need be said about it. The herbaceous kinds root from every shoot, and the creeping kinds root as they creep. These mentioned are so hardy, that they may be divided or transplanted at all seasons. Such kinds as V. longifolia require frequent division to prevent too crowded growth. Most of the kinds ripen abundance of seed, and round them come up seedlings which vary in colour and form.

V. amethystina is 12 to 18 in. high, but rather too diffuse. It should be cut down in autumn, as otherwise it trails in an untidy way. In June it produces many terminal racemes of blossoms.

V. Chamædrys (*Germander Speedwell*) has been recommended for covering beds where late-flowering bulbs are grown. A curious variety, named pedunculata, is quite distinct and a neat plant.

V. gentianoides is one of the earliest of the Speedwells, and flowers in May. Three forms are common—the type with gray flowers, a variety with white flowers and bright glossy leaves like the Gentianella, and another with handsome variegated leaves. All are worth growing.

V. incana, also called V. candida, is a dwarf plant with silvery leaves, and dark rich purple flowers. It is used with good effect in bedding, its gray leaves being a contrast to most other foliage. It is easily propagated by division in autumn or in spring, and grows anywhere. V. neglecta is similar but inferior.

V. longifolia is the commonest garden species, generally sold as V. spicata, and in four varieties—blue, white, rose-coloured, and purple. The variegation of the leaves is uncertain and irregular, but the habit of the plant is good. The rich colour of the flower, the length of the flower-spike, and the sturdy and compact growth of the plant make it handsome for the border. It grows well in any ordinary soil.

V. pectinata, is a pretty trailing kind, with serrated downy leaves and blue or rose-coloured flowers. It is well suited for dry spots in the rock-garden, for the margins of borders, and for other places

V. prostrata.—A very dwarf species, making spreading tufts. There are varieties with rose-coloured and white flowers which appear in early summer, the type being deep blue. V. prostrata is hardy and pretty, blooming so freely that when in full perfection the leaves are often quite obscured by the flowers. France, Central and Southern Europe, on stony hills and dry grassy places. In cultivation it succeeds perfectly in sandy soil. It is useful for the rock-garden, its prostrate habit fitting it best for sloping positions or for fissures on vertical faces of rocks.

V. repens clothes the soil with a soft carpet of bright green foliage, covered, in spring, with pale bluish flowers. It thrives well on moderately dry soil, but delights in moist corners of the rock-garden, and is an admirable little rock-plant.

V. rupestris trails neatly and closely, and flowers abundantly in June. To those who have seen large masses of it in rock-gardens it will want no further recommendation. There are several alpine species nearly allied to it.

V. satureiæfolia is one of the best of

the Speedwells, with flowers about the size of those of V. saxatilis, of the same intense blue, and in abundant upright racemes. It is somewhat rare, but when once seen in perfection not to be forgotten.

V. saxatilis.—A native of alpine rocks in various parts of Europe, and also of a few places in the highlands of Scotland. It forms neat tufts 6 or 8 in. high, the flowers being little more than ½ in. across. They are of a pretty blue, striped with violet, and have a narrow but decided ring of crimson near the bottom of the cup, the base of which is pure white. V. saxatilis is also an excellent rock-garden plant.

V. spicata is a dwarf native plant, not more than 5 or 6 in. high, useful for bare corners of rock-gardens, but seldom flowering before the end of July. V. corymbosa is a name given to varieties of two or three species, but the best seems to be a form of V. spicata. This is one of the best plants for rock-gardens, being profuse and continuous in bloom. V. hybrida is generally classed as a variety of it, but seems quite distinct, since it is far more robust, and its flowers vary in colour from dark purple to lavender and light rose. It grows wild in profusion on mountain limestone hills near Llandudno and in other parts of the north-western counties. V. spicata and V. hybrida increase in size under cultivation, especially when raised from seed.

V. subsessilis is botanically considered a variety of V. longifolia, with stalkless leaves, but for garden purposes is very distinct. It is without doubt the handsomest of the hardy Veronicas, and comes from Japan, but in constitution is better than most Japanese plants, as these require a warm spring and a hot summer, whilst V. subsessilis flourishes in spite of spring frosts and cold summers. Its large dense spikes of deep purple-blue flowers are effective, and it should always have a position among the choicest hardy flowers. It succeeds best in a good deep loamy soil and open situation. Division or seed.

V. taurica.—A dwarf, wiry, and almost woody species from Tauria, forming neat dark green tufts, under 3 in. high; its leaves are crowded, and the upper ones distinctly toothed; while its fine Gentian-blue flowers are borne abundantly. It is, perhaps, the neatest of all Veronicas for forming spreading tufts in level spots of the rock-garden, or drooping from chinks. It is also useful for the margin of the mixed border, being thoroughly hardy, in ordinary well-drained soil, and flowering in early summer, whilst it is suitable for association with the dwarfest alpine plants and mountain shrubs. Division or cuttings.

Veronica pinguifolia.

V. Teucrium.—A Continental plant, the stems of which form spreading masses, from 8 to 12 in. high, covered in early summer with flowers of an intense blue,

at first in dense racemes, but these afterwards become much longer. It is excellent for the rock-garden, or for borders, and grows freely in ordinary garden soil. Seeds or division.

V. virginica and other tall species are 3 to 4 ft. high, and flower in July, but are deficient in colour.

Vervain, Creeping (Zapania).

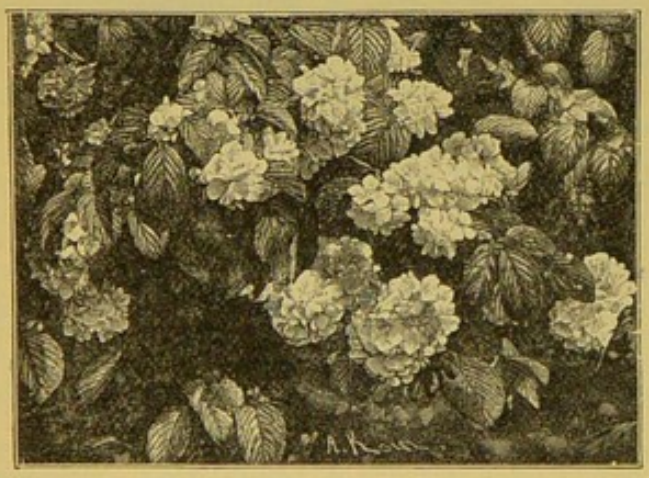
Vesicaria.—Of the many species in this family V. græca is the handsomest, and bears a strong resemblance to the better-known V. utriculata, long cultivated in gardens. The flowers open in succession for several inches on each stem. It is a hardy evergreen perennial. Rocky districts in Dalmatia and other places in South Europe. V. græca may be propagated, like V. utriculata, by cuttings placed in soil under a hand-glass, but the best way is by seeds, which, in favourable seasons, are produced plentifully. Both V. græca and V. utriculata flourish in dryish soil, on dry sunny parts of the rock-garden.

Vetch (Vicia).

Vetch, Bitter (Orobus).

Vetch Milk (Astragalus).

Viburnum (*Guelder Rose*, or *Snowball Bush*).—The most familiar Viburnum, V. Opulus sterilis, is a popular, attractive shrub, which makes fine specimens covered in early summer with great round clusters of white flowers. It is a garden form of V. Opulus, a native of Britain, abundant in some parts and worthy of more attention as a garden shrub for its varied beauty. Its flowers are in flat clusters, only the outer ones sterile, the others succeeded by berries of beautiful effect first yellow and then red. For the waterside or any wet place it is one of the best shrubs. V. plicatum, a beautiful hardy kind from Japan and China, also has a sterile form. The type itself, a spreading shrub of great beauty, exceeds our native species in profusion of bloom, its flat flower-clusters wreathing the shoots their full length, its leaves large, wrinkled, and deep green. The sterile form of V. plicatum, at present best known in gardens, is equally free blooming, the flowers all in close clusters like those of the garden Snowball Tree. V. macrocephalum, another Chinese species, is less hardy, but its flower-clusters are enormous. In some places it thrives against a wall, but is rarely seen in a flourishing condition. The N. American species V. prunifolium and V. Lentago are handsome when in flower, but not so important as the others. V. prunifolium has foliage like some of the Plums, and bears in May abundance of bloom. V. Lentago resembles our native Wayfaring Tree (V. Lantana). Both V. prunifolium and V. Lentago have dense clusters of white blossoms, succeeded by small black fruits. V. nudum and V. dentatum are N. American shrubs, interesting for a botanical collection, and so is V. pubescens, a relative of V. dentatum, which has large heads of white flowers. The favourite Laurustinus (V. Tinus), is known to every one. It has several varieties, more or less distinct. The finest is lucidum, so called from its shining leaves, which are larger than those of the common kind. The flower-clusters are larger and its blossoms whiter than those of the common form. It is therefore more suitable for forcing. The round-leaved variety (rotundifolium) is beautiful and distinct. It has a variegated form, but like the variegated form of the common Laurustinus, is not remarkable. The varieties variabile and Frœbeli are more or less distinct from the type, and worth growing, in fact, every form of so beautiful an Evergreen as the Laurustinus is valuable. It need hardly be said that it is not perfectly hardy in every part of these islands. In mild localities and in the south the shrub rises to tree-like dimensions, and has few rivals among Evergreens. It flowers and lives best on soils with a sandy warm subsoil.



Viburnum plicatum.

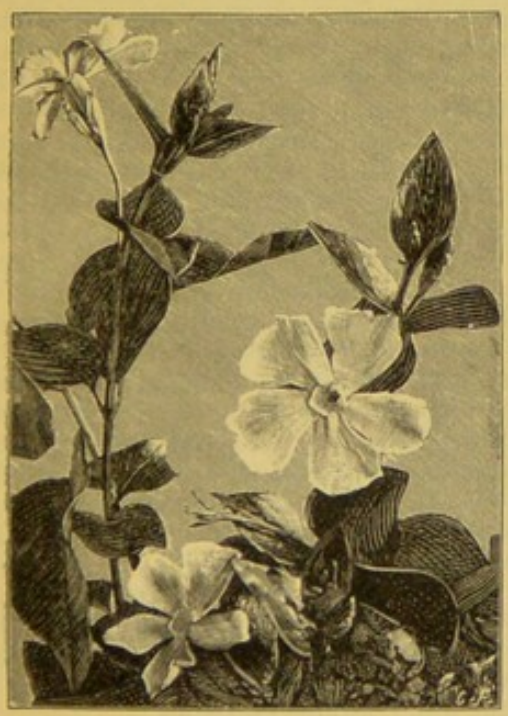
Vicia (*Vetch*).—Perennial and annual plants, several of which are natives. V. Cracca, V. Orobus, V. sylvatica, V. Sepium, and V. argentea are the most desirable, but are not of great importance. V. argentea has elegant silvery leaves, but is

rare in cultivation. Vicias grow freely in almost any soil, and are raised from seeds.

Vieusseuxia glaucopis (*Blue-eyed Peacock Iris*).—A beautiful bulbous plant 9 to 15 in. high, with flowers in early summer, about 2 in. across, pure white, with a beautiful porcelain-blue stain nearly ½ in. broad at the base of each of the three larger divisions. This stain is deep violet at the base, and margined with dark purple teeth. The plant should be grown on warm sheltered borders in sandy peat or sandy loam and leaf-mould. Increased by separation of the bulbs in autumn. Cape of Good Hope. = Iris Pavonia.

Villarsia nymphæoides (*Common Villarsia*).—An interesting British aquatic, with leaves like those of a Water-Lily, but smaller, and floating. Its yellow flowers are borne in summer singly on stalks as long as those of the leaf. Division.

Vinca (*Periwinkle*).—Perennial trailers, hardy and vigorous in almost any soil. The well-known V.major (common Periwinkle) is useful for banks on masses of rootwork, and also for rocky places or



Vinca major.

by wood walks and there are several variegated varieties, including a golden-leaved kind. The lesser Periwinkle (V. minor) is much smaller than V. major, and useful for the same positions, has several varieties well worthy of cultivation ; a white-flowered one (V. m. alba), a reddish one, and one or two double ones, and there are also several variegated forms. V. herbacea is much less frequently seen than our common Periwinkles, but is more worthy of culture on rocks, as it is not rampant in habit. It is a native of Hungary, flowers in spring and early summer, and its stems die down every year. V. auctiloba is a distinct and elegant Periwinkle, and flowers late in autumn and in winter, bearing delicate mauve blossoms. It is suitable for sunny banks and slopes and for warm borders.

Viola (*Violet*).—A beautiful and well-known family, many kinds of which are alpine flowers. Some Violets are among the most beautiful ornaments which bedeck the alpine turf ; and even the common Violet itself may almost be claimed as an alpine plant, for it wanders along hedgerow and hillside, along copses and thin woods, all the way to Sweden. From all kinds of Violets the world of wild flowers derives a precious treasure of beauty and delicate fragrance ; and no family has given our gardens anything more precious than the numerous races of Pansies and the various kinds of large, showy, sweet-scented Violets. Far above the faint blue carpets of the various scentless wild Violets in our woods and heaths, our thickets and bogs, and above the miniature Pansies that find their home among our lowland field-weeds ; far above the larger Pansy-like Violas (varieties of V. lutea) which flower so richly in the mountain pastures of northern England and even on the tops of stone walls ; above the large, free-growing Violets of the American heaths and thickets, we have true alpine Violets, such as the yellow two-flowered Violet (V. biflora), and large blue Violets such as the V. calcarata and V. cornuta. It would be difficult to exaggerate the beauty of these alpine Violets. They grow in a turf of high alpine plants not more than an inch or so in height. The leaves do not show above this densely-matted turf, but the flowers start up, waving everywhere thousands of little banners. Violets are of the easiest culture ; even the highest alpine kinds thrive with little care, and V. cornuta and V. calcarata of the Alps and Pyrenees thrive even more freely than in their native uplands, the foliage and the stems being much stronger. Some of the many stronger varieties of the Sweet Violet might be naturalised with advantage. Slow-growing compact kinds, like the American Bird's-foot Violet, enjoy, from their stature and their comparative slowness of growth, a position in the rock-

garden or in the choice border, and in such a position they are of easy culture in moist sandy soil. Violets of all kinds are easily increased by cuttings from stout short runners. All runners that are wiry and hard should be rejected, and none should be taken from plants that have grown in pots or under glass. The cuttings should be taken off the first week in April if they are to bloom next year. They should be put under hand-lights on a shady border, and kept close until they begin to grow, when the lights may be tilted a little, and the space gradually increased until at last the lights may be wholly dispensed with. By September the plants will be ready for transplanting, and may be placed in beds 4 ft. wide, three rows 1 ft. apart being in one bed. This space will afford room to hoe between the rows while they are growing. They will soon spread and fill the beds, but they must not remain more than two, or, at the most, three years in the same place, or the flowers will become small and short stemmed. If they are more than two years in the same place, they must receive liberal top-dressings of rotten manure, or copious applications of manure water. Another mode of propagation, which is perhaps attended with less trouble, is to get a few large plants as soon as they have done blooming, and to tear them into as many pieces as possible, each piece having a little bit of root attached to it. Little pieces without roots may be placed under hand-lights and treated like cuttings.

The following are among the most desirable for general cultivation :—

V. biflora (*Two-flowered Yellow Violet*). — This bright little Violet is a lovely ornament on the Alps, and in many parts it densely clothes every chink between the moist rocks. It even crawls under great boulders and rocks, and lines shallow caves with its fresh verdure and its little golden stars. It is readily known by its kidney-shaped or heart-shaped leaves, and its very small bright-yellow flowers, the lips of which are streaked with black. These flowers are borne in pairs. V. biflora is especially useful in large rock-gardens where rude flights of stone are constructed to give winding pathways over the mass. It will run through every chink between the steps, and tend to make the stair replete with life and interest. If obtained in a small or weak condition, it may seem difficult to establish, but this is by no means the case ; for, once fairly started in a moist and half-shady spot, it soon begins to creep about rapidly, and may then be readily increased by division. When well established in a suitable rock-garden, it is able to take care of itself. Europe, Asia, and America.

V. calcarata (*Spurred Violet*).—This plant resembles the well-known V. cornuta in flower and spur, but, instead of forming leafy tufts, it increases itself by runners under the earth, somewhat after the manner of Campanula pulla. V. calcarata is a pretty plant on the Alps, usually found in high situations, amidst dwarf flowers, and is so plentiful that its large purple flowers sometimes form sheets of colour, the leaves being scarcely seen amidst the other dwarf plants that form the turf. V. calcarata is as charmin the rock-garden as in its native wilds. Its yellow variety (flava) is the same as V. Zoysi.

V. cornuta (*Horned Pansy*). — This Pyrenean and Alpine Violet has been cultivated for ages in rock-gardens and borders. Its sweet-scented flowers of pale blue or mauve are abundantly produced, and make it valuable in lines and mixtures, but its use as a bedding plant has been in great part superseded by the many charming tufted Pansies raised during recent years. Generally speaking, it does poorly on dry soils and in warm districts, but it succeeds remarkably well on wet places. Division, cuttings, or seeds.

V. cucullata (*Large American Violet*) bears some resemblance to the common Violet, though without its delicious scent. It flowers, however, much more freely than the sweet-scented Violet, and its foliage is bold and sometimes variegated. It came originally from N. America. It belongs to a section which contains some fine varieties, such as V. primulæfolia, semperflorens, blanda, obliqua, sagittata, palmata, delphinifolia, canadensis, pubescens, striata, and others. All these varieties are worthy of culture in a full collection.

V. gracilis is a remarkably pretty dwarf species, never failing to produce in spring an abundance of deep purple blossoms in dense tufts. It is hardy in light soil. Mount Olympus.

V. lutea (*Mountain Violet*). — The yellow form of this Violet is very neat and compact, 2 to 6 in. high. From April onwards it flowers abundantly, and its flowers are of a peculiarly rich and handsome yellow, the three lower petals being striped with thin lines of rich black.

V. Munbyana.—One of the prettiest of Violets, abundant in flower, free and robust in growth, and quite hardy.

Generally it begins to bloom about the end of February, but it attains its greatest beauty in May. The deep purple-blue flowers resemble those of V. cornuta; and there is also a yellow variety. Algeria.

V. odorata (*Sweet Violet*).—This well-known plant is in a wild state widely spread over Europe and Russian Asia, and is common in various parts of Britain, while it is grown in almost every garden, and enormous quantities of it are sold in London, Paris, and many other cities. Its delicious odour distinguishes it from other Violets. It may be grown where almost everything else but weeds would fail, forming carpets for open groves or the fringes of woods, of hedges, the open parts of copses, or for banks. Instead of being confined to a bed for cutting from, it should fringe shrubberies, rock-gardens, or ferneries. In such positions it requires no care, and rewards the planter by filling the cold March air with unrivalled sweetness. It will grow in almost any soil, but best on free sandy loam. It is well to naturalise the plant on sunny banks, fringes of woods, and on the warmer sides of bushy places to encourage a very early bloom.

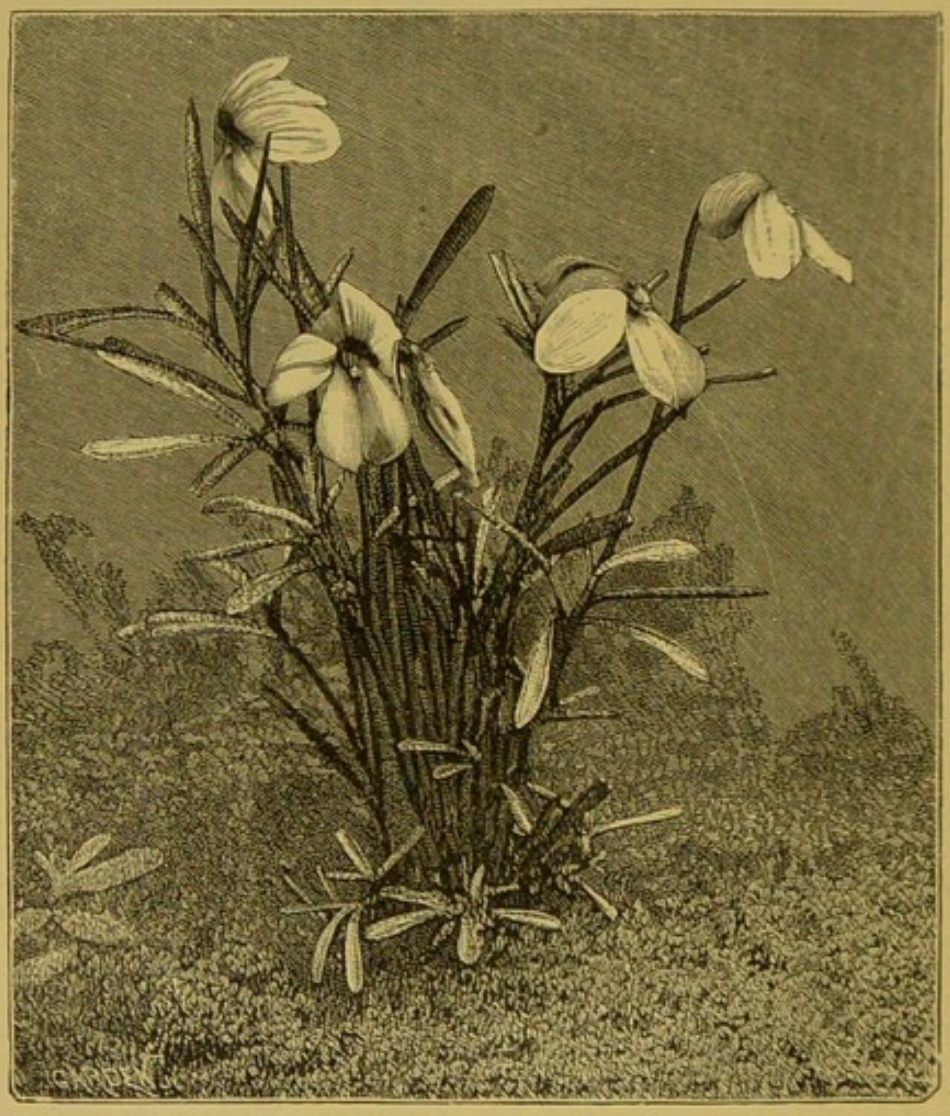
The cultivation of the Sweet Violet is of great importance, not only for private gardens, but also to supply the vast demand for it in large cities. About Paris, the cultivation of Sweet Violets for the markets is largely carried on, and in some places three or four acres may be seen covered with these flowers. The ground is well exposed to the mid-day sun, and is rich, free, and warm. The plantations are made in spring, those required for the winter markets being grown in frames. Sweet Violets may be propagated to any extent by division, but strong, healthy, free-flowering plants are easily raised from seed, which should be sown as soon as possible after it is gathered. In cold dry parts, where Violets do not succeed well, and also where they are required in mid-winter, it is better to raise a number of healthy plants every year, and to put them in a light frame in a sunny position in autumn. With very little trouble we may have Violets long before they bloom in the open ground. Plants which are obtained by setting out runners in spring in rich soil, and receive in dry weather all the water they need, may be set in a cold frame early in autumn. Allow them to grow until the approach of winter, when fill the frames with leaves, put on the sashes with a shutter over these. The plants must have abundance of air on mild days, and water as they need it. A frame of three sashes, separated into three parts by boards, may be uncovered, one sash at a time, at intervals of two or three weeks, and thus a succession of flowers will be kept up. Violets do not like forcing, neither do they need it if their crowns are ripened early, and they are tempted by the protection of glass to open out genially and exhibit their fragrant blossoms.

In the open border Sweet Violets thrive on a moderately heavy rich soil; if the soil happens to be light and gravelly, some stiff material and plenty of manure must be added to it; and if poor and hard clay, it will be benefited by the sharp gritty matter and abundance of rotten manure. Violets require shelter, but not that of a wall; and in town gardens or gardens surrounded by high walls they are seldom healthy. Their natural shelter is a hedgerow, in which they get currents of pure air, which are essential for keeping down red-spider and for maintaining the foliage in a healthy condition. Violets grow well on the north or north-east side of a Hornbeam hedge, if somewhat naked at bottom, so as to allow the sun to shine on their leaves early in spring, and afford a partial shade in summer. When the soil is deep and rich, however, Violets will bear a considerable amount of sunshine. It is well to have a few plants in different positions, so as to ensure a succession of bloom. On south borders Violets dwindle and die; but a few roots on sunny banks will give some early pickings.

The insects that trouble the Violet most are green-fly and red-spider. The first is generally the result of a close unhealthy atmosphere, and is easily got rid of by gentle smokings. Red-spider is helped by strong sun and by dryness at the roots; hand-dusting with sulphur is the best remedy, but it is easy to prevent its occurrence by syringing the plants and their surroundings.

The varieties of the Violet are very numerous. We have the single white and the single rose, the double white and the double rose, the small Russian, the Czar, (a very large and sweet variety), the Queen of Violets (with flowers almost as large as those of the double white cherry), and the perpetual blooming Violet—well known in France as La Violette des Quatre Saisons. It differs slightly from the Sweet Violet, but is valuable for flowering long and continuously in autumn, winter, and spring. It is the variety used by the cultivators round Paris. The double white, or, as it becomes in the open air, the rosy-

white Belle de Chatenay has a robust habit. Though not so pure as the old double white kind, it blooms more freely, and is not so loose in its growth. The Neapolitan kind, V. o. pallida plena, will doubtless ever be a favourite, in spite of other and newer kinds, but it needs a frame in severe weather. Marie Louise is a fine kind, and is a great advance upon the Neapolitan kind; its flowers are with handsome flowers 1 in. across, pale or deep lilac, purple or blue, the two upper petals being sometimes velvety and deep violet like the petals of a Pansy. The leaves are deeply divided, like a bird's foot. The variety bicolor is much prettier than the type; its flowers larger, and the petals are arranged flat like those of a Pansy, the two upper ones rich velvety purple, and the three lower delicate blush.



Viola pedata (Bird's-foot Violet).

larger, rather deeper, and more freely produced. The old double blue kind has very full and neat flowers, but its stems are short. It is, however, very beautiful when grown in frames, or in beds in the open, where the thick growth keeps the flowers well up from the soil. Blandyana, another double, is a rather free bloomer with dark flowers.

V. pedata (*Bird's-foot Violet*).—The most beautiful of the American Violets, V. pedata is free in growth in a light rich soil in partial shade, but the variety bicolor succeeds only in certain localities, and even then needs special attention. The variety bicolor is rare even in its native soil, but V. pedata is plentiful in sandy or gravelly soil in the Northern States of America. Flowers in summer. Seeds or division. It is best adapted for the choice rock-garden, but may also be grown in borders where the soil is peaty,

sandy, and moist. V. pedata does freely in pots in places where alpine plants are grown in cold frames, and it should be so grown.

V. reniformis (*New Holland Violet*).—This mantles the ground with a mass of small leaves, has numerous slender creeping stems, and bears throughout the summer blue and white flowers of exquisite beauty, which are only a couple of inches from the ground. It is peculiarly fitted for planting out over a bed of peat or very light earth, where handsome plants are put out in a scattered manner during the summer, and the little herb is allowed to crawl rapidly over the surface. Being very small and delicate, as well as pretty, it should not be used with coarse subjects. It must be treated like a tender

Viola reniformis (New Holland Violet).

bedding plant—taken up or propagated in autumn, and put out in May or June. Australia. Division. V. r. grandiflora is a larger plant in all its parts. *Syn.*, Erpetion.

V. rothomagensis (*Rouen Violet*).—A handsome plant belonging to the tricolor group, dwarf, and with low creeping stems which bear in spring numerous purple and white blossoms. It is a free grower, but, being a native of Sicily, is not so hardy as some Violets, and should be grown in a light soil and a warm border.

V. tricolor (*Heart's-ease*).—The Pansy is usually classed under the head of V. tricolor, though it is probably descended from V. altaica—a species to which a good many Pansies seem nearly allied. But the Pansies are so numerous, so varied, and, withal, so distinct from any wild species of Violet, that little can be traced of their origin. Of one thing we may be certain : the parents of this precious race were true mountaineers. Only alpines could give birth to such rich and brilliant colour and such noble amplitude of bloom. Its season never ends ; it often blooms cheerfully enough at Christmas, and is sheeted with gold and purple when the Hawthorn is white with blossoms. Such a flower must not be ignored on our rock-gardens, even though it thrives in almost any soil and position. It may be treated as an annual, a biennial, or a perennial, according to climate, position, and soil. One of the commonest of weeds in Scotland, the wild V. lutea may be grown in the south of England, if sheltered from the midday sun. It thrives capitally with a north or, better still, a north-east exposure, if sheltered by tall trees or buildings, so that it may get the cool sun of the early morning only.

For borders one way is to grow the plants from seed. The Belgian or fancy Pansies are remarkable for the strange and almost gorgeous variety of their colours and the unusual size of many of the blooms. They are more hardy as seedlings, and more robust as plants, than the other kinds, and yield a greater variety of colours. The seed should be sown in July or August, in pans of light leafy soil, such as sand, leaf-mould, and mould from rotted turf, and placed in a cool shady place. When mixed seeds are sown, sow each separately at a distance of 1½ in. or so. As soon as the first seeds have germinated and the seedlings have three pairs of leaves, they should be removed without disturbing the weaker and more backward ones, for amongst the seedlings which are the last to appear will be found the greatest proportion of finely-coloured flowers. It is important to sow the seed when fresh.

It is rarely convenient to plant the seedlings at once where they are to bloom, therefore they should be placed in pots plunged in a cool place in the open ground, and shifted to their final place in time to get well-established before winter sets in. They stand the winter well, and the only danger lies in heavy rain or sleet succeeded by sharp frosts. A pot inverted over each plant to protect the soil from too much wet would be sufficient protection. It is not advisable to move Pansies in spring unless they have been kept in pots during winter, in which case they may be planted, though with as little root-disturbance as possible.

Pansies are divided into two sections —the show or English kinds, and the fancy or Belgian kinds. The first comprises five divisions: white and yellow ground belted Pansies, white, yellow, and purple Pansies. The selfs must be clear decided colours, and should have a black well-defined blotch under the eye. The belted kinds should have a white or yellow ground, together with centre blotch, and a broad margin of bronzy-red, chestnut, purple, or crimson, or other hue; the colours must be dense, and the margins distinctly defined. The flowers of the show section should be rounded in form, stout of petal, and of good size, but size is of less importance than the quality of the markings. A fancy Pansy should have a large deep-coloured blotch, covering nearly the whole of the bottom petal and portions of the side petals. The rest of the flower may be white, yellow, buff, red, maroon, purple, crimson, and various other shades, but not so dense as the centre blotch. Some fancy Pansies are flaked or parti-coloured, but all good ones are showy and beautiful beyond the imagination of those who have only seen common strains. Named Pansies come fairly true from seed, but the only way to secure a stock of any particular variety is to take cuttings. When any plant or plants show flowers which it is desirable to perpetuate, the best way is to sacrifice the bloom for the year, pinch the bloom-buds off as fast as they show, feed the plant well with dressings of leaf-mould pricked in about the roots, and peg the first shoots down so as to leave the crown of the plant exposed, for fresh healthy shoots to rise from. A few shoots should be taken off when they have made three or four pairs of leaves, and be planted in light soil, sand, and leaf-mould, under a hand-glass, and kept moist and shaded. The pegged-down stems will produce shoots which may be taken off in the same way; and when well rooted treated as seedlings.

A good plant combines a profusion of fine flowers with a dwarf, short-stemmed, stocky habit, and the plant when in bloom is a round green bush, with the flowers about ½ in. clear of the leaves. It is useless to save seed before a stock of first-class plants is obtained. July is early enough to sow the seed in the south of England, but farther north it may be sown earlier, until in Scotland it should be sown in the spring.

TUFTED PANSIES.—These are hybrids of Pansies and alpine Violets. The term "tufted" has been very properly used to distinguish plants of a spreading habit, like Pinks, Aubrietia, and Alpine Violets, from plants with simple erect stems, like, say, the Stock, Lupine, and Aster. Sometimes the two forms of habit occur in the same family; for instance, there are Violas that are tufted and Violas that are not—the German, French, and other Pansies in our gardens do not spread at the root as the tufted Pansies do. Plants of this "tufted" habit are often a mass of delicate rootlets even above the ground, so that they are easily increased. Hence when older Pansies die after flowering, those crossed with the alpine species remain, like true perennials, and are easily increased. The term Pansies is a good one in all ways. Without an English name, we shall always have confusion with the Latin name for the name of wild species. To all of these belongs the old Latin name of the genus *Viola*. It is now agreed by botanists that all cross-bred garden plants—including tufted Pansies, of course—should have popular English, and not Latin, names. "Bedding Violas" is a vulgar compound of bad English and Latin; whereas "tufted Pansies" is a good English name with a clear meaning.—*The Garden*, 16th Jan. 1892.

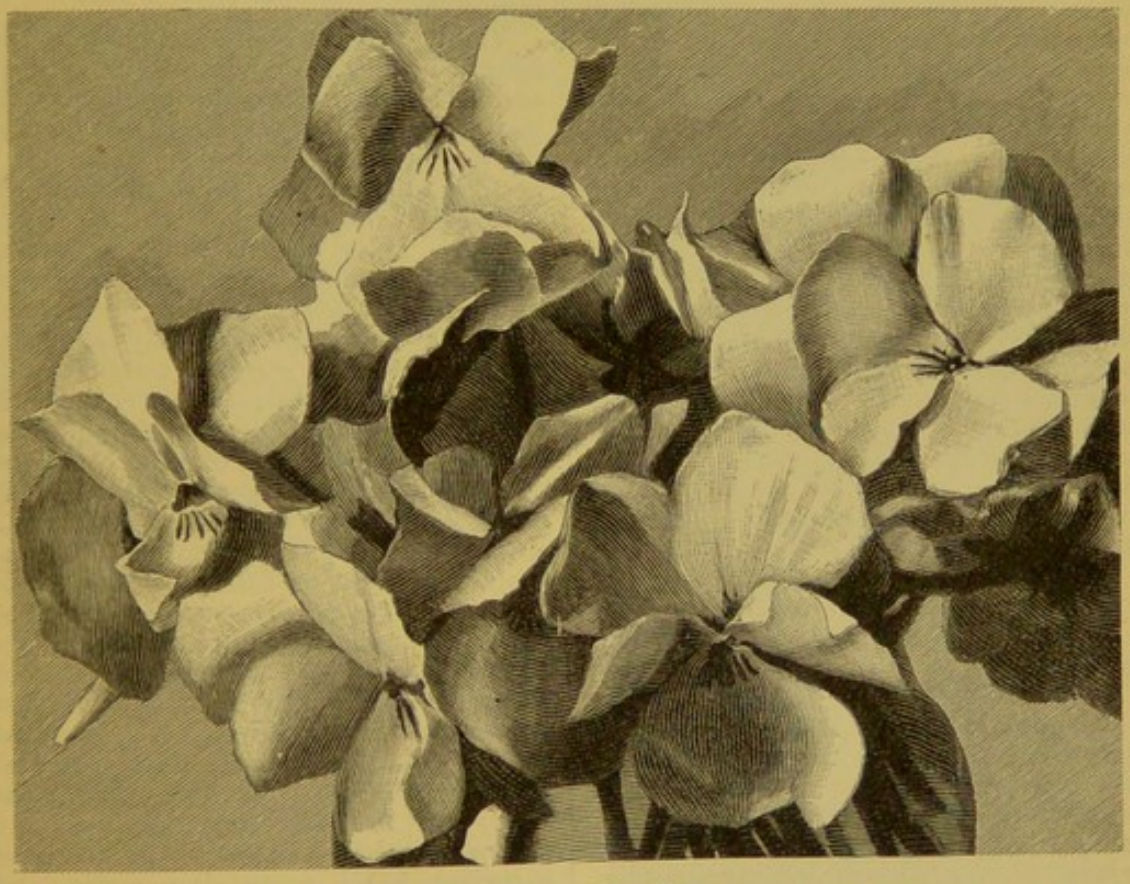
These are the flowers hitherto generally known as Violas and bedding Pansies, and Dr. Stuart, who has raised some of the best and truest of them, says:—"Botanically, Violets, Pansies, and Heart's-ease are all the same. Tufted Pansies are crosses from the garden Pansy and Viola cornuta, the latter being the seed-bearer. Pollen from V. cornuta applied to the Pansy produces a common enough form of bedding Pansy—never the tufty root-growth obtained when the cross is the other way. I have proved this by actual hand-crossing. Most strains of tufted Pansies are bred the wrong way, and in consequence lack the fibrous tufty root which makes the Violetta strain perennial."

Having settled the name, the next thing we have to do is select some of the most beautiful of these charming flowers, which are certainly more valuable for our flower gardens than the ordinary Pansy, fine and rich in colour as these are. They are so because the colours are simple and generally pure and true, and because they are most effective when used in groups, and then they are perennial, and may be easily increased and kept true.

The new race of Tufted Pansies raised by Dr. Stuart, of which Violetta was the first, is a precious addition to this

large family, because the flowers are pure in colour and so sweetly scented. The older tufted Pansies were welcome, but all of them had wiry streaks about the eye, not a serious detraction, but it is a gain to have kinds that are quite rayless, as are all of Dr. Stuart's. Violetta the first has small flowers, but all the later varieties have large flowers, and in other respects they are equal to the older sorts, much more tufted in habit, and better garden-plants in every way. The best kinds are Albino, Blue Gown, Blush Queen, Bridal Wreath, George Muirhead, Flower of Spring, King of Whites, Mary Scott, Sweet Lavender, and Sylvia. These in their several shades of colour are certainly some of the most beautiful flowers ever seen. The best of the older kinds with white flowers are Mrs. Kinnear, Countess of Hopetoun, Violetta, Mrs. Gray, and Marchioness of Tweeddale (with a delicate bluish shade). Near these creamy-whites come a group of creamy or pale yellow-coloured kinds, such as mentioned above, Abercorn Gem, Bridesmaid, and Gravetye Primrose. Among yellows there is nothing better than Ardwell Gem, and Bullion. Perhaps the most precious of all are the lavenders and delicate blues, such as Ariel, Quaker Maid, Elegans, Azurea, Duchess of Sutherland, Mrs. Turner, and Bessie Clarke. Of the blues and rich dark purples we have Archie Grant, Blue King, Holyrood, Cliveden Purple, Lottie, and Max Kolb.

Although we like the colours simple and pure, there are other pretty ones of a different kind, such as Columbine, Blue Cloud, Duchess of Fife, Countess of Kintore, Skylark. In the south, however, they are uncertain, liable to vary much in colour, and never good in effect like the true selfs. Some kinds, like Violetta, are white, running off to delicate bluish or lilac hues. These delightful things are so easily raised and crossed, that it might almost be well if each garden had its own colours, by the raising of a few kinds for itself, so as to have as much variety as possible.



Tufted Pansy, Mrs. Gray.

These plants love a fairly deep, rich and cool moist soil. In northern districts they are naturally more at home under ordinary conditions than in the south, and to bring them to perfection in the south, special treatment is necessary.

For early spring-flowering the cuttings should be rooted in July or August, and

planted out in their places the first or second week in October. They commence blooming early in April. In heavy soils, that is, such as are liable to crack with drought, use abundance of leaf-soil, burnt ashes from the rubbish fires, and the like, to bring them into better working. Also select a dry time for digging, working in the above with plenty of short manure from an old Mushroom bed, and scattering an inch or so on the surface for the roots at planting time. Cuttings are better than divisions ; particularly if they are made of the young shoots stripped from the old stool with a heel attached. To annually obtain a supply of these cuttings it will be necessary to plant out a reserve batch of plants for the purpose. About the second week in June, cut them back to within 2 in. of the soil. A month afterwards they will be bristling with young shoots. As soon as 3 in. long, scatter some fine soil and leaf-mould among the young growths, and keep well watered for a fortnight, by which time the majority will be making roots freely. A fortnight later they will be ready for planting in nursery-beds in a shady spot and in good soil. As growth is renewed, pinch out the top of each to encourage the quicker formation of shoots at the base. By October there will be some grand plants for putting into their permanent quarters, full of youth and vigour that will produce masses of flowers by-and-by.

Violet Cress (Ionopsidium acaule).

Violet, Dog's-tooth (Erythronium).

Violet, New Holland (Erpetion reniforme).

Violet Water (Hottonia).

Virgilia lutea, the Yellow-wood of N. America, is a pretty lawn tree of medium size and symmetrical growth, but not a satisfactory flowering tree. Its beauty is rather that of early autumn, when its leaves, always elegant during summer, turn to a rich golden-yellow, and remain bright for days and weeks—even until cut off by frosts. The white pea-shaped flowers are borne in loose clusters.

Virginian Cowslip (Mertensia virginica).

,, **Creeper** (Ampelopsis).

,, **Papaw** (Asimina).

,, **Poke** (Phytolacca).

,, **Spiderwort** (Tradescantia virginica).

,, **Stock** (Malcomia).

Virgin's Bower (*Clematis*).

Viscaria oculata.—This showy and beautiful hardy annual from South Europe is well suited for a border. Seed should be sown in spring or autumn, and the seedlings thinned out when large enough. V. oculata is 6 or 8 in. high, and bears a profusion of rose-coloured blossoms with a dark centre. The varieties cardinalis (bright crimson-purple), cœrulea (bluish), alba (white), Dunnetti (rose), splendens (scarlet), picta elegans (crimson purple, edged with white), and a dwarf variety, nana, about 9 in. high, are desirable.

Vitex Agnus-castus (*Chaste Tree*).—A very old S. European shrub, with divided leaves, and in late summer, clusters of small pale lilac flowers. It grows 6 to 10 ft. high against a wall, but even thus protected is liable to be killed during a severe winter. It is not very important.

Vitis (*Vine*).—There is, perhaps, no feature in the adornment of our gardens and woodlands where the gardener's art can be more effectively displayed than in the use of climbing shrubs. There is a peculiar charm about these plants which no other class possesses to the same degree. It is due to their surpassing grace and to some extent also, no doubt, to the strong suggestion they give of the luxuriance that more especially belongs to the vegetation of warmer, sunnier lands than ours. Our indebtedness is shown in this, as in every other branch of ornamental gardening, to the floras of other countries, and in the beautiful genus with which in this paper I have to deal there is not a single species that is a native of Great Britain or even of Europe. The Grape Vines and the Ampelopsis (now included under Vitis) are, in regard to hardy species, represented most strongly in North America and Northern Asia, to a less degree only in Asia Minor. Except in the case of the Hop-leaved Vine hereafter mentioned, it is not for the beauty of the fruit that the wild types of Vitis are grown in these islands. It is their luxuriant habit, surpassing grace, and wealth of handsome foliage, which in several instances affords the richest of autumnal colours—yellows, purples, and crimsons—that constitute their great value.

Some thirty species are at present in cultivation that can be grown out of doors in the southern parts of this country, a very small proportion, of course, of the total number of species known, most of which are semi or purely tropical. They are all of climbing or rambling habit, and their variety in foliage and different degrees of vigour and growth enable one or other of them to be employed for almost every purpose to which climbers may be put. Whilst some are especially

valuable for the walls of houses, others may be used for covering arbours, pergolas, the pillars of verandahs, old tree stumps or sloping banks. In the case of the stronger, taller-growing species they may be made to clamber over living trees. Little need be said on the matter of cultivation. They are moisture-loving plants, and require liberal treatment at the root. Where space is limited they can be kept at any required size by means of pruning, but the most luxuriant effects are, of course, obtained where they can ramble without let or hindrance. Where they are intended to spread over living trees, they should always be planted sufficiently far away from the trunk to allow rain and light to reach them. Success, too, will be better assured by giving them a pocket of good rich soil to start in. In the majority of the species increase can be accomplished by means of cuttings or by single "eyes," treated like those of the common Grape Vine. Some, however, are very obdurate and can only be increased by means of seeds. Layering will occasionally prove successful with those that refuse to root from cuttings. Grafting should only be resorted to as a last resource.

In the following enumeration of species the nomenclature adopted is that of the recently published "List of Hardy Trees and Shrubs" at Kew. The generic titles of Ampelopsis and Cissus are therefore sunk under Vitis.

North American.

V. æstivalis.
arborea.
arizonica.
Berlandieri.
californica.
candicans.
Champini.
cinerea.
V. cordifolia.
Labrusca.
quinquefolia (Ampelopsis).
q. var. incisa.
q.var. hirsuta.
q.var.muralis.
V. riparia.
r. var. palmata.
rupestris.
striata (Cissus).
vulpina.

Asiatic.

V. aconitæfolia.
amurensis.
capreolata (Cissus).
Coignetiæ.
ficifolia.
flexuosa.
heterophylla.
h. var. humuifolia.
V. h. var. variegata.
himalayana (Ampelopsis).
inconstans (Amp. Veitchi).
japonica.
orientalis.
V. Romaneti.
serianæfolia (Ampelopsis).
Thunbergi.
vinifera.
v. var. laciniosa.
Spinovitis Davidi

American Species.

V. ÆSTIVALIS (*Summer Grape*).—This species is probably the oldest of North American Grape Vines cultivated in England, having been introduced in 1656. It is described as abounding in wastes and woodlands. The leaves are broadly cordate, more or less deeply three to five-lobed, being of a deep green colour when old, but in a young state covered on the lower surface with a reddish down. They measure from 4 to 6 in. across, the marginal teeth being broad and shallow. The berries are small—about the size of Black Currants—but have been improved by cultivation. The larger-leaved forms of this variable species are sometimes mistaken for V. Labrusca, but a ready distinction is afforded in the arrangement

Claret-coloured Vine.

of the tendrils. In V. æstivalis the tendril is missing from every third joint, but in V. Labrusca there is (with rare exceptions) a tendril or fruit-stalk at every joint.

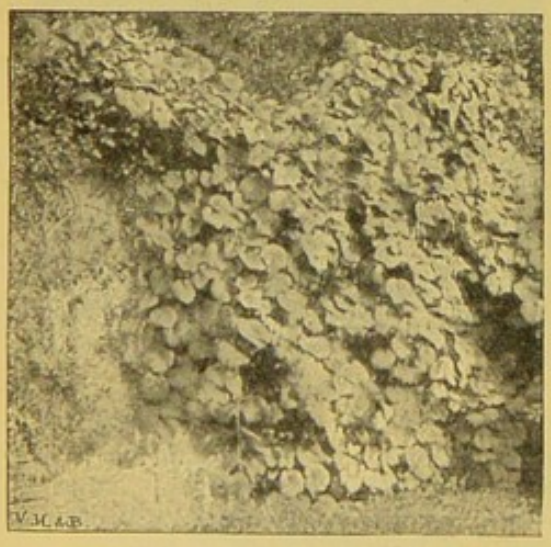
V. CALIFORNICA (*Californian Vine*).—This is, so far as my experience goes, the best of the American Grape Vines (*i.e.*, excluding the Ampelopsis) for colouring in autumn. It is one of the strongest growers, climbing in its native home over lofty trees. Its leaves, which turn a deep crimson in autumn, especially after a

summer like that of 1893, are rounded and covered with down.

V. CORDIFOLIA (*Frost Grape*).—A strong, vigorous-growing plant with thin, three-lobed, cordate leaves, measuring 3 to 6 in. in diameter, the lobes ending in a long, fine point, the coarse teeth being also sharply pointed. The berries are black and only palatable after they have been subjected to frost, hence the common name of Frost Grape. A moisture-loving Vine, affecting in a wild state the banks of streams. It has the same arrangement of the tendrils alluded to in V. æstivalis.

V. RIPARIA is a near ally to the preceding, and by some authorities is reduced to a variety of it. The leaves are larger than those of V. cordifolia (although the plant itself is smaller), smooth and shining, with long pointed teeth. The sweet, Mignonette-like perfume of the flowers of many American Vines is in this species especially apparent. The variety palmata (V. palmata, Vahl.) has the branchlets and frequently the petioles of a red colour. It was cultivated in the Jardin des Plantes at Paris well back into the last century, and is conjectured to have been sent to France by the French missionaries who were amongst the earliest plant-collectors in the Mississippi region.

V. LABRUSCA (*Northern Fox Grape*).—Before the introduction of V. Coignetiæ this was perhaps the most striking and effective of the true Grape Vines in culti-



Japanese Vine on wall at Warrenpoint.

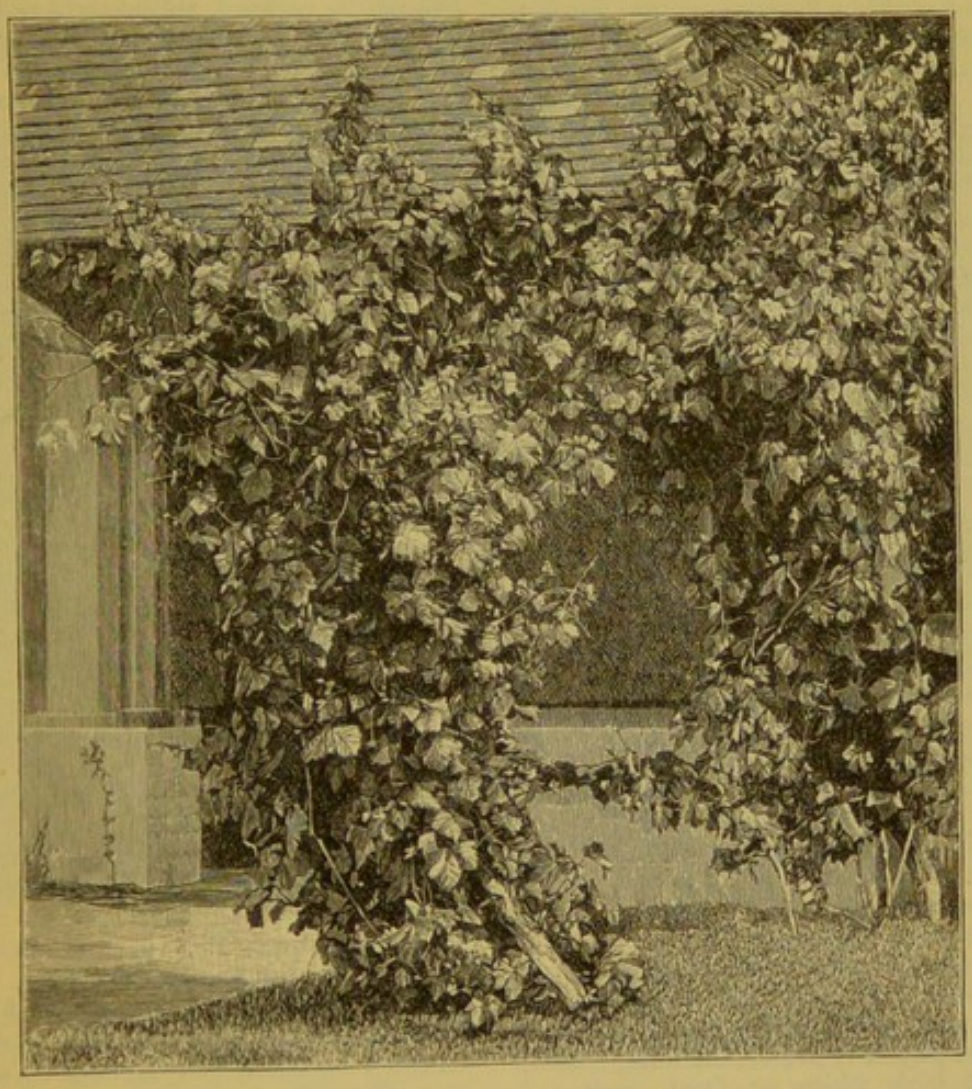
vation in Britain. Its leaves are amongst the largest, both they and the young branchlets being covered on the under surface with a rusty-coloured or sometimes whitish down. They are of stout texture and vary considerably in shape, sometimes entire, sometimes deeply lobed. There is almost invariably a tendril or a fruit-stalk opposite each leaf, constituting the distinction between this and the four species previously mentioned, which has already been referred to. In a wild state the fruit has a musky flavour, but by cultivation it has been much improved, and numerous varieties of the species are grown in the United States. Englemann says that although not large as a rule, it occasionally reaches the tops of high trees. In England it proves to be a strong grower and deserves a high place amongst ornamental climbers.

V. VULPINA (*Southern Fox Grape*).—A very distinct and handsome species, differing from the American species already enumerated in its close bark, which does not peel off. The leaves are small (2 to 3 in. across) and rounded, usually smooth and shining on both surfaces, and although coarsely toothed, rarely distinctly lobed. The species is worthy of note, as its small, bright green leaves may be used as an effective contrast with those of the Labrusca and Coignetiæ types, or may prove suitable in situations to which the larger-leaved species would not be adapted. Other American Grape Vines worth growing, but possessing no particular value beyond those already described, are V. rupestris, arizonica, and cinerea (the downy Grape), all of which are in the Kew collection.

V. QUINQUEFOLIA (*Virginian Creeper*).—This is better known as Ampelopsis quinquefolia, or as A. hederacea. Introduced, according to Loudon, in 1629, it has during the long period of its cultivation in this country become almost as well known as any of our native climbers. So far as autumn colour is concerned, it is the finest of the American Vines, its foliage changing in the fall of the year to various shades of crimson, scarlet, and purple. The leaves consist of five (occasionally one or two less) leaflets, which are broadly lanceolate, with a few coarse teeth on the terminal half. For covering arbours, walls, verandahs, or old tree stumps there is no climber which produces so luxuriant an effect in so short a time as the Virginian Creeper does. The following varieties are in cultivation: Major, incisa, hirsuta. Their distinctive characters are indicated by the names. Deserving of more detailed mention is V. muralis, a name current in this country and on the Continent, whilst the same plant is known in America as Vitis Englemanni. It is a distinct form of the

Virginian Creeper, possessing the same shaped leaves and developing equally, or even more, brilliant autumnal colours. Unlike the ordinary form, however, which requires support if it is intended to cover a wall, this is self-supporting, and will attach itself as firmly to any suitable surface as V. inconstans does.

V. ARBOREA (*Tree Vine*).—A species of considerable beauty of foliage, differing from any other North American species here mentioned in having bipinnate leaves. The numerous leaflets constituting a single leaf are small and deeply toothed. It is not a quick grower in this country, and is naturally of a shorter and more bushy growth than is characteristic of the Vines generally.



Vine growing on a gazeebo. From a photograph by Miss Willmott.

ASIATIC SPECIES.

VITIS COIGNETIÆ.—So far as this country is concerned, this is the newest and in some respects the most beautiful of all the Vines. It is a native of Northern Japan, its nearest ally under cultivation being the North American V. Labrusca. For many years a Vine clambering over a tall Pine in Mr. Anthony Waterer's nursery at Knap Hill has been at once a puzzle and a delight to all who have seen it. The foliage before falling turns a glorious crimson, making one of the most beautiful of autumn garden pictures. Up to within the last year or so, however, its identity could never be ascertained, no specimens in herbaria or in living collections exactly matching it. There is now every reason to believe that it is Vitis Coignetiæ, of which numerous plants have been lately raised in this country from seeds collected in Japan. The under-surface of the leaf is covered with a woolly down, which in Mr. Waterer's specimen is

reddish-brown; the colour, however, varies; in some instances it is nearly white, but similar variations are met with in other species. The species is named in honour of Mme. Coignet, who gathered the seeds in the mountains of Northern Japan, and sent them to France in 1875. Seeds were again introduced to that country in 1884, but until recently very few plants appear to have reached England. We may now hope that in a few years' time it will constitute one of the most striking features of our gardens in autumn. The leaves are cordate, irregularly toothed, and measure each from 6 to 10 in. across. In size of leaf and vigour of growth it is at least the equal of any other Vine in cultivation. It has hitherto proved difficult to propagate by the usual methods of eyes and cuttings, and with only very limited success when layered. It can be grafted on several of the American species, but in view of its superior vigour that is not likely to be a satisfactory method, and now that it is well known there is no likelihood of a dearth of seeds sent direct from Japan.

V. HETEROPHYLLA (also grown as V. brevi-pedunculata). — The Hop-leaved Vine, which is the variety of V. heterophylla known as humulifolia, is the most generally grown and most beautiful of the various forms of this species. Unlike any of the species hitherto mentioned, it has, besides its handsome foliage, the additional recommendation of producing in autumn a profusion of pretty turquoise-blue berries. The leaves are smaller than in the common heterophylla and are usually more deeply lobed. This Vine requires in most places a position on a wall in order to induce it to fruit with proper freedom, and appears to succeed better when it is restricted for root room. It was originally discovered by Dr. Bunge in North China, but has since been found in Japan and Corea. A variegated form of V. heterophylla is pretty, the foliage being mottled with white or faint pink. A sheltered, sunny position is necessary to develop the variegation to its full extent.

V. INCONSTANS (*syns.*, Ampelopsis Veitchi and A. tricuspidata).—The unfamiliar name here given is the one that properly belongs to the plant so well known as Ampelopsis Veitchi. It is the most beautiful of all the species in the Ampelopsis section of the genus, and for covering walls has no rival. As is the case with so many of the Vines, this shows great variety in the shape of the leaves. In young plants the leaves are small and very often scarcely lobed at all, whilst in older ones they are cut into three lobes and occasionally into the same number of separate, short-stalked leaflets. This tendency to variation shows itself also in the colours the leaves put on in autumn. In the best forms the leaves assume various rich tints of purplish-red and crimson; whereas others have a large admixture of brown in the colouring. There is also a form whose foliage has a bronzy hue more or less throughout the season, but especially when young. This climber is planted abundantly in Oxford, and more than once have I been charmed in autumn by the glorious masses of rich colour on some of the walls and gateways of the college quadrangles. It is a plant of the very easiest propagation by means of cuttings. A native of Japan and introduced about 1868.

V. ROMANETI is a species of recent introduction, and one which promises to prove very distinct and vigorous in habit. It has large leaves, of much the same size and shape as those of V. Coignetiæ, but it differs from all the Vines in cultivation (except Spinovitis Davidi) in having the branches and petioles covered with bristles or stout hairs. It was discovered by the Abbé David in the Shen-si province of China.

SPINOVITIS DAVIDI is nearly allied to V. Romaneti, having the same bristly or even prickly character. Carrière says, however, that seedlings raised in France exhibit much variation in this matter, the bark of some being perfectly smooth. In any case the character is not one of sufficient importance to justify the creation of another generic name. In the Kew list of trees and shrubs it is referred (under a query) to V. vinifera. It was found by the Abbé David in the Shen-si province. Both this and V. Romaneti assume purplish-red autumn tints.

V. VINIFERA (*Common Grape Vine*).—Of the numerous varieties of the common Grape Vine the following may be alluded to: Purpurea. — This is one of the deepest purple-foliaged plants we possess. Although the colour becomes most intense in autumn the leaves have a bronzy-purple tinge from the first. It is not so quick a grower as the ordinary form. Var. laciniosa or apiifolia is the Parsley-leaved Vine. Its leaves are very deeply cut, frequently into several leaflets, which are again deeply lobed. Besides these there are the Miller's Grape, with smallish leaves covered with white down, and the "Teinturier" Grape, the leaves of which assume a beautiful claret colour before they fall.

Brief mention may be made of the following Asiatic species: V. ficifolia, a distinct plant with small round-lobed leaves like those of the Fig; V. flexuosa, V. Thunbergi, whose foliage turns red in autumn; and V. serianæfolia, an interesting species of the Ampelopsis group, with tuberous roots like a Dahlia, and with palmate or bipinnate foliage. All these are natives of China and Japan. V. himalayana is a North Indian species with striking trifoliate leaves.—W. J. B.

Vittadenia triloba and **australis** (= Erigeron mucronatum).

Wahlenbergia pumilio.

Wachendorfia.—Bulbous plants from the Cape of Good Hope, but not hardy, requiring the same treatment as Cape Ixias and Sparaxis. W. paniculata, W. hirsuta, and W. thyrsiflora are the best known, and have tall, slender, branching flower-stems, which bear, in early spring, numerous large showy yellow blossoms.

Wahlenbergia (*Tufted Hairbell*).—A charming group of alpines, closely allied to the Hairbells, and mostly inhabiting the mountains of Dalmatia and Asia Minor: best known in gardens under the name of the Edraianthus, but now merged into Wahlenbergia. They are all useful free-flowering alpines, and hardy, forming tufts which bear large heads of pretty, bell-shaped, upright flowers, of various shades of purple. The chief points in their culture are full exposure, plenty of sunshine, a free gritty soil, and raising the plants above the surrounding level, so that there is no possibility of stagnant moisture remaining near them.

All the species are true perennials, easily cultivated, vigorous, and free-flowering. They are difficult to increase by division on account of the long roots they make, but they ripen seed freely, which if sown directly it is gathered rarely fails to germinate.

W. DALMATICA, a native of the mountains of Dalmatia, is a tufted species with narrow Grass-like leaves, 2 to 4 in. in length, and flower-stems at first drooping, afterwards erect, 4 to 6 in. high, with large flowers of a violet-blue colour, in clusters which appear in July and August.

W. GRACILIS.—This is a variable species from New Zealand, with square, hairy, much-branched stems, the leaves opposite, narrow toothed, and hairy, the flowers terminal, erect, but nodding while in bud, blue, large, and attractive, flowering all through the summer. W. stricta, littoralis, capillaris, and polymorpha are varieties of this kind.

W. GRAMINIFOLIA is the commonest and easiest to manage, forming tufts of

long Grass-like leaves, bearing bunches of large purple flowers. It ripens seed freely, and that scattered about in the rock-garden usually germinates readily.

W. HEDERACEA (*Ivy-leaved Hair-bell*).—A native plant closely allied to Campanula. It has creeping thread-like branches, which bear small leaves and light blue flowers. There is about it an interest and grace not found in other more robust members of the family, especially when seen interlaced with the pink Bog Pimpernel on British bogs. Worthy of a place for a moist spot in the rock or bog-garden, and easily increased by division. It is abundant in Ireland and the south and west of England.

W. KITAIBELI is a sturdy tufted species, with large purplish blue flowers and narrow toothed leaves.

W. PUMILIO forms a dwarf tuft of narrow, needle-like leaves of a bluish tint, half an inch or more in length, and has large flowers of a reddish-lilac or bluish colour, bell-shaped, numerous, and borne erect on short stems, coming in succession on the tuft for more than two months in May and June.

W. PUMILIORUM is the rarest, and although little different from W. Pumilio, it gives us another shade of colour, smaller and narrower leaves, a more straggling habit, and longer-tubed flowers. We find it an excellent hardy plant for the rock-garden, where on raised mounds of free gritty soil it grows and flowers vigorously.

W. SAXICOLA.—A beautiful species from the mountains of New Zealand, with leaves in close tufts and pretty flowers which first appear in June and keep coming in succession till November. It is easily raised from seed and varies greatly from white to deep blue.. The best forms can be increased by division. It makes a handsome rock plant, and, when left undisturbed and allowed to shed its seeds freely, gives the cultivator no trouble, but makes a highly attractive picture.

W. SERPYLLIFOLIA, with its small and Thyme-like leaves and abundance of purple-blue flowers, is effective on ledges in the rock-garden.

W. TENUIFOLIA is a dwarf compact growing species, with hairy stems, short slender leaves and small flowers, six to ten in a head, violet-blue or whitish-purple.

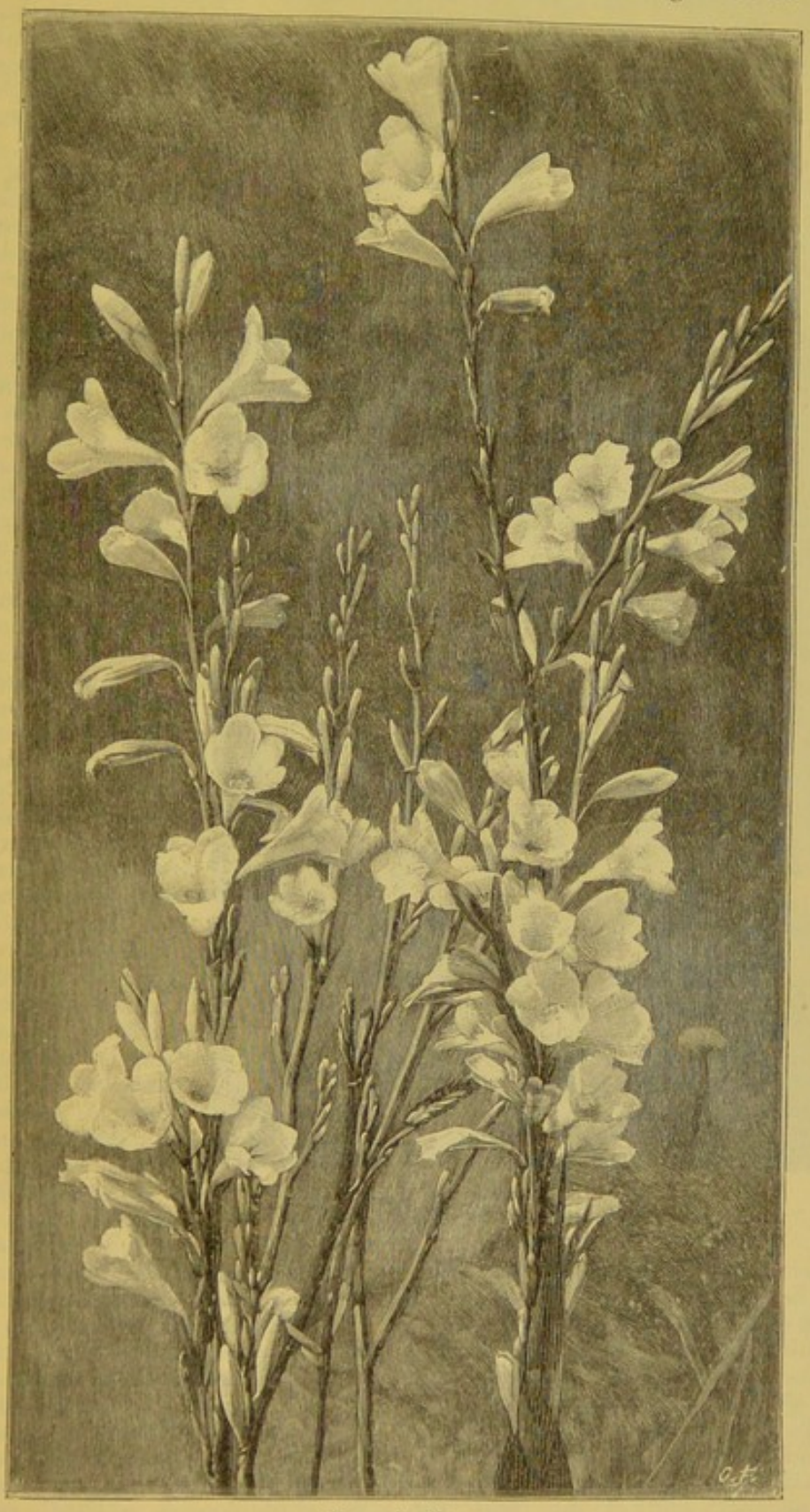
Waitzia. — Half-hardy annual Composites from Australia. Of the four kinds of Waitzias in cultivation all are valuable for their pretty flowers, which are useful for winter bouquets. W. acuminata has a variety with purple flowers, and another with yellow flowers. W. aurea has bright yellow flowers. W. corymbosa has white and purple flowers, and the flowers of W. grandiflora are like those of W. aurea, but finer. All grow about 1 ft. high, and require to be treated like other tender annuals, such as Rhodanthe. They succeed best in an open position in sandy peat. Seeds. The seedlings should be shifted into different-sized pots before planting out in May. Waitzias flower in August and September.

Waldsteinia.—Dwarf Rosaceous plants, three of which, W. geoides, W. fragarioides, and W. trifolia, are in cultivation. The last is the most attractive, but not one is ornamental enough for border culture, only for dry banks and such places. Their yellow flowers appear in spring.

Wallflower (Cheiranthus Cheiri).
Wall Rue (Asplenium Ruta-muraria).
Water Chestnut (Trapa natans).
,, **Dock** (Rumex Hydrolapathum).
,, **Flag** (Iris Pseud-acorus).
,, **Lily** (Nymphæa).
,, **Soldier** (Stratiotes aloides).
,, **Violet** (Hottonia palustris).

Watsonia.—Bulbous plants representing some of the most beautiful of the large Iridaceous family. Several of the finest were, long ago, favourites in gardens. Watsonias cannot be called hardy, but in the southern counties some of them succeed perfectly in open borders. There are only a dozen species and about as many varieties, half of which are variations from W. Meriana. All the species are natives of S. Africa, but their head-quarters are at the Cape. There is a great diversity of colours, and some of the trade lists even advertise a "mixed" selection representing "all colours." The commonest species seem to be W. Meriana, W. coccinea, W. iridifolia, W. rosea alba, W. humilis, W. angusta (also known as W. fulgida), and W. aletroides. All these kinds are true Watsonias, and have much more showy flowers than the other sections of the genus. The white Watsonia (W. alba) is a lovely plant, flowering in early summer. With regard to culture, treatment similar to that recommended for the early Gladioli will suit them. Where they are grown in frames, a good deal of trouble is saved, and they give finer flowers as the young growths are protected when they most need it. Generally, however, it will be found best to grow the plants in warm situations in open borders of light rich soil. Of the varieties offered in trade lists, the following may be taken as representative: W. coccinea, fulgens, Meriana, alba, humilis,

marginata, rosea, speciosa, fulgida, brevifolia, angustifolia, Grootvorst, Louis XVI., Wreede, Duchess, George IV., Chilea, Duc de Berri, and Blucher.



Watsonia alba.

Weigela (*Bush Honeysuckle*). — The Weigelas have long been in the front rank of flowering shrubs, and are deservedly popular, being elegant, rapid in

growth, and beautiful in bloom. A multitude of varieties have sprung from W. floribunda, W. grandiflora (known also as W. amabilis), W. rosea, and W. hortensis. These are natives of China and Japan, have been introduced within the last forty years, and so much hybridised that they are rarely found pure. The most valuable sorts have come from W. grandiflora, which has the largest flowers, while the smaller, but more numerously-flowered kinds, have originated from W. rosea and W. floribunda. The varieties

Weigela grandiflora.

have been raised chiefly on the Continent, as may be inferred from their names. A selection of the best kinds should include the following: Abel Carrière, numerous small flowers of deep red; Isolinæ, large flowers of white or pale rose with yellow markings; Van Houttei, large and showy white and red flowers; Lemoinei, numerous small deep crimson-red flowers; Groënowegenei, one of the best, the flowers being large, of pink or pale rose, with a yellow blotch; striata, a pretty sort, having flowers striped with red and white; Stelzneri, with numerous deep red flowers; Lavallei, with numerous crimson-red flowers; hortensis nivea, more spreading than that of others, with larger and paler foliage, and large pure white flowers; and candida. If a large collection is needed, the following may be added to those already enumerated: Carminea, Emile Gallé, Docteur Baillon, Edouard André, Aug. Wilhelm, Diderot, Montesquieu, and Desboisi. The golden-leaved W. Looymansi aurea is a very fine ornamental shrub, usually retaining its bright golden foliage through the season. Its variegated-leaved form is also excellent. All sorts are of free habit if planted in good soil in an open position. They should never be crowded, but grown as isolated groups on lawns, or placed on the margins of shrubberies. Weigelas make large bushes, 6 to 10 ft. high and as much in diameter, and their graceful drooping branches are ornamental, even when leafless in winter. They should be top-dressed annually with good rich soil, and pruned, leaving the vigorous stems and the branches that yield the finest bloom. Weigelas are now classed botanically in the genus Diervilla, which also includes other species, such as D. sessiliflora and D. trifida, from N. America. Neither of these is to be recommended for general cultivation, though both are worth planting for the bright tints of their autumn foliage.

Welsh Poppy (Meconopsis cambrica).

White Thorn (Cratægus).

Whitlavia grandiflora.—A beautiful plant allied to the Nemophila, attaining a height of about 1 ft. of branched growth, with an abundance of showy bell-shaped blossoms of a rich deep blue. There is a white variety, and also one called gloxinioides with white and blue flowers. W. grandiflora is a hardy annual, and may be sown either in autumn or in spring in the open border, in good friable soil. California. Hydrophyllaceæ.

Whortleberry (Vaccinium).

Wigandia. — These noble-leaved plants are natives of the Tropics, but they succeed in the open air in summer. The best is W. caracasana, from the mountainous regions of New Granada ; and the size and form of its leaves entitle it to a place among the finest plants of our gardens. In London it has borne leaves remarkable for size, strong veining, and texture. It will succeed in the midland and southern counties, though too much care cannot be taken to secure for it a warm sheltered position and good free soil. W. caracasana may be used with superb effect either in a mass or as a single plant. It is propagated by cuttings of the roots, shoots, or from seeds, the young plants grown in a moist and genial temperature through the spring months, and kept near the light, so as to preserve the plant in a dwarf and well-clothed condition. It should be very carefully hardened off previous to being planted out at the end of May. The stems of W. macrophylla, from Mexico, are covered with short stinging hairs, bearing brownish viscid drops, which adhere to the hand like oil. W. imperialis, a new variety, is said to excel the others in its growth. W. Vigieri is another fine kind, of quick and vigorous growth, and of remarkable habit. Its leaves are 3 ft. 9 in. long (including the leaf-stalk), and are 22 in. across, and its stem, nearly 7 ft. high and 3 in. in diameter, bears a column of leaves. This plant is distinguished by its leaves and stem being covered in a greater degree with glossy, slender, stinging bodies, so thick as to give the stems a glistening appearance. W. urens is

Wistaria (Glycine) sinensis.

often planted, but is decidedly inferior to the foregoing, except in its power of stinging, in which it is not likely to be surpassed. All Wigandias have clusters of blue or violet blossoms, which are not often borne in the open air with us. In their native habitats they range from 3 to 12 ft. high, W. caracasana being the tallest.

Wilbrandia drastica.—An interesting Cucurbit of graceful growth, with dense clusters of small fruits. It should be treated as a half-hardy annual Gourd. Brazil.

Willow (Salix).

,, **Herb** (Epilobium).

Windflower (*Anemone*).

Winter Aconite (Eranthis hyemalis).

,, **Cherry** (Physalis Alkekengi).

,, **Green** (Pyrola).

,, **Heliotrope** (Tussilago fragrans).

Wistaria.—The common Wistaria, W. sinensis, is the finest of the few Wistarias to be found in gardens. The type has pale purple flowers, but there is a pure white variety, and another with very long racemes, which is named macrobotrys, and is of great beauty. The double variety (fl.-pl.) is worthless, and little can be said in favour of the variegated-leaved variety recently introduced. Other eastern species in cultivation are W. multijuga, from Japan, which resembles its Chinese relative W. sinensis in its pale purple flowers, borne in racemes often 2 ft. or more in length. It is also known as W. grandiflora, and though it has been in cultivation for some years, it is still rare. Another Japanese species is W. japonica, described as a twining shrub. It has racemes of white flowers, but the specimens in the Kew arboretum, labelled W. japonica, show little tendency to climb or twine, but make most graceful standard bushes. The N. American species, the only Wistaria of the West, is W. frutescens, a very old garden favourite, sometimes called the American Kidney Bean Tree. It is smaller than W. sinensis, its flower-racemes shorter and denser, the flowers deep purple, varying to white. W. frutescens is a hardy shrub, and may be grown as a standard in most parts of England; it flowers some time after W. sinensis. For arbours, trellises, and pergolas, W. sinensis and W. frutescens are equally suitable, and in southern or mild localities they may be grown as standards on a lawn, with an open trellis or framework to support the branches. All good soils suit Wistarias, but they prefer those that are light and warm. A sunny spot should always be selected.

Witch Hazel (Hamamelis).

Woodbine (Lonicera).

Wood Lily (Trillium).

Woodruff (Asperula).

Woodsia.—These pretty deciduous hardy Ferns are admirably suited for a northern position in the alpine or rock-garden. As they are impatient of sunshine, drainage should receive special attention, and they should have a mixture of fibry peat and loam, which has some broken-up sandstone mixed with it. It is a good plan to place Woodsias between little blocks of sandstone which just peep out of the soil. These blocks of stone could be covered with Sedums and other flowering rock plants. The best hardy species are W. ilvensis and W. alpina; there is also a very beautiful North American kind named W. obtusa.

Wood Sorrel (Oxalis).

Woodwardia.—There are a few hardy species of these noble Ferns. All are handsome, have broad beautifully arching fronds, which are especially ornamental if seen a little above the level of the eye. Woodwardias thrive under the ordinary conditions of the hardy fernery, and succeed in a shady position if they have a light peaty soil that is moist in summer. The principal hardy kinds are W. areolata (angustifolia) and W. virginica, both from N. America; W. japonica and W. orientalis, from Japan; and W. radicans from Madeira. W. radicans is the tenderest, and requires a sheltered position, and perhaps protection in severe cold.

Wormwood (Artemisia).

Wulfenia carinthiaca.—A remarkably dwarf, almost stemless evergreen herb, 12 to 18 in. high, bearing in summer showy spikes of drooping purplish-blue flowers. Found only on one or two mountains in Carinthia. W. carinthiaca is a pretty plant for rock-gardens or borders, but should have a light moist sandy loam. W. Amherstiana from the Himalayas, similar to the Carinthian species, but more showy, rare, and we have seen it only in Kew Gardens. It is hardy, grows freely in any position in the rock-garden, but prefers a shady spot and light rich soil. Scrophulariaceæ.

Xanthosoma sagittifolium.—A West Indian plant of the Arum family, resembling Caladium esculentum, but less valuable, with arrow-shaped dark green leaves on slender stalks. Another large handsome species is X. violaceum, the leaves and leaf-stalks of which are suffused with delicate violet, and slightly incline to hoariness. The position and treatment should be those recommended for Caladium esculentum. Xanthosomas should be tried only in the warmer parts of the

country and should not be placed in the open air till June.

Xanthoceras sorbifolia.—A beautiful dwarf hardy tree, but not a rapid grower; its leaves elegant, and its flowers, which are white and marked with red, borne in erect clusters. It is said to grow 5 to 15 ft. high. China.

Xeranthemum annuum.—This hardy annual, one of the prettiest of Everlasting flowers, grows about 2 ft. high, and, if sown in patches, yields abundant masses of white, purple, and yellow double, single, and semi-double blossoms. A packet of mixed seed sown in any ordinary garden soil in March will give a variety of colours, but if it is desired to keep the colours distinct, seeds of the different kinds must be sown separately. The principal kinds are—Album, white; imperiale, dark violet-purple; plenissimum, dark purple, double; superbissimum, double, globe-flowered; and Tom Thumb, a compact dwarf variety. The flowers are excellent for cutting, and, if dried in autumn, are useful for winter decoration. S. Europe. Compositæ.

Woodwardia radicans.

Xerophyllum asphodeloides.—A beautiful and interesting tuberous-rooted plant with the aspect of an Asphodel, forming a spreading tuft of grassy leaves. Its flower-stem, 1 to 4 ft. high, is terminated by a compact raceme of numerous white blossoms. It grows well in a moist, sandy, peaty border, and in the drier parts of boggy ground. Common in the Pine barrens in N. America.

Yarrow (Achillea).

Yucca (*Adam's Needle*).—In its own peculiar habit and style of growth the Yucca has no rival among hardy plants. Though the stiffest of all garden plants, it has grace and elegance, under all conditions, if the plant is not cramped for room. Yuccas seem fitted for various uses, as a single plant may stand alone on a lawn, or in the centre of a bed, or numbers may be grouped with other plants, or form a bed by themselves. Yuccas look especially well on rock-garden banks. They are not very particular about soil, but do not flourish so well in sand, chalk, or peat. They are hardy save in very severe winters and on cool soils. All of the kinds mentioned below are so vigorous that it is almost impossible to kill them. Suckers, unless carefully taken, are apt to die down to the ground when first planted; but if they are left alone they will renew their growth in a few months. There are several hardy species well suited for the flower-garden, and quite distinct from each other. The effect of well-developed Yuccas is equal to that of any hot-house plant that we can venture to place in the open air for the summer, while they are green and ornamental at all seasons. The free-flowering kinds, Y. filamentosa and Y. flaccida, may be associated with any of our nobler autumn-flowering plants, from Gladiolus to the great Statice latifolia. Even species that do not flower so often, like Y. pendula and Y. gloriosa, are magnificent if grown in the full sun and planted in good soil. Division of the

stem and the rhizome. Yuccas should be planted singly, beginning with healthy young plants, so as to secure perfect specimens.

Y. aloifolia.—A distinct species, with a stem which, fully developed, is as thick as a man's arm, and 6 to 18 ft. high. The numerous leaves of the plant are dark green, but have a slight glaucous bloom; ascend rigidly; are 18 to 21 in. long, broad at the middle, while their horny margin is rolled in for 2 or 3 in. below the point, and is finely toothed in the remaining portion. The flowers are almost white, and are borne in a vast pyramidal panicle. Y. aloifolia is hardy, but is not generally known to be so. It should be tried on well-drained slopes in good sandy loam. The finest varieties are quadricolor and versicolor. Their leaves are variously edged with green, yellow, and red. They are hardy, but as they are yet far from common, it will be best to use them in the greenhouse or the conservatory, or to place them in the open air during summer. They look very pretty when isolated on the Grass, the pots being plunged to the rim. S. America and W. Indies.

Y. angustifolia.—This is the smallest of all the Yuccas. When in flower it is not more than 3 ft. high. Its long strips of leaves are nearly 1½ ft. in length, but are not more than ¼ in. in width. They are thick and rigid, of a pale sea-green colour, and fringed with white filaments. Y. angustifolia bears a simple raceme of white flowers slightly tinged with yellow. Till it is more plentiful, it should be grown in warm borders, in well-drained sandy loam. It is excellent for rock-gardens. N. America.

Y. canaliculata.—The leaves of this Yucca are entire—*i.e.* neither toothed nor filamentose at the margin, and form a dense rosette on a stem 1 or 2 ft. high. Each leaf is 20 to 24 in. long, and 2 to 2¼ in. broad at the middle, strong, rigid, and deeply concave. The flowers are creamy-white, and borne in a large panicle 4 or 5 ft. high. It is well suited for isolation or groups, but, till more plentiful, should be encouraged in favourable positions and on warm soils. Mexico.

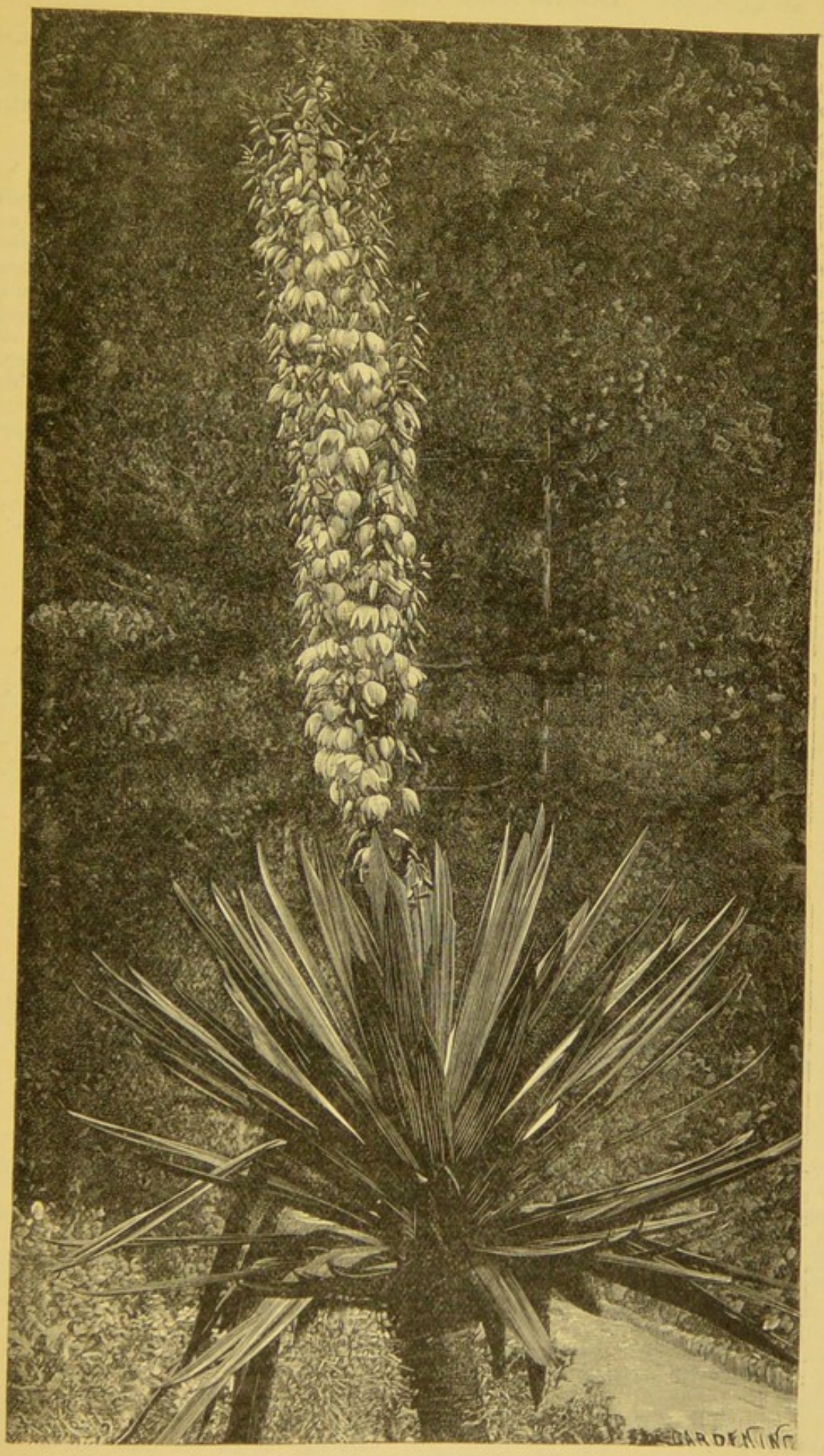
Y. filamentosa.—A well-known species, with apple-green leaves and a much-branched panicle, 4 to 6 ft. high. It varies very much when raised from seed. One variety (concava) has short, strong, broad leaves, which are more concave than those of the type; another variety (maxima) has narrow leaves which, though nearly 2 ft. long, are only 2½ in. broad. It has a panicle 7 to 8 ft. high. Y. filamentosa flowers with much vigour and beauty. It has a fine variegated variety. All the varieties of Y. filamentosa thrive best in peaty or fine sandy soil. N. America.

Y. flaccida.—A stemless species, somewhat resembling Y. filamentosa, but smaller, has a downy branching panicle, 3 or 4 ft. high, and bears close rosettes of leaves 18 to 24 in. long, and about 1½ in. broad at the middle. They are often fringed with filaments, the young ones nearly erect, and the old ones abruptly reflexed in the middle, and appearing almost broken. This gives such an irregular aspect to the tufts, that it is easily distinguished from any of the varieties of Y. filamentosa. Y. flaccida also flowers more regularly and abundantly than Y. filamentosa, and is well suited for groups of the finer hardy plants, for borders, or to plant in large isolated tufts. N. America.

Y. glaucescens.—A free-flowering kind, with a panicle 3 or 4 ft. high, and sea-green leaves, about 18 in. long, with a few filaments on the margins. The flowers are greenish-yellow, when in bud tinged with pink, which gives the whole inflorescence a peculiarly pleasing tone. It is a very useful and ornamental sort, fine for groups, borders, isolation, or for placing among low shrubs. N. America.

Y. gloriosa.—A large and imposing Yucca of distinct habit and somewhat rigid aspect. Its flower-stem is over 7 ft. high, much branched, and bears an immense pyramidal panicle of large almost white flowers. Its numerous leaves are stiff and pointed. It is one of the noblest plants in our gardens, and is suitable for almost any position. It varies very much when grown from seed, and this is a good recommendation, as the greater variety of fine form we have the better. Its chief varieties are Y. g. longifolia, plicata, maculata, glaucescens, and minor. The soil should be a rich deep loam. N. America.

Y. pendula.—Perhaps the best species, considering its graceful habit, which is invaluable. It grows about 6 ft. high; its leaves, at first erect and of a sea-green colour, afterwards become reflexed and change to a deep green. Old and well-established plants standing alone on the Grass are pictures of grace and symmetry, from the lower leaves which sweep the ground to the central ones that point up as straight as a needle. It is amusing to think of people putting tender plants in the open air, and running with sheets to protect them from the cold and rain of autumn and early summer, while perhaps



Yucca gloriosa (Adam's Needle).

not a good specimen of this fine plant is to be seen in the place. There is no plant more suited for planting near flower-beds or for associating with them. N. America. = Y. recurva.

Y. Treculeana. — This species is one of the most remarkable, both from its habit and from the dimensions of its leaves. Like many Yuccas of its family, young specimens of Y. Treculeana differ considerably from those which have reached maturity. Thus, while the leaves of young specimens are bent, and generally inflected, those of mature specimens are erect, rigid, long, and straight. The stem of the plant is about 10 in. in diameter, and furnished on all sides with leaves about 4 ft. long, straight, thick, and deeply channelled, very finely toothed on the edges, and end in a stiff sharp point. The stout branched flower-stalk is about 4 ft. long, the branches erect, 12 to 20 in. long, bearing flowers with long narrow petals of a shining yellowish-white. If placed singly it is fine for banks and knolls, and is also suitable for the boldest groups. Texas.

Any one wishing to have a distinct collection of Yuccas would find the kinds mentioned suitable, but there are several other species more or less desirable. The dead flower-stems of Yuccas make capital supports for delicate creepers.

Yulan (Magnolia conspicua).

Zapania nodiflora (*Creeping Vervain*). —A pretty, spreading trailer, with prostrate stems 2 or 3 ft. in length, which late in summer bear small round heads of little purplish flowers. Suitable for the rougher parts of the rock-garden, for borders or edgings in free warm soil.

Zea Caragua.

Asia and America. = Lippia nodiflora. Verbenaceæ.

Zauschneria californica.—A distinct and bright perennial from California, hardy in warm soils in sheltered places, but in cold localities requiring a little winter protection, such as a covering of ashes. It grows 12 to 18 in. high, and yields an abundance of gracefully drooping bright vermilion flowers during summer and autumn. It flourishes in sandy loam in the rock-garden, and grows capitally on an old wall, but on heavy and moist soils doe not thrive. It can

be easily propagated in spring by division of the roots, or from seeds sown on a gentle hot-bed. Onagraceæ.

Zea Mays (*Indian Corn*).—This, one of the noblest of the Grasses that thrive in our climate, is almost indispensable to our gardens, and has a fine appearance either isolated or associated with other fine-leaved plants. Cuzko and Caragua are the largest of the green varieties, and gracillima the smallest and most graceful. The variegated or Japanese Maize is a handsome variety that comes true from seed. It is useful for intermingling with arrangements of ordinary bedding plants for vases; and may be grown in the margins of beds of sub-tropical plants, or in any position where its variegation may be well seen, and where its graceful leaves are effective. It should have light, rich, warm soil. It has a habit of breaking into shoots rather freely near the base of the central stem, and this should recommend it for planting on the turf in an isolated manner, or in groups of three or five. The seeds of the Maize should be sown on a gentle hot-bed in April, although seeds will occasionally succeed out-of-doors. Gradually harden off the plants before they have made more than three or four little leaves, keeping them in a cool frame near the glass, so as to keep them sturdy, finally exposing them by taking off the lights. This method is perhaps the more desirable in the case of the variegated Maize, which does not grow so vigorously as the green kinds. In no case should the plants be drawn up long in heat, for if they are they will not thrive so well. The first few leaves of the variegated kind are green, but soon begin to manifest the striping. The plants should be planted out about the middle of May.

Zenobia speciosa.—One of the most beautiful shrubs in the Heath family, about a yard high, with small roundish leaves of a pale green. In the variety pulverulenta, the leaves are almost white, covered with a mealy glaucescence; flowers, white and wax-like in form, resembling those of Lily of the Valley, come in summer in beautiful loose drooping clusters. A well-flowered specimen is most charming, and lasts for some weeks in beauty. The shrub thrives in a peaty soil or a sandy loam. It comes from the Southern United States; and is therefore not absolutely hardy. In nurseries it is known as Andromeda cassiniæfolia and A. speciosa, and its variety Z. pulverulenta as A. dealbata and A. pulverulenta.

Zenobia speciosa pulverulenta.

Zephyranthes (*Zephyr-flower*).—This beautiful flower has been termed the Crocus of America. There are about fourteen species,—low-growing bulbous plants, with grassy leaves, which appear in spring with or before the Crocus-like flowers, which are white or rosy-pink, large and handsome. Zephyranthes require rest during winter, and at that season are best kept dry. In spring they should be planted out in the full sun in sandy soil. They do well in the greenhouse, four or six being planted in a pot. Offsets. The valuable species are:—

Z. Atamasco (*Atamasco Lily*).—This handsome plant is a native of N. America, where it is a conspicuous ornament of damp places in woods and fields. Its

glossy leaves appear at the same time as the blossoms, and slightly exceed them in height. The white flowers are striped with rose, are about 3 in. long, and borne singly upon a scape 6 in. high. It flowers from May to July, grows well in the open border, and increases rapidly by offsets, which should be removed and divided in the spring of every third or fourth year. Z. candida is similar, but less hardy.

Z. carinata. — This lovely plant has narrow leaves, and its flower-stem, which is about 6 in. high, bears a delicate rosy flower, 2 or 3 in. long. It blossoms freely in the open border if kept dry in winter, and should be grown in light sandy loam. Z. carinata is widely distributed in S. America. Z. rosea, a beautiful species, with flowers of a bright rose, is a native of the mountains of Cuba.

Z. tubispatha.—A handsome plant, bearing a white, slightly fragrant flower, 2 or 3 in. long. It is a native of Antigua, and of the Blue Mountains of Jamaica. Though properly a stove plant, it will thrive and flower well in mild localities, if well protected in winter. A pretty pink hybrid between this species and Z. carinata is sometimes met with under the name of Z. Spofforthiana. Z. Treatiæ, a new species resembling Z. Atamasco, is too rare for us yet to speak of its culture.

Zietenia lavandulæfolia. — A dwarf, creeping, half-shrubby perennial of a grayish hue, 6 to 12 in. high, with purple flowers in summer, borne in whorls, forming a spike about 6 in. long, with a slender downy stalk. Suitable for the margins of borders and the rougher parts of the rock-garden, or for naturalisation in ordinary soil. Division. Caucasus. Labiatæ.

Zinnia.—Half-hardy annual plants of splendid colour and thriving best in our country on good warm soils. They are among the most effective of summer-blooming plants, and they flower well until autumn. Their blooms are not easily injured by inclement weather, but retain all their freshness and gay colouring at a time when many bright flowers present but a sorry appearance. In mixed borders, and in beds among sub-tropical plants, well-grown Zinnias are always attractive. Zinnias require a deep loamy soil and a warm open situation. Seed should be sown in gentle warmth. Nothing is gained by sowing before the middle or end of March, as, if the young plants have to stand for a considerable time before being planted, they are apt to become root-bound and stinted for nutriment, and to lose something of that fresh free growth which should be maintained until they come into flower. If the tissues once harden so much as to bring the young plants to a standstill, there will be little chance of rapid progress when they are set out in the open ground. Indeed, it is not advisable to plant them out much before the second week in June, as they are very sensitive to atmospheric changes, and are completely ruined by a few degrees of frost. Plant them in well-stirred, fairly-enriched soil and in full exposure, for they love to bask in the sun's fiercest rays, and demand merely a surface-covering, to protect the roots, and a constant supply of moisture. In a bed by themselves, they would be greatly improved if the soil were thrown out, and a good depth of fermenting manure were well trodden in, and the soil replaced. Both the single and double Zinnias are fine garden plants, and display a diversity and brilliancy of colour equalled by few plants. The double forms have of late been most in request, although both the double and single varieties have been greatly improved. There is one good characteristic about double Zinnias—they are not all so rank and unwieldy as the single types, dwarfing having gone hand-in-hand with multiplying petals in the flowers. Selection has also done something to induce a better habit; and it will be observed that particular types of flower often improve in habit and bloom at the same time. Some of the single Zinnias are very beautiful, for instance, the yellow, carmine, rosy-purple, scarlet, crimson, and orange kinds. Z. elegans is the species from which the numerous varieties mentioned in catalogues have been derived. Z. Darwini is a beautiful hybrid with very double flowers of various colours. Z. Haageana, known also as Z. mexicana, has a very neat habit, and rich orange-yellow blossoms; it also occurs with double flowers.

Zygadenus.—Plants of the Lily family, of no great ornamental value, for their flowers are all greenish-yellow, but their distinct growth makes them worth cultivating in a botanical or a full collection. There are three species in cultivation, all from California. These are slender bulbous plants, with narrow grassy leaves, and tall branching flower-stems, 1 to 4 ft. high. Z. Fremonti (also known as Z. glaberrimus, Z. chloranthus, and Z. Douglasi) is the largest flowered species. The other kinds are Z. Nuttalli and Z. paniculatus. Zygadeni thrive best in a moist peaty border in a shady position protected from cold winds.

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