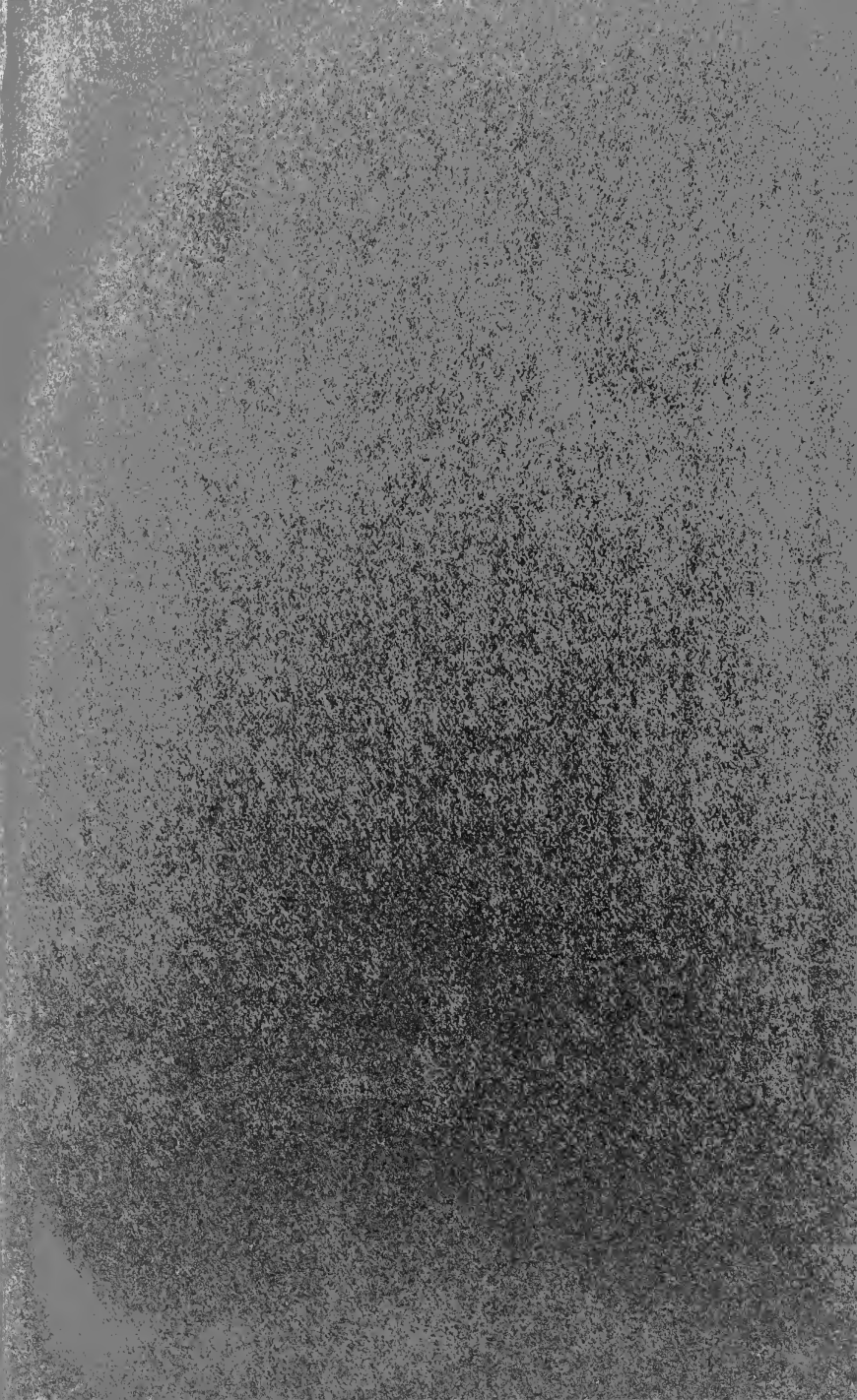




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ROCK GARDENING FOR AMATEURS

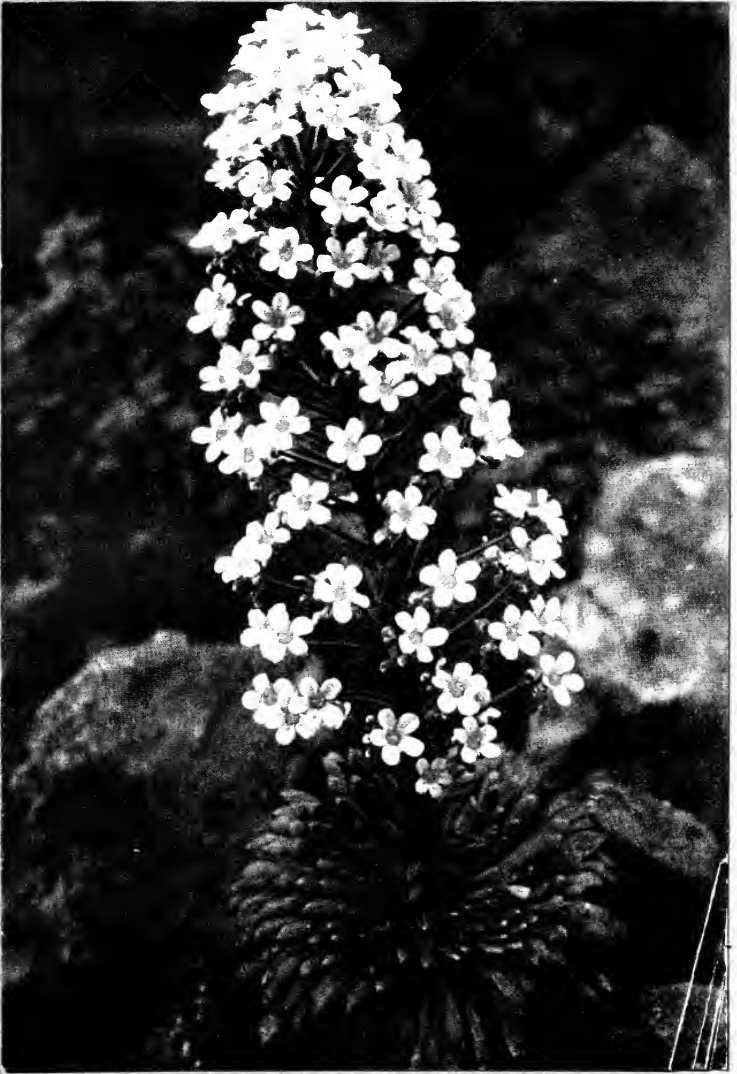
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Rock Gardening for Amateurs

By H. H. Thomas

Author of "The Rock Garden"

Assisted by S. Armitage

THE QUEEN OF SILVER SAXIFRAGES
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Beautifully Illustrated with Twelve
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THE QUEEN OF SILVERY SAXIFRAGES
(*S. longifolia*)

Green

Rock Gardening for Amateurs.

By H. H. Thomas

Author of "The Ideal Garden," etc.

Assisted by S. Arnott

*Beautifully Illustrated with Twelve
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PREFACE

TO have written a book on rock gardening for amateurs a few years ago would probably have proved futile, since comparatively few amateurs were interested. They were indifferent because ignorant of the charms and the possibilities of rockeries, and of the adaptability of alpine plants. The present popularity of rock gardening, and its wide appeal to all classes of flower lovers, are due to the fact that amateurs have begun to realise that the miniature plants from the high mountains—and it is for their accommodation that rock gardens are made—are intensely fascinating, and, on the whole, easy to grow. This result is doubtless owing in great degree to the discovery of new and beautiful kinds, and to the prominence given to rock plants at flower shows throughout the country. However this may be, rock gardening enjoys far greater popularity now than ever before, and garden lovers have found that a simple rockery can be just as delightful as an elaborate one.

Alpine flowers should make an especial appeal to the possessor of a small garden, for it is possible to grow so many of them in a restricted area. Quite a small rockery will accommodate from one to two hundred alpines, and the more kinds one grows, the greater is the enjoyment; they vary so remarkably in growth, in form and colour of leaf and blossom, and in their needs, as to afford unending delight to the gardener.

*

Many of them are attractive little tufts of green or silvery grey in winter, when most garden plants have lost their leaves, or, perhaps, both leaves and stems; the flowering season, beginning in February, progresses through spring to the full tide of blossom in early summer, though not altogether failing until the coming of autumn.

“Rock Gardening for Amateurs” endeavours to show how a rock garden, whether large or small, is built and planted, and how success is achieved with these exquisite mountain flowers. Care has been taken to make the directions as simple and as explanatory as possible, and to describe a thoroughly representative selection of flowers, including those that are easy and others demanding some skill and more than usual care. Luckily some of the loveliest and showiest of all are easiest to grow, and the beginner’s rock garden, planted with Aubrietia, Mossy and Silvery Saxifrage, dwarf Phlox, evergreen Candytuft, and others will compare in brilliancy of display with another planted with the most exacting of high alpine flowers. The colour plates and illustrations from photographs need no introduction; they are, it is hoped, no less useful than attractive.

The writer has had the privilege of assistance from Mr. S. Arnott, an accomplished grower of alpine flowers and a well-known writer on rock gardening. Acknowledgments are also due to Mr. Walter Irving, who has charge of the rock garden in the Royal Gardens, Kew, for his valued help. Mr. Irving has been good enough to read the proofs of the book, and has also contributed notes on some of the most important genera of alpine plants.

H. H. T.

February, 1914.

CONTENTS

PART I

Making, Planting and Tending

CHAPTER	PAGE
1. THE AIM OF A ROCK GARDEN	I
2. ROCK-GARDEN FLOWERS	5
3. MAKING THE ROCK GARDEN	8
4. PLANTING AND GENERAL HINTS	26
5. THE SUMMER CARE OF ALPINE PLANTS	35
6. THE WINTER CARE OF ALPINE PLANTS	38
7. ALPINE FLOWERS FROM SEEDS	41
8. INCREASING ALPINES BY DIVISION AND CUTTINGS	47
9. SHRUBS FOR THE ROCK GARDEN	51
10. BULBS IN THE ROCK GARDEN	55

PART II

The Charm of Variety

11. MORAINÉ GARDENING	65
12. THE LITTLE BOG GARDEN	75
13. ROCK POOLS AND PONDS	79
14. THE ROCK BORDER	90

CHAPTER	PAGE
15. A LITTLE BOG BORDER	100
16. WALL GARDENING	103
17. ALPINE FLOWERS IN POTS	107

PART III

Indispensable Rock-Garden Flowers

18. ANDROSACE (ROCK JASMINE)	111
19. ANEMONE	116
20. CAMPANULA (BELLFLOWER)	121
21. HARDY CYCLAMEN (SOWBREAD)	131
22. THE ALPINE PINKS	134
23. GENTIANA (GENTIAN)	141
24. IRIS	147
25. THE MOSSY PHLOXES	151
26. ROCK-GARDEN PRIMULAS	154
27. THE ROCKFOIL OR SAXIFRAGE	167
28. SEDUM (STONECROP)	182
29. SEMPERVIVUM (HOUSELEEK)	185
30. HARDY ORCHIDS	189

PART IV

DESCRIPTIVE LIST OF THE BEST KINDS	193
--	-----

PAGES FOR READY REFERENCE	260
-------------------------------------	-----

LIST OF ILLUSTRATIONS

COLOURED PLATES

THE QUEEN OF SILVERY SAXIFRAGES . . .	<i>Frontispiece</i>
	FACING PAGE
RAMONDIA PYRENAICA	12
EDELWEISS	26
SUN ROSE (HELIANTHEMUM)	36
LITHOSPERMUM PROSTRATUM	48
A BRILLIANT SPEEDWELL (VERONICA RUPESTRIS)	66
THE MOUNTAIN AVENS (DRYAS OCTOPETALA)	80
A ROCK JASMINE (ANDROSACE CHUMBYI)	112
CAMPANULA STANSFIELDI	122
A DAINTY PINK (DIANTHUS NEGLECTUS).	134
YELLOW FLAX	190
ENTRANCE TO A SUNK ROCK GARDEN	214

BLACK-AND-WHITE PLATES

	FACING PAGE
NEWLY PLANTED ROCK GARDEN	6
MRS. WILLIAMS' ROCK GARDEN, HEMINGFORD PARK	7
ROCK GARDEN SHOWING PAVED PATH AND HUT	14
ROCK GARDEN AT FRIAR PARK	15
A SMALL ROCK GARDEN	18
ROCKY BANK PLANTED WITH ALPINES	19
LOW ROCK WALL	30

	FACING PAGE
WOOD LILY (TRILLIUM)	31
PRIMULA LITTONIANA	38
FRAGRANT THYME (THYMUS ODORATISSIMUS)	39
GROUP OF ALPINE PINKS	44
ROCKY MOUND OF SAXIFRAGES	45
LITHOSPERMUM PROSTRATUM	52
ROCK-GARDEN FLAX	53
GOLDEN DROP (ONOSMA)	60
ALPINE CINQUEFOIL	61
VIOLA PEDATA	70
VIOLA LUTEA	71
WATERFALL IN THE ROCK GARDEN	76
LITTLE BOG GARDEN	77
LOW WALL PLANTED WITH PINKS, ETC.	84
A DRY WALL AFTER PLANTING	85
JASIONE AND AQUILEGIA	92
ANTENNARIA DIOICA	93
CORNER OF A ROCK BORDER	96
CERASTIUM ON A ROCK BORDER	97
BUILDING A WALL FOR FLOWERS	100
A GARDEN WALL IN THE MAKING	101
SAXIFRAGA WALLACEI	108
SILVERY SAXIFRAGES (S. COCHLEARIS MINOR)	109
THE SNOWDROP WINDFLOWER	118
AN ALPINE WOODRUFF	119
THE CARPATHIAN BELLFLOWER	128
SOAPWORT (SAPONARIA OCYMOIDES)	129
HARDY CYCLAMEN	132
AN EARLY SAXIFRAGE	133
GROUP OF PINKS (DIANTHUS PLUMARIUS)	138

LIST OF ILLUSTRATIONS

xi

	FACING PAGE
THE MAIDEN PINK	139
A SHOWY GENTIAN (<i>G. SEPTEMFIDA</i>)	144
GENTIANA PRZEWALSKYII	145
CHINESE PRIMROSE (<i>P. PSEUDO-SIKKIMENSIS</i>)	154
A STATELY BOG-LOVING PRIMULA	155
A ROCK PRIMULA (<i>P. HIRSUTA ALBA</i>)	160
PRIMULA BEESIANA	161
ALPINE PINKS AND <i>SAXIFRAGA LONGIFOLIA</i>	170
GROUP OF <i>SAXIFRAGA EXARATA</i>	171
SILVERY SAXIFRAGES	174
MOSSY SAXIFRAGES	175
IBERIS CORREAEFOLIA	182
EVERGREEN CANDYTUFT	183
ROCK-GARDEN YARROW	186
LEBANON CANDYTUFT	187
BALEARIC SANDWORT	202
ANTHEMIS MONTANA	203
AUBRIETIA PRICHARD'S A I	208
AUBRIETIA LAVENDER	209
SNOW IN SUMMER (<i>CERASTIUM</i>)	212
SUN ROSE (<i>HELIANTHEMUM</i>)	213
A HANDSOME SPURGE	220
HERON'S BILL (<i>ERODIUM</i>)	221
POLEMONIUM REPTANS	234
ROCK WALL AND BOG BORDER	235
OXALIS ADENOPHYLLA	244
OXALIS ENNEAPHYLLA	245

ROCK GARDENING FOR AMATEURS

PART I

Making, Planting and Tending

CHAPTER I

The Aim of a Rock Garden

IT is rather extraordinary, yet nevertheless true, that if one talks to the unskilled amateur gardener about a rock garden (and is it not a fact that there are some very expert amateurs?) he realises at once what is meant. Attempt, however, to broach the subject of alpine flowers and he confesses immediately to bewilderment. He seems to be unaware that the object of a rock garden is, or should be, to enable one to grow the flowers that have their homes on the fringe of eternal snow, where "hills peep o'er hills, and alps on alps arise"; that flood the lush mountain meadows, rock crevices, and stony moraines with most exquisite blossom at the quick coming of spring. It is true that all the flowers grown in the rock garden are not denizens of the high alpine zone, nevertheless that is the home of the great majority. The list of mountain flowers is so extensive, their classification seems so complex, and their names are so strange that

2 ROCK GARDENING FOR AMATEURS

the beginner in gardening is apt to be alarmed when he attempts their cultivation. Yet this is a pursuit that exercises an immense fascination over its devotees, and their number is increasing every year; it is certain that the beginner has only to cross the threshold—to make a start with those that are as easily grown as a rose—and he will have discovered a new and very real delight in gardening.

I remember the time when the very name of Saxifrage was sufficient to create a nightmare of despair, the horrible feeling that arises when one attempts to tackle a subject that is foreign and bristling with difficulties. But no sooner have you put in a bit of Mossy Saxifrage and wonderingly watched it grow and grow until it forms a fairy carpet of evergreen foliage, studded in spring with pink or red or white blossoms, and all without further attention on the gardener's part, than bewilderment becomes merged in admiration, and Saxifrage is no longer a name but the symbol of a lovely and bewitching plant that responds readily to the most ordinary care. Subsequently you discover that there are Silvery Saxifrages, close-tufted, creeping plants with hard, silvery-margined leaves, that spread an enchanting grey cushion over the rocks at the instance of a little further care. Thus your acquaintance with Saxifrage makes rapid progress and soon borders on intimacy, while your doubt and dismay correspondingly disappear. During many gardening years I have grown all sorts and conditions of flowers and fruits, yet in the tending

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of none have I found such real and lasting enjoyment as of the rock-garden flowers.

As a rule they are so miniature that one's heart goes out to them at once; they seem to demand the utmost care and delicate attentions. Then one can grow so many alpines in a small piece of ground that there is no need for a gigantic rock garden for the accommodation of even a representative selection. With the help of the moraine—the very latest thing in gardening—one may have a miniature alpine garden in a suburban back yard. It has long been commonly thought that big rock masses are essential to success with the high alpine flowers, and the idea has spread and become deeply rooted that rock gardening is a recreation for the wealthy possessed of extensive grounds. Nothing is farther from the truth. Providing your garden gets the precious sunshine—which someone has described as the life and soul of a garden of flowers—then there is no reason at all why you should not fill it with the choicest jewels that bedeck the mountain ranges of the wide world. This sounds like exaggerated phrase, but it is the plain unvarnished truth. Some of the alpines are ridiculously easy, most of them respond admirably to a little extraordinary care, while those few that are tantalising—well, they can very well wait until one's knowledge has reached such a stage that one is able to estimate and to satisfy their needs. It is, then, true that the size of the rock garden is no just measure of its capacity for giving pleasure.

4 ROCK GARDENING FOR AMATEURS

The love of building is inherent in all of us, and the average amateur who has hitherto grown his flowers on the flat, finds, when once he has made a start, that he gets as much real fun out of it as the babies building castles on the sands. If his attitude towards gardening is a proper one, even the preparation of a rose bed or mixed border is capable of giving pleasure to the digger, but this is as nothing to the fierce joy that possesses the rock gardener. Slowly, surely, and with a subtleness that fascinates, the work of his own creation grows under his eyes; there is something substantial to show for his labour, and he experiences the satisfaction that follows "something attempted, something done." It is, I think, true that building a rock garden is so absorbing because one is following an ideal set by Nature; here rises a peak or dips a hollow, here frowns some miniature promontory or rises sheer some Liliputian precipice. There gapes a chasm or lies some stony slope or exquisite alpine meadow. It is all so delightfully imitative that in idealistic moments it is easy to imagine one's garden of rocks and flowers peopled by mountain elves. The prosaic methods that are followed in preparing borders on the flat have no such effect on the imagination; they leave one, in comparison, mentally cold, if bodily warm. He who builds well and truly has created a little flower world of his own; he has—it may be in some small suburban plot, dull, flat and enclosed—raised a fair model of a mountain range, and peopled the peaks and crannies and crevices with their own inimitable flowers.

CHAPTER II

Rock-Garden Flowers

TRUE alpine flowers are those that grow wild high on the mountains of the globe, where, through long ages, they have adapted themselves to the conditions of their environment. A long, long winter is theirs, during which they lie deep-covered with a warm mantle of frozen snow. In spring, at the melting of the snows, they are supplied with abundant moisture that, together with increasing warmth, brings them into bloom in an incredibly short time. The summer, though comparatively brief, is hot and dry, and the heat is intensified by the rarefied atmosphere of the high elevations at which the alpiners grow; were it not for their deep roots, the close-matted foliage which lessens evaporation, or the herbage that grows up about some of them, they would fare badly. As it is they suffer from no lack of moisture at the root. Late in summer snow again falls and they are kept warm and dry throughout the winter months. Thus they have a short season in which to grow, flower, and ripen seeds in order that their kind may be perpetuated.

How different are the conditions in this country! Instead of the perfect winter rest they enjoy on the mountains, the alpine flowers are subjected to the changes

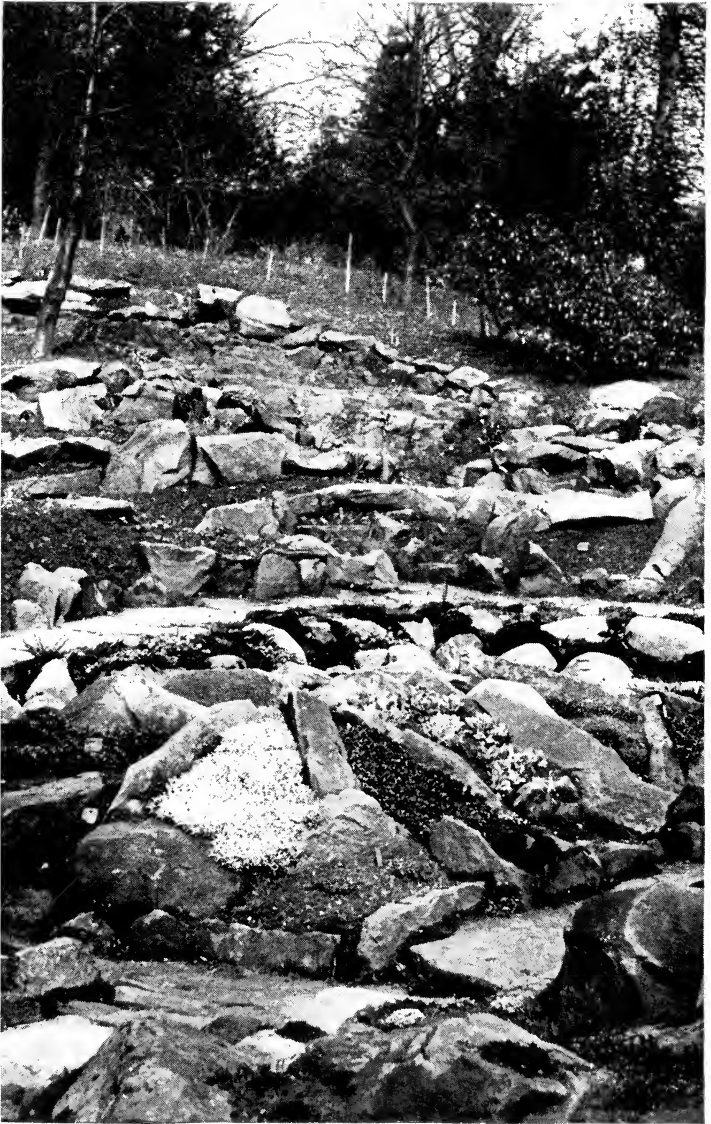
6 ROCK GARDENING FOR AMATEURS

and vicissitudes of an English winter, when we may have frost, hail, sleet, snow, and rain in one day.

The native conditions of some high alpiners, those from near the snow line for example, are such that it is almost impossible to imitate them in our gardens. With us these plants may be suffering from drought at a time when in nature they are amply supplied with moisture. Nature's contrivances for the protection of alpiners are frequently of very varied character. Many of them are thickly clad with hairs, woolly material, silvery down, or a coat of farina or mealy substance, which are of the utmost value on the high mountains as a protection against either excessive cold or fierce heat. The dense woolly covering on the flower heads of Edelweiss, the silvery silk of some of the Androsaces, or the web-like hairs of the Cobweb Houseleek are examples. Others, again, have fleshy, succulent stems which render their acclimatisation here a matter of difficulty.

In their native habitats many alpiners grow in the crevices of rocks or among stones and debris. Some are fully exposed to the sun during the day, yet are kept moist by heavy dews at night:

Another large class of alpine plants consists of those from the mountain meadows and valleys. Some of these are remarkably difficult to manage. We know, for example, that it is not easy to cultivate the Spring Gentian (*Gentiana verna*) successfully in our rock gardens, whereas many a Swiss meadow glows with its intensely brilliant blue flowers in spring. Later the grass grows up about the



PART OF A NEWLY FORMED ROCK GARDEN AT GARTSHORE





MRS WILLIAMS' CHARMING ROCK GARDEN AT HEMINGFORD PARK, HUNTS

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plants, shielding them from the glare of the sun, and giving them the coolness they then need.

Fortunately, however, alpine flowers generally are so accommodating that we can persuade most of them to grow more or less happily in our rock gardens. The measure of success depends largely upon our consideration for their needs and upon the attention we may afford them. The observance of many little points, apparently trifling, often accounts for the difference between success and failure. Though the true alpine flowers are natives of the high mountains, in the rock garden we grow others of low growth suitable for associating with them. Many of these are bog plants, others—such as some of the New Zealand Veronicas—grow by the seashore. Their inclusion not only gives variety and increased interest to the rock garden, but prolongs its season of beauty, for many of the plants that are not true alpines bloom after the high mountain flowers are over, and are thus of especial value. If the rock garden is properly planned and constructed it will provide suitable homes for all these—the alpine plants from near the snow line, the denizens of the mountain meadows, dwarf plants from the lower ranges, and those that grow wild in the bogs and on the seacoasts of various lands. Most of them are so accommodating that, with a little care, we may enjoy them in almost perfect beauty, and provide them with all they need to enable them to grow healthfully and happily in our gardens.

CHAPTER III

Making the Rock Garden

WHERE shall we make the rock garden? Often enough the considerations of space provide an easy and final answer to the question. After all, it does not matter very much, providing certain elementary principles, such as appeal to the common-sense gardener, are kept in mind and are not infringed. One should avoid positions that are shady, wind-swept, under the drip of trees, or damp. Sunshine is, above all things, essential to success with mountain flowers, and the great majority of them cannot be grown satisfactorily in its absence. It is true that some rock-garden flowers, though comparatively few true alpines, require shade, but it is a simple matter to arrange for this when building. In fact, as the formation of the rock garden proceeds, the varying needs of the different plants should be always in mind, and provision made for them. It is poor rock-gardening to build in haphazard fashion without considering the exigencies of the flowers. The uninitiated reader is strongly advised to get to know something about the plants before he starts building; he will then build all the more finely. This sounds very much like the advice given by some of the golfing books,

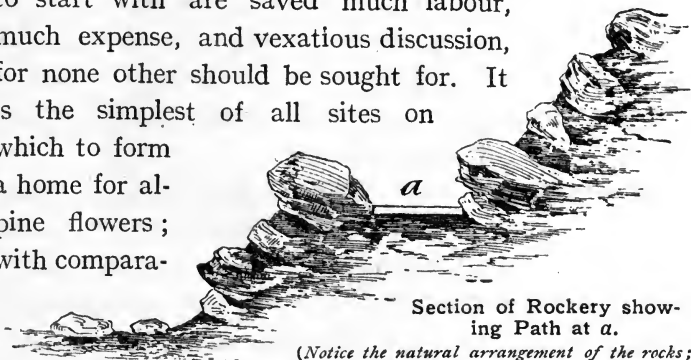
that one should learn to putt before attempting to drive, which, of course, no one ever does, for it would prove too dull for words. Probably also the beginner will not make the acquaintance of the flowers before he begins to build, and in so doing, if not wise, he will at least be quite human. He will, however, have much to unlearn, and his rock garden will doubtless need some alteration; but, after all, this is part of the game, and the game abounds in interest. How dull would gardening be if we were able to learn it all at once! Each one has to teach himself to a large extent; books can only put the reader in the right way.

A Place in the Sun.—Choose then, above all things, a place in the sun, and you will have begun thoroughly well. Have not many of us at one time or another, with some regret, given away pieces of rock plants to friends whose only home for the mountain flowers is under the drip of some leafy tree that is fit merely for the weeds of the rock garden, and no more suitable for the jewels of the race than the garden-rubbish heap? Drip, drip, drip, the winter through soon tells its tale, and the little alpines, that can be so gay in the sunshine, dwindle, droop and die. Do not have the rock garden within yards of a big tree, or the roots of the latter will assuredly find it out, rob the rock flowers of their rightful nourishment, and generally prove a nuisance. Positions near buildings, too, should be avoided, if possible, for these hill flowers love an open, airy spot. Choose also, if you can, a spot that is sheltered from fierce winds.

10 ROCK GARDENING FOR AMATEURS

If such an ideal is not to be found within the space available, give preference to the sunshine. You can put in a few shrubs for shelter, and though you cannot provide fresh air in a confined corner, plenty of sunshine atones in great degree.

The best of all places in which to build a rock garden is on a bank or natural slope, and those who have this to start with are saved much labour, much expense, and vexatious discussion, for none other should be sought for. It is the simplest of all sites on which to form a home for alpine flowers; with compara-

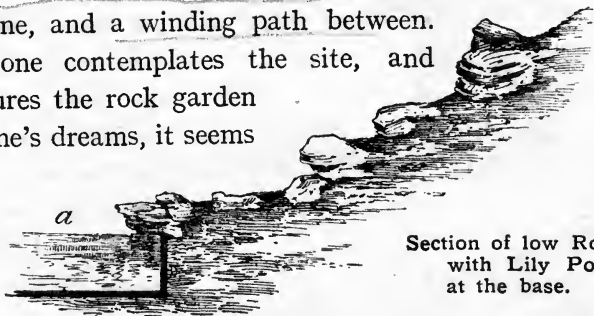


Section of Rockery showing Path at a.

(Notice the natural arrangement of the rocks; they are deeply embedded and sloping inwards.)

tively little trouble it may be transformed into a veritable alpine slope, flooded with the blossom of the high hills in spring and early summer. Here and there miniature promontories, formed with the biggest rocks available, will jut out, giving both shady and sunny spots; elsewhere there will be little receding bays, and almost everywhere rocky, stony banks, steep sometimes, sometimes gently sloping, and always as naturally irregular as one can make them. Little stone-flagged paths shall wind in and out and round about, discovering fresh beauties to the tourist at every turn.

The Sunk Rock Garden.—So far so good, but how do those of us fare whose gardens are as flat as the proverbial pancake? Why, very well, indeed, though the labour will be greater and more prolonged, the expense perhaps somewhat heavier, but the result just as good, and the interest in the building even more intense. Perhaps the most satisfactory form the rock garden can take when a piece of flat ground only is available, is of two banks of bold and irregular outline, and a winding path between. As one contemplates the site, and pictures the rock garden of one's dreams, it seems



Section of low Rockery with Lily Pond (a) at the base.

that there is a long way to go. The way will be long or short, according to the depth one delves. Are the banks to be ten or twelve feet high? Then, of course, it means heavy digging, and much wheeling of soil. If, however, one is content with a height of say six feet from the central path the labour will be proportionately lighter. But there is no need to complete it all at once if expense is a consideration. One may build it little by little, planting as one goes. The banks should preferably face east and west, the central path thus running north and south, not, of course, straight, but winding gracefully,

12 ROCK GARDENING FOR AMATEURS

and every now and again giving off little paths that lead up to the miniature mountain peaks, and explore



Rocks should not be placed so that the upper overhangs the lower one as shown. Plants in the crevices beneath are not likely to thrive.

the enchanting alpine dells. Thus shall we provide aspects facing all points of the compass. A sunk rock garden such as this has the advantage of self-provided shelter which one may accentuate by planting the most exposed parts with shrubs. The general effect, too, is likely to be more pleasing, for if there are houses or other buildings near, these objects will be less obtrusive in the general view than if the rock garden is so

placed as to be above the level of the ground.

Providing one has a distinct scheme in mind—as, of

FOR COOL CREVICES FACING NORTH
(*Ramondia pyrenaica*)

ROCK GARDENING FOR AMATEURS

and the soil is very rich and that the plants will grow well. The soil is very rich and that the plants will grow well.

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FOR COOL CREVICES FACING NORTH (*Ranunculus pyrenais*)

The soil is very rich and that the plants will grow well. The soil is very rich and that the plants will grow well.

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course, one should have—the labour of making the sunk rock garden is not so formidable as it would seem, for each barrow-load of soil, as excavated, may be dumped down where it has been decided to form the hills, thus avoiding the necessity of a second removal. Once the pathway, or part of it, is cleared, the rest of the work, if not easy, is at least far more interesting, for the actual formation of the bays or recesses, the lesser mounds and the hilly walks, can be proceeded with, and the work is intensely fascinating. There is probably no other initial garden work that gives so much pleasure or offers such scope for originality as the building of a rock garden. Every man must fashion it according to his own ideas, and exercise his own powers of imagination. You cannot very well, in a book, tell him exactly what to do. You can tell him what not to do, and describe some essential details, but you cannot provide a plan and advise that one rock be put here, another there, and so on. These things the gardener must work out for himself, and, believe me, he will find it enthralling work, and feel immensely proud of his creation.

If a representative collection of rock-garden flowers is to be grown, one must remember the necessity for providing all sorts and conditions of sites and aspects, sunny and shady, stony and boggy, gentle slopes, and deep declivities; and arrange also, perhaps, for a miniature cascade, a rocky bed for a stream, and a pool at the foot for water plants. Each and all of these is possible in quite a small rock garden, and they add

14 ROCK GARDENING FOR AMATEURS

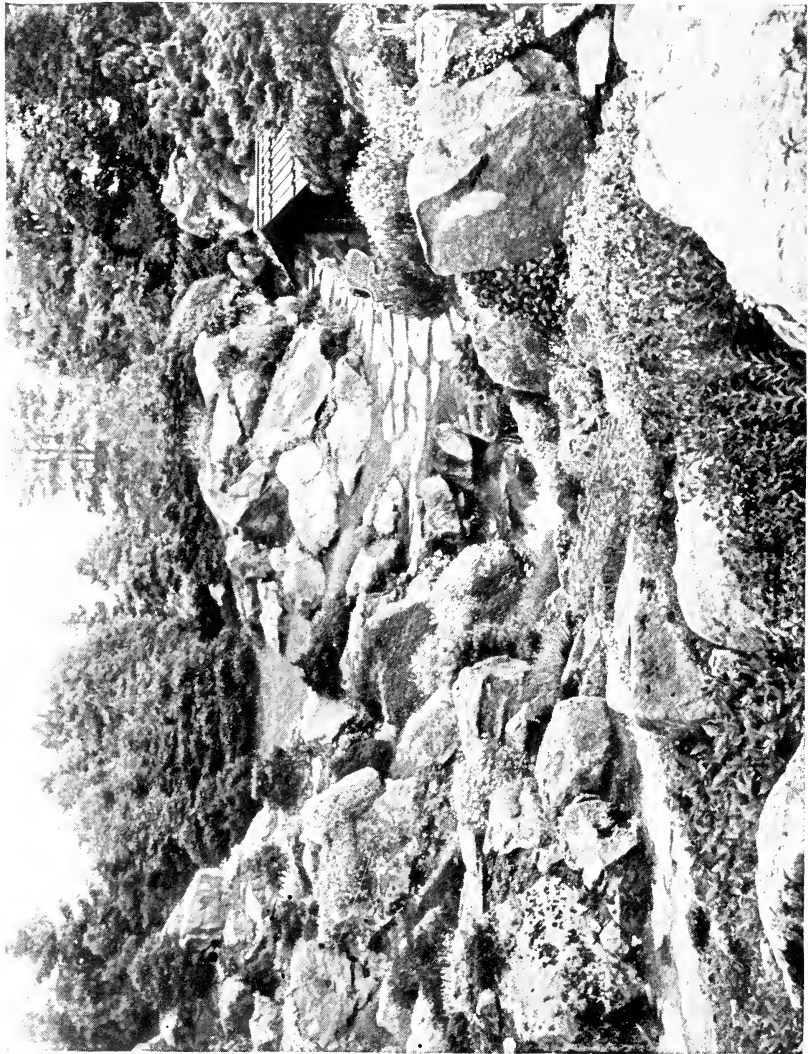


A bold outcrop of rock that looks best when sparsely planted.

immensely to its interests and screen its artificiality. Let the worker imagine that he is attempting to reproduce in miniature some mountain side, with its casual, giant boulders, its groups of smaller rocks, its boggy places, and little stream; if he keep this ideal in view, remembering to build as naturally as possible, he can scarcely be disappointed with the result, especially if he has a thought also for the plants for which he is making a home. Some alpines will grow in the crevices of hot, sunny rocks, or may need depth of soil among stones.



Showing rock crevices well filled with stones and soil for the deep roots of alpine plants.



IN THE ROCK GARDEN AT FRIAR PARK, SHOWING PAVED PATH AND ALPINE HUT





ROCK GARDEN AT FRIAR PARK, SHOWING THE "MATTERHORN"

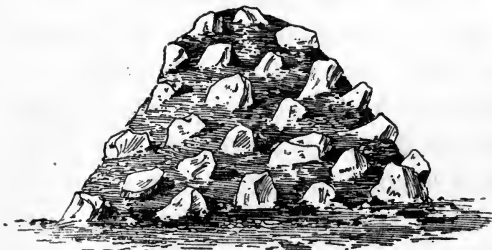
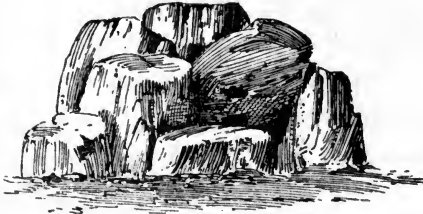
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Others, again, like the cool cleft of a rock-face facing north, or will clothe little mounds in half shade, while still others need deep soil that is always moist.

The Choice of Stone.—The choice of stone affects the appearance of the rock garden to a remarkable degree. It is better to have a few pieces of good stone than an unlimited number of pieces of poor stuff, and if they must be few, let them be big, for even a few big rocks, boldly placed, will give such character that many smaller stones fail to do. If one's garden is in a neighbourhood where a certain kind of stone is plentiful, that generally will be chosen. It is a mistake to use numerous kinds of stone. Make choice of one kind and use it throughout. One should, if possible, avoid hard rocks, such as those of granitic type, for plants do not like them, and derive no help at all from their impervious surface. Those that are porous and absorbent are most suitable, for the plants' roots cling to them readily, and find abundant moisture in their cracks and crevices. Moreover, such rocks soon become weathered, while the hard stone never does. One should try to avoid very soft stone, for it is apt to crumble and disintegrate from the effects of the weather. There are many kinds of rocks, chief of which are sandstone and limestone. Both vary very considerably, the former from the light-coloured, attractive stone of Yorkshire and Cheddar, to the brown sandstone-like material that is found in Gloucestershire. The light limestone, especially when weathered, is most admirable material for rock building; its appearance

16 ROCK GARDENING FOR AMATEURS

is probably more natural than that of any other. The rocks are marked with cracks and crevices and fissures, telling of ages of exposure to the elements, and they



How not to build a Rockery.

form admirable roothold for many alpine plants.

Weathered sandstone, too, is excellent, and, moreover, cheaper than limestone. It is very porous, absorbing much moisture, and plants cling to it very readily. Millstone grit is a form of sandstone, excellently suited also to rock-garden building, and much liked

by the plants. This is of greatly varying shape; the rocks are generally bold and rugged in appearance, and even in the hands of a beginner are likely to give pleasing and natural results. There are many other different kinds

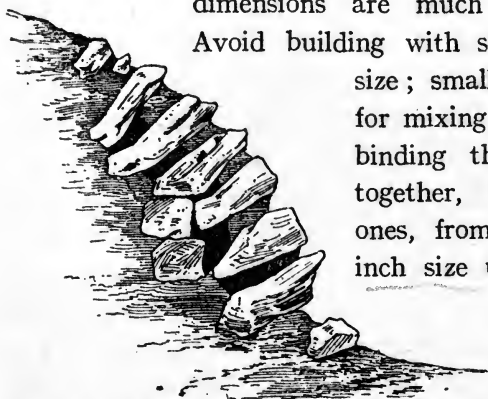
of stone that may be used for the purpose in view. The least satisfactory are those of flat, slab-like character. It is very difficult to arrange these to produce a natural rock garden, though they are less objectionable when buried deeply. Such stones are, of course, useful for placing beneath the surface, and for building walls, but generally rocks of irregular shape and bold outline alone should be chosen.

One of the most expensive of all rocks is tufa, though it is undoubtedly most attractive, and very useful. It is useful because some alpine plants that are difficult to grow have an especial fondness for tufa, and will grow there while languishing in other stone. One may drill holes in tufa, fill them with soil, and put in little plants with every prospect of success, for the roots will penetrate the rock, and there wax strong and lusty.

The Geology of Rocks.—The scientist has swamped geology in a flood of technicalities, but it is quite sufficient for the owner of a garden to divide all rocks into two great classes—stratified and unstratified. The former, or sedimentary rocks, as they are called, are well represented by shale, sandstone, and limestone, in which layers or strata are distinctly noticeable; the strata are considered to have been formed by the action of water; they are fossiliferous, and, what chiefly concerns the gardener, are generally found in a more or less regular condition in the natural state. Unstratified rocks are igneous or volcanic in origin; it is presumed that they existed at one time in a molten condition, and now

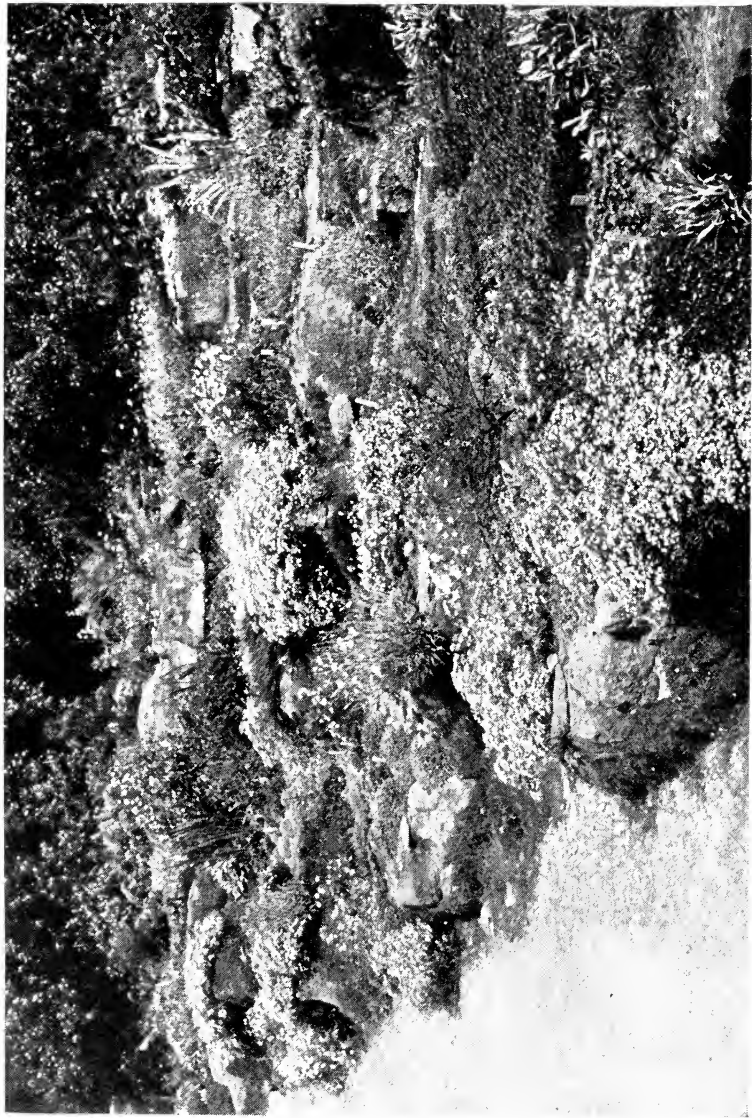
that cooling has taken place they have a more or less glassy or vitreous appearance. Whinstone and granite are typical representatives of this great class of volcanic rock, and the crystalline forms obtained in certain localities are also of similar nature. In the latter a kind of stratification is traceable, but this is easily seen to be entirely different from that of the sedimentary rocks, and an attempt to break up specimens of the two kinds conclusively determines their classification.

Crystalline rocks are distinctly beautiful as specimens for a museum, or a private collection, but by all means should be avoided for the rockery. Gaudy, bright rocks are much too conspicuous, and detract from the charm of the rock garden. Weather-beaten stones from which all suspicion of newness has been removed by long exposure are best; and irregular, uneven pieces of all dimensions are much to be desired.



Showing the wrong use of cement in building up a "rock"; all the crevices are blocked, thus preventing the roots reaching the soil.

Avoid building with stones of uniform size; small stones are useful for mixing with the soil and binding the bigger pieces together, but fairly large ones, from a cube of six-inch size up to the largest obtainable, are best for the actual building, and should be selected.



A SMALL ROCK GARDEN PLANNED AND PLANTED WELL





ROCKY BANK PLANTED WITH ALPINE ROSE, HOUSELEEK,
ALYSSUM, ETC

70 111
Alyssum

Lessons from Nature.—The veriest tyro has recognised the fact that igneous rocks are always found in an irregular collection, scattered here and there in no harmony of design. So, in building with such as granite and whinstone, the specimens should be used to represent a chance group of rocks. Corners will peep through the soil and suggest a mighty boulder underneath; large pieces of rock will lie partially buried in the ground, and occasionally one may rest almost totally upon the surface. Small stones can be built up to represent a giant crag; cement is justifiable to elaborate this principle, but the greatest care should be exercised to conceal all parts where it has been employed, and to use as small a quantity as possible.

Sedimentary or stratified rocks retain fairly regular lines and forms; sometimes, indeed, the strata are contorted by a long past rending of the earth's crust, but in all cases the lines of formation can be followed distinctly. Now, in copying from natural rock structures, it would be the height of folly to model our rockeries on these frigidly regular parts, such as may be seen along the face of a quarry or on the tall crags that are found at various parts of our coast. Our aim must be to avoid such uniformity in order to obtain impressive effect; variation must enter into the work—must be, in fact, the very essence of the work—and picturesqueness can scarcely be attained along with scientific regularity. Fortunately, stratified rocks are frequently found broken up and scattered about in all directions, thus affording

a better example for us to follow. Variation revealing the essential form of stratification is, then, the aim. When employing flat rocks, between the fissures of which plants are to be grown, do not have the strata level, for in such a case any soil between the layers becomes dried up readily ; give them a slope and plants will establish themselves easily, sending their roots down to the soil below.

The grouping of a mixed quantity of rocks makes a difficult problem for the beginner. He must select them a little ; unless they are all stratified, or all unstratified, he should place them in two heaps composed respectively of the different kinds. As a general rule keep the stratified for one corner of the work, the unstratified for the other, and combine the two groups by a rock construction in which a gradual change from one type to the other does not strike the eye as being peculiar and out of place. Often the evils of sudden changes from a sedimentary basis to a volcanic formation are noticed, and the result is scarcely ever pleasing. Groups of one kind of rock interspersed in rockeries composed chiefly of the other have the same result, and seldom look well. One might think that this scientific selection is unworthy of consideration when a small rockery is being built, and that anything will do ; but a rockery is an artistic creation, and as such it has established itself in the heart of the modern æsthetic gardener. Any kind of paint will cover a canvas, but blending, harmony, and the right colours make a picture.

The Value of Stone.—As is pointed out in the chapter dealing with the rock border, it is possible to have a rock garden and to grow alpines successfully without rocks or any real stone at all. It is possible to form an excellent substitute from concrete blocks, though one would not do this from choice. These can be built up into “boulders” of varying size, with the help of cement, and it is an easy matter to round off the edges, and in other ways to give them a fairly natural appearance. One often hears it said that rocks are not at all necessary in a rock garden if one regards this as a place in which to grow alpine flowers, and, of course, it should be so regarded. It is quite true that most alpines can be grown without putting in any rocks at all, but that scarcely justifies their total exclusion. It is the abuse of the rocks that has led to this condemnation. No one can deny that alpine flowers look infinitely more attractive in a well-arranged rock garden than they do on a raised border. If some foolish persons make a garden of rocks instead of a rock garden for flowers, that is no good reason why we should dispense with rocks altogether. It remains true, however, that it is very easy to spoil an alpine garden by using too many rocks; a few bold pieces, cleverly placed, give far more character than an unskilled display of ten times as many. If it is kept always in mental view that the rock garden is for the cultivation of alpine flowers, one is not likely to overdo the rocks.

How to Build.—Having discussed the site and the rocks, we now come to the crucial part of it all—how to

22 ROCK GARDENING FOR AMATEURS

use them both to the best advantage. Firstly and chiefly most alpine plants need a good depth of soil. One is apt, in visiting a good rock garden, to get the impression that the plants are growing in or on top of the rocks. They may look as though they are—they should, in fact, do so—but really their roots are deep down in cool and moist crevices, or in fair depth of suitable soil. One has only to read of the difficulties encountered by collectors of alpine plants, owing to the great depth of the roots, to realise that a deep root run must be provided. Soil, then, is all important. Free drainage is not less so, for a lack of well-drained soil is as bad as too little. If the ground where the rock garden is to be built is fairly light, and never very wet in winter, no drainage is necessary. If, on the other hand, the land is heavy, clayey stuff, proper drainage is most essential. As the hills and mounds and headlands are built up, such material as broken brick, pieces of flower-pot, pieces of rock, leaf-soil, old potting soil, and coarse sand should be very freely mixed in; otherwise there will be great danger of some of the plants deteriorating or dying in winter. The necessity of incorporating such materials in heavy soil cannot be too strongly emphasised, and, further, when the actual planting of choice flowers is carried out on such ground, holes not less than twelve inches deep should be taken out, and the bottom filled with drainage. Lucky, indeed, is the rock gardener who has a light soil to deal with; he is saved much tribulation. He of the heavy soil, however, will have no

cause to grumble if he takes the precaution to mix in plenty of drainage material as the work proceeds. One can scarcely bury too many pieces of stone and broken brick in heavy soil, and even in light soil it is wise to bury a few big pieces of stone, for the roots of the plants find coolness and moisture there, and cling to them in a remarkable fashion.

Having roughly outlined the form which the rock garden is to take, the valleys and hills and mounds and promontories showing prominently, and having ensured good drainage if the soil requires it, the next thing to do is to place the rocks.

Placing the Rocks.—There should be coherence in the scheme, some real design, so that the finished garden may have repose and naturalness. There should be some strong outstanding feature to which all else is subservient, whether it be a rocky cliff, a bold crag, or a mountain stream flowing through a stony bed, something that will at once arrest the attention, and to which the other parts of the rock garden form a setting. The rocks cannot be put in too firmly; this is, perhaps, the chief detail to remember. To get them firm we must put the greater part of the rock beneath the soil; we shall then get not only stability, but a natural formation as though the rocks were outcropping from the ground. To dump the stones down on the surface as one so often sees done is wrong; they are then neither firm nor pleasing, moreover they are of little or no benefit to the plants. Not that every bit of rock should be covered;

far from that, for we rely upon a sight here and there of bold rockwork to give character to the scene. Yet generally the greater part of the stone should be below the soil; there it is of greater benefit to the plants, and the portion that outcrops will look its best. A perusal of the simple notes dealing with the chief classes of stone will give clues to the methods of placing them, but generally it may be said that no rock should be stuck on end, as though it were some peak growing out of the ground, and that regard should be paid to the natural stratification. For example, rocks in which the strata are horizontal should not be placed in a vertical position. If the function of the rocks is regarded chiefly as that of supporting the soil, the builder is not likely to commit many heresies.

The soil should be made very firm all around the rocks, so that no hollows and no half-filled fissures remain. It is necessary to provide "pockets"—that is, portions of soil enclosed by rocks or stone—otherwise much soil will be washed away from the plants in spring during heavy rains. Unfortunately they are apt to give the rock garden an artificial appearance if regularly margined by small pieces of stone; it is far better to make use of fewer pieces of larger stone, which can be so arranged as to prevent the possibility of the plants suffering from drought in dry weather. One can, for instance, form rock ledges behind the top of which the plants are inserted. All rocks and plants should, when their form admits of it, be so placed that they slope

towards the soil; then all moisture that falls will trickle to the roots of the plants instead of trickling away from them, as it would do if the rocks leaned outwards. It is wrong to place one rock so that its edge overhangs the rock below; it should be set slightly farther back, otherwise plants beneath it would be liable to perish from lack of moisture.

CHAPTER IV

Planting and General Hints

THE question of planting is one of the most important that arises in the cultivation of alpine flowers. Upon its proper performance depends not only the general appearance of the rock garden, but the future welfare of the flowers also.

In considering the subject there are several points that need to be kept in mind. The general effect of the display is of consequence to the amateur, although the enthusiastic collector is inclined to attach less importance to this. To have a really satisfactory rockery there must be an association of plants of various types—such, for instance, as those that will thrive in dry soil, or where the ground is moist, in sun, or shade—together with shrubs and other distinctive plants that give character to the garden. There is no reason why even the smallest rock garden should not form a complete and satisfying picture. In careful and correct planting is found the solution to many of the problems that arise in the cultivation of alpines, and it cannot be too strongly emphasised that any additional care given to this work is bound to help towards the success of the flowers.

Before putting in the plants it is wise to indulge in

THE POPULAR EDELWEISS (*Leontopodium alpinum*)



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a little anticipation, so that one may form some idea of the future aspect of the rockery when the plants shall have become established and displayed their true characteristics. Probably three or four years will elapse before such a consummation is fully realised, though the rock garden will be a source of intense interest from the moment the plants are put in. Let us, then, make some study of the plants, and the best position in which to place them. This will prove a simple matter if the details given in this book, and especially the lists, are studied, while much useful information on the question may be derived from the catalogues of the various nurserymen who make a speciality of rock plants. In purchasing, a selection described as suitable for different aspects should be procured, so that the whole garden may be well covered. A few dwarf shrubs, however limited in number, ought always to be included, for if planted in a prominent position they add surprisingly to the character of the rock garden, and lend a distinction that nothing else is able so readily to furnish. There are many quite low-growing shrubs, true pygmies, that can be employed in the smallest rock garden with great advantage.

Single Plants or Groups.—Whether single plants or groups of several of the same sort should be planted depends largely upon the size of the rockery and the depth of the owner's pocket. In a large rock garden groups are essential, otherwise a "patchy" and meagre display will result. If the object be chiefly to produce

a brilliant show of bloom it is far better to plant generous groups of a few kinds than one plant only of many sorts, though a collection so formed would lose in interest owing to lack of variety. If the reader would have a representative collection in the small rockery, he must needs be content with comparatively few plants of each sort. Besides, it is really far more interesting to choose plants that will give a prolonged season of bloom than to have a brilliant show at one time and a pronounced blank a little later. One should endeavour to have three plants of each kind if only for the sake of experiment, for often, though one may give it all that it apparently needs, a plant will refuse to thrive, while another in a different position will progress and prove an immense success. This is especially the case with some of the more difficult sorts. In dealing with the commoner kinds no such trouble is likely to be experienced, and they should be grouped together.

A group of three is more satisfying than a group of two, but with scarce or expensive kinds the reader may have to content himself with a single plant. This may usually be increased without difficulty within the course of a year or so. There is even an advantage in beginning with only one plant of a kind, for one soon learns how best to increase it, and raising alpine from seed or cuttings or by division is fascinating work. The kind of plant one is buying should determine whether or not more than one is necessary; for instance, while three plants of *Saxifraga Burseriana* would be required

to form a really satisfactory little group, one of an *Aubrietia* would soon develop into a wide patch quite big enough for the small rockery.

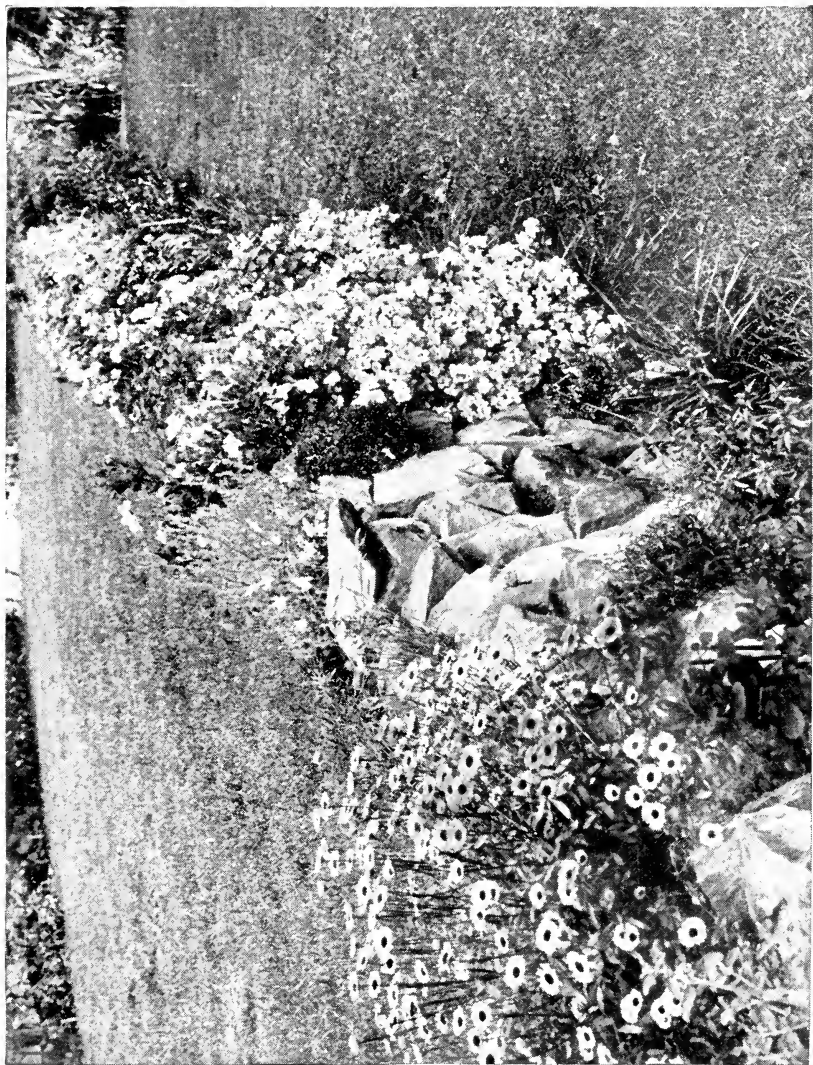
This introduces the question of whether the free or the slower growing alpiners should be chiefly planted at first. The advice frequently given to purchase free-growing plants, which can be discarded when the others have reached a fair size, has something to commend it, for the rockery has a "furnished appearance" from the start, whereas it would take several years to obtain the same result with the smaller and choicer plants. Yet there should certainly be a large proportion of choice kinds in the initial selection, for the vigorous ones cover a lot of ground the first season, and are liable soon to become rather a nuisance in the small rock garden if too many are planted. A smaller number of really good plants will eventually give greater pleasure.

The Actual Planting.—The actual placing of the plants is a question that cannot be too well considered, for as a rule transplanting is a bad practice with rock-garden flowers. They must remain undisturbed if they are to be a success. The beginner is apt to be misled by some of the rock gardens arranged at the large flower shows. These are exhibited, as a rule, merely to make an imposing display, and in many cases the plants are set in positions in which they would never grow permanently. It is folly to expect a moisture-loving *Primula*—such as *Primula rosea*, for instance—to thrive on high rockwork in a position in which *Primula marginata*

30 ROCK GARDENING FOR AMATEURS

would delight ; or a *Sempervivum* or Houseleek, which needs a sunny peak or crevice, to be happy in a low, moist part of the rockery. The lists at the end of this work will, it is hoped, be helpful to the reader in choosing plants suited to each position in the rock garden. One most essential point is that planting should be done firmly : plants that are set loosely in the soil rarely or never succeed. Amateurs frequently fail to realise this and disappointment is bound to follow. It is impossible for the roots to obtain a proper hold of the soil unless they are inserted very firmly ; moreover, if loose or insufficiently covered they are more than likely to die of drought. It may be said, in fact, that far more alpinists are lost from loose planting than from any other cause.

In planting from pots the plants should be turned out so as to leave the ball of earth intact. If the soil is full of roots and these are interlaced, the crocks should be picked out from among them with a small, sharply pointed stick and some of the outer roots disentangled before planting. The plants must be firmly pressed down, the soil being placed closely about the roots. It is an advantage to have plants in pots, since practically no check is then given. When very small plants not in pots are received it is just as well to put them into little pots and keep them in a frame for a few weeks, so that the pots become fairly full of roots before planting time. Plants that were raised from seeds and not grown in pots and those ordinarily received from nurseries also require some additional care in planting. If the roots



A ROCK WALL SHOWING ERIGERON, CAMPANULA AND OTHER FLOWERS





WOOD LILY OR TRINITY FLOWER (TRILLIUM GRANDIFLORUM)

70 11

are small and numerous they should be spread out well in a hole made large enough to hold them comfortably. Plants with a tap root—a long, unbranched root that goes straight down—are more difficult to establish; they should be given a deep root run, the tap root being placed in as natural a position as practicable. It is advisable to give water to newly planted alpine, so that the soil may be well settled about them, and finally to add a little more soil.

Planting in Rock Crevices.—The work of planting in rock crevices needs especial care, for it is there that failure to pack the soil closely about the roots is most likely to occur. Small plants are necessary. When it has been ascertained how deeply the plant's roots will go, the crevice should be filled to the necessary depth with a suitable soil mixture made thoroughly firm by ramming with a flat-bottomed piece of wood. It is impossible to do so after the plant is inserted. The plant is then put in, the roots are covered with soil, and the crevice is filled, the soil being made quite firm as it is put in. It is necessary to insert certain plants flat against the face of a perpendicular rock, their roots being laid in a horizontal fissure; some of the Silvery Saxifrages, the Ramondia and some of the Rock Primulas are commonly so planted. The practice in this case is first to fill the base of the crevice, then to place a layer of soil on its lowest side, lay the roots on this and gradually fill in from above, making the soil thoroughly firm as the work proceeds. Small pieces of stone introduced in the compost help to

keep the plant firm, and similar pieces placed round about the neck of the plant at the entrance to the crevice will serve further to ensure its stability.

In bright, dry weather shading with light tiffany is advisable for a few days. A flower-pot is often made to serve the purpose, but it is not so suitable. Practically all the choicer alpiners benefit by a covering of broken stone or gravel placed on the soil; this serves to prevent loss of moisture by evaporation, and is especially beneficial to those freshly planted. Failing broken stone or gravel, a few ordinary stones may be used to the same end. Newly planted shrubs ought really to be supported by a small stake to prevent their being blown about.

Some General Hints. — The special care of alpiners during summer and winter is considered in another chapter, but a few general hints may now be given. Attention, for example, is necessary to prevent strong-growing plants from overgrowing the smaller and choicer sorts. It is hopeless to expect these to thrive when they are jostled by others of rampant growth, but the exercise of a little judgment at planting time will enable one to avoid this difficulty. The strong growers should be cut back whenever necessary, and the best time to do this is immediately the flowering season is past. Some plants send up underground shoots or runners, and are peculiarly troublesome; watch should be kept upon them lest they destroy some precious and less robust neighbour. Timely propagation is essential

in the case of plants that are short-lived or dwindle away after a season or two. Top-dressing, referred to fully in another chapter, should never be neglected, and can advantageously be performed at all seasons. Even in spring, watering is occasionally necessary, and when required at all it should be done in no perfunctory manner, a thorough soaking being given to roots, but not poured on the foliage.

The Question of Manure.—Alpine plants occasionally require some manure, and there is nothing better than dry cow-dung, rubbed through a small-mesh sieve into very fine particles, and placed round about the plants or worked among the leaves of those of tufted or creeping habit. Fine bone-meal is very helpful to many plants and may be applied in the same way once a fortnight, in spring, but a mere sprinkling is enough. Basic slag, applied to the soil in autumn, at the rate of three ounces to the square yard, is helpful, and a good liquid manure for summer use may be made up of the following ingredients: Phosphate of potash, 68 grains; nitrate of potash, 45 grains; sulphate of potash, 45 grains; nitrate of lime, 45 grains: dissolve in 60 gallons of water, and apply in showery weather.

When to Plant.—The best time to plant alpiners is in early September, or in March, but planting is very commonly practised throughout autumn, winter and spring. Plants in pots may, of course, be put out at any season, though if planted in summer close attention is necessary to ensure that they do not suffer from drought.

34 ROCK GARDENING FOR AMATEURS

Although alpines of undoubted hardiness and vigour may be planted in mild weather between September and March, it should not be forgotten that there is some risk in doing so, and, if it can be arranged, the work had far better be done in September or March. With regard to the choicer alpines, it is unusual to put them out later than the middle of October or earlier than March. It is much better to keep them in pots in a cold frame during winter, and plant in spring.

CHAPTER V

The Summer Care of Alpine Plants

THERE is much to be done in the rock garden even during the summer months. Various little attentions may be given that will be rewarded by greater success with the plants and the increased attractiveness of the rockery. One important point needing attention is the removal of withered flowers and seed pods. Of course, if seeds are to be saved this cannot be done; otherwise the practice is most beneficial, and indeed necessary to the welfare of the plants, while it adds greatly to the neatness of the garden. Take, for instance, a Mossy Saxifrage covered with the brown stems and seed capsules that follow the dead flowers; if these are cut off, the tuft of emerald leafage is shown in all its winsome beauty.

If the spring has been wet, top dressing will most probably be necessary to replace the soil that may have been washed away from the plants, while it is in any case sure to be beneficial. This also is the time to increase many plants by means of cuttings or division, or by sowing seeds. The seeds of the spring flowers ripen in early summer, and if sown within a week or so of being gathered they germinate quickly, and produce seedlings that will usually bloom the following year. Flowers that are left purposely

for the production of seeds should be looked over frequently, otherwise many seeds may fall to the ground and be lost. The ripe seeds are placed on sheets of paper in a sunny greenhouse or window until all are gathered, and then sown without delay. Plants of which the blossoms are over may generally be increased by division at this season, and cuttings can be taken of alpines possessing soft or herbaceous stems. As soon as Aubrietia, Arabis, and dwarf Phlox are out of flower they may with advantage be cut back fairly hard, with the object of keeping the clumps neat and well filled with growths in the centre. If this attention is not given they are apt to become straggling and untidy, and then lose much of their charm. Fresh growths will soon form, and the plants will look brighter and neater than ever. If an increased number of plants is wanted this is the time to take cuttings. Primulas of all kinds may be divided after flowering.

Plants in hot, dry places showing signs of distress in bright weather may be shaded by setting a large stone in such a way as to intercept the rays of the sun, or be temporarily sheltered by a piece of wood. Seedlings and newly planted alpines need to be shaded in sunny weather; shade is of far greater benefit to them than continual watering, which indeed may do much harm.

The question of watering established plants deserves greater consideration than often it receives. In many cases mere surface watering is given almost daily in dry weather, and often the plants are sprayed for several hours each fine day. This is not at all essential, and is,

A GROUP OF SUN ROSE OR HELIANTHEMUM

HOW TO GARDENING FOR AMATEURS

The production of seeds is a very frequent, but not a very common, and will be lost if the plants are not properly cared for in a sunny position. The seeds should be sown in a shallow box or tray, and then covered with a thin layer of soil. The seedlings should be kept in a warm place, and the soil should be kept moist. The seedlings should be watered frequently, and the soil should be kept moist. The seedlings should be watered frequently, and the soil should be kept moist. The seedlings should be watered frequently, and the soil should be kept moist.

A GROUP OF SUN ROSE OR HELIANTHEMUM

The sun rose or Helianthemum is a very common and beautiful flower. It is a member of the Compositae family, and is very hardy. The flowers are yellow, and the leaves are green. The sun rose is a very common flower in gardens, and is very easy to grow. It is a very hardy plant, and will grow in a sunny position. The sun rose is a very common flower in gardens, and is very easy to grow. It is a very hardy plant, and will grow in a sunny position. The sun rose is a very common flower in gardens, and is very easy to grow. It is a very hardy plant, and will grow in a sunny position.



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SUMMER CARE OF ALPINE PLANTS 37

in fact, frequently highly injurious. In properly constructed rockwork in which there are plenty of stones remarkably little watering is necessary. In continued dry weather, however, a good soaking may be given once a week so that the soil is moistened thoroughly. Evening is the best time to do this, and the water should be applied so as to reach the roots rather than the foliage of the plants. As a supplement to this the rock garden may be lightly sprayed in the evening of hot days. Another point of importance is that of forking up the soil about the plants where this is not covered by stone.

In mild, moist weather slugs ought to be searched for and destroyed. They are frequently found sheltering beneath tufted plants, such as Arabis, Aubrietia, and Pinks, and these should be examined frequently. Choice plants may be surrounded by rings of zinc. If small heaps of bran are laid down near the plants most subject to the attacks of slugs, and examined after dark or early in the morning, many of the pests will be caught. Rings of cinders or soot will often protect small plants. Freshly slaked lime dusted over the plants while the leaves are moist tends to keep away slugs. There is really nothing better than hand-picking, and a sally into the garden with a lamp after dark on a dewy evening will provide an opportunity of getting rid of many of these most troublesome pests of the rock garden. The best way to dispose of them is to drop them in a jar of salt.

CHAPTER VI

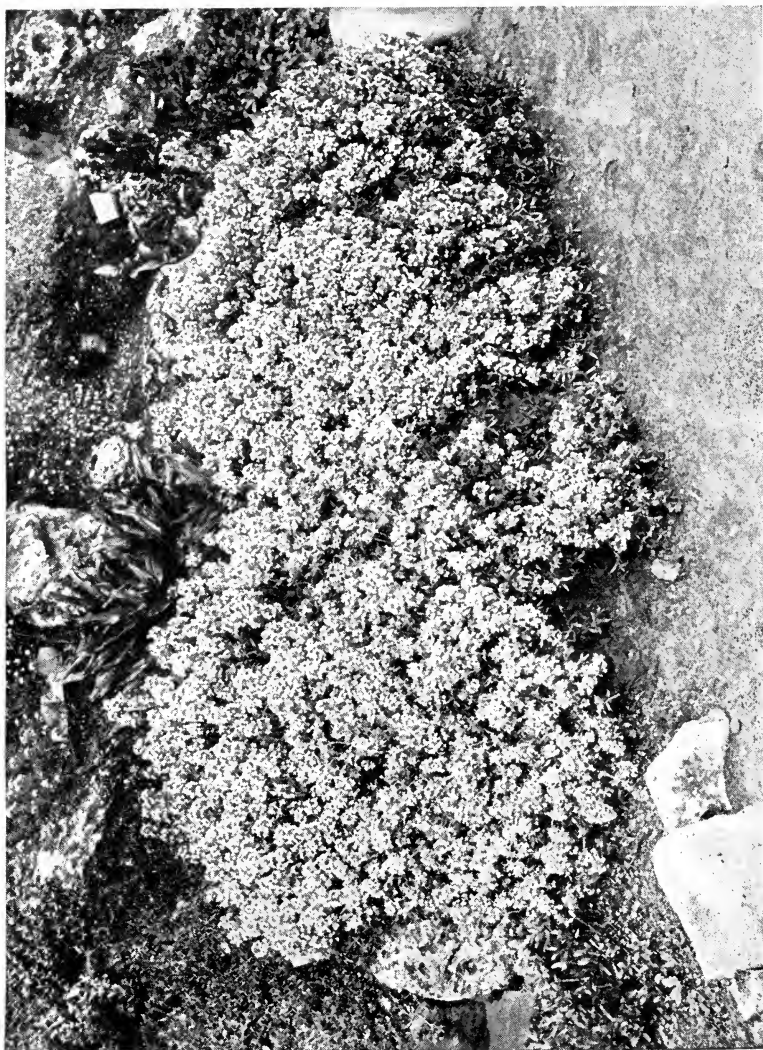
The Winter Care of Alpine Plants

DURING winter, except when the ground is frozen or shrouded by snow, many things can be done profitably in connection with the rock plants. In such a climate as ours, especially in certain districts where there is a heavy winter rainfall, the alpines suffer greatly from wet and from extremes of weather to which they are subject, when frost, snow, rain, hail, and sleet succeed each other rapidly.

Protecting Alpines from Wet.—Plants with woolly or silky foliage, though able to withstand severe cold, suffer from wet, and should be protected by means of some overhead covering. If the foliage is kept dry there is little fear of their being lost or seriously injured. A sheet of glass is the best medium for the purpose. The covering should be secured by pieces of wire hooked at the top, the glass being fixed in the hooks. It is most important that the covering be not so placed as to exclude air, otherwise the plants are just as likely to succumb as if not covered at all. The covering should be about six inches above the low-growing kinds, such as *Saxifraga Burseriana*, *Androsace foliosa*, *A. sarmentosa*, etc., but for taller ones the glass



A REMARKABLE HARDY PRIMULA (*P. LITTONIANA*)



A FRAGRANT ROCK PLANT (THYMUS ODORATISSIMUS)

NO. 1111
ANNALS

may be nearer the plants, so that too much rain may not be driven beneath it. There are several patent contrivances by means of which the glass may be held in position. Wood's glass supporters, for instance, are excellent, and the Chase Continuous Cloche serves the purpose well. Bell-glasses or handlights, placed on bricks or tilted so as to admit plenty of air, are valuable, and may also be used. The glass or other shelters should be put on not later than the end of October, and be left there until the middle or end of February. Certain alpines, such as the Soldanellas, which are "shy flowering," are often induced to bloom if given protection in this way during winter. We cannot imitate the conditions of total rest which the mountain flowers enjoy in winter, but we may at least endeavour to suit them as far as possible.

Removing Decaying Leaves.—The removal of dead and decaying leaves from the plants, and also any which may have been blown among them by the wind, should be seen to. Many amateurs allow these to remain, under the impression that they save the plants from being injured by frost, whereas moisture settles in them and is liable to cause the plants to decay. Tufted evergreen plants, especially, may die owing to their becoming covered by wind-blown leaves. If this results in the exposure of some of the stems, light soil should be placed round about them. Loam and leaf-soil with sand and grit intermixed answer well for this top dressing. The winter treatment is summed up in the directions to keep the plants as dry and clean as possible, together with

giving a free circulation of air to those which are covered by glass.

Alpines in Frames or Greenhouses require a good deal of care and attention. The great danger here also is that of damp, added to which a stagnant atmosphere is a frequent cause of loss. A free circulation of air continually is very necessary. In favourable weather the ventilators and lights should be wide open. Want of air leads to damping off, and also increases liability to attacks of disease. Where damp has made its appearance, a dusting of sulphur may be helpful after the affected parts have been cut off. Stages and floors of houses containing the plants ought to be kept as dry as possible, and excessive watering be avoided. All dead and decaying leaves need also to be removed. Artificial heat in winter should only be applied for the purpose of drying the atmosphere or for bringing into bloom such alpines as are wanted early; even then the night temperature should not exceed 45° Fahrenheit. If forced prematurely into growth and bloom, alpines become "drawn," weak, and lose their true character. Plants in pots in frames should be plunged in ashes or sand, and looked over frequently, for slugs constantly attack them.

If a heated house is available, seeds of alpine flowers may be sown there as early as January, but the seedlings must have plenty of air and light from their earliest stages, and it is doubtful if it is wise to sow the seeds before February except in the case of those which are slow of germination.

CHAPTER VII

Alpine Flowers from Seeds

GROWING alpine flowers from seeds is a cheap and most interesting way of obtaining a large number of plants. A packet of seeds often costs less than a single plant, and seedlings are invariably vigorous. Some trouble, of course, is involved, but those who have the time to devote to it will find the raising of alpine flowers from seed full of pleasure and the results altogether satisfactory. Most alpine flowers come true from seeds, though some cannot be relied upon to do so, as the flowers become cross-fertilised by the pollen of others near by, and the seedlings show considerable variation. Saxifrages, especially the Silver-leaved sorts, and Campanulas are among those most likely to vary from seed, but there is sometimes the compensation that good new varieties may be obtained.

When to Sow.—Seeds saved from home-grown plants are best sown as soon as ripe. They should first be spread on a sheet of paper in a sunny greenhouse for a few days to dry thoroughly. Seeds are commonly offered for sale in spring, and are sown at that season; they do not, however, usually germinate so quickly as seeds sown as soon as gathered. Some seedsmen now

offer seeds of alpines in late summer, and it is really preferable to purchase them then. It is better to sow the seeds in pots or pans placed in a cool greenhouse or frame than to risk them out of doors. Suitable soil consists of loam and leaf-soil in equal parts, silver sand being freely intermixed. The ingredients should be mixed together well and passed through a small-meshed sieve; the rough part will be found useful for placing on the crocks in the flower-pots or pans. Pans are really preferable, and far more convenient than pots, since they are wide and shallow. Whether pans or pots are used they should be clean and well drained, and made about half full of crocks (pieces of broken flower-pot). It is an advantage to sterilise the soil by heating it in an oven or in an old saucepan over the fire, then no trouble with insect pests is to be feared. A thin layer of moss on the crocks is often recommended because it retains moisture so well. Finally, the pots are filled almost to the rim with prepared soil mixture, this being pressed down fairly firmly with a flat piece of wood. It is best to water the pots of soil an hour or two before the seeds are sown.

Depth to Sow.—The common rule is to cover the seeds to a depth of about twice their thickness, which means, of course, that tiny seeds are not covered at all. The merest sprinkling of sand is found sufficient for these. To avoid losses by damping off and to ensure the development of sturdy seedlings, the seeds should be sown thinly; moreover, if thick sowing is practised,

it becomes difficult to transfer the seedlings later on without damaging the roots. When dealing with minute seeds it is an advantage to mix them with silver sand to ensure their being distributed evenly and regularly over the soil surface. After sowing is completed the pots are placed in a frame or greenhouse, and covered with a piece of glass and brown paper to keep the seeds cool and moist.

Method of Watering.—It is important that the soil be not allowed to get dry. The pots should be looked over each day, and those in which the soil appears at all dry should be immersed to the rim in water, leaving them there until the moisture has reached the surface. This is by far the best method of watering pots or pans of seed, since it ensures the soil being moistened through and the seeds are not disturbed. It is the best way also of watering small seedlings. If water is applied to the surface by means of a watering-can or even a syringe, the seedlings are liable to be washed down and may damp off. As soon as the seedlings show through the glass is taken off, and the pots are removed to a light and airy position near the roof glass, taking care, however, to shade them during sunshine.

The Period of Germination varies greatly. Some seeds will appear in a day or two, others in a few weeks, while some—for instance, those of *Primula*, *Gentian*, *Anemone*, and various bulbs—may remain dormant for a year or more. It is wise not to disturb such as these until the second year, as seedlings frequently appear

the following spring. Primulas sown in autumn generally give a percentage of seedlings in spring, and others the next year.

Care of the Seedlings.—When the seedlings have formed the second lot of leaves, they should be transferred to other pots or boxes and placed wider apart, say from one to two inches. Soil similar to that previously used is suitable. They are placed in the frame, watered, and kept close for a day or two, then gradually exposed to the air. Seedlings of precious alpine should be placed singly in small pots; there is then no risk of disturbing the roots when planting in the rock garden, which is best done in late August, early September, or March, though with alpine in pots planting is carried out at any time. Watering needs to be done with great care. The surface of the soil should never be moister than that underneath, and the best way to ensure this is, as already described, to immerse the pots to their rims in water. There is little fear of the young plants damping off when treated in this manner. Seedlings that come up thickly or are left too long before being transferred to other pots are very liable to suffer from this malady, which destroys tiny plants in great numbers. When they begin to damp off it is desirable to prick off the seedlings into fresh pots at once, even if they have not formed the second lot of leaves. Air and light are of great importance; seedlings that have become “drawn,” from being kept too far from the glass or in too high a temperature, are more liable to damp off than sturdy ones.



ALPINE PINKS IN THE ROCK GARDEN

UNIVERSITY OF
CALIFORNIA



ROCKY MOUND OF SILVERY SAXIFRAGES

THE
MOUNTAIN

Another point of special importance is that of inserting the seedlings firmly when they are transplanted. Many amateurs plant them loosely, with the result that the roots do not make progress. A stick notched at one end is useful for lifting them out.

Sowing seeds of alpiners in the open ground is not, as a rule, advisable, for fewer plants are obtained and the risks of total failure are much greater. The place chosen should be a sheltered one, and the soil made light and sandy. If the position is sunny, some shelter, provided by canvas or scrim, must be given to prevent the necessity of too frequent watering and to screen the seedlings from strong sunshine. The seeds are sown in April or May in little drills, first filled with fine soil made firm. The seeds are just covered with very fine soil, and this is pressed gently down.

When seeds are sown in late summer or autumn the seedlings should not be disturbed until spring; they may then be transferred to other pots or boxes in the orthodox manner. Providing the pots are put in a cold frame and buried to the rims in ashes, the seedlings will not suffer. Air must be admitted freely during favourable weather; cold will do them no harm providing they are kept fairly dry. They need very little water, merely sufficient to keep the soil quite moderately moist.

Alpiners Readily Raised from Seed.—Only plants are named of which seeds are commonly offered by specialist seedsmen. Those that may bloom the first year if sown under glass not later than February are marked

46 ROCK GARDENING FOR AMATEURS

with an asterisk :—*Acaena*, *Achillea*, *Adonis*, *Aethionema*, *Alyssum*, *Androsace*, *Anemone*, **Anthemis*, *Antirrhinum*, *Aquilegia*, *Arabis*, *Arenaria*, *Armeria*, *Arnica*, *Aster*, *Aubrietia*, **Calandrinia*, **Callirhoë*, *Campanula*, *Carlina*, *Cerastium*, *Cheiranthus*, *Chionodoxa*, *Coronilla*, *Corydalis*, *Crucianella*, *Cyclamen* (very slow of germination), *Dianthus*, *Draba*, *Edraianthus*, *Erigeron*, *Erinus*, *Erodium*, *Erysimum*, *Gentiana* (very slow from seeds), *Globularia*, *Gypsophila*, *Helianthemum* (the single-flowered sorts), *Horminum*, *Houstonia*, *Hutchinsia*, *Hypericum*, *Iberis*, *Iris*, *Leontopodium*, **Linaria alpina*, *Linum*, *Lychnis*, **Mimulus*, *Myosotis*, **Oenothera*, *Onosma*, **Oxalis* (*corniculata* and *floribunda*), **Papaver alpinum*, **Parochetus*, *Pentstemon*, *Phyteuma*, *Platycodon*, *Polemonium*, *Primula*, *Prunella*, *Ramondia*, *Saponaria*, *Saxifraga*, *Sedum*, *Sempervivum*, *Silene*, *Sisyrinchium*, *Soldanella*, *Statice*, *Symphyandra*, *Thymus*, **Tunica*, *Veronica* (*prostrata*, *repens*, and *saxatilis*), *Viola*.

CHAPTER VIII

Increasing Alpines by Division and Cuttings

WHILE numerous alpines are best raised from seeds, some are more conveniently or necessarily propagated by division or cuttings.

Division may be carried out in early spring, in summer, or in autumn. Plants that bloom in spring are as a rule best divided in late August or early September, those that bloom in early summer immediately after the flowers are over, and those of late summer and early autumn flowering may be divided in March. The plants are taken up, carefully pulled to pieces, the outside portions of the clumps only being replanted. This is especially necessary in dealing with plants that form large cushions or tufts, such as some of the Campanulas and Saxifrages of the Mossy and Kabschia sections. The sizes of the pieces or "divisions" will depend on the size of the parent clump and the number of fresh plants required. Generally every piece having a few roots will grow if treated carefully, but it is not advisable to divide plants in such a drastic fashion. In the case of plants with thick rootstocks, as some of the Primulas, for example, a sharp knife should be employed to cut them through. Some, such as Hepatica, are difficult

to deal with after division ; before replanting the roots are dipped in water and then in dry sand to cause the small fibrous roots to adhere to this, or into a puddle of soil and water. When the divisions are small they are put in pots and sheltered in a frame, which should be kept closed for a few days. An excellent compost consists of two parts loam, one of leaf-soil, and another of sand.

Cuttings.—By far the greater number of alpine plants may be increased by cuttings ; the scarcer sorts are generally propagated in this way or by small divisions, which are practically cuttings, requiring the same care as the latter. The best time to take cuttings is largely a question of convenience. Rooted plants are obtained most quickly by inserting the cuttings in an unshaded frame in full sun in summer, in late May or early June. A frame is chosen and filled to within a few inches of the top with well-drained, light, sifted soil, and surfaced with two inches of fine sand. This is made firm, and the cuttings are inserted as closely as convenient. They are then well watered, the lights put on, and the frame is kept closed and unshaded until the cuttings root, when air should gradually be given. It is essential that the soil in the frames, exposed as it is to full sun, should not be allowed to get dry. This may be described as an “express” method of rooting cuttings, needing some skill and constant attention. For amateurs the orthodox treatment is preferable. Then the cuttings are either inserted in light soil surfaced with sand in a cold or

ONE OF THE FINEST ROCK PLANTS
(*Lithospermum prostratum*)

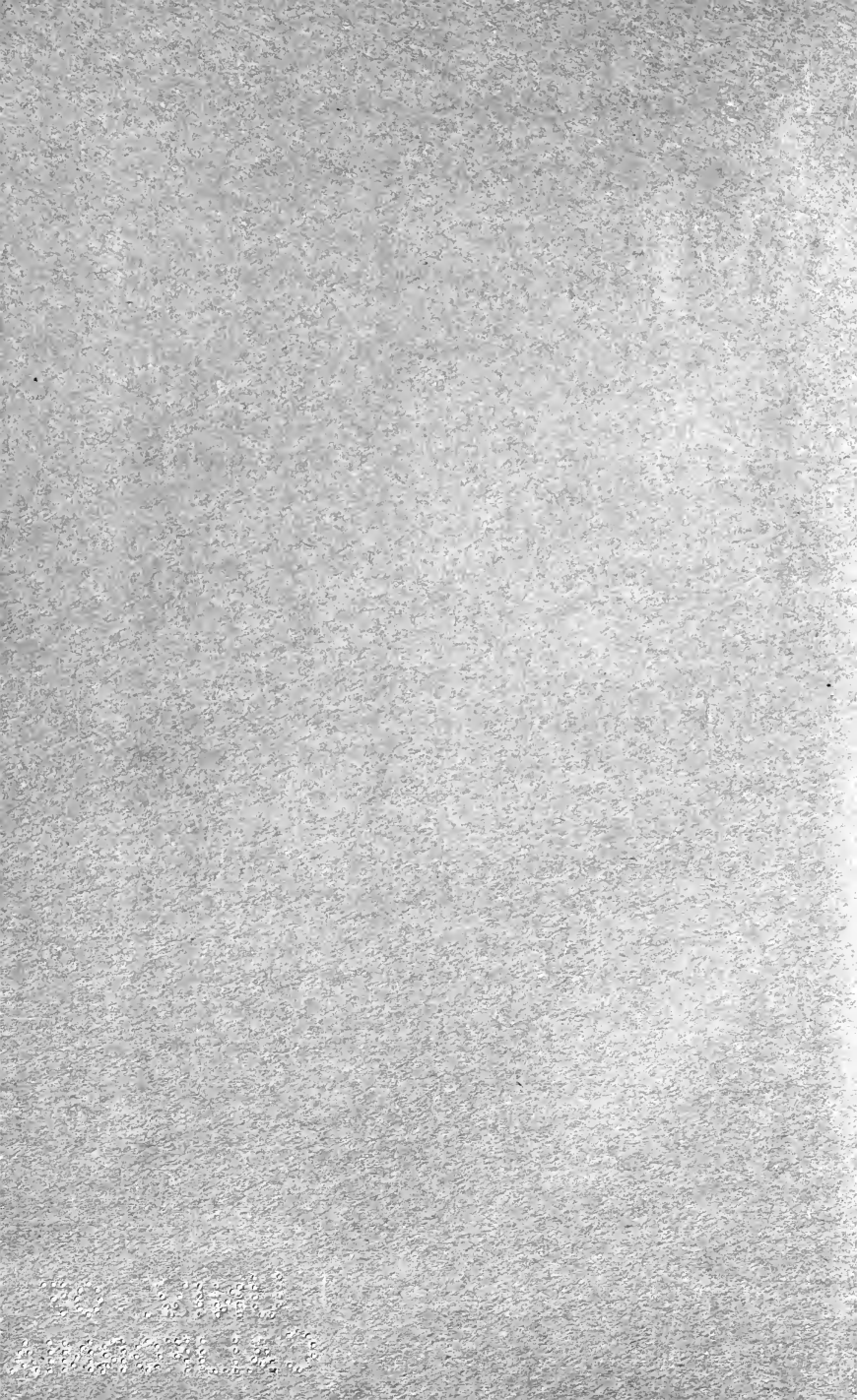
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AND ONE OF THE FINEST ROCK PLANTS
(*Lithospermum prostratum*)

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NEW YORK
COLUMBIA UNIVERSITY



very slightly heated frame, or round the edges of pots in a frame, in spring, summer or autumn. The frame should be kept rather close for a week or two, air being admitted only for a little while each morning.

Cuttings in small pots generally root well and suffer less when planted out than those taken from a bed of soil, while they are also much more convenient to handle after they are rooted, as they can be lifted nearer the light and placed readily in any desired position. Plants with rather hard stems, such as the Candytufts, Helianthemum, Broom, Andromeda, etc., are best propagated by means of short cuttings, taken off with a "heel" of the old wood attached. This "heel" should be trimmed smooth, and the lower leaves of the cutting taken off also. An excellent plan is to set a small pot containing the cuttings inside a much larger one, the space between the two being filled with moss and a sheet of glass placed over all. A little air should be given daily, and any moisture accumulating on the glass wiped off. When the cuttings have rooted the small pot containing the young plants may be taken out.

Root Cuttings.—A considerable number of alpine flowers can be increased by means of root cuttings, and this method is much more easily practised than most amateurs are aware of, though it is not very largely followed. *Morisia hypogaea*, *Statice*, many of the *Primulas*, especially those with good rootstocks or thick roots, some of the *Anemones*, *Campanulas*, and other

alpines possessing thick fleshy roots, may be increased in this way.

The process is a simple one, and is best performed during the winter months, from November to February. The usual practice is to cut the roots into pieces about an inch and a half long, more or less, and to put them, with the thicker end up, in pots or boxes of sandy soil, and to place these in a greenhouse or frame. The top of the cutting ought to be just visible on the surface of the soil. In spring the root cuttings will begin to show leaves, and when they have made some growth they should be potted and treated like ordinary cuttings.

The following is a selection of rock plants commonly increased by division:—*Acaena*, *Achillea*, *Adonis*, *Anemone*, *Arabis*, *Arenaria*, *Campanula*, *Cerastium*, *Dodecatheon*, *Draba*, *Erodium*, *Gentian*, *Geranium*, *Geum*, *Gypsophila*, *Haberlea*, *Hutchinsia*, *Iris*, *Linnæa*, *Mentha*, *Mertensia*, *Mimulus*, *Omphalodes*, *Oxalis*, *Polygonum*, *Primula*, *Ranunculus*, *Saxifraga*, *Schizocodon*, *Sempervivum*, *Shortia*, *Tiarella*, and *Trillium*.

Chief among those increased by cuttings are:—*Acantholimon*, *Æthionema*, *Alyssum*, *Androsace*, *Antirrhinum*, *Aubrietia*, *Cistus*, *Cytisus*, *Dianthus*, *Helianthemum*, *Hypericum*, *Iberis*, *Lithospermum*, *Ononis*, *Phlox*, *Potentilla*, *Saponaria*, *Sedum*, *Thymus*, *Veronica* and *Viola*.

CHAPTER IX]

Shrubs for the Rock Garden

THE careful disposition of a few shrubs in the rock garden much enhances its attractiveness, giving the effect of height in a remarkable manner, and helping generally to add distinction. Only a few are necessary, but they should be in a prominent position so that their outline shows well above the rocks and other plants. A rock border or quite low rockery may be much improved by the use of a few suitable shrubs, and raised from the level of a bed of alpine flowers to the dignity of a real rock garden. If evergreens are chosen—and it is those that are in mind at the moment—they add some measure of cheerfulness to the rock garden in winter, and stand out in strong relief when the mountain plants are void of flowers. It is wise to plant evergreen shrubs, and especially conifers, only while they are quite small, as the risk of failure with mature specimens is much greater. Moreover, the former may be put in a rock crevice, or in spaces between stones where it would be impossible to introduce a full-grown plant, or, if possible, it would be unlikely to thrive. Little shrubs, on the other hand, soon establish themselves in such a position.

Pigmy Conifers.—Most picturesque of all shrubs for the rock garden are the pigmy conifers ; they are so admirably in keeping with the rest of the scheme—the rocky peaks and promontories and alpine dells—and add greatly to the illusion, for that is really what the rock garden is—an attempt to reproduce a piece of mountain scenery in miniature. The pigmy Spruces are especially suitable ; they form somewhat rounded little trees, varying in height from one to three feet, and give one the impression that they are true mountain trees dwarfed by exposure on alpine heights. In fact, similar shrubs are to be found at high elevations. Some of the Spruces suitable are: *Picea excelsa* and its varieties *globosa nana*, *compacta*, *dumosa*, and *pygmaea*. Or one may have little Pines, e.g. *Pinus montana* and *P. edulis* ; together with the dwarf Cypresses, prostrate Juniper (*Juniperus Sabina prostrata*) and *J. communis tamariscifolia* ; and the dwarf Yew, *Taxus baccata ericoides*. Some of the Heaths are very delightful in the rockery, especially *Erica carnea*, that flowers in winter and spring and is of low growth. If interplanted with bulbs of various sorts, Squills, Glory of the Snow, and Daffodils, a charming display results in spring. Low-growing *Rhododendrons*, too, may be used here and there—for example, *R. ferrugineum*, *R. hirsutum*, and *R. racemosum*. Among the Rocksprays, or Cotoneasters, several are good rockery shrubs, notably *C. microphylla*, *C. thymifolia*, and *C. humifusa* ; all have low-growing or prostrate stems, and bear showy berries in winter.



A ROCK GARDEN FLAX (*LINUM SALSOLOIDES*), WHITE WITH PURPLISH CENTRE

For blossom in April and May one should certainly include some of the Brooms, notably *Cytisus kewensis* (pale yellow) and *C. Ardoini* (yellow); they are of low growth and look especially charming when falling over a rock face or steep bank. The Sun Roses (*Helianthemum*) are showy little shrubs suitable for high rock ledges, where they soon form big tufts of evergreen leafage, and in June become smothered in blooms of varying colour. The Rock Roses (*Cistus*) are generally rather tender plants, but *C. lusitanicus* is a beautiful little shrub, hardy in well-drained soil, evergreen, and bearing in July comparatively large white, purple-blotched flowers. The fragrant *Daphnes*, *D. blagayana*, *D. Cneorum*, and *D. Mezereum*, are quite indispensable rock-garden shrubs; they are referred to in the alphabetical list towards the end of the book.

There are several interesting little shrubs, members chiefly of the Heather family, that need a moist peaty soil. Among them are *Andromeda polifolia*, evergreen, with bunches of white flowers in May; *Vaccinium Myrtillus* (the Bilberry), bearing dark blue fruits in late summer; *Empetrum nigrum*, having purplish flowers in May, followed by black berries in early autumn; and *Loiseleuria procumbens*, a very tiny plant bearing rose-coloured blooms in June. *Astragalus Tragacantha* is a dwarf tufted little evergreen, growing about eighteen inches high; its Vetch-like flowers in June are of lilac colouring. *Erinacea pungens* is a charming little shrub, bearing pale purple Pea-like blossoms in April. Here

54 ROCK GARDENING FOR AMATEURS

and there a *Yucca* may be planted with good effect. *Yucca angustifolia* is one of the prettiest, and may be given a choicer position than Adam's Needle (*Yucca gloriosa*), which is much more vigorous and should be grouped on the upper edge of the rockery.

CHAPTER X

Bulbs in the Rock Garden

SOME of the most delightful of all the flowers of spring are found amongst the bulbs, and no rock garden can afford to dispense with the chief of the low-growing sorts. It is true that, as the leaves fade, they are to some extent unsightly; but, so far as the dwarf kinds are concerned, this is really not a very serious drawback, and in any case the unsightliness is not of long duration. It is quite certain that if, for this reason, bulbs are taboo, the rock garden will lose many most charming flowers that generally open before the alpinists have come to full beauty. There is no need to make special provision for the commoner sorts, as the gritty soil of the rockery is all they need. A fair depth of soil, however, is essential, for one has, as a rule, to plant the bulbs several inches below the surface. There are always plenty of odd corners in which one may group a little colony of bulbs, and it is possible, with their help, to form some delightful colour associations in early spring. Squills, *Chionodoxa*, or Daffodils may be interplanted among the rose-coloured winter Heather (*Erica carnea*), while the Apennine Windflower among this Heath produces a most exquisite scheme of colour.

56 ROCK GARDENING FOR AMATEURS

The Anemone also associates perfectly with some of the lesser Daffodils, as, for instance, *Narcissus cyclamineus* (the Cyclamen-flowered Daffodil), or *Narcissus Bulbocodium* (the Hoop Petticoat Daffodil). Then small bulbs may be freely planted beneath the low, tufted carpeting alpines, especially those that do not bloom until early summer; thus a twofold display is obtained from the same spot. It is just as well to keep them away from all choice alpine flowers, the Silver Saxifrages, Androsaces, little Campanulas, Gentians, and so on; where, indeed, they would be out of place. There are, usually, plenty of bare spaces on the outskirts of the rockery, beneath the shrubs, on shady banks, and in other more or less rough places, for one has to remember that the bulbs are only used as an adjunct to the rock-garden flowers proper. Some of the chief of the bulbs suited to the rock garden are described in the following notes. Although it is not strictly correct to describe the roots of all those named as bulbs, they may, so far as their treatment and value in the garden are concerned, be grouped together very conveniently.

Allium.—The decorative Alliums, or Onions, are not commonly met with in amateurs' gardens, probably owing to the strong odour that is as characteristic of them as of the edible Onion. Yet a few of them are worth mentioning, notably *Allium Moly*, about fifteen inches, yellow, May and June; *A. neapolitanum*, fifteen inches, white and green, June; *A. ostrowskianum*, one foot, purple, May; and *A. pedemontanum*, eighteen inches,

purple, May. The two former are liable to spread rapidly. Plant the bulbs in early autumn.

Anemone (Windflower).—Some of the Anemones are the loveliest flowers of spring, and deserve to be freely planted in the rock garden. *A. apennina*, bright blue, March; *A. blanda*, pale blue, February; *A. nemorosa*, our native Wood Anemone, pink-white, April; *A. Robinsoniana*, a charming blue variety of *nemorosa*—these are the choicest for the amateur's rock garden. They like moist soil and a sheltered situation, and the tubers should be put in the ground in September. For later flowering there are the brilliant scarlet-blossomed *Anemone fulgens*, and the Poppy Anemones (*A. coronaria*); the former should be planted in a warm sunny spot in early autumn, while the latter may be put in at any time between September and early March, according to the time the flowers are wanted.

Brodiaea.—*Brodiaea* (better known, perhaps, as *Triteleia*) *uniflora* (Spring Star Flower) is the chief favourite; it is a charming little flower of April, lilac-purple, and the stems are only five or six inches high. It thrives well under trees. *Brodiaea laxa*, eighteen inches, pale purple, April; *B. grandiflora*, fifteen inches, purple-blue, May; and *B. ixioides*, eighteen inches, yellow, April, are other attractive sorts. The bulbs are planted in early autumn.

Bulbocodium vernalis.—This is an early spring bulb, of which the rosy-purple blooms are similar to those of the Crocus; the flowers come before the leaves, and the

plant, therefore, lacks somewhat in attractiveness, but they open very early, often before the Crocuses, so that this is some compensation. The bulbs are planted in August or September, and should have light soil and a sunny spot.

Chionodoxa (Glory of the Snow).—Most popular of the Chionodoxas is *C. Luciliae*, with beautiful blue and white flowers, like glorified Squills, in March. It will thrive in all sorts of odd corners, and apparently un- promising situa- tions; and is, too, very cheap. *C. sar- densis* is taller and more vigorous, and has blue flowers. The bulbs ought to be put in not later than September or early October.

Colchicum.—The (Colchicum autumn-September flower, welcome in the for comparatively there. The

Colchicums to put in an until after have faded. to the Mea- one might Bornmülleri, *C. speciosum*



Glory of the Snow
(*Chionodoxa Luciliae*).

Meadow Saffron (nale) is a charming and is especially rock garden then, little is in bloom leaves of do not begin appearance the flowers In addition Meadow Saffron also have *C. lavender-rose;* *rubrum*, rose-

red; *C. cilicicum*, rose; and *C. variegatum*, in which the blooms are rose marked with purple. All these blossom in September. The bulbs should be planted in summer, during July or early August.

Crocus.—There is no need to say much about the showy spring Crocuses, in white, yellow, or violet-blue, though those who care to go to the extra expense will find that some of the named varieties are finer than the common sorts. But in the rock garden one ought really to plant a few bulbs of the *Crocus* species, the wild types from other lands. Some of them are very beautiful: for example, *C. biflorus*, pale lilac; *C. chrysanthus*, yellow; *C. Imperati*, pale purple; *C. Sieberi*, deep lavender; and *C. tommasinianus*, pale lilac. They should be planted in August. Then there are some attractive autumn-blooming Crocuses, of which the rock gardener would do well to plant a few; bulbs of these should be put in the ground in July. Among the best may be mentioned *C. speciosus*, purple-blue; *C. pulchellus*, lilac-blue; and *C. laevigatus*, white with purplish marking.

Cyclamen.—The hardy *Cyclamens* are very dainty little flowers for the rock garden, and a description of the chief kinds, together with notes on their cultivation, will be found on another page.

Daffodil.—Of the many *Narcissi* suitable for planting in the rock garden none are so pleasing as the miniature kinds. The Hoop Petticoat (*Narcissus Bulbocodium*), Angels' Tears (*N. triandrus*), *Cyclamen Flowered Daffodil* (*N. cyclamineus*); the small trumpet variety, *Queen*

of Spain, and the tiniest of all Daffodils—*minus*. Such as these are worthy of a choice, well-drained spot, where they can have more than usual care. As for others, it is best to choose those distinguished by grace rather than boldness of bloom, such, for instance, as *Waterwitch*, *Mrs. Langtry*, *Duchess of Westminster*, *W. Goldring*, and innumerable others to be found in catalogues. The new triandrus hybrids, with pale drooping blossoms, are very charming. Bulbs ought to be in not later than October, though earlier planting is preferable.

Eranthis.—The exquisite little Winter Aconite (*Eranthis hyemalis*), with its cup-shaped yellow blooms in the midst of a ruffle of green leafage, is the earliest hardy flower of the year. It should be freely planted, especially beneath the shrubs and on the outskirts of the rock garden. *Eranthis cilicicus* is very similar. The roots should be planted during August.

Eremurus (King's Spear).—The *Eremurus* is the noblest of the plants classed in this section; the roots are thick and numerous, and radiate from a central bud or growing point. They should be planted in early autumn, about six inches beneath the surface, in well-drained loamy soil, and covered with leaves or old ashes during the winter, for they start growing very early. They ought to be planted in some conspicuous spot on a fairly high part of the rockery, so that their tall spears of bloom may show to the best advantage. The flower stems of *E. himalaicus*, white, reach a height of six or eight feet, and those of *E. robustus*, palest pink, grow



THE GOLDEN DROP (ONOSMA), A SHOWY ALPINE FLOWER





AN ALPINE CINQUEFOIL (POTENTILLA ALBA)

TO THE
MOUNTAIN

even taller. Both bloom in May. *E. Bungei*, about three or four feet high, is of less robust type, and has lovely yellow flowers in June.

Erythronium (Dog's Tooth Violet).—Several of the Erythroniums are indispensable rock-garden flowers, blooming in spring and early summer. They like a moist, peaty, or leafy soil, and do well in the bog garden. The commonest kind is *Erythronium Dens-canis* (so named from the shape of its roots), with drooping lilac-rose flowers, on stems four or five inches high, in March. *E. giganteum*, white, with yellowish shading; *E. californicum*, almost white; and *E. americanum*, pale yellow, are other beautiful kinds. Some of these plants are additionally attractive from the fact that the leaves are prettily marked with a second colour. The roots are planted in early autumn, September and October.

Fritillaria.—The Fritillaries, with their showy, drooping, more or less bell-shaped blooms, are very attractive, and less often grown than they deserve. The commonest and easiest of all is the Snake's Head Fritillary (*Fritillaria Meleagris*), with pale blossoms, spotted with purple crimson. The Crown Imperial (*Fritillaria imperialis*) is a well-known cottage garden favourite, having clusters of drooping yellow or orange-coloured flowers, on stems some two feet high. Room might well be found for it, as it gives rich colour in April. *Fritillaria armena*, yellowish, and *F. pyrenaica*, purple and yellow shades, are others that are satisfactory out of doors in well-drained sandy soil. The bulbs should be planted in September and October.

Galanthus (Snowdrop).—One can scarcely have too many Snowdrops in odd corners of the rock garden; they are charming early in the year, and one likes to look upon them as heralds of the alpine lovelinesses still to come. Instead of planting so many of the common kind it might be worth the reader's while to purchase a few bulbs of one of the larger-flowered sorts, such as *Galanthus Elwesi* or *G. Fosteri*. The bulbs should be planted in August or September.

Iris.—The bulbous Irises include the June-flowering Spanish and English Irises as well as many charming sorts that bloom in spring. They are referred to in another chapter.

Muscari (Grape Hyacinth).—One can scarcely plant



The Grape Hyacinth (*Muscari*).

too many of the lovely Grape Hyacinths, of which the little, erect, blue flower spikes are so showy in late March and April. They are very accommodating, and will thrive in all sorts of unlikely spots. The finest lot I have

ever seen was on a hedgebank. The variety Heavenly Blue is the most brilliant of all. *M. botryoides*, blue, and its white variety, *alba*, and *M. conicum*, blue, are others commonly grown. The bulbs are planted in September or October.

Scilla (Squill).—The Squills are dainty flowers of early spring, and are well worth planting freely in the rock garden, for the decaying leaves are very little in the way. *Scilla sibirica* and *S. bifolia*, both blue-flowered, are usually grown. *S. festalis* is the common Bluebell, and this, of course, is very lovely in May, but it needs to be abundantly grouped to give a good effect. The Spanish Squill (*Scilla hispanica*) is a charming plant; it forms a tuft of narrow leaves, from which the flower spikes, twelve or fifteen inches high, rise in May, bearing pale blue blossoms; there is a pink variety called *rosea*.

Tulip.—One would not care to group the bedding Tulips freely in the rock garden, though here and there a clump adds welcome gaiety. But there are several choice Tulip species that seem more at home among the alpine flowers; such, for example, as *T. sylvestris*, yellow, fragrant; *T. montana*, bright red; *T. persica*, yellow; and *T. clusiana*, white, with crimson eye. The bulbs should be planted in October or early November.

The commonest mistake in bulb cultivation made by unskilled amateur gardeners is that of not planting them deeply enough. A fairly reliable method to follow is to have the top of the bulb at twice its depth below the surface. Thus, if the bulb is two inches deep, its

64 ROCK GARDENING FOR AMATEURS

top would be covered with four inches of soil. If, however, the planter takes care to have about two inches of soil above the small roots and bulbs, and three or four inches above the larger ones, he is not likely to go very far wrong. In light soil one may with advantage plant bulbs more deeply than in heavy soil.

PART II

The Charm of Variety

CHAPTER XI

Moraine Gardening

IT is still a fair question to ask, "What is a moraine?" The dictionary defines a moraine in Nature as "an accumulated mass of debris found at the foot, in the centre and by the sides of a glacier." In the garden its chief purpose is to enable one to grow with real success some of the high alpine flowers that have hitherto proved disappointing, and often impossible, in face of the conditions obtaining in the ordinary rock garden. But it is not only the difficult alpines for which the moraine is suited, a large number of others thrive there perfectly, and, nestling among the cool stone, they look more charming than ever.

The Garden Moraine.—As adapted to the needs of the gardener the moraine may be described as a bed or border of varying size, preferably situated on a slight slope, and consisting chiefly of broken stone, with which, however, a certain proportion of light, sifted soil is mixed. It proves of such immense value because the manner of

its composition ensures comparative dryness to the roots of the plants in winter, and assures against drought in summer. This apparently paradoxical statement is easily explained. It is obvious that the heavy rains of winter will pass through a mass of broken stone more readily than through a similar body of soil, but how it manages to remain moist in summer is, perhaps, not so apparent. Every gardener has probably often noticed on removing a large stone that the soil beneath it is moist, while the surrounding soil, not similarly covered, is dry. The explanation, no doubt, is that the stone prevents loss of moisture by evaporation. The broken stone of the moraine acts similarly, if the work is properly carried out. Further, the plants are not so liable to damp off at the ground level, and they become thoroughly "ripened" in summer by the heat from the stone. The latter is a matter of some importance. It is surprising to feel how hot the stone becomes on a sunny day, and it retains the heat for a considerable time.

Natural moraines are invariably kept moist during spring and summer by the constant passage through the stones of mountain streams, thus ensuring adequate sustenance for the roots of plants growing in them. In fact, it has been declared that a moraine is not rightly fashioned unless it is kept moist by a constant supply of underground water. However, it has been found that, so far as the moraine in gardens is concerned, a supply of water through the stones is not essential. It depends largely upon climatic conditions. In very

A BRILLIANT SPEEDWELL (*Veronica rupestris*)

ROCK GARDENING FOR AMATEURS

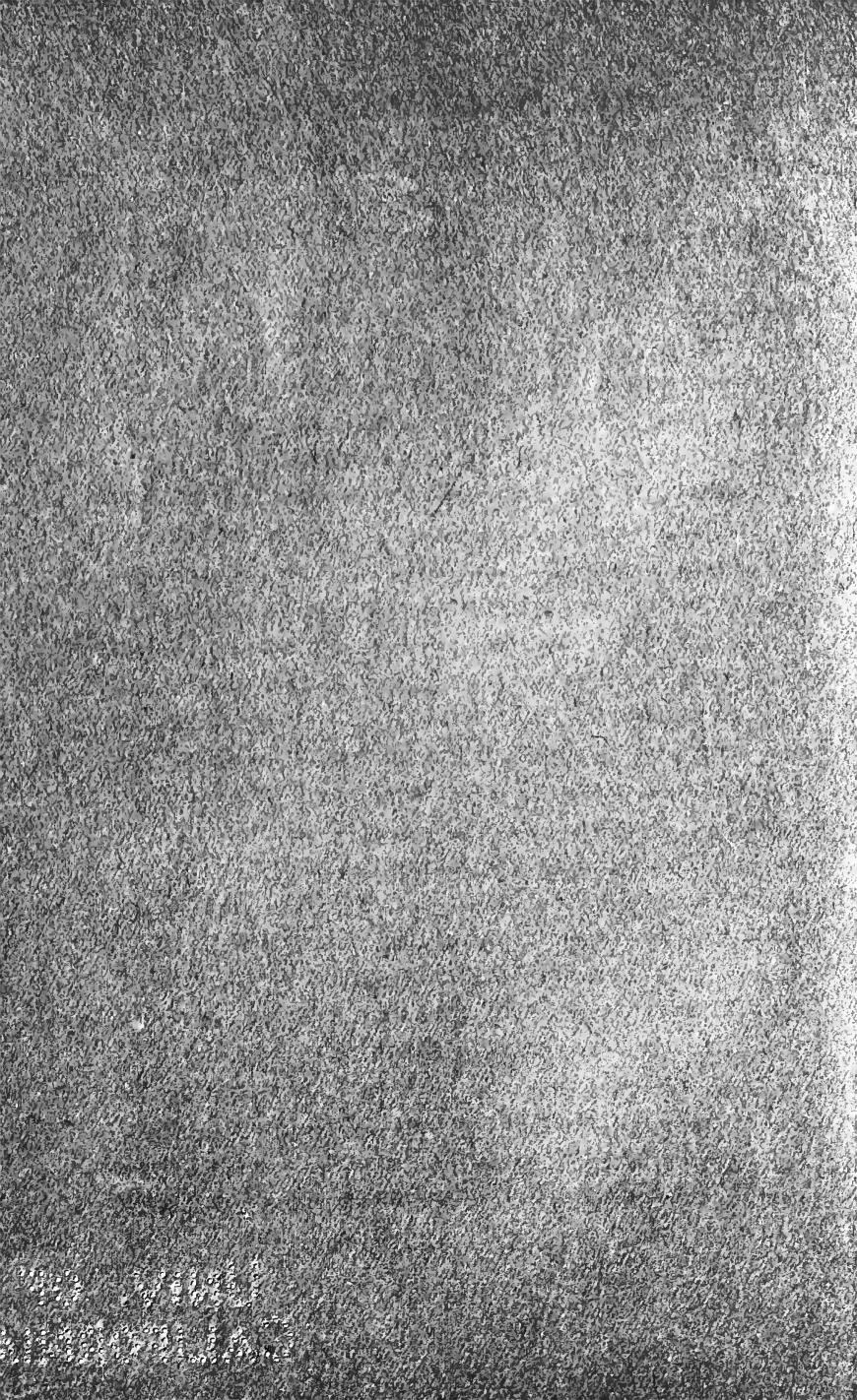
its composition ensures comparative dryness to the roots of the plants in winter, and a sure against drought in summer. This apparently paradoxical statement can be easily explained by the fact that the heavy rains of winter will pass through the cracks in the stone more readily than they will penetrate the soil, but now that the ground has become so dry, the water in the soil is held so tightly that it is not available to the plants. In fact, it is only in the immediate vicinity of the roots that the soil is sufficiently covered by the water. It is, therefore, not surprising that the stone is the best material for rock gardening. The broken

VERONICA SPEEDWELL (*Veronica rupestris*)

... soluble ... become thoroughly ... from the stone ... It is ... from a ... of ... during ... through ... side path ... In fact, it is ... rightly fashioned unless it is kept ... of underground water. ... been found that, so far as the matter of water is concerned, a supply of water is not essential, but it is not essential ... depends largely upon climatic conditions. In wet



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dry parts of the kingdom water beneath is desirable, but it may, without doubt, be dispensed with. Such a supply of water is often difficult, if not impossible, to secure, and those who cannot arrange for it need have no anxiety on that account. In its absence it becomes necessary, of course, to water the moraine by means of a watering-can, but the moisture clings so to the broken stone that one canful here is probably more helpful than ten on an ordinary border.

Position of the Moraine.—The choice of position needs some consideration. One should endeavour to place it as naturally as possible. Probably it is never seen to better advantage than when filling the bed of some miniature valley in the rock garden, as though the stones had been brought down from higher places by a mountain torrent or stream. But really so long as the moraine forms part of the rock-garden design, and does not stand out by itself as a thing apart, it will scarcely be out of character. One should, however, remember its place in Nature, and in its arrangement try to approximate as closely as possible to that ideal. It is not absolutely necessary to have the moraine on a slope, though it is undoubtedly preferable, as having a more natural appearance and providing better drainage. Admitting this, one might appropriately enough have a moraine on each side of the path that leads through the rock garden, preferably where the ground slopes right to the edge of the path, but even in flat places. All that one has to do to ensure as great success

68 ROCK GARDENING FOR AMATEURS

on the flat as on the slope is to provide deeper drainage.

How it is Made.—The first thing is to excavate the site to a depth of two feet. At the bottom of this put from six to nine inches of rough drainage, composed of stones or broken brick, arranging for an outlet through which surplus water may pass away. This may be a trench filled with rough stones or other similar material. More often than not there is a little bog border in association with the rock garden, and it is advisable that the surplus water from the moraine be directed there. The drain is not necessary in a sandy soil. On top of the rough drainage comes the moraine mixture proper. Everyone seems to have his own special method of preparing the compost, and no two persons mix soil and compost in equal proportions. Perfect drainage, allowing for the elimination of stagnant water, is the whole secret of moraine making, and above all things should be ensured. For this reason it is, I think, advisable to place rather smaller stones directly on the broken bricks and large stones used for drainage, forming a layer some six inches in depth, the stones of the upper three inches being smaller than those of the lower three. In fact, throughout the building of the artificial moraine it is best to use stones of gradually decreasing size, until at the top one employs only those passed through a fine mesh—say, quarter-inch—sieve. Those forming the bulk of the upper twelve inches should be of such a size that they will pass through a half-inch sieve. Good drainage

is then secured below, and evaporation is checked from above. So far we have, say, six inches of rough stone or brick in the bottom, followed by another six inches of stones used in decreasing size. There remains another twelve inches to fill. The simplest way, and one that is probably just as satisfactory as a more elaborate method, is to complete the filling of the moraine with pieces of stone, each layer decreasing in size until, as directed above, the upper two inches or so consist of quite small stones. Really very little soil is necessary, and it may be sprinkled on the surface; the rains will soon wash it in. To add much soil to the moraine is to defeat the object for which it was formed.

Moraine Compost.—Having completed the lower twelve inches as explained, quite the commonest practice is first to prepare the compost of stones and soil and use the mixture to fill the moraine to the surface. The proportion of soil used may be about one-tenth of the bulk, the remainder consisting of broken stone. Probably limestone chips are the best of all stone material, though they are by no means indispensable; if sandstone or whinstone chips are more readily obtained, they may be used instead. Failing any of these one may employ broken brick with quite good results. Sifted gravel also forms a good substitute, while stone chips, such as are employed for road making, are quite satisfactory. As many alpinists delight in lime and few really dislike it, some old lime rubble may be mixed in those places where it is intended to grow lime-loving plants. Many alpinists

commonly supposed to need lime seem to be quite happy among whinstone chips alone. The limestone chips have an advantage so far as attractive appearance is concerned—they are cool looking and of neutral tint, and the alpine flowers look especially well among them. Suitable soils to mix with the chips are sifted loam and leaf-soil in equal quantities. Needless to say, stone chips and soil should be well mixed together before they are placed in the moraine. The small chips on the surface prevent evaporation, and after a spell of dry weather the plants will be found quite moist at the roots.

One should aim at building a moraine that forms an integral part of the rock garden, and for this reason opportunity should be taken to arrange a few small boulders here and there as the building proceeds, the greater part of each being below the surface so that they may outcrop in as natural a manner as possible. If the moraine is left merely as a bed or border of stone chips it can scarcely fail to appear incongruous; it will almost certainly be conspicuous as an artificial introduction. A pretty little moraine may be made by arranging three or four large boulders on the top of the soil, putting between these a foot or so of drainage, and filling the remaining space with moraine compost of soil and stone chips or gravel.

Water through the Moraine.—There can be no doubt that a supply of water through the moraine is an advantage, especially in a dry district. They are indeed fortunate whose gardens possess a little stream that can be diverted



A VIOLA (*V. PEDATA*) FOR THE ROCK GARDEN



A GROUP OF VIOLA LUTEA

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through the moraine ; failing this the best plan is to carry the water in small perforated pipes, through the holes in which the moisture may reach the stones. When water is to be introduced a bed of concrete or clay should be laid at the bottom of the moraine before the drainage is put in. In such a case the moraine should slope very slightly. The water will, of course, enter at the top, and must be so spread by means of the pipes that it will flow over the whole of the lower part of the moraine. An outlet pipe should be laid at the foot to carry off the surplus water into a bog or a drain. If the water is from an artificial supply a tap or plug must also be provided, so that it can be cut off in winter. If it is obtained from a natural stream some means should be taken to divert it from the moraine during the winter months.

When to Plant.—With regard to the season at which to plant the moraine, there can be little doubt that September and March and early April are the best times. With some care, however, the plants may be put in, during mild weather, throughout spring, summer and autumn. It is surprising how soon they accommodate themselves to the new conditions, and how rapidly they grow. The writer finds that plants from pots establish themselves most readily ; they should be turned out of the pots, the ball of soil and roots being undisturbed. If the roots are long enough the plants are put in the moraine and the roots brought into contact with the compost of stone and soil. The gravel is then placed

round about the necks of the plants, which are made firm. If the weather is dry a good watering completes the process, and in few instances, indeed, do the plants fail to make progress. If they are not in pots, place a little fine sandy, gritty soil about the roots, cover them with gravel, and water well. The moraine, especially if supplied with underground water, ought to be in sunshine. South, south-east, south-west, and west are the best exposures.

So far as the subsequent care of moraine plants is concerned, one point of importance is to prevent their overgrowing each other; some of the more vigorous sorts spread so rapidly. If there is no underground water supply, a few canfuls of water should be given daily in hot dry weather, or the hose may be turned on. Needless to say, a fine spray is essential, whether hose or watering-can is used, or the stone may be washed away from the plants. Moraine plants require even less care than those on rockeries, and when the stems grow above the surface the chips can readily be drawn up about them or a little more moraine mixture added. A slight top-dressing with light, sifted leafy soil is advisable occasionally, say in March and once again during the summer.

Favourite Moraine Plants.—A list of plants suitable for the moraine is given at the end of this work, but a general survey of some of the best may be undertaken now. The lovely Rock Jasmines or Androsaces seem quite at home there, and look delightful among the stones. They are less apt to damp off there than on the rockery.

Campanulas, not very difficult as a rule, flourish wonderfully in the moraine, and choice sorts, such as *Campanula Zoysii*, which are often devoured by slugs on the rockery, are usually safe in the moraine. These pests dislike the rough going over the sharp chips. The *Edraianthus*, often so troublesome in the rock garden, is far less difficult in the moraine, while the alpine Pinks flourish there as a rule. The exquisite *Dianthus alpinus*, *Dianthus microlepis*, and other very choice sorts, are much happier in the moraine than on rockwork. *Armeria caespitosa*, one of the Thrifts, a poor grower in the rock garden proper, makes nice little free-flowering plants, and the two newer *Helichrysums*—*bellidioides* and *frigidum*—grow in the stone chips admirably. So, too, does that choice Soapwort, *Saponaria caespitosa*. The rock-loving *Primulas*, such as *P. marginata*, and the varieties of the *Auricula* are perfectly successful, while with the Silver Saxifrages, such as *S. Aizoon* and its many varieties, together with *S. Engleri*, *S. paradoxa*, and others, it is possible to make a most attractive planting. The *Kabschia Saxifrages*, represented by such as *S. Burseriana* and its varieties, *S. apiculata*, and *S. sancta*, delight in the moraine, especially if a little lime is mixed with the compost for them. The *Stonecrops* or *Sedums*, *Houseleeks* or *Sempervivums*, the *Achilleas* and dwarf *Artemisias* thoroughly enjoy moraine conditions. It is amazing, indeed, how many plants thrive far better in a well-constructed moraine than on a rockery.

Even those who do not care to go to the trouble or

74 ROCK GARDENING FOR AMATEURS

expense of building a moraine proper may, with great advantage, carry out the principle in some modified form. The simplest way to imitate moraine conditions is to cover the soil round about and close up to the plants with a layer about two inches deep of stone chips or clean, sifted gravel. Surprisingly good results are often obtained by this means, though the ground must, of course, be well drained. Still more successful is the plan adopted by some who have very small gardens, which consists really of making a miniature moraine wherever some choice plant is grown. The soil is taken out to the depth of about twelve or eighteen inches, and some rough stones are put in the bottom for drainage; the remaining space is then filled in with the moraine mixture of soil and stone. This plan is especially beneficial when the cultivation of choice and difficult alpines is attempted. When so cared for they will succeed, while almost certain to fail in the ordinary rockery.

CHAPTER XII

The Little Bog Garden

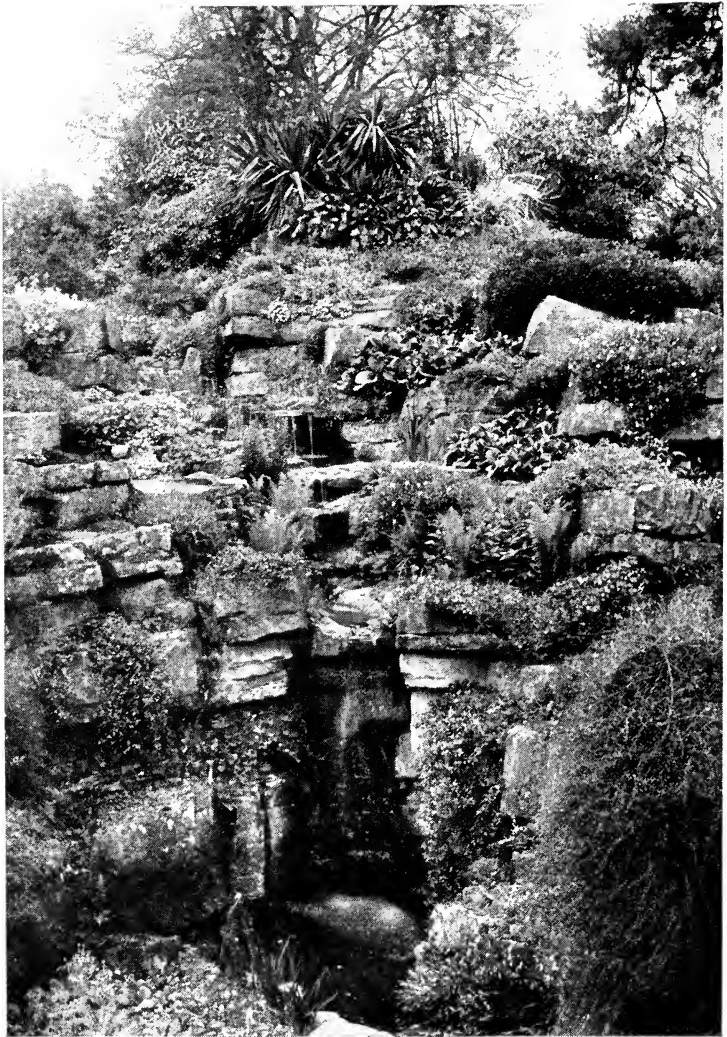
A DELIGHTFUL adjunct to the rock garden or small rockery is the little bog garden. It is easily constructed, and the expense need not be great, for the cost of material is trifling. By its means many moisture-loving plants which cannot be suited on the rockery or in the ordinary flower border may be grown to perfection, and when well placed and planted it seems to complete the garden picture one has endeavoured to paint.

Its Position.—A natural position is either in a hollow or at the base of the rock garden, and in planning the rockwork this should be borne in mind. The surplus water from the rockery should be drained into it, while it should also receive as much as possible of the surplus rainfall which may flow down the rockwork. If possible, a little pipe should connect it either with the water-supply or a cistern receiving the rain water from the roof of the house. But these are not essential, and an occasional good soaking by means of the watering-can will generally supply all that is required. The bog may be of any desired size; we have seen pretty little bog gardens not more than a yard square, in which choice moisture-loving Primulas and other plants were thriving happily.

How it is Made.—To begin with, the ground should be excavated to a depth of about two and a half feet. The bottom is then well trodden and laid with concrete, or with stones and bricks laid in cement, with walls of the same material round the sides, keeping these of irregular outline. Well-puddled clay may be used instead of concrete or bricks, but there is more danger of its being penetrated by the roots of trees, etc. About six or eight inches above the bottom insert in the side wall a small pipe, either of metal or of earthenware, from one and a half to two inches in diameter. The pipe may be dispensed with, and a hole left in the wall instead, but the pipe is better. It can then be covered with a piece of perforated zinc, and a few stones placed about the interior opening.

About six inches depth of rough stones are then put in and covered with turves or rough soil. On this again there should be placed sufficient soil to fill the vacant space, consisting of loam and peat or leaf-mould with some sand added. A few stones may with advantage be mixed with the compost. Some growers provide a second pipe, fitted with a plug at the bottom of the bog, so that when the plug is removed the water drains away. This is hardly necessary, though convenient, especially in winter. The surface of the soil ought to be of irregular outline, some portions rising above the remainder; and an edging of rough stones, over which low-growing plants may trail, will improve its appearance.

The Bog Garden Pool.—In a small bog garden a



WATERFALL IN ROCK GARDEN





BOG BORDER AND LITTLE STREAM

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pleasing feature may be formed by the addition of a little pool; this must, of course, be made watertight, and formed of well-puddled clay, or preferably concrete. It ought to be in proportion to the size of the bog, and for a little one a pool which would accommodate one of the smallest Water Lilies, such as *Nymphaea Helvola*, is quite sufficient. It need not be more than two or three feet across. When a water supply, which can be applied at will, is available, it should certainly be used. It may either take the form of a little rivulet, running into and losing itself in the bog, or it may be led in by means of a pipe. If this is chosen the pipe should be hidden. Some gardeners lead the pipe down the sides or through the walls, and insert it so that the inflow will enter close to the bottom, to ensure a change of water. In theory this is an advantage, but in practice it presents no improvement. If the water is on the surface and runs into the bog directly, it is advisable to make little courses, so that the water may pass all over the surface. A few large stones should be placed among the compost, some of them rising slightly above the surface.

An important question in relation to the bog is that of keeping down weeds and rampant-growing plants. In the moist soil many weeds run riot, and there are certain flowers which, if left alone, soon monopolise the whole space.

Some Bog Garden Flowers.—For the large bog garden, strong-growing, moisture-loving plants, such as the taller Irises, *Lysimachias*, etc., are suitable, but they should

be excluded from the small one. The moisture-loving Primulas are a host in themselves: Primulas japonica, pulverulenta, involucrata, Cockburniana, farinosa, Bulleyana, and many others will delight in it. The Summer Snowflake (Leucojum aestivum) is happier there than in a border, and if a carpeting plant is wanted over the bulbs, the golden-leaved Creeping Jenny (Lysimachia Nummularia aurea) is excellent. Wood Lilies or Trilliums are lovely in the bog garden; so, too, are some of the hardy Orchids, such as Cypripedium spectabile, Orchis foliosa, besides some of our native kinds. If free-growing plants are wanted, some of the Musks may be added. Gentiana verna will thrive there, especially if some stones are put about the plants. Saxifraga Hirculus major, with S. aizoides and its variety aurantiaca, are happy in the little bog garden; so, too, is the choice violet-blue Pinguicula grandiflora, while a number of little peat-loving shrubs, mentioned elsewhere, will grow there.

CHAPTER XIII

Rock Pools and Ponds

THE presence of water in the rock garden adds immensely to its charm and beauty. From a practical point of view also it is satisfactory; by its means the cultivation of many rock-garden plants is rendered simpler, while it offers also an opportunity of introducing fresh treasures in the shape of aquatic plants. Those who have an ample water supply of their own will find the provision of a pond, pool or stream in the rock garden to be a simple matter; but to those having to depend mainly upon public supplies, it is a more serious consideration. A great fault of many of the small ponds is that they are so flagrantly artificial, and quite out of character with their surroundings.

The first question to be considered is that of the situation of the pond or pool. It ought to be in a hollow, yet for the welfare of the best water plants it should be in full sun; it ought also to be placed where water would be likely to run naturally. If a constant flow of water is desired there must be drainage, or at least an overflow into the bog.

The Water Supply.—The crux of the question is the supply of water. When it is realised that a constant

flow is not requisite, and that many aquatic plants can be cultivated with absolute success without a flow of water, many difficulties disappear. It is only required, in fact, that the green scum shall be occasionally removed from the pool, and that the loss of water caused by evaporation and other agencies be made good. This loss is very small, and would be even less were it not that the birds find in the pool a source at which they can quench their thirst and perform their ablutions. Their presence really adds to the true interest of the garden. We have cultivated Water Lilies for years in pools and tubs without a continuous supply of water, and have no hesitation in recommending others to adopt this method. After the first week or so, there is no offensive smell from the water. Not that the pool or pond without an ample supply of water is to be preferred. It is only to meet the case of those who cannot secure it that the above experience is given.

The Ideal Water Garden in conjunction with rock-work is fed by a streamlet appearing to issue from a spring and flowing down a declivity leading to the pond or pool. This streamlet supply may be purely artificial and regulated by a tap that can be turned on and off as required. It must be remembered that the lovely Nymphaeas do not like running water, but prefer to be in a placid pond, where the sun's rays can reach the water ; there they will open more freely than in water cooled by a constant influx. A pipe leading from the household supply will provide all that is necessary, and this may be

THE MOUNTAIN AVENS (*Dryas octopetala*)

ROCK GARDENING FOR AMATEURS

It is not requisite that many aquatic plants be cultivated with absolute success without the aid of water, many difficulties disappear. It is only required, in fact, that the rock garden will be occasionally flooded. In a garden of this kind the water is never cut off, and the plants are never allowed to dry. The plants are not only more numerous, but they are also more numerous. The water is not only more numerous, but they are also more numerous. The water is not only more numerous, but they are also more numerous.

THE MOUNTAIN AVENS (Dryas octopetala)

The Mountain Avens (Dryas octopetala) is a hardy perennial which grows in rocky places. It is a very common plant in the mountains of the Alps and Pyrenees. It is a very common plant in the mountains of the Alps and Pyrenees. It is a very common plant in the mountains of the Alps and Pyrenees.

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disconnected as desired. A very little water will suffice for a pond or pool of moderate size. In a small



A Pool at the base of Rockery, the cement margin masked by rocks.

pool of some three or four yards diameter any loss can be made good by the addition

of a few canfuls of water. In rainy weather none is needed. In the construction of the artificial pond or pool the chief thing to ensure is that it is made absolutely watertight. If it leaks it will be an endless source of worry and trouble.

If a sufficient supply of good clay is available and inexpensive it may be utilised for rendering the pond watertight, the bottom and sides being lined with it.

It must be chopped into small pieces, mixed with water, and then "puddled" until it forms a close mass impervious



Showing how the cement margin is hidden by rocks and plants.

to water. A thickness of from six inches to a foot will be sufficient, according to the quality of the clay and

the nature of the subsoil. Clay may prove unsatisfactory, as water-rats and other creatures sometimes bore through it and cause leakage.

Masonry ponds are good, and may be built of non-porous stones or of hard non-porous bricks set in cement. Concrete is largely employed, and when properly made and of sufficient thickness is perhaps the most satisfactory. A combination of stones and concrete is often



A Pool among the Rocks.

excellent, and may be commended to those who have plenty of odd stones or broken bricks which they may desire to use up. The course we have followed is to put a layer of stones and broken bricks at the bottom, to run concrete among them so that every crevice is filled, and then finish off with concrete and cement to a total thickness of about six inches.

After deciding what material to employ, and getting it ready, the hole should be excavated. The soil is taken

out (it will come in for forming the base of the rock-work) to a depth that will allow of the placing of the concrete or other watertight material, and a depth of water varying from two and a half feet to eighteen inches in different parts. This varying depth is useful for the accommodation of small aquatic plants, but for *Nymphaeas* a uniform depth of about two to two and a half feet is best. If the subsoil is light and porous, it must be well beaten down and made as firm as possible, as leakage is sometimes caused by its sinking. The sides may either be quite upright or sloping, this depending on the space available, though the latter is preferable. About six inches from the intended water level a shelf may be formed all round by making the hole there a little wider. This is to allow for a margin of moisture-loving plants.

Forming the Pond.—The material should then be laid in the bottom and continued up the sides. Too abrupt an angle at the junction of the bottom and sides is not advisable, as leakage is more likely to occur if this exists. If concrete is to be employed it is an advantage to embed wire netting in it: a layer of concrete is put down, the netting laid on it and covered by additional concrete. Some make concrete with three parts of cinders and one of quicklime, mixed with cement and water; but the usual method is to employ two or three parts of broken stone to one of Portland cement, mixing these thoroughly with water. It is better to give too much rather than too little cement.

84 ROCK GARDENING FOR AMATEURS

About six inches of the concrete is laid, and carefully plastered over with a good coating of cement and sand; about two parts of the latter to one of cement. The whole ought then to be washed over with pure cement and water, as thickly as it can be applied with a white-wash brush. The cement is rendered quite watertight if about 10 per cent. of oil is added to the cement coating and wash. The writer uses boiled linseed oil. This is mixed with the cement after it has undergone its usual mixing with water. The "shelf" already mentioned is coated at the same time. Before the final coat of cement is added, if the concrete beneath appears smooth, it should be roughened before it is dry by drawing a rake, or something of that kind, over it. This will cause the final coating to adhere better.

Should the pond be composed of brickwork set in cement it is hardly necessary to coat it with concrete, though it is wise to do so as a precaution against leakage. A piece of piping should be put into the pond close to the bottom, and connected with a drain. This can be stopped with a plug, and supplies a ready method of emptying the pond for cleaning or other purposes.

It is always wise to test the pond before putting in the soil, and it is prudent to fill it with water a day or two after the cementing is completed. Should there be no signs of leakage the water should be let off and the soil put in position. Should there be leakage, the water must be run away and an additional coating of thin cement, with oil added, washed carefully over the whole



A LOW WALL PLANTED WITH PINKS, SAXIFRAGES AND BELLFLOWERS





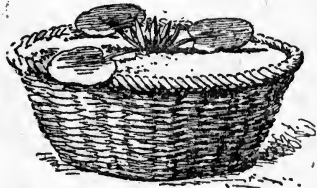
DRY WALL A FEW MONTHS AFTER PLANTING

1944

pond. Should it be impossible to drain away the water by a pipe, it must be removed by buckets or by means of a portable pump.

Presuming the pond to be quite watertight, we may now fill in the soil, composed of loam, with a little old cow manure added, to a depth of about six inches. Stones should then be cemented to the edge of the shelf, next the water, and rising above the water line. They are to enable one to place soil for the plants to be grown on the margin of the pond. About two inches of rough stones of small size should be placed at the bottom of the shelf, the whole being filled up with loam, leaf-soil or peat and sand.

Planting the Pond.—The plants may then be set in the pond and round the margin, and made firm in the soil. If the soil is loose some of the aquatics may be dislodged by the water and float to the surface, so that it is wise to put a few stones over the roots to keep them from rising. If *Nymphaeas* or other aquatics have to be planted when the water is in, they may be set in a small basket filled with soil and loaded with stones and sunk to the bottom. The roots will pass through the openings and enter the soil in the pond. A frequent error in planting aquatic plants, such as *Nymphaeas*, is that of putting them so close that



A convenient method of planting Water Lilies is to set them in baskets, the latter then being sunk.

they soon become overcrowded. *Nymphaeas* should be at least three feet apart, and it is necessary to give more space unless occasional thinning out is adopted. If the formation of a small pond is out of the question,



Tubs for Water Lilies arranged in a rock border.

a cask, cut in two, and sunk in the soil, will form a good substitute when only one Water Lily is desired. Every care should be taken to ensure that the pond or pool harmonises with the scheme of the rock garden, and to give it as natural an appearance as possible.

An Artificial Stream.—Streams, either natural or artificial, are most ornamental in a rock garden. Unhappily they are seldom available. It is possible, however, to have a short stream to carry water from the source, whether this be a tank or a tap from the public supply, at a comparatively low cost. A good deal depends on the height of the source above the pond, and whether

the stream is only intended as a watercourse to convey the water to the pond, or is to form in itself a special feature of the garden. In the former case, it may be only a few inches across, and may be edged with trailing plants and others that benefit by moisture. On the other hand, a larger stream, needing scarcely any more water, may be made and ornamented with water-loving plants. If only intended as a watercourse for supply purposes, it will do if but a few inches deep, and may be formed with stones set in the soil and grouted with cement, or it may be made of greater width—a foot or so deep, and provided with little stone barriers to keep a steady depth of water and to carry off any overflow. Either this or the smaller stream may open out into a little pool, whence the surplus water again may flow to the larger pond.

Let us take the larger stream, from one to two or three feet across. It should be constructed of puddled clay, concrete, or stones with cement run between. It ought, however, to be formed with rough stones above the water line at least, so that they may be decorated with rock plants. In such a stream some of the moisture-loving Irises, such as *I. sibirica*, *I. Kaempferi* or *laevigata*, *Monspur*, and others, will grow together with *Spiraeas*, *Astilbes*, *Mimulus luteus*, and many others. There is hardly any limit, save that created by considerations of space, to the charming effects that may be produced by a little stream in the garden. Besides swelling out into a tiny pool, it may be made to supply

a small marshy spot in which moisture-loving Primulas and other flowers of considerable beauty can be planted.

Care of Water Plants.—It is necessary to look over the ponds and pools occasionally. Weeds may appear, or certain plants may take possession of too much space. *Ranunculus Lingua major*, for example, or the Water Dock, may spread too freely, and spoil the appearance of the pond. Nymphaeas increase rapidly, and it becomes necessary to thin them out. Spring is the best time for this, though it may also be performed in autumn. The pond should never be wholly covered with vegetation, as the water appearing between the plants not only adds to their beauty, but affords space for revealing the reflections of the rocks and plants on the surface of the pond.

Time to Plant.—Most aquatics should be planted in spring, and March, April, and May are the best months for planting Water Lilies. One of the happy things in connection with water in the rock garden is that it enables one to plant the ponds, pools, and streams at almost any time, except, possibly, the depth of winter. Aquatics may be set in the water and moist soils, even in the most brilliant sunshine, with but little danger. Still, spring is the most suitable time for lifting, dividing, and replanting, as well as for planting.

It is not worth while to raise many true aquatic plants from seeds; most of them are readily increased by division. The plants for the margins may often be raised from seeds successfully. A list of the plants

suitable for ponds, pools and streams will be found at the end of the volume.

A water garden gives little trouble after the initial work, and its presence affords an excellent opportunity of cultivating many choice and lovely flowers that otherwise would be neglected.

CHAPTER XIV

The Rock Border

WHO cannot aspire to a rock garden must needs be content with a rock border, which, if properly made, differs only from the other in extent, in height, and in variety of aspect. The higher you build, the greater is the scope for sunny and shadowed places, and the more alpines you may expect to grow successfully. Yet so wide is the choice of rock-garden flowers that there are more than enough from which to select even for a rock border. There is no reason why every garden favoured with fresh air and sunshine should not possess its rock border filled with many of the choicest of alpine flowers. Sunshine is of far greater importance than shade; those that will thrive only in the shade are very few in number, and even in a low rock border it is easy to contrive sufficient shadowed spots for the accommodation of such as need it.

What, then, is a rock border? It is a rock garden on a very lowly scale, and it fails to rise to the higher dignity owing only to lack of space. To get height in the rock garden obviously there must be a broad base covering a considerable area of ground. If, however, the site at disposal measures only, say, ten feet wide,

it is impossible to build high with rocks and soil, and the low rock border is the result. This is no apology for a rock garden, it is the real thing on a small scale, and you may grow the choicest alpines there just as well as, or perhaps even better than, on some higher level, which, after all, may conceivably suffer from being wind swept unless adequate protection is given.

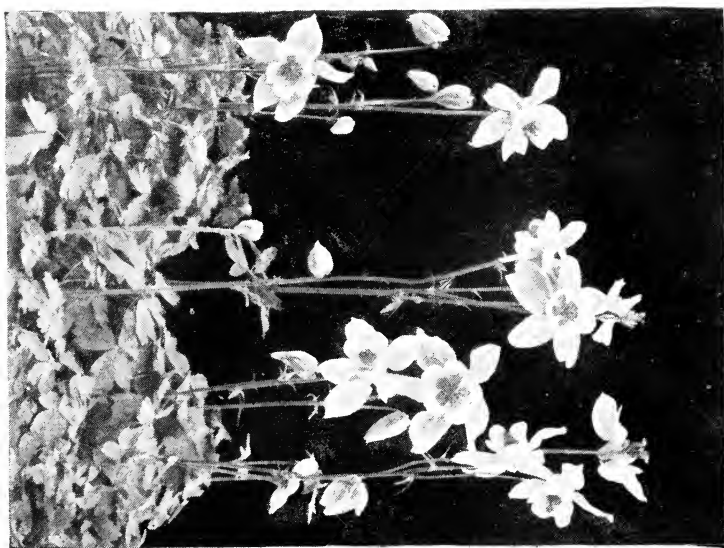
How to Begin.—The way to begin the formation of a rock border is to mark out the area of its base, making the outline irregular, though not fantastically so, with miniature bays here and there, and little promontories to shelter them. Then the question of drainage has to be considered: if the ground is heavy, clayey stuff that gets sodden in winter and is apt to cake and crack in hot dry weather, thorough drainage is essential. In fact, proper drainage is the chief secret of success in growing alpine flowers, whether they are in a big rock garden or on a low rock border. As has been so often pointed out, they cannot thrive in water-logged ground. If the land is "heavy" it becomes necessary to dig out the soil to the depth of ten or twelve inches over the area of the base and subsequently to fill the hole with broken bricks, clinkers, stones or any other material that will serve the purpose of draining away the superfluous water from about the roots of the plants. If the soil dug out is stiff clay, there is nothing to be done except to spread it over the rose beds or the flower borders, first removing a similar quantity of lighter soil to make room for it. When thus exposed to the action of the atmosphere, and

if broken up occasionally with the spade, it is astonishing how quickly clayey soil improves and becomes part and parcel of the border soil proper. By taking suitable soil from different parts of the garden it is possible to keep down the expense attaching to the purchase of fresh soil. My own rock border was made under similar conditions. I had first to dig out the clayey stuff and use in its place the lighter, cultivated soil taken from rose beds and flower borders. This is admirably suited to form the bulk of the material used for the rock border. One generally has to buy some soil, it is true, but only for making up special mixtures in which to plant.

The Soil Mixture.—It is advisable to place some large pieces of chopped turf over the drainage so that it does not become choked up by particles of smaller soil falling through from above. On top of this comes the soil gathered from the garden beds and borders, and made firm by treading. Then the foundation of the rock border is well and truly made. The depth of soil to place upon the drainage before the real building begins must depend upon the height to which we intend to go, and also upon the size of the rocks. If the height of the tallest peak is to be two and a half feet from the ground level, there should be some ten or twelve inches of soil alone before the rock or stone is put in. We must leave nothing to chance in the building of the rock border, for, once well made, it will last for years and yearly increase in charm and beauty; so let us attend to details as the work proceeds. As has been pointed out, a well-drained soil is



JASIONE JANKAE GROWING IN A DRY WALL



AQUILEGIA GLANDULOSA. RICH LILAC-BLUE
AND WHITE

A DWARF GREY-LEAVED ALPINE (*ANTENNARIA DIOICA*) IN BLOOM



essential ; it will be wise therefore to spread some stones or grit, even broken brick or pieces of flower-pots will do, over the twelve-inch layer of soil, and fork them in.

The Rock or Stone.—Now comes the great question of the placing of the actual rocks ; or, if there are no real rocks, whatever substitute is used. Those to whom the question of outlay is of moment would be well advised to obtain a few really good pieces of limestone or sandstone for the most prominent places, and for the rest to use cheap stone. The best stone will be largely, though not wholly, used for the sake of appearance, and to enable the rockery to show some approximation to



A Glimpse of a Rock Border.

natural form; the worst stone will be buried beneath the soil. Thus we are led to consider the right use of stone in rock building. It is true that if all the rock and stone used were buried beneath the soil, not even the top of a single piece showing, the plants would thrive equally as well as, and possibly better than, if the rockery were built in orthodox fashion. But it would not look so well; it would be merely a border of alpine flowers, and their association with rocks is natural, and therefore worthy of imitation. In writing of cheap stone I have in mind the concrete blocks that are used for the edge of pavements by contractors. If a number of these are buried in the bed of soil they will still further help the free passage of water; and, moreover, the roots of the plants, many of which go deeply, will find them out and cling to them for coolness and moisture.

Placing the Rocks.—Having inserted a number of the cheap stones on the twelve-inch bed of gritty soil, and filled round about them with further gritty soil made firm and worked well into all crevices, there remains to arrange the rocks proper that will give character and naturalness to the finished border. Many amateurs first build their mound of soil and then insert the rocks, pressing them in as far as they will go, which is exactly the thing not to do. It is impossible to get them firm in this way, and unless they are firm they are of little or no use to the plants. Let us, then, begin to arrange the final rocks while the bed of soil is still low, then we can fill in between them with the soil mixture, working

it round about them so that all the crevices are filled, and making it firm. Thus the rocks, settling with the soil, will be immovable. One should make every effort to arrange the rocks as naturally as possible. The surest way to avoid mistakes is to place them on their broadest base; the commonest fault is to stick them up on end, for the sake of showing as much stone as possible. In any case the greater part of the rock should be covered with soil, so that it has the appearance of a natural outcrop such as may be seen on any rocky cliff in hilly districts. If these simple rules are followed the effect can scarcely be other than pleasing and congruous. The lowest stones should, of course, be put in first; otherwise it will be impossible to ensure a firm foundation. No rock should rest directly upon another—there should be soil between; and no upper rock should overhang a lower one, or the plants in the crevices of the latter may perish for lack of moisture. When all the rocks are in position—and they should be so disposed as to provide an irregular and varying outline—the remaining soil is filled in. This should consist of two-thirds ordinary garden soil, one-third leaf-soil, with sand and grit added freely.

One need not depend on the rocks altogether for irregularity and variety of outline. This may be secured by arranging mounds of soil of different heights here and there. In fact, these are necessary to the perfect rock border, for when draped with *Aubrietia*, with Mossy Saxifrage, or some other easily grown evergreen alpine,

they are very beautiful, and add interest to the garden at all seasons. When the actual planting takes place, provision in the way of special soil mixtures must be made for those plants that need it; but usually a bushel each of peat or leaf-soil and turfy loam, with some lime rubble, will provide all that is necessary.

As for the plants one may grow on the rock border, their name is legion. Alpine Pinks will flourish in the chinks of the border peaks, Silvery Saxifrages will rapidly cover stony soil among the highest rocks, with Erinus, Rock Primulas, Alyssum, and Houseleeks as near neighbours; Aubrietia, Mossy Phlox and Mossy Saxifrage will creep over half-shady mounds and smother the less sunny slopes, while the lowlands offer a home for some of the brightest jewels of the mountain flora—Campanula, Gypsophila, Primula, Arenaria, Phlox, Flax, Veronica, Geranium, and a host of others that are described in a later part of the book.

It is possible to associate a moraine with such a rock border as I have described, and thus to taste the delights of growing some of the most difficult and most exquisite of alpines. In fact, one may have several moraines, arranged on slightly sloping ground between low mounds or running right through between two banks and following the outer edge of the rock border. The moraine may be of the simplest possible description. Having dug out the soil about two feet deep, let the reader fill the lower twelve inches with rough drainage material, the upper eight inches with broken brick chips passed through a



Silene alpestris

Sempervivum
or Houseleek

Sedum Sieboldi
variegatum

CORNER OF A ROCK BORDER





CERASTIUM IN A ROCK BORDER

NO. 100
1910

half-inch sieve, finishing off the remaining three or four inches with similar chips passed through a quarter-inch mesh sieve. A sprinkling of sifted soil, half loam and half leaf-soil, on the surface, to be washed in by rain, will complete the work, and a really satisfactory moraine is the result.

Substitute for Stone.—Some may not care to purchase expensive stone. It is possible to dispense with it altogether. The substitute does not perhaps look quite so well as the real thing, though it can be given a fairly natural appearance, and the plants do not object to it. The method I adopt is to obtain from the builder a number of oblong or square concrete blocks such as are used to form an edge along the pavements in town and suburb. With a little care one can transform these into very presentable "rocks" of varying size. There must first of all be a firm foundation, consequently several of them are buried in the soil to enable one to build up a steady and satisfactory "rock." Having made the lowest slabs thoroughly firm by ramming the soil round about them, one proceeds to place other blocks on top of them, to such a height and width as are essential to the size of "rock" required. It is important to place a layer of soil, say two inches thick, between each of the concrete blocks, thus filling all crevices, whether horizontal or vertical. The completion of the work will give us a more or less regular erection of slabs and stone, firmly built.

The plants ought next to be put in; in fact, when

crevices are to be planted the best plan is to insert the plants as the building proceeds, otherwise it is difficult to get the roots far enough back. Presuming the planting to be finished, it remains only so to treat the concrete that it bears some resemblance to natural rock. The materials needed are of the simplest—Portland cement, sand and water. Suitable proportions for mixing are half cement and half sand, or perhaps rather more sand than cement. Sufficient water is used to bring the mixture to the consistency of paste, otherwise it does not stick well on the perpendicular face of the stone. A mason's trowel is the best tool with which to put on the cement. Immediately one of the slabs is finished, sand should be scattered very freely all over it; in fact, it is necessary to throw the sand forcibly so that it may become firmly embedded in the cement. When cement and sand are dry a very fair substitute for a sandstone rock results. Care should be taken to make the surface as rough and irregular as possible. This is easily achieved by forming small ridges in the moist surface by means of the trowel, and by disguising the corners and edges by using an increased quantity of cement and sand.

The vertical fissures should also be filled with the cement and sand mixture, still further to assist in the delusion. It is not wise to close the horizontal fissures on the top of the "rock," otherwise rain will not be able to penetrate freely to the roots below, but they will soon be hidden by various plants. Such a method of providing a substitute for real stone may be, and probably

is, unworthy of the attention of those who are able to obtain natural stone, but reference to it is thought worthy of inclusion here since it offers a ready and really satisfactory means of increasing the interest of the rock border.

CHAPTER XV

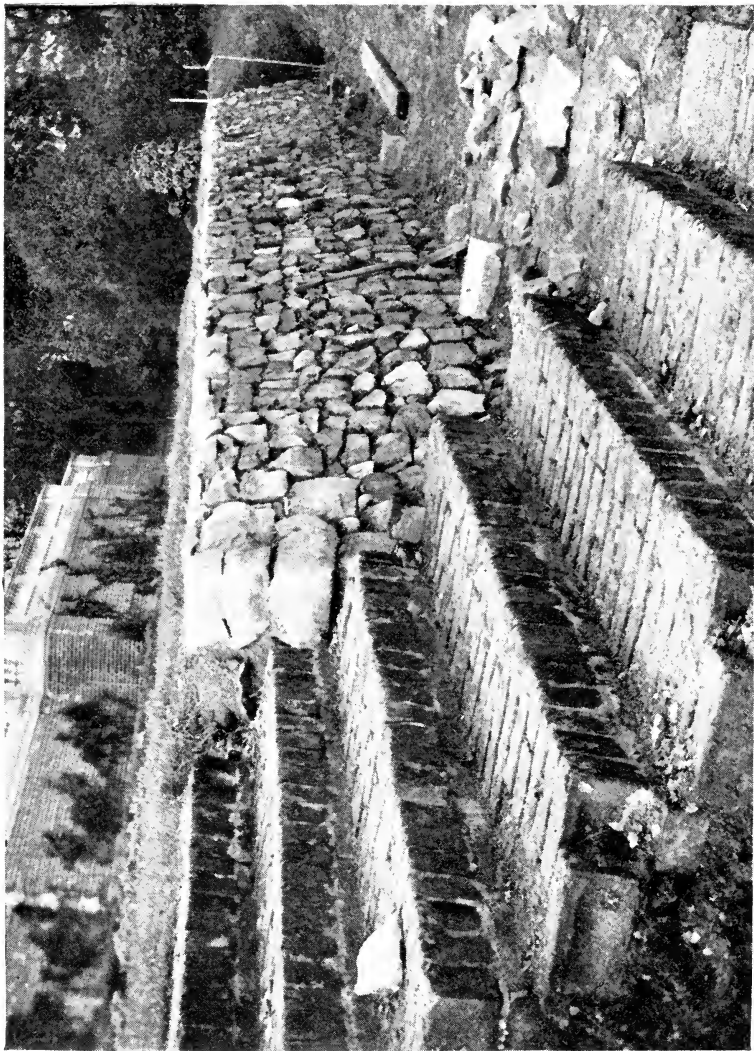
A Little Bog Border

IN almost every garden of circumscribed extent there is a border facing north that is more or less unsatisfactory. Why not make a bog border of it? I happened to possess such a piece of ground, and the thought occurred that there are plenty of exquisite bog-loving plants that delight in shade, and it seemed that in such an apparently unpromising place one might be able to fulfil their requirements. Accordingly I set to work, and first dug out the soil to a depth of two feet, then filled the lower six inches with broken bricks for drainage. Drainage in a bog border! you exclaim. It sounds odd, certainly, but it seems nevertheless to be the right thing. It ensures what bog plants seem to like so much—moisture that passes through the soil. The drainage is especially advantageous in winter, for owing to the unfavourable position of the little border the sun scarcely shines on its surface between October and March. The drainage serves to keep the soil from becoming water-logged and sour, which it would otherwise be liable to do. In the summer it is perhaps a slight disadvantage in that it necessitates free and constant watering. Of course, an ideal way out of the difficulty is to have a perforated



BUILDING A WALL FOR FLOWERS





A GARDEN WALL IN THE MAKING

THE
GARDEN
WALL

pipe running through the bog, thus enabling one to keep the soil moist with the minimum of trouble. But the same end is achieved by timely attention with the watering-can.

The choice of soil is all important because it must be that which is capable of holding and retaining moisture. My little bog border was made up chiefly of peat and leaf-mould with a little turfy soil mixed in, and I have found it answer well. There ought to be not less than eighteen inches depth of soil—rather more would be an advantage—so that in hot weather there is no danger of the bog drying up. It needs to be kept thoroughly moist from spring until autumn; subsequently, of course, it will be kept quite moist enough by the winter rains. It is necessary to make the soil fairly firm as it is put in, otherwise, in time, as it becomes wetted through, it will sink too low.

Here, then, we have a border, it may be as big or as little as you please, drained and filled with a peaty, leafy soil, such as bog plants delight in. What shall we place in it to justify this somewhat elaborate preparation? Well, success with the flowers I shall recommend seems to me to be well worth the outlay and labour, and that they will thrive in such a position I have proved. First of all there is the big-leaved Japanese Primrose, that sends up strong stems in May which, as they lengthen, produce tier on tier of blossoms that may be crimson or pale rose or pink, according to the variety obtained. Then there is its very near relative *Primula pulverulenta*,

which is of similar growth and habit, but even more attractive in appearance, owing to the beautiful white mealy covering on stems and leaves. The blossoms of this are of various colours.

The exquisite little *Primula rosea* from the Himalayas is quite happy there ; so, too, are other bog-loving *Primulas*, such, for example, as *P. sikkimensis*, *P. sibirica*, *P. luteola*, and *P. Sieboldi*. Then the lovely white Wood Lily or Trinity Flower flourishes in the same unlikely spot, with *Linnaea borealis* with its tiny pinkish, fragrant flowers, and several hardy Orchids for company.

CHAPTER XVI

Wall Gardening

THERE is perhaps no more charming garden scene in early spring than a wall built dry, i.e. without mortar, and planted with a selection of free-growing, profuse flowering rock plants. When they are established the wall becomes draped in blossom from top to base. I have seen many wall gardens, but I remember none that so impressed me with the exquisiteness of its display as one in a garden on the red loam of Somerset. I was fortunate enough to obtain a photograph of this, and am able to reproduce it in one of the accompanying plates. As I saw it in early June it showed a perfect riot of bloom; there were garden and Alpine Pinks, Bellflower and Mossy Saxifrage, Toadflax and Catchfly, Cerastium and Veronica. Here and there the old stone showed through, and, together with the grey leaves of the Pinks and Cerastiums, gave just sufficient relief to the glowing mass of colour to render the whole scene a delightful and complete garden. The wall was scarcely more than four feet high. In the border against which the wall was built were flaming Oriental Poppies, Paeonies, Dropmore Anchusa, Larkspurs, and other favourite flowers of early summer. Quite happy in the wall chinks

was *Incarvillea Delavayi*, bearing its handsome, somewhat trumpet-shaped blooms quite freely. I had never seen it in a wall before. Another wall that haunts the memory still was draped from end to end with white *Arabis* and mauve *Aubrietia*; it was the most exquisitely simple colour scheme I have ever seen.

The Ideal Wall Garden is built against a bank of soil. It is possible to build a wall having two sides, and filling in between them with soil; but though the colour display may be equally fine, such a wall lacks the natural charm that distinguishes the other. Readers possessing an old stone wall built against a bank of soil, and smothered perhaps in Ivy or other plebeian creeper, might with little trouble transform it into a paradise of spring and early summer bloom.

Building and Planting.—In building, it is important to ensure that the stones are firmly set as the work proceeds; when the lowest layer is laid the soil should be well rammed about and behind it. Here and there a stone ought to be placed having one end level with the wall face and the other end deeply embedded in the bank, so that the structure may be strengthened. If these precautions are regarded and care taken to place each layer of stone slightly farther back than the layer below, the wall will be firmly built, and the upper plants will not rob the lower ones of their fair share of moisture. Unless the soil is made quite firm, and all interstices between the stones are carefully filled, it is impossible for the wall to settle properly.

The best time for planting is the month of September, the earlier the better. Some of the plants should be put in as the wall is being built, for after the wall is complete it is impossible to insert those having many roots. Small plants only should be used, while seeds of some kinds may be sown. If mixed with a little fine moist soil, the latter being put in the chinks, the seeds will



Building a Dry Wall. The wall should slope as shown in the first sketch. The second sketch illustrates a wrong method of building. Overhanging rocks should be avoided.

soon germinate, and the plants will obtain a foothold such as bigger ones could never hope to do.

Flowers for the Wall.—There are innumerable showy and interesting plants from which to choose for the wall garden. Some care is necessary in disposing those that form curtains of leaf and blossom, or they will smother others beneath. The Aubrietia, Arabis, Evergreen Candytuft, Snow in Summer (*Cerastium*), Sun Rose (*Helian-*

themum), Dwarf Phlox (*P. subulata* and others), yellow Alyssum, Alpine Pinks, especially *Dianthus caesius*, *deltoides*, and *plumarius*, some of the Bellflowers, notably *Campanula garganica*, *Portenschlagiana*, *carpatica*, and *pusilla*—all these will form drooping masses of leaf and blossom, and should be allowed plenty of room. Then there are *Erinus alpinus*, a purple drift in spring; *Silene alpestris*, a beautiful little white-flowered Catchfly; *Gypsophila repens* and *rosea*, *Saponaria ocymoides*, *Acaena Novae Zealandiae*, the brilliant blue *Veronica rupestris*, Sedums and Sempervivums (Houseleeks), the lovely *Arenaria montana* and *Saxifraga Wallacei*. These exquisite and easily grown flowers are suitable, and all will be found described in another part of the book. For shady corners there are the Mossy Saxifrages, *Arenaria balearica*, that creeps, a fairy leaf tracery, over the rock face, *Arenaria caespitosa*, ferns in variety, and Foxgloves.

Beautiful grey-leaved plants are the Silvery-leaved Saxifrages (more fascinating than ever when in bloom), *Thymus lanuginosus*, Sedums *Ewersi* and *spathulifolium*, and *Cerastium*.

Seeds may be sown of the little purple and orange Alpine Toadflax (*Linaria alpina*), *Vittadenia triloba*, with pink, Daisy-like blooms; *Tunica Saxifraga*, that becomes a cloud-like mass of tiny pinkish flowers in September; and *Oenothera missouriensis*, a fine, big pale yellow Evening Primrose. All these are likely to bloom in summer if seeds are sown in early spring. Then there are Wallflowers, Snapdragons, Foxgloves, Mulleins, and others.

CHAPTER XVII

Alpine Flowers in Pots

THEY who have a cold (unheated) greenhouse cannot fill it more delightfully in spring than by growing alpine flowers in pots. The glass covering protects them from damage by wind and weather, thus ensuring the opening of the mountain blossoms in all their exquisite purity of colouring. Moreover it advances the period of flowering by a few weeks, so that, having a little greenhouse, or even a frame, one is able to enjoy these "children of the high hills" before they are due to open in the rock garden. Growing alpine flowers in pots is an absorbing recreation open to the dweller in the suburbs as well as to the possessor of a country garden, and, providing some initial care is taken, the subject presents no insuperable difficulties even to the unskilled amateur.

Many alpines may remain in the same pots or pans, undisturbed from year to year; though, as a rule, the bulbs need to be freshly planted each autumn. Flower-pans (which are really wide flower-pots) are better than pots for most kinds, and should be preferred. Those six or seven inches wide and four or five inches deep are most generally suitable. Plenty of drainage is one

of the chief essentials to success. The hole or holes in the base are carefully covered with crocks (pieces of broken flower-pot), and the flower-pan is then made half-full of crocks and small pieces of stone, so that there shall be no possibility of stagnant moisture about the roots. Such thorough drainage as this is necessary for most of the small alpines, though for bulbs of various sorts and for bigger plants the drainage need not occupy more than one-quarter of the depth of the flower-pan or pot. A soil mixture suitable for the majority consists of two-thirds turfy soil, one-third leaf-soil, with plenty of grit or silver sand intermixed. Small pieces of sandstone may, with advantage, be half-buried among the alpines; it tends to keep the soil cool and moist. Some variation in the compost becomes necessary in dealing with special plants; for instance, for all the silvery or grey-leaved kinds one should mix in a few pieces of limestone (lime rubble or old plaster will do); for such as *Lithospermum*, the moisture-loving *Primulas*, some of the hardy *Orchids*, and others, peat is needed, but reference to the descriptive list towards the end of the book will provide the reader with a clue to the special soil mixture, if any is needed. As for the potting, this should be done with as great care as possible, to avoid damage to the roots. A little prepared soil is first spread over the drainage, the plants are then put in, the roots being made firm. A few pieces of sandstone among the soil help to ensure firmness, and, as already mentioned, other pieces may be used on the surface.



ONE OF THE BEST AND EASIEST OF MOSSY SAXIFRAGES (S WALLACEI)





ONE OF THE SILVERY SAXIFRAGES (*S. COCHLEARIS MINOR*)

When to Start.—The best time to make a start, if plants are purchased in pots, is in early spring, for one then has the pleasure of enjoying any flowers that may open the first season. If the plants are not in pots, or are dug up from the home garden, a start is best made in July or early August; if potted then the plants become nicely rooted before winter sets in, and before their flowering season is due. During the summer months the pots should be “plunged” to the rim in a bed of ashes made up in a frame in a sunny spot. The plants need watering freely in hot, dry weather, since it is important that the soil be not allowed to become dry, though the fact of the pots being in ashes will, to some extent, lessen the labour of watering. The advantage of the frame becomes apparent in autumn, for during heavy rain the glass light can be placed on; it should be tilted at the top by means of a block of wood, so that air can enter freely. The plants will need little water after October, but if the soil appears very dry it should be moistened. Cold will do them no harm, so they may be left in the frame throughout winter, air being given in all but the coldest weather, or when keen winds are blowing. In the New Year, as the flowers begin to show, the plants should be taken into the cold greenhouse, or, in the absence of this, they may be left in the frame, there to blossom. But a little greenhouse is a great advantage, as it is possible there to arrange the plants in a pleasing fashion, and to make their close acquaintance more conveniently. Those who possess a

veranda, open at the sides, yet covered at the top by a glass roof, may build a rockery there, and enjoy the alpinists in a more natural environment than that offered by the flower-pots or pans. There is no need to repeat the advice given in the chapter on making a rockery, since there is not much scope for building unless plenty of space is available. All one can hope to do in the veranda is to build a rocky bank, taking care to arrange for a fair depth of soil, and to make the rocks or stones firm. In summer water must be given freely; it is an advantage if the glass roof is movable, then the plants may be fully exposed to the summer rains.

Some of the low-growing bulbs or roots are very charming, and excellently suited to cultivation in pots—such, for instance, as *Anemones apennina*, *blanda*, *nemorosa*, *Robinsoniana*, *Pulsatilla*, and *Hepatica*; the miniature Daffodils, hardy *Cyclamen*, *Fritillarias*, the larger Snowdrops, dwarf Tulips, *Muscari* or Grape Hyacinth and others. The Mossy Saxifrages, the Silvery Saxifrages, and those of the *Kabschia* section (which are fully described on another page), *Gentiana acaulis*, *Primula Auricula*, and some of the many cross-bred forms, *P. marginata*, *P. denticulata*, *P. frondosa*, *P. sikkimensis*, *Draba aizoides*, *Arenaria balearica*, and *montana*—all these and many others may be grown without difficulty under the conditions outlined.

PART III

Indispensable Rock-Garden Flowers

CHAPTER XVIII

Androsace (Rock Jasmine)

THE members of this family have been described as the most alpine of alpine plants, and they may be taken as the most completely characteristic type of the flora of the high mountains. They are all of low stature, very pretty, and as in season they are covered with beautiful flowers they enliven the rocky masses and stony places in the Alps. In the Pyrenees *A. Laggeri* forms quite a turf, short and spreading, completely taking the place of grass, producing in spring broad stretches of pretty pink flowers. Regarded from the point of view of the gardener, the *Androsaces* (natural order *Primulaceae*) consist of two groups. The first group is represented by *A. carnea* from the European Alps, and *A. sarmentosa* from the Himalayas, which grow naturally in turf or on steep stony slopes. Those of the other group, represented by *A. helvetica*, grow in rocky fissures, and form the saxatile (rock-loving) section.

The first group contains many species found in the European Alps and in the Himalayas. They must be grown in very stony soil with ample drainage, and need abundant moisture during the growing season. In winter it is advisable to cover the silky-leaved kinds, like *A. villosa*, with a piece of glass, raised above the plant some four inches, thus keeping off rain, though admitting plenty of air. From a garden point of view it is the more important group of the two, and the following are a selection of the best :

A. carnea is a dwarf tufted plant from the granitic Alps of Europe at a high elevation. The flower-stems are about three inches long, and bear bunches of bright rose-coloured flowers in May. *A. Lageri* is the Pyrenean counterpart of this, but is a better grower. It differs in having green instead of glaucous leaves, which are also narrower, and blooms in March and April.

A. Chumbyi.—This is regarded as a hybrid between *A. sarmentosa* and *A. villosa*, and comes from the Himalayas. It may be described as a non-creeping variety of *A. sarmentosa*, with shorter and very woolly leaves and large bright carmine flowers. It blooms in May.

A. foliosa.—From rocky pastures in the Eastern Himalayas ; it is a vigorous plant with thick creeping stems and large leaves, which colour well in the autumn. The bunches of pink flowers are borne on stems which are often twelve inches high. It flowers from May to September, and grows well in rockwork in a half-shady place. It should be planted in deep, well-drained soil,

A ROCK JASMINE (Androsace Chumbyi)

PLANTING AND CULTIVATION

1. The soil should be rich and well-drained. It should be free from any kind of weeds and grass. The soil should be prepared by digging to a depth of 1 foot and mixing with a good manure.

2. The plants should be planted in rows, 4 feet apart. The plants should be planted in a hole 1 foot deep and 1 foot wide. The plants should be planted in a hole 1 foot deep and 1 foot wide.

3. The plants should be watered regularly. The plants should be watered regularly. The plants should be watered regularly.

4. The plants should be pruned regularly. The plants should be pruned regularly. The plants should be pruned regularly.

A ROCK JASMINE (Androsace Chamyd)

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3. The plants should be watered regularly. The plants should be watered regularly. The plants should be watered regularly.

4. The plants should be pruned regularly. The plants should be pruned regularly. The plants should be pruned regularly.

5. The plants should be fertilized regularly. The plants should be fertilized regularly. The plants should be fertilized regularly.

6. The plants should be protected from frost. The plants should be protected from frost. The plants should be protected from frost.

7. The plants should be protected from insects. The plants should be protected from insects. The plants should be protected from insects.

8. The plants should be protected from diseases. The plants should be protected from diseases. The plants should be protected from diseases.

9. The plants should be protected from wind. The plants should be protected from wind. The plants should be protected from wind.

10. The plants should be protected from hail. The plants should be protected from hail. The plants should be protected from hail.



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composed of loam, leaf-soil and sand, and may be increased by cuttings, division, or seeds.

A. lanuginosa.—A trailing plant from the Western Himalayas, where it is said to carpet extensive stretches in rocky places. The whole of the plant is covered with silky hairs, giving it a silvery appearance. The rose-lilac flowers are produced in abundance throughout the summer and autumn. *A. l.* var. *Leichtlini*, or *oculata*, has flowers of a lighter colour with a distinct crimson eye. Both will grow well on rocky, sunny ledges, where the stems can trail or hang down the slopes. Quite one of the most beautiful of all the *Androsaces*.

A. sarmentosa.—Also a Himalayan plant, making large rosettes of silky leaves from which are produced large umbels of from ten to twenty bright rose-coloured flowers on short stems in May. It is a rapid grower, and spreads about by means of runners, which, when fastened down with pegs, soon root, and make separate plants. A sunny place in gritty soil suits this beautiful plant, and it should have glass protection in winter to protect it from extreme wet.

A. sempervivoides.—A native of Tibet, with rosettes of leaves resembling some of the *Sempervivums*, from which it obtains its name. It is an interesting and pretty plant with rosy purple flowers in June.

A. villosa.—A beautiful little plant with small rosettes of densely woolly leaves, forming a silvery-like tuft. In May and June the sweet-scented, rosy coloured flowers are produced in umbels on short stalks. This plant

must be planted in very stony soil in a sunny position. Cover with glass in the winter. It is found on mountains in Europe and Asia. Closely allied to this is *A. arachnoidea*, a more spreading plant with white flowers, while *A. Chamaejasme*, the "Rock Jasmine," has flowers which open pure white, but gradually become pink with age; both open in early summer.

The members of the second group, although very beautiful, are less valuable from a garden point of view, because they are more difficult to manage. They usually grow in crevices of rocks or in heaps of rocky debris at high altitudes, conditions that are difficult to imitate in this country. They are happiest in the moraine.

A. alpina.—Grows in the fissures of rocks, forming close tufts like a small cushion, with nearly sessile white flowers in spring. To grow it successfully it must have a vertical fissure in a wall with scarcely any soil, and with a partly shaded aspect. It is native of the European Alps.

A. ciliata.—A beautiful plant from the Pyrenees, forming large turf-like tufts, covered in April and May with rosy carmine flowers. It is difficult to keep in this country, but may be grown in places like the preceding species, in half sun.

A. glacialis.—One of the most brilliant of the high mountain plants. The tufts growing in the rocky debris of the Alps of Europe are often so covered by the bright rose-coloured flowers, that the foliage cannot be seen. It may be grown in a moraine composed of granite

chippings, a little peaty soil, and sand, but must be supplied with abundant moisture when growing. There are many others belonging to this section, both granitic and calcareous, requiring the same treatment. Some of the easiest are *A. helvetica*, *A. imbricata*, and *A. pyrenaica*. Most are increased by means of seeds, sown in spring, or as soon as ripe, in stony, sandy soil.

CHAPTER XIX

Anemone

FEW hardy plants are more beautiful than the Windflowers and Pasque Flowers, as the members of this genus are commonly called. Like many other families, that of Anemone is composed of two separate groups,

which are so distinct that the Pasque Flowers have been placed in another genus, and named Pulsatilla. There is also a third group known as the Hepatica, with beautiful blue and white flowers, that is valuable for planting amongst ferns in the hardy fernery, as well as in the rock garden. For spring effect few plants are more valuable than *A. apennina*, or *A. blanda*, the blue Windflowers, for planting in broad patches under trees, or on the shady slopes of the rock garden.



Alpine Anemone
(*A. alpina*).

The beautiful flowers that

compose the Pasque Flower section of the Anemone (natural order *Ranunculaceae*) have feathery tails attached to the seeds, which give the mature heads of fruit a silky and ornamental appearance. They are amongst the most welcome of spring flowering plants, with a distinct beauty of their own, and as the flowers are freely produced on established plants, especially in the case of *A. Pulsatilla* and its varieties, they are very desirable for the rock garden. The Pasque Flowers are distributed over Europe and Northern Asia, with one in North America. There are about ten kinds in cultivation, of which the best are :

A. alpina.—The tallest and one of the most handsome of the group, with elegant foliage, and large white flowers in May. It is a limestone plant, and varies in height up to two feet. *A. sulphurea* is a counterpart of this plant, found only on the granite, with yellow flowers. Both are found on the Swiss Alps.

A. Halleri.—A native of the Alps, with pale purple flowers, and the silky appearance of *A. Pulsatilla*, which it resembles, but for the broader leaf segments.

A. patens.—A very handsome plant, with large, widely spreading, pale purple flowers and somewhat palmate leaves. It is found both in Europe and Siberia, and there is a charming form with cream-coloured flowers.

A. pratensis.—This is very distinct, owing to the drooping bell-shaped flowers, which bear little resemblance to the usual Anemone. They vary in colour from very dark purple to almost white. It is a native of Northern

Europe, and is always found growing in dry, poor, clayey soils.

A. Pulsatilla (the Common Pasque Flower).—This is found all over Europe in dry, chalky soil, in open situations. The long silky hairs, with which the whole plant



The Pasque Flower
(*Anemone Pulsatilla*).

is covered, and the large open flowers produce a charming effect. These vary a great deal in colour, the form found in this country having dull purple flowers in early spring. A more robust form is var. *lilacina*, with lilac-coloured flowers, quite one of the finest. A charming free flowering white form is variety *alba*, quite as easy to grow as the others.

A. vernalis.—This is the smallest of the group, but nevertheless one of the most charming. It is somewhat difficult to grow. It forms a tuft of leaves close to the ground, and bears delicately tinted flowers, white inside, and pink and blue outside. It is found on the Alps only at high elevations. Like most of the others, it flowers in March or April.



THE SNOWDROP ANEMONE (*A. SYLVESTRIS*)

UNIVERSITY OF CALIFORNIA



AN EXQUISITE ALPINE WOODRUFF (*ASPERULA SUBEROSA*)

As the Pasque Flowers ripen plenty of seeds, they can always be increased in that way. Good seed will germinate readily and freely, especially if sown as soon as it is ripe. It is best to sow in good-sized pans and plunge them in ashes in a cold frame, so that they can be protected from heavy rains, though they must not be allowed to get dry at any time. The pans need to be well drained, and a sandy loam is the most suitable soil for the seedlings. If germination takes place in the autumn the seedlings may be left in the pans during the winter, and potted, or pricked off into other pans or deep boxes in spring when they start growing again. When the seedlings are large enough to plant out, select an open situation in well-drained loamy soil that is not too wet. Old plants may be successfully transplanted in early spring.

The second group, of which our native Windflower, *A. nemorosa*, may be taken as an example, is well adapted for planting in broad patches on the rocky slopes of the alpine garden, but can also be effectively used under trees in grass that is not too strong, or in fern borders, and such-like shady places. They are all easy to grow, and will flourish in any rich soil of a light nature, especially leaf-soil. They do not root deeply, and in planting it is only necessary to bury the twig-like roots or stems about two inches below the surface.

A. apennina (Blue Apennine Anemone).—A well-known plant, much used for planting in grass, owing to the ease with which it is naturalised. When established

in large colonies its blue flowers in spring are very charming. The white form of this is also very pretty.

A. blanda comes from Asia Minor, and is closely allied to the Apennine Anemone, but does not do so well in grass. It is earlier in flower, and varies in colour from dark blue to pure white. Drifts of this are very effective in the rock garden in early spring, for it can be planted between other plants that bloom later, after the Anemone has died down. It seeds freely, and soon establishes itself.

A. nemorosa.—Our native Wood Anemone is a charming little plant, of which there are many varieties. *Bracteata* is a curious form with a ruff-like calyx. *Robinsoniana* is one of the most beautiful, with very pale blue flowers of large size. There are also many others. All these prefer light shade.

In the *Hepatica* section, *A. Hepatica* has trilobed leaves, and flowers varying in colour from pink and blue to pure white; *A. angulosa* has larger leaves and blue flowers. They are readily raised from seeds, but are slow of growth. Old plants do not like being disturbed, and prefer a rich loamy soil, to which has been added mortar rubbish or broken limestone. They do best in partial shade.

CHAPTER XX

Campanula (Bellflower)

THE Bellflowers (natural order *Campanulaceae*) are indispensable rock-garden flowers, and a representative selection offers remarkable variety. Some kinds are of erect growth, with cup or salver-shaped flowers; some, also of erect growth, produce graceful pendent bell-shaped blooms; while others, again, are of prostrate or drooping habit of growth or form dense little carpets covered with dainty bells of blue or white. The rock-garden Bellflowers are generally of easy cultivation, though there are some that need special consideration. We therefore divide them into two classes—the first comprising only such as are easily grown, the second devoted to those needing more than usual care. Practically all of them can be raised from seeds, but when several kinds are grown together it is found that the seedlings do not always come true. Seeds of the rarer kinds are difficult to procure. They should be sown, preferably in late summer as soon as ripe, or, alternatively, in spring in pots or pans of very light soil, and just covered with the same compost; the pots are placed in a frame or greenhouse. The seedlings ought to be pricked out as soon as they can be handled, and subsequently planted

out where they are to bloom. Those sown in late summer should be kept in a cold frame during winter.

THE EASY CAMPANULAS

Unless otherwise mentioned, these can be grown in the rock garden in soil composed equally of loam, and leaf-soil or peat, sand and grit being freely intermixed. Most of them do well on the level, but the trailing sorts look best on rockwork.

C. abietina.—Quite an easy Bellflower, soon forming a carpet of small green leaves, whence rise tall stems bearing saucer-shaped, purple flowers in July. It blooms badly if left alone too long, and ought to be divided every two years or so. Increased by division after flowering.

C. caespitosa (Tufted Harebell).—Considerable controversy has arisen as to the similarity of this to *C. pumila* (*pusilla*), but the plants grown under either name vary considerably. It bears dainty little bells of blue, and can be grown almost anywhere in a light soil. It is only from three to six inches high. Increased by division or seeds.

C. carpatica (Carpathian Bellflower).—One of the easy and indispensable Campanulas, native of Carpathia. Well known for its erect, open, flattish blooms, varying in colour from blue to white. It reaches a height of about a foot, and soon forms a big patch. It should be grown on the rougher parts of the rockery or near the edge of the walk. *C. turbinata*, said to be a variety of this, does not grow so tall, has hairy leaves and blue flowers,

A CHARMING AND EASILY GROWN BELL-
FLOWER (Campanula Stansfieldi)

ROCK GARDENING FOR AMATEURS

to how they are to bloom. These sown in late summer should be kept in a cold frame during winter.

THE LILY CAMPANELLAS

These plants are hardy and these can be grown all the year round in a cold frame. Usually of them, and they are very hardy, but they are best sown in a cold frame in the autumn and they will be ready for planting in the spring.

The plants are very hardy and they are forming a very good ground cover. The plants are very hardy and they are forming a very good ground cover. The plants are very hardy and they are forming a very good ground cover.

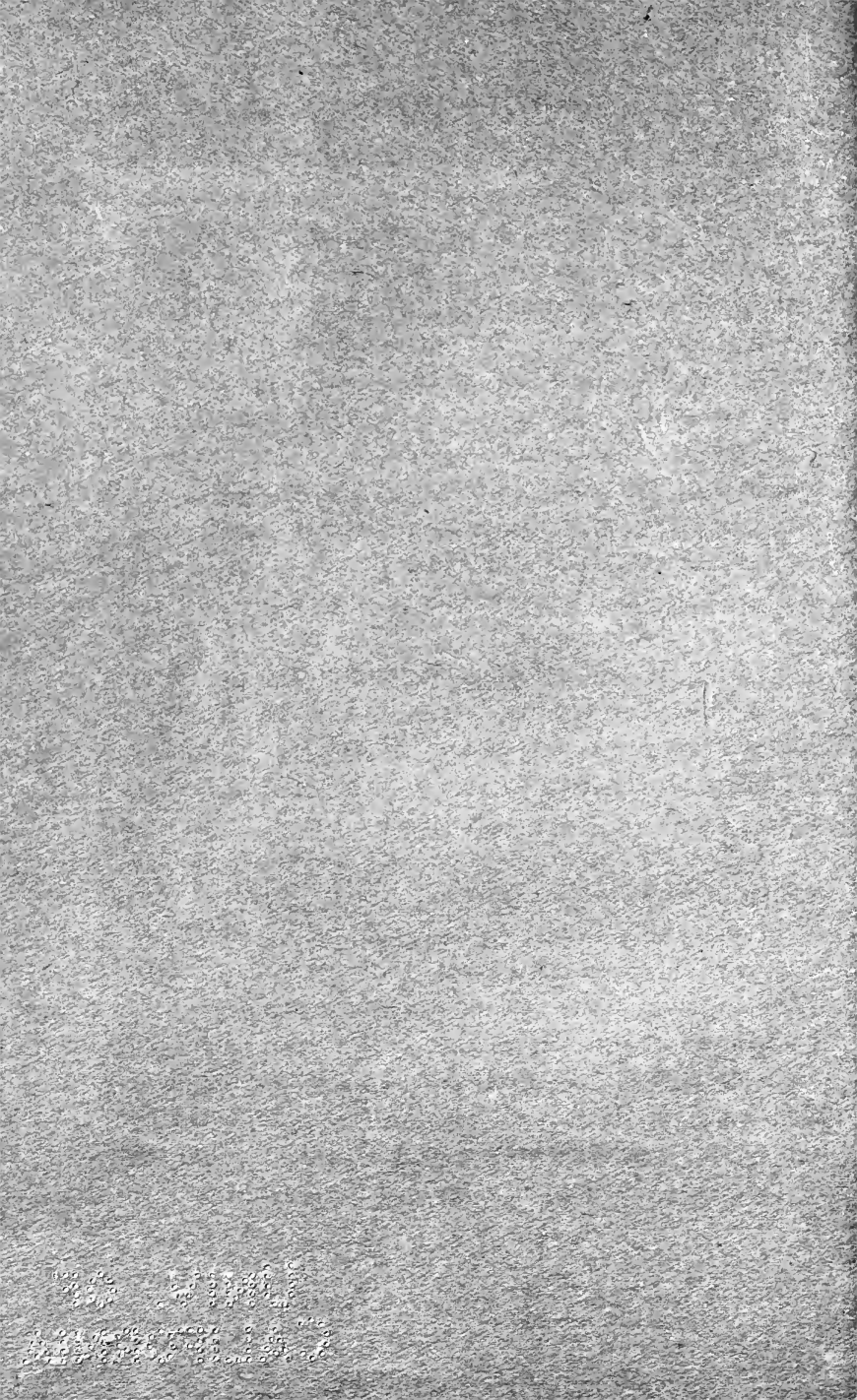
A CHARMING AND EASILY GROWN BELL-FLOWER (Campanula Stansfeldi)

This is a very hardy plant and it is very easy to grow. It is a very hardy plant and it is very easy to grow. It is a very hardy plant and it is very easy to grow. It is a very hardy plant and it is very easy to grow. It is a very hardy plant and it is very easy to grow.

(The Campanula Stansfeldi Bellflower).—One of the most hardy and beautiful Campanulas is the Campanula Stansfeldi. Well known for its long, pendulous stems, varying in colour from blue to white. It reaches a height of about a foot, and soon forms a big patch. It should be grown on the rougher parts of the rockery or near the edge of the walk. C. turbinata, said to be a variety of this, does not grow so tall, has hairy leaves and blue flowers,



View of
California



produced one on a stem. *Carpatica turbinata alba* is a pretty white variety. Isabel, White Star, China Cup, pelviformis and Riverslea are handsome varieties of *Campanula carpatica* with which nobody can go far wrong, especially if they are put where they will not smother smaller plants. All these will grow in sun or shade in well-drained soil on the level. Increased by seeds or division, the latter for the named varieties.

C. collina (Hill Bellflower).—This is one of the most beautiful of the taller Campanulas, found wild in the Caucasus, about twelve inches high. The blooms, opening in July, are violet coloured. It is a true perennial and of the easiest cultivation in common rockery soil. Increased by division or seeds.

C. G. F. Wilson.—A pretty hybrid Bellflower, raised near Edinburgh many years ago, and to be met with in two forms, one having yellow, the other green leaves; the latter is the better plant. Both have beautiful drooping bells of deep violet-blue in July. It thrives on the flat in the rockery or may be grown in the moraine. Increased by division.

C. garganica.—Everybody loves this well-known Italian Campanula, a handsome plant with open starry blue flowers in July. It is charming for hanging over rock-work, looks well in the moraine, and thrives in a wall. There are several varieties, and of these *hirsuta*, light blue, is one of the best. There are also white varieties, and others that differ chiefly in size of bloom. Increased by division or cuttings, also by seeds, if obtainable.

C. glomerata (Clustered Bellflower).—The taller varieties of the British *C. glomerata* are rather too big for the rockery, but the curious little variety named *acaulis*, with heads of blue flowers set among the leaves in June, is pretty. It grows best on the level, in any soil. Increased by division or seeds.

C. haylodgensis.—Among the several hybrid Campanulas of trailing growth this is one of the best. It has shining yellowish leaves and light blue flowers in June, which last a long time in bloom. It is easily grown in gritty soil, in sun or shade. *C. Profusion* closely resembles this. There is a double variety of *C. haylodgensis*. Increased by division or cuttings in July.

C. Hostii (Host's Bellflower or Harebell).—This is really a glorified form of the common Harebell (*C. rotundifolia*), but much finer in every way, and with bigger blooms in July. Easily grown almost anywhere. The white variety, *alba*, is charming. Increased by division after flowering.

C. linifolia (Flax-leaved Harebell).—This is closely allied to the common Harebell also; it is a pretty plant with drooping violet blooms. There is also a white variety. *C. valdensis* is a variety of this having greyish leaves and bigger flowers. Easy anywhere, though preferring a moist soil. Increased by seeds or division.

C. macrorhiza (Large-rooted Harebell).—Obviously closely related to the common Harebell, having small flowers of a pretty lilac shade. It flowers very freely.

Grows in sun or shade, and in any soil. Raised from cuttings or seeds.

C. planiflora (Flat-flowered Bellflower).—This Campanula is a quaint little North American plant, with flat, open flowers on short stout stems about six or nine inches high. It is known also as *C. nitida*. There are single and semi-double varieties in both blue and white, and all are easy to grow in common soil. Increased by division in July.

C. Portenschlagiana (Portenschlag's Bellflower).—Especially in its larger and finer form, called major or bavarica, this is one of the most valuable Bellflowers for a wall or for the rockery, where it will grow in common soil. It is native of Southern Europe. It prefers some shade, is drooping in habit, and gives good purple-blue flowers in plenty, from July onwards. It is also called *C. muralis*. Increased by division or cuttings in July.

C. pulloides.—This is a large and handsome form of *C. pulla*, but more easily grown; splendid in the moraine or in cool, peaty soil. It is very handsome and has good, deep blue flowers. Increased by division after flowering.

C. pusilla.—This well-known and showy little plant from South Europe, of tufted growth, glossy green leaves, and dainty drooping bells of blue, pale blue or white in July, is often called "Witches' Thimbles" or "Fairy Thimbles," and is frequently used as an edging. It has various forms, and all are beautiful. It is called also *C. pumila*. Miss Willmott is a beautiful pale blue

variety, and Miranda is a choice and distinct novelty with white blooms. Any soil suits it; it is excellent for rockwork crevices, for planting on the flat, in a wall, or in the moraine. Increased by seeds or division.

C. Raddeana (Radde's Harebell).—An easy rockery plant, about nine inches high, with pretty leaves and fragile stems, bearing violet-purple blooms. Easy in crevices or flat places, as well as in the moraine. Increased by seeds or division.

C. rotundifolia (Common Harebell).—Everybody knows this wild plant and would probably scarcely include it among their rock-garden flowers, but some of its varieties are worthy of consideration. There are white and also pale blue forms, and the double one is a favourite with some. Alaskana, a big, twelve-inch-high plant, bearing a profusion of blue flowers, is very handsome. Increased by seeds or division.

C. Scheuchzeri (Scheuchzer's Harebell).—Another of the numerous Harebells, a good form with deep blue flowers, easy to grow, and requiring no special attention. Increased by seeds or division.

C. Stansfieldi (Stansfield's Bellflower).—This fine kind forms a dwarf carpet of leaves, and bears unusually large, blue, somewhat drooping flowers. It needs no special care. It can be grown in rock crevices, on the level in loam, leaf-soil, and sand, or in the moraine. Increased by division. It is of garden origin.

C. Tommasiniana (Tommasini's Bellflower).—A beautiful Italian rock plant with little narrow, blue flowers

on slender stems five or six inches high; it forms a dense little tuft. It flourishes in light soil on rock-work or in the moraine. Increased by division or seeds.

C. tridentata (synonym *C. Saxifraga tridentata*).—This Bellflower grows well, and is not nearly so troublesome as its choice appearance would suggest. It is of tufted growth, and bears rather large violet bells in July. It grows readily in gritty soil, and is quite a success in the moraine.

C. Waldsteiniana (Waldstein's Bellflower). — This plant, which is native of Hungary, has upright and star-shaped blue flowers on short stems. It does well in a cool part of the rock garden in gritty loam, and leaf-soil, or in the moraine.

THE MORE DIFFICULT CAMPANULAS

C. Allioni (Allioni's Bellflower).—An unusually charming dwarf plant from the Alps of Italy; it thrives best in the moraine. It will also grow in the crevices of a sunny wall built without mortar, or on a sandstone or granite rockery with plenty of stones and chips about it. The pale blue tube-shaped flowers open in July. Increased by division after flowering.

C. alpina (Alpine Bellflower).—A choice rockery plant found on the European Alps; although perennial, it is apt to flower itself to death, and should be frequently raised from seeds. It is about six inches high, and has large blue, fringed, bell-like flowers in July. Grow on

the level in loam and lime. It transplants badly when established.

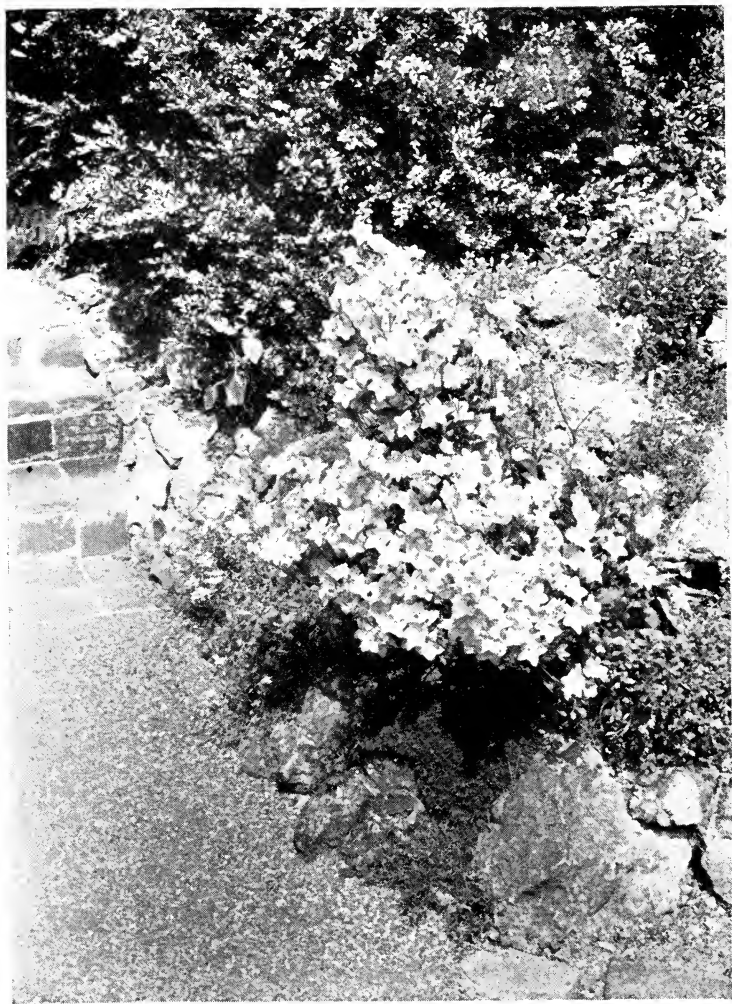
C. barbata (Bearded Bellflower).—This is so called because of the hairs inside the blooms. Easy to grow, though apt to die after flowering, through rot setting in at the base. It therefore requires a well-drained soil, containing plenty of stones. Found wild on the Alps of Europe. The handsome blue or white flowers are produced in June on a stem some twelve or fifteen inches high. Raised from seeds.

C. cenisia (Mont Cenis Bellflower).—Here again we have a troublesome plant needing a moraine to induce it to live. It is very beautiful, having masses of short-stemmed, light, clear blue, star-like flowers in June. Increased by division after flowering.

C. elatines.—A beautiful but rather troublesome North Italian rock plant, needing a crevice between sunny rocks. The starry flowers on trailing branches open in June, and bear some resemblance to those of *C. garganica*.

C. excisa.—A singular little plant found wild on the Swiss mountains, looking as if a small hole had been punched out of the lower lobes of the tiny drooping bells, which are purple, and open in June. It dislikes lime and should be grown in the moraine. It is of spreading growth, and seems to prefer a cool spot. Increased by division or seeds.

C. lanata (Woolly Bellflower).—Most cultivators of alpinists agree that this is difficult to grow for any length



THE CARPATHIAN BELLFLOWER (*CAMPANULA CARPATICA*)





SOAPWORT (*SAPONARIA OCYMOIDES*), PRETTY AND EASILY GROWN

TO ALL
REMEMBER
TO ALL

of time. Its woolly leaves "damp off," and assuredly a sunny or dry spot in the rock garden is essential, with a sheet of glass for protection in winter. It has white or pinkish bell-like blooms in summer. Increased by seeds. It comes from the Balkans, and is only a biennial.

C. mirabilis.—This Caucasian Bellflower is grouped among the difficult kinds because usually not long lived, and needing to be raised from seeds frequently. It is about a foot high, and produces a stiff spike of blue flowers. Plant in a dry, sunny position. Grows readily from seeds, but some plants may not flower for a year or two.

C. Morettiana (Moretti's Bellflower).—A rare and very choice, tiny plant with handsome purple bells, thriving well only in a small, shady crevice on limestone rock, and not easy to establish even there. Increased by cuttings taken in July.

C. pulla.—Although reputedly easy, this beautiful little Bellflower, from Eastern Europe, does not always prove so, and many lose it. In nature it thrives on limestone, but some growers assert that it does not like lime in cultivation. It needs a cool place, and well-drained gritty soil, or may be grown in the moraine. It is about four inches high, with large, drooping deep violet bells in July. Increased by division after flowering.

C. Raineri.—A really delightful Swiss Alpine plant, with downy leaves, and big cup-shaped flowers in July.

It gives some trouble and slugs are especially fond of it. It needs a level spot in the rock garden with plenty of grit in the soil and an annual top dressing. It thrives well in the moraine. Increased by division in July.

C. stenocodon.—A comparative novelty of much beauty, having beautiful pale blue flowers of similar shape to those of the Harebell. It should be put in the moraine or in very stony soil.

C. Zoysii (Zoy's Bellflower). This is an exquisite rockery plant from Eastern Europe, of close growth, and bears a profusion of narrow tube-like blue flowers in July. Large plants often die off without apparent cause. It must be zealously protected from slugs. Give it a level spot on the rockery in loam, sand, and grit, or put it in the moraine. It will grow in sun or shade. Increased by division in July.

CHAPTER XXI

Hardy Cyclamen

FLOWERING in the summer, autumn, winter, and early spring, the Hardy Cyclamen are welcome and useful plants (natural order *Primulaceae*). They require perfect drainage and shelter from winds in March and April. In fern borders they are quite at home, whilst in the corners between the stones in the rock garden they make large corms and produce their handsome flowers very freely. The foot of an old wall, where they get some shade, is an ideal place for them, while *C. Coum* may be naturalised on shady banks among short grass. Before planting Cyclamen corms some old mortar rubbish or lime should be mixed with the soil.

C. europaeum.—This species flowers from June to September, having the longest period of any. The rounded leaves, which are dark green, and marbled with white above, are persistent nearly all the year round. The purplish-red flowers are strongly fragrant, and in the fernery amongst old roots or stones this plant may be naturalised, where it will flower freely during the summer and autumn. It is found wild in Europe, etc.

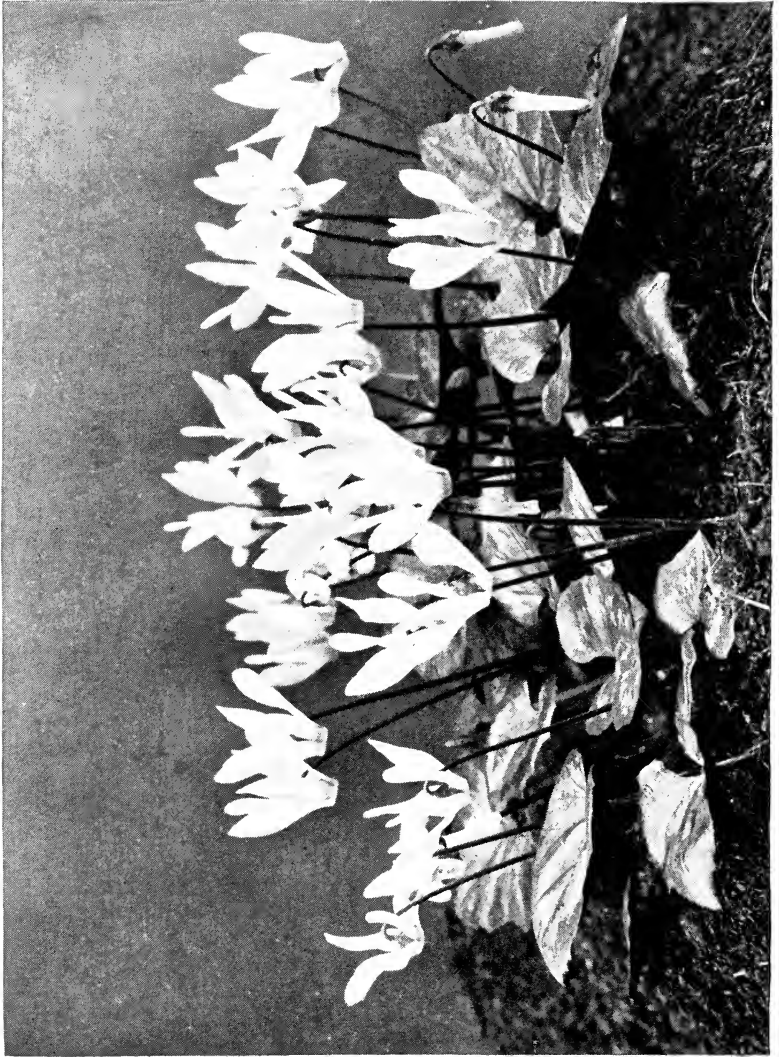
C. neapolitanum.—This kind, which flowers in the

autumn before its leaves are produced, is often known as *C. hederæfolium*. It is a beautiful plant, with flowers of good size, rosy purple in colour in the type, but there are many varieties, including a pure white. The beautiful marbled leaves are produced after the flowers and persist during the winter and spring, forming an attractive feature in sheltered nooks in the rock garden. The seeds are ripened during the following spring, and if sown as soon as ripe they germinate well. They may be grown on in small pots in a frame, potted up in sandy loam, with broken-up mortar rubbish mixed with the soil. It is a native of South Europe.

C. cilicicum is another autumn-flowering kind from Asia Minor, with prettily marbled leaves, and pale rose-coloured flowers.

C. Coum.—This comes from Asia Minor and the surrounding countries, and is one of the smallest kinds. It flowers in the early spring, the blooms appearing at the same time as the rounded green leaves. In colour the flowers vary from a dull rosy purple to white. It is one of the hardiest, as its leaves and flowers are not hurt even after being frozen. Easy to grow, this may be naturalised in short grass, while in the fern border and around the base of large trees it is very beautiful when established. *C. ibericum* is the Caucasian form of this, with leaves that have a white zone above, while the range of colour in the flowers is the same. Of the two it is the stronger and more ornamental.

C. repandum.—Is a native of Southern Europe, and



HARDY CYCLAMEN (*C. REPANDUM*)

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AN EARLY SAXIFRAGE (*S. OPPOSITIFOLIA*)



does not produce its flowers till April or May. It is a very old plant in gardens, having been grown for over 300 years. The leaves, which appear with the flowers, are toothed and angular, and beautifully marbled with white above, while they are purplish beneath. The rosy white flowers are produced very freely. This Cyclamen requires to be planted in a very sheltered spot, as it is not so hardy as some of the others.

The above Cyclamens may all be considered hardy when planted in suitable positions. In their native localities they are seen on rocky, sloping banks, generally shaded, under trees in a northern aspect, while they are usually found growing in chalky, stony, porous soil, out of reach of any stagnant moisture.



Hardy Cyclamen

CHAPTER XXII

Alpine Pinks

THE Pinks (natural order *Caryophyllaceae*) comprise a large number of valuable plants for the rockery, moraine, or wall garden. Some of the alpine sorts are very easy to grow; others, again, present some cultural difficulties. We have, therefore, divided them into two classes, the first of which can be cultivated in gritty soil. Many of them are easily propagated by seeds, by



Alpine Pink (*Dianthus alpinus*).

cuttings, or, in the case of the larger growers, by what are called pipings, i.e. growths pulled out at a joint and inserted in the same way as cuttings. In striking the cuttings or pipings the lower leaves should be trimmed off and the leaves slightly shortened. All the Pinks should have plenty of sun, unless it is otherwise mentioned. Seeds are sown as described in the chapter dealing with

A DAINY ALPINE PINK (*Dianthus neglectus*)



VIEW OF
CALIFORNIA

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that subject. The cuttings are best inserted in pots or pans, surfaced with sand, and put in a frame or greenhouse. Large plants may be divided after flowering, this being also the best time for striking cuttings. All bloom in summer, unless mentioned specially.

EASILY GROWN PINKS

Dianthus arenarius (Sand-loving Pink).—A neat but free-growing Pink, native of Eastern Europe, delighting in a sandy soil and sun, and having white flowers with a carmine ring; deeply fringed and fragrant. Excellent for dry, hot places. Increased by seeds or cuttings.

D. Caryophyllus (Carnation).—Some growers find the single Carnations useful for high positions on rockeries, and also on the tops of walls, but they are rather large for most rockeries. The best is the original single wild plant, which has rose flowers, and is found wild in Southern Europe.

D. cruentus (Blood-red Pink).—This plant is of stiff, erect habit, with clustered heads of red flowers. Native of Eastern Europe. It is easily grown in gritty soil, and should be raised from seeds.

D. deltoides (Maiden Pink).—The Maiden Pink, which grows wild on some British meadows and hills is a beautiful little plant with narrow green leaves and bearing a profusion of small, bright rose-pink or crimson flowers, with a darker zone. There is also a white variety. Easily grown on rockery, wall, or moraine; flowers all

the summer and autumn. Increased by seeds, division, or cuttings:

D. fragrans (Fragrant Pink).—An easy rockery Pink from the Caucasus, needing sandy loam and grit. It forms a compact plant, and produces pretty, white, fringed, and fragrant flowers freely. It likes sun and a light soil. Increased by seeds or cuttings.

D. graniticus (Granite Pink).—A glorified form of the Maiden Pink, though rather taller, and with bigger flowers of rose colour, with a darker zone. It blooms from June onwards. It thrives in a sunny place and gritty soil, and is easily propagated from seeds, by division or cuttings.

D. hybridus (Mule Pink).—This name covers the many forms of Mule Pinks, which are exceedingly varied. Some think them too artificial-looking for the rockery, as a number of them have double flowers. Most Mule Pinks are bright, however, and some live a long time without much attention. Others, again, require to be propagated from cuttings almost every summer. The most brilliant is Napoleon III., with glowing crimson flowers; it often fails to produce growths suitable for cuttings. As soon as it has done flowering the flower stem should be cut down to encourage fresh shoots. It is advisable to obtain two plants of most of the Mule Pinks: one of them should not be allowed to flower, so that it may yield cuttings. *Atkinsoni* is good; *Salmon*, excellent, and *Fürst Bismarck*, *Fettes Mount*, *Marie Pare*, *Emilie Pare*, and others will well repay cultivation. They should have sun and a gritty soil. Increased by cuttings.

D. Knappi (Knapp's Pink).—This plant is a cluster-headed Pink, after the fashion of *D. cruentus*, but with sulphur yellow flowers. Rather stiff and coarse for a good rockery. It likes poor, dry sandy soil, with lime added. Best increased by seeds. It sometimes dies off after seeding freely.

D. monspessulanus (Montpelier Pink).—This is often met with as *D. alpestris*, and is somewhat like *D. superbus*. It is native of South and East Europe, and has slender stems, about a foot high, with pink, fringed flowers. Suitable for large rockeries or the tops of walls. Propagated by seeds or cuttings.

D. petraeus.—Contrary to what one would anticipate from its appearance, *D. petraeus* is an easy Pink in the rockery, moraine, or chinks of a wall. Eastern Europe is its home. It is about six inches high, has small leaves, and rose or rosy white solitary flowers. Increased by seeds, division, or cuttings.

D. plumarius (Garden Pink).—A packet of seeds of this will give many pretty varieties, ranging from white to deep rose, though none is so suitable for the rockery as the species or wild type itself. Its home is in Eastern Europe. Increased by seeds or cuttings.

D. suavis (Sweet Pink).—This rock Pink forms a mass of grass-like leaves, and produces a wealth of small white flowers on stems about six inches long. A useful and pretty Pink, though not a showy one. Best placed where it may droop over a rock face. Increased by seeds, division, or cuttings. It is a form of the Cheddar Pink.

D. superbus (Fringed Pink).—In its several distinct varieties this is an interesting Pink, its fragrance and deeply fringed flowers rendering it a favourite. It is, however, short-lived, and should be raised almost yearly from seeds. It is widely distributed, being found in Europe and Asia. The flowers vary from almost white to pink or rose. Best on the rockery in a sunny, but not too dry place.

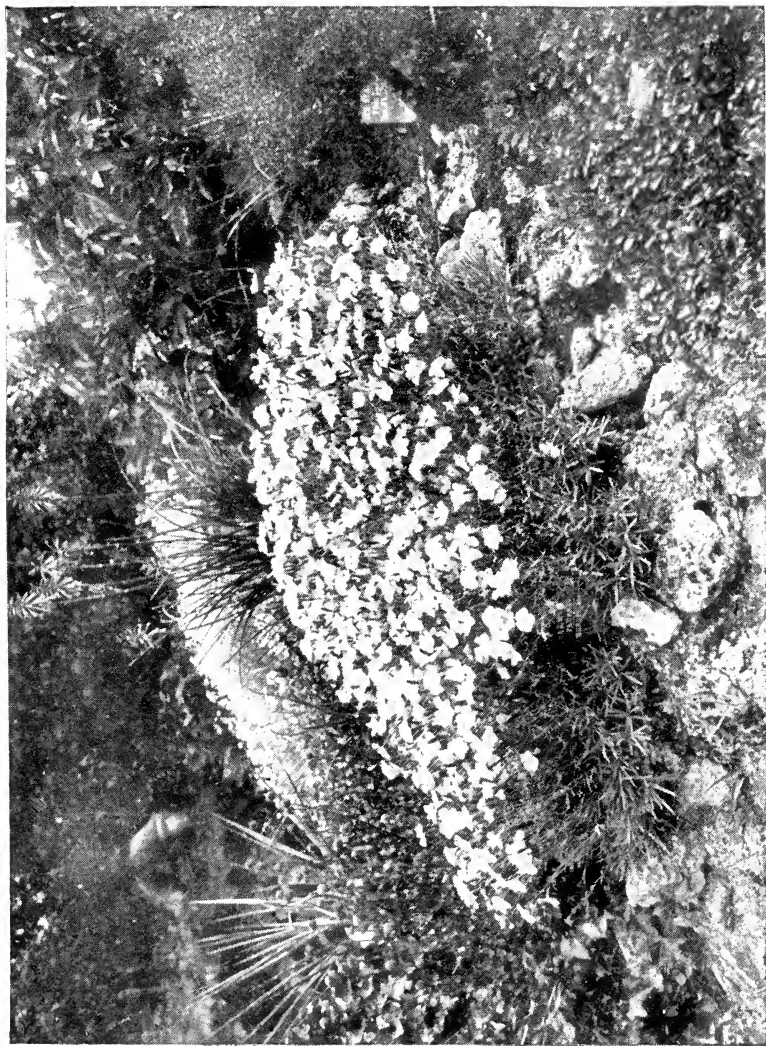
D. zonatus (Zoned Pink).—This is quite an easy sort, bearing rose blooms, having a deeper zone of colour. The plant is free-growing.

Other easy Pinks are *D. squarrosus*, *D. noeanus*, *D. fimbriatus*, *D. Requieni*, *D. Segueri*, *D. Simsii*, and *D. Sternbergi*.

THE MORE DIFFICULT PINKS

Some gardeners are fortunate enough to find some of the plants described in the following notes quite as easy as those already named, but that is not the general experience with them.

D. alpinus (Alpine Pink). This is one of the loveliest of all rockery Pinks, with glossy leaves and short stems and big flowers of brilliant rose. Its home is in the European Alps. It thrives best in loam, with some lime added, or in a limestone moraine, although occasionally it does not do so well in the moraine. Some find that it needs a little shade. There is a white variety, and there are also others of varying shades, from white to rose. Increased by seeds, division, or cuttings.



GROUP OF PINKS (DIANTHUS PLUMARIUS) IN THE ROCK GARDEN





THE MAIDEN PINK (*DIANTHUS DELTOIDES*)

D. cal-alpinus.—This is a beautiful kind, a hybrid between *D. callizonus* and *D. alpinus*, and has big rose-coloured flowers zoned with crimson. It may be grown in the same positions as the latter, and is raised from cuttings.

D. callizonus.—An exquisitely coloured Pink, with large crimson flowers marked with carmine, on stems about two inches high above neat grey leaves. It is a most tantalising plant. It likes a cool and shady place, and well-drained sandy loam, among stones; it needs plenty of water in summer. It often dies off without any apparent cause. Increased by seeds, when obtainable, or by cuttings.

D. dentosus (Toothed Pink).—Quite a rare rockery plant from Southern Russia. The writer has it on a level sunny part of the rock garden, in loam, sand, and grit, with about half an inch of fine gravel on the surface round about the plant. It has large leaves and violet-lilac flowers with a deeper band. Increased by seeds or cuttings.

D. microlepis.—A charming little Pink with distinct, stiff, glaucous foliage and tiny flowers varying from rose-purple to white. Best in the moraine or in peat and loam. Lime, though often recommended, is not essential. Should be kept rather cool in summer if in dry soil. Increased by division or seeds.

D. glacialis (Glacier Pink).—This treasure is the despair of many cultivators of alpinists. Its home is on the Alps of Europe. It forms a close carpet of glossy leaves,

surmounted in June by two-inch stems, each carrying a large rose flower of intense beauty. It is a lime-hater—according to general experience, at any rate—and in nature grows on granite. It likes a soil of loam and peat with granite chips intermixed, and thrives in the moraine or rock crevices in slight shade. Never allow it to suffer from drought in summer. Increased by seeds or division.

D. neglectus.—A lovely Pink from the south-west of Europe; it is shown in one of the colour plates. It varies greatly, but the best forms have large carmine flowers, tinged on the outside with buff. The leaves are grass-like, and the stems about four inches high. Inferior forms abound, and these are often taller, with small flowers of poor colour. Increased by cuttings or seeds. It should be planted in sandy loam with lime rubble intermixed, or in gritty loam. It should be on sunny rockwork or in the moraine.

D. sylvestris (Wood Pink).—The specific name of *sylvestris* is quite misleading, as this is not a woodland plant at all. It is a handsome Pink with grass-like, bluish leaves and solitary deep rose flowers on stems six or eight inches high. *D. frigidus* is classed as synonymous. It likes an open, sunny place in sandy, stony loam. It has a bad reputation for dying off. A slight covering of chips over the surrounding soil is beneficial. Increased by cuttings or seeds.

CHAPTER XXIII

Gentiana (Gentian)

MANY of the members of this family (natural order *Gentianeae*) are remarkable for their brilliant blue flowers. The term Gentian blue is a well-known one, and often used in describing the colour of other flowers of similar shade. There are about fifty kinds of Gentian in cultivation, including some that have been recently introduced from China. They vary a good deal, from the tall-growing *G. lutea*, often over three feet high, to such a dwarf plant as *G. verna*, only an inch or so high. While several, like the Willow-leaved Gentian (*G. asclepiadea*), and *G. septemfida*, are perennials, and easy to manage in partly shady places with deep rich soil, others, like the vernal Gentian (*G. verna*), are more difficult, and require careful planting. Even under the best of conditions they are often short-lived, and require to be raised fresh from seeds every year or two. The Gentians cannot be dealt with culturally as a whole; directions for growing each kind are therefore given.

G. acaulis (Gentianella).—This is one of the best known, and an old inhabitant of our gardens. It is native of the Swiss Alps and the Pyrenees. It does not flower well in all places, but where it is successfully grown it

is a most beautiful plant, with rich blue trumpet-shaped flowers in April and May, having a yellowish mark down the throat. In some gardens it is a valuable border plant, forming a carpet of green, covered in early spring with sheets of exquisite blue. Deep and well-drained stony loam in full sunshine is essential, with plenty of



The Spring Gentian (*Gentiana verna*).

water during early summer. Very firm planting is necessary. *G. a.* var. *alpina* has shorter leaves, and flowers more freely than the type, while there is also a variety with white flowers. A rare form is var. *caelestis*, with light blue flowers.

G. Andrewsii (the Closed Gentian).—This is an American plant, which flowers during the summer months. It grows well in half-shady positions, planted in deep loamy

soil, sending up stems eighteen inches high, bearing clusters of blue flowers. The flowers are peculiar in that they seldom open.

G. asclepiadea (the Willow-leaved Gentian).—One of the most robust and long-lived kinds, making progress for many years, and forming large tufts. Its home is in South-eastern Europe. An ideal place for this plant is an old, rough-built, shady wall, where the roots can find their way between the stones. During July the long stems, covered for the greater part of their length with beautiful blue flowers, rise two feet high. It is difficult to transplant on account of the long, fleshy roots; it is better to raise plants from seed than to divide old plants, as the latter take a long time to recover. Seed is freely produced, and germinates well when fresh, so that the plant is easy to naturalise in such a position as described. There is a variety with pretty white flowers. This Gentian may also be grown in the bog garden or by the pool side.

G. bavarica.—One of the smallest species from the European Alps, with Box-like leaves in dense tufts, and beautiful blue flowers in July. It is a moisture-loving plant, always growing in boggy places, where there is plenty of moisture. Under such conditions it may be kept for a time, but being found at a high elevation on the mountains of Switzerland and elsewhere it is not so easy to grow as *G. verna*.

G. decumbens.—This beautiful Himalayan plant forms rosettes of long, strap-shaped leaves, and produces decumbent stems, bearing at their tips clusters of charming

blue flowers in July. It can be grown in any deep soil, in a half-shady spot.

G. Freyniana.—In habit and appearance this Gentian, which comes from Asia Minor, most nearly resembles *G. septemfida*, but differs chiefly in having much larger flowers. These are more inflated towards the mouth, while the fringed crest of the larger segments of the corolla is not so prominent. During July and August the beautiful dark blue flowers, with a paler throat, are produced in terminal heads, in which the flowers are closely packed together. This plant, like many others of this family, prefers a half-shady position; it produces several decumbent stems, nine inches or more in length, each terminated by a head of flowers.

G. Kurroo.—This Himalayan Gentian, in habit of growth similar to *G. decumbens*, is one of the most charming, with azure-blue flowers in September, sprinkled with white spots near the throat. Slugs are very fond of this plant, and a sharp look-out must be kept in order to preserve it from injury. It thrives in half-shade, planted in deep loamy, well-drained soil.

G. lutea is not often seen, although it will grow in any well-drained clayey loam. It is known as the Great Yellow Gentian, and often reaches three feet or more in height. It has stout stems, with great Plantain-like leaves, and four or five close whorls of flowers of deep yellow colour in July. It is not easy to divide, and is best raised from seeds, which it ripens abundantly. It is found on the Alps of Europe.



A SHOWY GENTIAN (*GENTIANA SEPTEMFIDA*)





THE BEAUTIFUL GENTIANA PRZEWALSKYII



G. ornata is found both in the Himalayas and on the mountains in China. It has narrow leaves and pretty blue flowers on slender decumbent stems in May.

G. Pneumonanthe (Calathian Violet).—This is a very beautiful native plant, found usually in boggy places. It is easy to grow in moist, well-drained soil, reaching a height of some six or eight inches, with deep blue flowers on slender stems in August.

G. Przewalskyii is a beautiful Chinese plant, similar to *G. decumbens*, but with larger, lighter blue flowers.

G. scabra comes from Japan, and grows about two feet high, having leafy stems. It is one of the latest to flower, extending the long period over which the various members of this family spread their season. The flowers are deep blue and borne in clusters.

G. septemfida.—The name of this, which means seven-cleft, has been explained in reference to the scales between the divisions of the corolla, which are fimbriated, and may sometimes be found to have seven points, But this number is by no means constant, and more frequently there are only five. This Gentian, native of the Caucasus, grows about twelve inches high, and bears bright blue flowers in June. It is one of the easiest to cultivate except in dry, sandy soil.

G. verna.—The Vernal Gentian is one of the most lovely of our native spring flowers; it thrives in deep sandy loam, and with abundance of water during the spring and summer and full exposure to the sun it may be kept in good condition for many years. It grows

wild in cool alpine pastures and uplands, where it is never subject to the parched conditions that often obtain in this country. Grit or broken limestone may be mixed with the soil, and an annual top dressing of gritty soil should be given, working this well in between the slender stems. In addition to the above there are many other Gentians well worth growing.

In the autumn, when the rock garden is less attractive, the Gentians are very much appreciated, and deserve to be planted more extensively than they are. They well repay a little extra care in the preparation of a deeply worked, well-drained pocket of loamy soil. Plants from seed vary to a great extent, some are dwarf, while the colour of the flowers ranges from very dark to pale blue. Seeds are produced freely, and should be sown as soon as ripe in a pan of sandy soil under glass. They are best grown in partial shade and a rather moist soil.

CHAPTER XXIV

Iris

THE Irises (natural order *Iridaceae*) are among the most beautiful of hardy flowers, and the species and varieties are innumerable. Most of them are too large for the rock garden. Amongst the rhizomatous kinds, however—those having a rootstock like the common Purple Flag Iris—there are a few charming little plants that may be used with advantage, whilst many of the bulbous sorts, like *I. reticulata* (the Golden-netted Iris), make lovely groups of colour in early spring. The Irises of the former group are not difficult to grow, they flourish well in sunny positions if planted in loamy, well-drained soil. They are easy to increase by means of division, some just after flowering, others during the spring. The bulbous kinds may be planted in groups amongst carpeting plants, like the Mossy Saxifrages, or Aubrietias, that are not too thick; they will furnish backgrounds of green for these welcome flowers of spring. If there is a bog in the rock garden such kinds as the Japanese Flag (*I. Kaempferi*) will make a gorgeous display, and the many forms of the Siberian Iris (*I. sibirica*) are suitable for this position. For the rock garden the following is a selection of the choicest dwarf kinds:

RHIZOMATOUS IRISES

I. arenaria.—Only a few inches high, forming tufts of narrow leaves, and bearing in May bright yellow flowers, with purplish-brown markings on the lower petals. It comes from Eastern Europe.

I. Chamaeiris.—This dwarf plant, native of Southern Europe, and its various forms, are excellent for the rock garden, growing only six inches or so high. The type has beautiful flowers, with bright yellow standards, and pale primrose-coloured falls. Besides this there are several varieties with white (var. *alba*), deep yellow (*aurea*), purple (var. *italica*), and many others. They bloom in April.

I. cristata is a pretty plant from North America, with exquisite flowers of azure blue and lilac, striped with gold. Its season is April and May.

I. graminea, from Central and Southern Europe, is a stronger growing plant, with long, narrow leaves, and fragrant purple flowers in May.

I. humilis has very dwarf evergreen foliage, and bright lilac flowers among the leaves in summer. It is native of Russia.

I. lacustris.—One of the most dwarf of all the Irises, resembling *Iris cristata*, with flowers that are pale lilac and white, with a yellow throat. It has a long flowering period, and likes a half-shady spot in gritty loam.

I. pumila.—This species (native of Asia Minor and Eastern Europe) and its numerous varieties are of great

value for spring display in the rock garden. They are of the easiest cultivation, growing freely in any light soil. In colour the flowers vary from rich deep purple to yellow and pure white splashed with blue.

I. unguicularis (or *stylosa*, as it is often called).—If there is a spot in the rock garden at the base of a south wall, that is the place to plant this winter-flowering Algerian Iris. The lilac-blue flowers are fragrant, and during mild weather in the winter are produced very freely from established plants. If protected by a piece of glass or handlight, this plant will give a continuous supply of flowers for cutting.

BULBOUS IRISES

I. Danfordiae.—One of the most beautiful of the early Irises, having bright yellow flowers. When established in clumps it forms a perfect picture in early spring. It is quite hardy, native of Asia Minor. It does best in a light, well-drained soil, in a sunny position, conditions which suit most of the bulbous Irises.

I. Histrio and *I. Histrioides* are two similar kinds from Palestine. They are very early in flower, often in February, and are hardy in sheltered positions. The flowers are large, and mottled with white and rich lilac.

I. orchioides.—A distinct and hardy plant, very attractive with its golden-yellow flowers, borne on leafy stems. It likes a rather stiff soil that is dry in summer. *I. bucharica*, with paler flowers, is very similar. Both are native of Central Asia.

I. reticulata.—The Golden-netted Iris, from the Caucasus, is one of the most useful for planting amongst other dwarf-growing plants. Its spear-like leaves appear early in spring, followed by the beautifully golden-netted, violet-purple flowers, that are very fragrant. A still finer form is the variety major, more robust in habit, and with larger flowers. There is also a still earlier flowering form called var. Krelagei, with duller purple blooms.

Two other beautiful Irises from Asia Minor are *I. stenophylla* and *I. Tauri*. The former has very large flowers, about four inches across, borne on a stem of the same height; the standards are of a soft blue shade, while the falls are intense blue bordered with white. *I. Tauri* has violet purple flowers of different shades, with a band of gold on the blades of the fall. Another winter-flowering plant is the Scorpion Iris (*I. alata*) from Algiers. Its beautiful blue flowers of various shades commence opening in November, and with mild weather last on for a long time. Unfortunately, the bulbs do not ripen properly during our summers, and seldom flower much the second year. Fresh bulbs, however, are very cheap, and well worth getting every season in order to have a display.

CHAPTER XXV

Dwarf Phloxes

THE Phloxes form an important group of garden plants; their value in both the flower border and rockery can scarcely be over-estimated. The dwarf-growing sorts form spreading masses of evergreen foliage, and in May become smothered in blossom, giving showy colour groups in the rock garden. It is safe to say that during their season they are not surpassed for sheer profusion of bloom by any other of the rockery flowers. The dwarf Phloxes are not alpine flowers, but they are, nevertheless, most admirably suited for associating with them. They grow wild on the hills of Virginia and other States of North America, and belong to the natural order *Polemoniaceae* (which contains also the well-known Jacob's Ladder, *Polemonium*). Although hardy in well-drained soil, some of them are liable to suffer during winter in cold and heavy ground. They never look better than when grouped on some rock-garden slope, down which they may spread, and where there is little likelihood of the presence of stagnant water in winter. They are best suited by a loamy soil, with which some leaf-mould and sand are intermixed in the proportion of about one-third of the whole bulk. It is all important that

it be well drained. At least a foot depth of good soil is essential. They thrive best in a position that is not exposed to the midday sun, and should preferably be planted facing west or east. An old wall, dry built, with a cool aspect, offers an ideal home for the dwarf Phloxes; if small specimens are planted at the top they will soon form cascades of leaf and blossom, falling over the wall face.

Phlox amoena has characteristic trailing growths, and in May yields its lovely rose-coloured blossoms in great abundance.

P. divaricata is a taller kind, about twelve inches high, with pale lilac flowers. *P. Laphami* is a very beautiful variety of this, bearing light lilac-blue flowers very freely.

P. procumbens, lilac with purple markings, and *P. ovata*, purple-rose, are two other good dwarf Phloxes, though they lack the freedom of blooming so characteristic of the Moss Pink.

P. reptans (the Creeping Phlox, synonym *P. verna*) is of much looser growth, and lacking the compactness of some of the others; but its large rose-coloured blooms in early May are very handsome.

P. Stellaria is a vigorous kind with white flowers; its variety *lilacina*, having lavender-blue blossoms, is especially attractive.

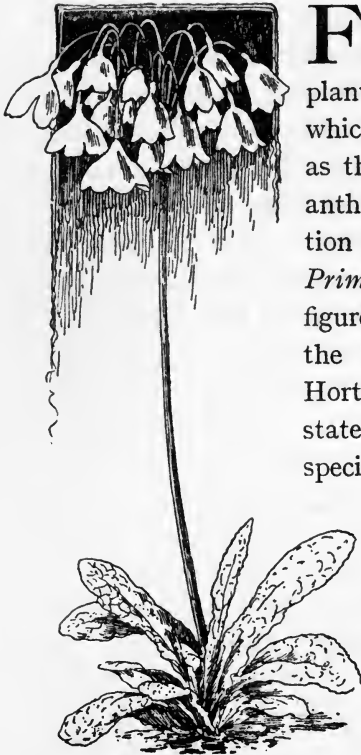
P. subulata, the Moss Pink, forms close, small-leaved tufts of foliage, that in April bear their pink flowers very freely. There are now numerous varieties of the

Moss Pink, with blooms varying in colour from white to crimson and purple. The Bride and Nelsoni are the finest whites; Vivid, brilliant rose; Brightness, light rose; G. F. Wilson, mauve; Fairy, lilac; and Little Dot, white with blue centre, are other good sorts. Some of these, notably The Bride and Nelsoni, seem less hardy than the type, and especially liable to fail in soil that is not sufficiently light and well drained.

The dwarf Phloxes are readily increased by cuttings taken as soon as the flowers are over, and inserted in sandy soil beneath a bell-glass in the shade. When the old plants have become straggling they may be taken up, and divided in June, the pieces being set out in light soil on a shady border. *P. reptans* is best increased by pegging down the trailing shoots; roots form at the point of contact with the soil, and the pieces may be severed when well rooted. These Phloxes are much improved by occasional top-dressing with light sandy soil; this should be worked well among the shoots immediately after the flowering season. The plants may be kept neat and within bounds by cutting back some of the shoots in June.

CHAPTER XXVI

Rock-Garden Primulas



The Sikkim Primrose
(*Primula sikkimensis*).

FEW families contain more well-known and popular garden plants than that of the Primula, which embraces such familiar flowers as the Cowslip, Primrose, and Polyanthus. The extent and distribution of this family (natural order *Primulaceae*) may be gathered from figures given at the Conference on the Primula, held by the Royal Horticultural Society. There it was stated that over three hundred species were now known, distributed over the Northern Hemisphere in the following proportion: Seventy are found in the Himalayas; one hundred and forty are Chinese; about forty occur in Asia outside the Himalayas and China; fourteen are Japanese; nineteen are American; whilst in



A CHINESE PRIMROSE PRIMULA PSEUDO-SIKKIMENSIS)





A STATELY HARDY PRIMULA (P. PULVERULENTA)

W. W. W. W.
W. W. W. W.
W. W. W. W.

Europe there are some thirty additional species. These figures show a great increase since the time of Linnæus in 1753, when only six species of *Primula* were known.

The headquarters of the *Primulas* is evidently on the great mountain ranges of Asia, particularly on the Himalayas and the spurs ending in China. From this country in the past few years many new and remarkable kinds have been introduced to our gardens, and there is promise of many more to come. With very few exceptions all these various *Primulas* are hardy in this country, and although the conditions under which they are found in their native habitats must be of a widely divergent nature, it is possible to grow successfully, under practically the same conditions, plants found wild in China, Japan, the Himalayas, Switzerland, and North America.

Botanically the *Primulas* have been divided into a great many sections according to their affinity, but for garden purposes they may be generally classified in two, or at the most three, great groups. There is the group of rock-loving kinds represented by *Primula Auricula*, the members of which are found on the European Alps, and generally need to be grown in rocky crevices or stony soil in the rock garden. The majority of these, however, will also flourish in the open border in many gardens. Next comes the group of moisture-loving or bog plants, represented by *Primula rosea* and *Primula japonica* among numerous others. Some of the stateliest *Primulas* are included in this group, which is of great horticultural value. Last, but not least from a decorative

point of view, there is a section that is of great use for growing in borders or in beds. Of this, the best known are the Cowslip, Oxlip, and Primrose, from which is derived the popular *Polyanthus*.

Although they are practically perennials in nature, many of the *Primulas*, especially the moisture-loving sorts, are short-lived in this country, and die after flowering. It is thus necessary to make annual sowings of these particular kinds in order to keep up a stock. The best time for sowing *Primula* seeds is as soon as they are ripe, for if kept during the winter and allowed to become dry, those of many kinds do not germinate for a year or two, and often not at all. In the case of *Primula japonica*, self-sown seedlings come up in numbers around old plants that have been allowed to shed their seeds; but if gathered and kept for a season the seeds take a long time to germinate. On the other hand, some of the *Primula* seeds retain their vitality for a considerable time, and may be successfully raised after being kept for a year or two.

In the following lists of *Primulas* arranged under the different sections of Rock, Bog, and Border sorts, the best for various purposes are dealt with. They are selected for their beauty, easy cultivation, and in some instances for their unique character.

ROCK-LOVING PRIMULAS

The typical *Primula* of this group is *P. Auricula*, which is one of the parents of the different types of garden

Auriculas that were once even more popular than now. The members of this section are essentially European, for they are chiefly found on the mountains of Central and Southern Europe. All are furnished with stout fleshy roots, which act as reservoirs of sap, and reach far down into the interstices of rocks, where they develop a mass of rootlets for supplying the plant with moisture. The chief requirement of these Primulas is a deep, perfectly drained soil, where the plants can always obtain moisture. They like a horizontal position in the cracks and crevices of rocks, where the roots can penetrate deeply, for in such positions they can resist



A beautiful Rock Primula (*P. hirsuta*).

drought to almost any extent. In the warmer parts of this country nearly all the Rock Primulas should be planted in half-shady places, where they only get sun for part of the day. In their natural habitats some are found confined to calcareous or limestone rocks, while others are found only on granite. In planting and in mixing up soil for the various species this should

always be taken into account. The following form a good selection:

P. Allionii.—Found in the fissures of limestone rocks in the Maritime Alps at high elevations. It is somewhat rare in cultivation, but well worth a little trouble

to grow on account of its charming rosy lilac flowers in April. The plants should be wedged tightly into a crevice where they will get plenty of sun. It flowers in April.

P. Auricula.—The typical Auricula of the Alps is found over the mountain ranges of Central Europe. It has somewhat fleshy leaves, glaucous in appearance, and very mealy, while the sweet-scented yellow flowers are borne, in May, in a dense umbel on stems some five inches in height. It is a limestone plant, and may be successfully grown in the rock garden



A remarkable Primula from China
(*P. littoniana*).

planted between large stones, with the rosettes of leaves in a vertical position. The plants should be wedged in the crevices tightly with smaller stones and stiff, loamy soil, and thrive best with an eastern or western aspect where they do not get too much sun. They are somewhat variable in foliage, some of the leaves being lobed and having a conspicuous white margin. The flowers open in May.

P. carniolica.—A beautiful and distinct plant from the Alps of Carinthia, where it is found at an elevation of nearly 4,000 feet above sea-level. It has smooth green leaves in a rosette, and heads of bluish-purple flowers in April. It thrives best in a half-shady position, with plenty of moisture, and should be planted in gritty soil or wedged between rocks in a sloping position.

P. Clusiana.—One of the most beautiful Primulas contained in this section, and a native of the calcareous Alps of Austria, growing at high elevations. It has dark green leaves slightly margined with white, while the large violet-carmine flowers are very handsome. It differs from *P. glaucescens*—which is often sold for it—in having the petals cut, or divided down to the middle. It is a free grower, forming large tufts, and succeeds well in half-shade, planted in stony, loamy soil. It flowers freely in April.

P. glaucescens.—Also known as *calycina*, this is closely allied to the above, from which it is distinguished by the bluish-grey leaves, which have a horny edge, and by the lobes of the corolla being cut to only one-third of their length. The large, handsome flowers, of carmine-

lilac colour, are produced in March and April. It is found on calcareous mountains near the Lake of Como, and succeeds in a similar position to that advised for *P. Clusiana*.

P. hirsuta.—One of the commonest alpine Primulas, found on the Alps and Pyrenees, mostly on granite. It forms rosettes of pubescent leaves, and bears flowers of various shades of rosy purple in May and June. It may be grown in cracks, or planted in pockets in the rock garden in a mixture of sandy peat and loam, with plenty of broken stones mixed with it. It is very variable in colour; and perhaps the most beautiful and easily grown form of it is *P. h. var. alba*, mostly known in gardens as *P. nivalis* or *nivea*. This has lovely pure white flowers, and increases as freely as an ordinary border plant in many places.

P. integrifolia is a limestone plant, from the European Alps, with small tufts of leaves and rose-coloured flowers, in April, that are very large in proportion to the size of the plant.

P. marginata.—One of the easiest to grow, as well as being one of the longest-lived Primulas. It likes a sunny position, and is worth growing for its beautiful silvery leaves, which have a waved golden margin. It comes from the Alps of Dauphiny and Piedmont, and grows well in gritty loam, with plenty of broken limestone mixed with it. Its pale lilac flowers are produced in early spring.

P. minima.—A very small plant with crowded tufts



A CHARMING ROCK-LOVING PRIMULA (*P. HIRSUTA ALBA*)

55



ONE OF THE NEWER PRIMULAS (*P. BEESIANA*), CRIMSON PURPLE

TO WH
ADDRESS

of coarsely toothed leaves. The large flowers, single or in pairs, are of violet-rose colour and are deeply cleft. It occurs in granite soils, and needs abundant moisture at the roots when in growth. It is found on the Alps of Europe, and blooms in April and May. There are numerous cross-bred forms of this, many of great beauty.

P. Palinuri is a rare early flowering plant from Italy. It has large leaves and yellow flowers on stout stems. It prefers a north aspect wedged between broken stones. Although the plant is hardy, the flowers, which open in March, require the protection of a piece of glass when in bloom.

P. pedemontana.—A very beautiful Primula, with bright crimson flowers in large heads. It forms large rosettes of leaves, which are furnished with brown hairs, and grows freely in half-shady positions planted in rocky crevices or stony ledges. It is native of the Piedmont, and flowers in March and April.

P. viscosa.—Under this name in gardens we frequently meet with the commoner *P. hirsuta*. The true kind comes from the Maritime Alps, where it grows in granitic rocks. The plant makes quite a stem, with rosettes of broad leaves fringed at the edge with hairs. The beautiful pale violet flowers are borne in large heads in April.

All these, with the other species and their numerous cross-bred forms, may be raised from seed. They should be sown in pots or pans in the early autumn, using a mixture of sandy loam and leaf-soil. The pans are

placed in a cold frame, and as soon as the seedlings are large enough they ought to be potted off singly in small pots, using a mixture of loam and sand, with plenty of broken bricks or limestone, according to the requirements of the different sorts. The small plants should be kept in frames until the pots are full of roots, when they will be fit for planting out in their permanent quarters.

MOISTURE-LOVING OR BOG PRIMULAS

Although classed as bog plants, the following selection of Primulas, and numerous others not included in this section, do not all require strictly bog treatment, for many can be grown in deeply dug, moist borders that give the requisite amount of shade. The majority are found either in peaty bogs, marshy mountain pastures, open damp woods, or by the sides of streams. In this section are some of the most stately and handsome of all Primulas, and among them are some of the newer introductions from China. They are all readily raised from fresh seed, sown soon after it is ripe, in sandy soil. After germination the seedlings are quick growing, and require timely potting on or planting out in moist rich soil in shady borders. The following is a selection of some of the best of this section:

P. Beesiana.—One of the novelties from the mountainous regions of Yunnan, in China. It is a very robust plant, growing from two to three feet high, with several tiers of velvety purple flowers, each with a conspicuous yellow eye. It is a remarkable Primula, quite hardy,

with large primrose-like leaves, and numerous flowers in summer. It produces plenty of seeds, and if they are sown as soon as ripe they germinate readily.

P. Bulleyana.—The introduction of this handsome plant from the same region as the above brought quite a new colour into the Primula family. It has been described as a combination of buff, orange, and scarlet, and is one of the most distinct of all Primulas. The flowers are borne in early summer, in several tiers, on stout stems. Grown in deep rich soil, with plenty of moisture, preferably in a shady place, it is truly a charming plant.

P. Cockburniana.—Another interesting Primula from the same region with orange-scarlet flowers in May. It is a smaller plant, with a rosette of leaves close to the ground, and somewhat slender stems, with several tiers of its beautiful flowers. It will succeed under the same conditions as the other two, and, like them, produces plenty of seeds. In some cases *P. Cockburniana* dies after flowering, but under favourable conditions it lives over the winter and flowers again the second year. Between this and *P. Bulleyana* some beautiful hybrids have been obtained. It has also been crossed with *P. pulverulenta*, and the offspring, called *P. "Unique,"* is more vigorous than *P. Cockburniana*, with cinnabar red flowers. *P. Lissadell Hybrid* is also fine.

P. capitata.—A charming plant from the Himalayas, with dense round heads of violet-coloured flowers on white, mealy stems. It is one of the latest of all the Primulas

to flower, coming into bloom in late summer and autumn. *P. capitata* is a biennial, and must be raised annually from seeds, which should be sown in the autumn. To grow it successfully, a cool, shady place must be selected where it can get plenty of moisture.

P. denticulata, from the Himalayas, is a handsome plant that is well known and much appreciated in gardens. It is valuable for naturalising in moist, shady places, like fern borders, where it will establish itself from self-sown seedlings. In rich soil it is very robust, with large leaves and stout stems twelve inches high, bearing globular heads of deep lilac flowers in early spring. There is also a pure white variety. *P. cashmiriana* is a form of this with more densely packed heads of flowers, usually paler in colour, while the lower surface of the leaves is covered with yellow powder.

P. Forrestii.—A recent introduction from Western China, with large leaves and golden yellow flowers, closely resembling, but larger than, the Common Cowslip. So far it has only proved hardy in the warmer parts of the country. It is a long-lived plant in its home, forming long woody stems which hang down the faces of the cliffs, bearing rosettes of leaves at the end. The flowers are fragrant. In a cold frame it may be kept over the winter if it is not allowed to get frozen.

P. frondosa.—A large and beautiful form of *P. farinosa* from the Balkans. It is a good perennial, and will stand our winters in a sheltered corner of the rock garden. After flowering the plants may be divided,

and potted up singly into small pots in rich sandy soil. They should be kept close for a time in a hand-light or frame. It is easily raised from seed.

P. involucrata.—A Himalayan plant, suitable for more boggy conditions than those already named. As with many others of this family, the best results are obtained from young plants, but at the same time *P. involucrata* is a perennial. It makes tufts of small leaves and bears umbels of creamy white flowers on stems about six inches high from April to July.

P. Littoniana.—One of the most remarkable plants in the Primula family. The flower-stems rise to a height of two feet, and bear bright red spikes that are very attractive before the flowers expand. After a time the flowers begin to open, and vary in colour from lilac to deep purple. The contrast of colours is very effective. It likes a shady place in deep rich soil with plenty of moisture. Its home is Yunnan in China, and July its flowering season.

P. japonica.—This handsome Japanese plant is well known, and one of the most effective for growing in moist, shady places. It varies in colour from deep crimson to pure white and blooms in May.

P. luteola.—A marsh-loving species from the Caucasus, with large leaves and tall stems, bearing whorls of yellow flowers. It may be grown along with *P. japonica*.

P. pulverulenta.—Closely allied to *P. japonica*, but of more graceful habit, with larger and more richly coloured flowers on white, mealy stems. It is native of China, and flowers in April and May.

P. rosea.—This Himalayan Primula is one of the dwarfest and also one of the first to flower. It is a charming plant for the bog garden, growing only six inches high, with rosy carmine flowers early in April. It is a good perennial, and may be increased by division after flowering or by seeds.

P. sikkimensis.—The Sikkim Cowslip is a graceful plant, with drooping yellow flowers on tall stems in May. It is a bog plant, and requires plenty of moisture when growing. It may be easily raised from seed. The Chinese form of this, *P. pseudo-sikkimensis*, is a better “doer,” with rather larger flowers.

OTHER PRIMULAS

Besides the Primulas above mentioned there are numerous others suitable for the rock garden and easy to grow. There is the common Primrose with its multi-coloured varieties. There is the Cowslip, which, cross-bred with the Primrose, produced the popular Polyanthus so well known. The little Bird’s-eye Primrose (*P. farinosa*) is a charming little plant for the bog. One of the newer introductions from the Himalayas is *P. Winteri*, a distinct and beautiful plant, with mealy leaves like the Primrose in shape, and with pale lavender-blue flowers in early spring. The many forms of *P. cortusoides*, a Siberian plant, are very beautiful, and the varieties of the Japanese *P. Sieboldii* are also attractive. *P. Juliae*, from the Caucasus, has rose-coloured flowers in April.

CHAPTER XXVII

The Rockfoil or Saxifrage

THE Saxifrages form a very large and important class of alpines, and, owing to their beauty and extraordinary variety, are quite the most valuable of all plants available for the rock garden. The various kinds which constitute the group have a long flowering period, commencing with Burser's Rockfoil (*S. Burseriana*) in the beginning of the year, continuing through the spring and summer, with numerous others, and closing with Fortune's Saxifrage (*S. Fortunei*) in October. So numerous and distinct are the various Saxifrages that they have been separated into several groups, according to their natural affinity. The natural order is *Saxifragaceae*.

For general purposes the most valuable kinds may be classified into five groups: (1) *Silvery* or *Encrusted* (*Euaizoonia*); (2) *Mossy* (*Dactyloides*); (3) *Large-leaved* (*Megasea*); (4) *Small tufted Silvery* (*Kabschia*); and (5) the *Oppositifolia* section (*Porphyron*). In addition to these groups there are a few others well known and grown in gardens—such, for instance, as those of the London Pride group, *Saxifraga umbrosa*, and its many forms.

THE ENCRUSTED SAXIFRAGES

During the month of June the members of the Encrusted section of this attractive family of rock plants are at the height of their beauty, and form a most delightful display in the rock garden, especially when planted in bold groups. There are many kinds of great merit that may be considered among the easiest of plants to grow, provided they are planted in a sunny spot among plenty of stones, and in gritty soil to ensure perfect drainage. On old walls they may be planted to great advantage, especially where the wall is backed with soil, and the stones are loosely laid together without mortar. The rosettes of Saxifrage, when small, may be inserted in the crevices between the stones, and soon make good-sized tufts that, when established, produce flowers freely every season. Fissures in large masses of rock may also be utilised for planting the Encrusted Saxifrages; one of the neatest and prettiest kinds for this purpose is *S. cochlearis*, with its silvery cushion of leaves, and graceful sprays of white flowers. Even when not in flower the large rosettes of silver-edged leaves are most ornamental. The following are some of the best and most easily grown kinds in this section:

S. Aizoon.—One of the commonest of European Encrusted Saxifrages, as well as one of the most variable. It is found both on the granitic and limestone formations, and flourishes on either. In its many forms it is a very useful plant for the rock garden, growing either in

full sun or half-shady positions. As long as the soil is very gritty and well drained there is no difficulty in growing this species. Some of the most distinct forms are var. *balcana* with flowers densely spotted with pink; var. *flavescens* with pale yellow flowers; var. *baldensis*, a most minute and compact form; var. *pectinata*, having rather longer leaves with a silvery serrate margin; var. *robusta*, one of the tallest, with large rosettes; and var. *sempervivoides*, with rosettes of leaves resembling those of some of the *Sempervivums*.

S. Andrewsii.—A natural hybrid found in Ireland by A. M. Andrews, and supposed to be a cross between *S. umbrosa* and *S. Aizoon*. It has rosettes of prettily serrated green leaves, and erect panicles of whitish flowers spotted with red. It is an interesting plant, that likes a half-shady position, forming spreading tufts of evergreen foliage. *S. Guthriana*, from the Pyrenees, is almost identical with this plant. It likes a moist position, with plenty of leaf-soil.

S. catalaunica, from the Pyrenees, is a choice and rare Saxifrage with rosettes of recurved leaves, having a broad silver margin, which give it a most distinct and handsome appearance. In early summer it bears long densely flowered sprays of good-sized white flowers. It may be grown on a rocky ledge in full sun.

S. cochlearis may be described as one of the neatest and prettiest in habit of growth, with small rosettes of silvery, spoon-shaped leaves packed closely together and forming a dense tuft. The flowers are produced in

light and graceful panicles during the early summer months. It is a native of Southern Europe, and, like *S. catalaunica*, grows well in sunny positions, planted in limy soil. *S. cochlearis* var. *minor* is a diminutive form well worth a place in the smallest garden.

S. Cotyledon.—This plant is found on most of the mountain ranges of Western Europe, from the Pyrenees to Lapland. It is one of the most ornamental of all. It is easily distinguished by its rosettes of broad leaves, and tall stems bearing a profusion of white flowers. These vary a good deal in size; the flower stems of some forms reach a height of three feet or more, and rise from rosettes over twelve inches in diameter. The largest form is known as *S. Cotyledon* var. *icelandica*; this assumes large proportions in favourable situations. One of the smallest is *S. C.* var. *pyrenaica*. *S. Cotyledon* and its varieties are easy to propagate. Numerous side shoots develop, and these, if taken off and potted up singly, in sandy soil in July, soon root, and make large rosettes. They need to be kept in half-shade for a few weeks. In order to obtain large specimens it is necessary to remove all side shoots from rosettes of leaves that show flower.

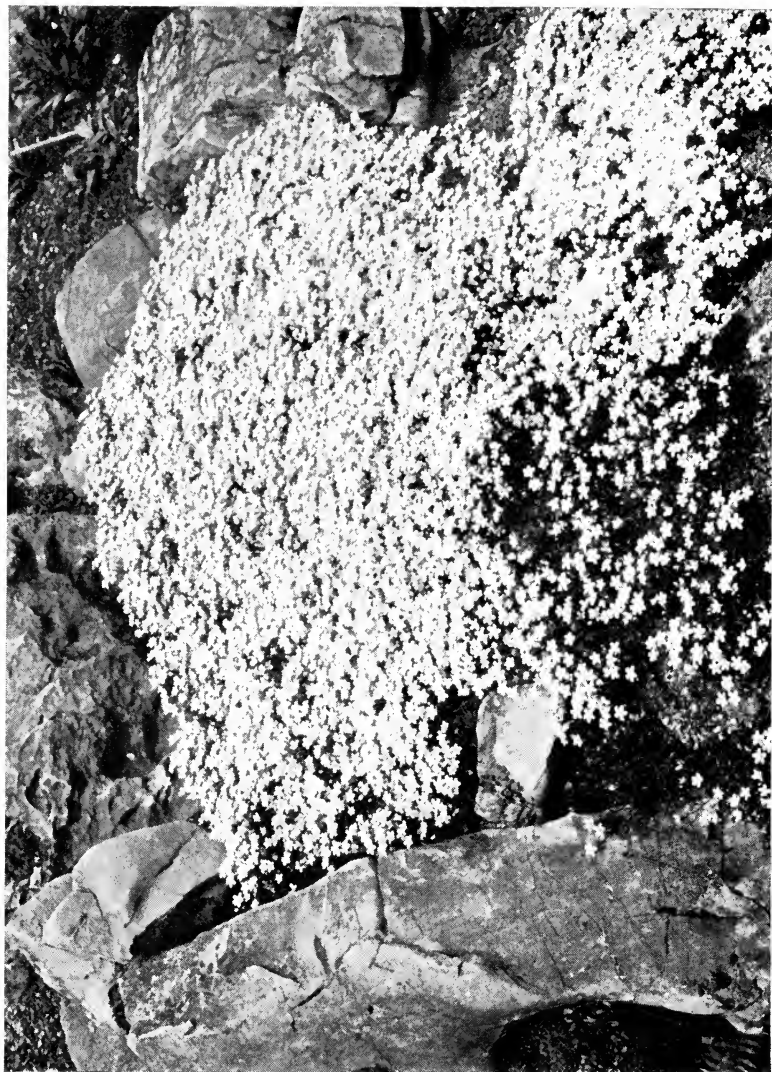
S. Hostii is a free-growing plant, from Central Europe, with rosettes of strap-shaped leaves and somewhat flat-topped panicles of white flowers spotted with pink. The pink spots are more numerous in the variety known as *S. Macnabiana*.

S. lingulata.—This and its variety *lantoscana* may be



ALPINE PINKS AND SAXIFRAGA LONGIFOLIA ON AN OLD WALL





A GROUP OF MOSSY SAXIFRAGE (*S. EXARATA*)

10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

considered among the choicest of all Saxifrages. They are found on the Maritime Alps, and both are beautiful plants. *S. lingulata* has somewhat loose rosettes of long, narrow, silvery leaves and panicles of white flowers. The variety *lantoscana* is more compact in habit of growth, with the flowers crowded mostly on the upper side of the arching inflorescence. Both grow well in sunny situations, planted firmly in soil that contains plenty of broken limestone.

S. longifolia.—This Pyrenean plant is probably the most striking member of the Encrusted Saxifrages, either as a large, silver-edged rosette of leaves, or when it has lengthened out into its handsome pyramid of white flowers. It is finely shown in one of the coloured illustrations. Confined entirely to the Pyrenees it grows in the crevices of perpendicular rocks, sending out horizontally its beautiful cone-shaped flower panicle two feet or more in length. The rosettes often take several years before they attain flowering size, and having flowered they die. Side shoots are seldom if ever produced, so



Saxifraga lingulata.

that this plant has to be propagated by seed. To prevent cross fertilisation of the flowers, which readily takes place when other kinds are growing near, a piece of gauze should be placed over the flowers selected for seed. Seeds are best sown in spring, in gritty soil. The pots should be placed in a frame that is slightly heated; if this is not available a cold frame will do as well, but the seeds will take a little longer to come up. The seedlings require careful attention, and must be pricked off singly into very small pots as soon as they are large enough to handle. Loamy soil with plenty of grit and broken stones, bricks, or crocks will do. All the members of this section need a similar soil.

MOSSY SAXIFRAGES

The Mossy Saxifrages are ideal plants for amateurs; they form perfect little carpets of evergreen that quickly spread over the ground or cover the stones with exquisitely close-tufted verdure, which, in spring and early summer, becomes jewelled with little rounded blooms in pink, white or red. Most of them are easy to grow, and they are less fastidious as to soil than many other rock-garden flowers. Ordinary well-drained loamy ground, with which some grit or pieces of stone have been mixed, suits them admirably, and they prefer half-shade to full sunshine. Often enough they are happy in ordinary garden soil on some partially shaded slope in the rock garden, though in ground that gets sodden in the winter the tufts are liable to decay and lose that compactness and neatness

that is so charming. Mossy Saxifrages look especially well when planted on top of a mound of soil, which they soon transform into perfect little hills of green. They are far more likely to suffer from damp in winter on the flat than when planted on a slope from which excessive wet has a chance to escape.

During the last few years the hybridist has been busy amongst the Saxifrages of the mossy section, as well as the others. Many new varieties have been raised of various degrees of excellence, but some of the taller kinds are of very loose and untidy growth, and, handsome though the flowers may be, the plants have little attraction. The charm of the best Mossy Saxifrages lies in their neat and tufted habit, with flowers in proportion, on stems that hold themselves erect. It is evidently the influence of our native Rockfoil (*S. granulata*) that has tended to develop the taller and less graceful habit that is characteristic of many of the newer sorts. For general use, easy cultivation, and close-tufted growth, the following sorts are the best in this section:

S. caespitosa.—This plant is found growing over the whole of the Northern and Arctic regions, and naturally varies to a great extent. Many names have been applied to the different forms, among which may be mentioned *S. decipiens* and *S. sponhemica*, but although the extreme varieties may be quite distinct, they are connected by intermediate kinds, and it is thus difficult, or even impossible, to distinguish between the various so-called species and varieties. Attempts have been made to

evolve order out of this chaos with little or no success ; the distinctions are of more or less geographical character, and are of no avail when the plants are grown side by side under the same conditions. It is therefore simplest to keep to Linnaeus's name of *S. caespitosa* for all these indistinguishable forms, which begin flowering in May and continue until July.

One of the most marked varieties is *S. c. var. hirta*, with very hairy foliage. Many varieties have been raised of late years, some with charming red flowers. The red colour in these newer forms of *S. caespitosa*, which has white flowers, is due to the influence of *S. muscoides var. atropurpurea*, a charming little plant with bright red blooms. One of the first was Guildford Seedling, a very dwarf carpeting plant, with bright crimson flowers. *S. Clibrani* is of rather taller habit with red flowers ; so too is *S. Bathonensis*, which grows nearly one foot high, with much branched stems and large brilliant red flowers. One of the best is *S. sanguinea superba*, of neat habit, and flowers of rich ruby scarlet that do not fade so quickly as some of the other kinds.

S. exarata.—A distinct and beautiful kind from the Alps and Pyrenees, forming a close, compact carpet of bright green, completely covered with a mantle of white flowers in early summer. The thin wiry stems, reaching only two or three inches high, are rigid and freely branched.

S. globulifera.—A free-blooming and handsome plant from the Western Mediterranean region. It is somewhat



SILVERY SAXIFRAGES IN BLOOM





MOSSY SAXIFRAGES



similar to *S. Wallacei* (*which see*), and bears white flowers in May and June.

S. hypnoides.—The “Dovedale Moss” with its emerald green carpet is a well-known plant in gardens. During the winter months it is one of the chief attractions in the rock garden, clothing otherwise bare banks with a permanent mat of beautiful foliage. In spring and early summer the white flowers appear in great profusion. It is a rapid grower, and small tufts planted some distance apart soon meet, and make a fitting background for spring-flowering bulbs. Named varieties of the Dovedale Moss are numerous, one of the closest and most compact being *gemmifera*, also known as *S. Kingii* (a very delightful little plant), while *variegata* has foliage prettily variegated with white and green.

S. muscoides.—This is a dwarf, dense carpeting kind, forming a moss-like turf only an inch or so in height; it has yellowish flowers. *S. m. atropurpurea*, with bright red flowers, is the original source of all the fine red hybrids we have now. *S. m. moschata* is a stronger-growing kind, with white flowers. The typical plant (*S. muscoides*) is found throughout Arctic and Central Europe.

S. trifurcata.—This elegant plant comes from Northern Spain, and makes a carpet of rosettes with three-parted leaves that are of a stiffer character than most in this section. It has pure white flowers on stems three inches high. The variety *ceratophylla*, which is known as the “Stag’s-horn Rockfoil,” has more deeply parted leaves of a still more rigid character.

S. Wallacei.—One of the best, with distinct foliage of a light green colour, and large white flowers, that are sweetly scented. For spring bedding, or borders, it is a valuable and attractive plant, producing its flowers freely, and lasting for a long time in perfection. It is known also as *S. Camposi*, and is of garden origin.

All the Mossy Saxifrages like to be planted on a half-shady and moist bank. Ordinary rich soil of a light, well-drained character is suitable for them. They are best increased by means of division in the early autumn, when the tufts may be split into small pieces, which should be planted in a shady border until they are well rooted. They may then be transferred to where they are to flower. As the flowers of these plants become cross-fertilised so readily, seed as a means of increase is not advisable except when new varieties are required.

LARGE-LEAVED SAXIFRAGES

The members of the Large-leaved or Megasea section are remarkable for their handsome foliage and large bunches of beautiful flowers. They are excellent for prominent places in the rock garden, where their evergreen leaves are of much decorative value during the winter, while during April the flowers, freely produced, are very effective. They are all easy plants to grow and increase, and may be propagated to any extent by division in autumn. As to soil, they are not at all particular, generally flourishing well in rather poor and dry ground. The best kinds are :

S. cordifolia.—This is a native of Siberia, and has been grown in gardens over 130 years. It is one of the most robust, with large, handsome foliage, and rosy red flowers produced in dense masses well above the leaves at the latter end of April. There are many beautiful named varieties of this species offered in catalogues.

S. crassifolia.—Also from Siberia, differing from the last by having obovate leaves instead of cordate ones, and panicles of somewhat pendent rose-purple flowers.

S. ligulata.—This handsome Himalayan plant is one of the earliest in flower, and unless planted in a very sheltered position, is liable to be caught by the spring frosts. The leaves are not so persistent as those of the Siberian Saxifrage, *S. cordifolia*, and it often loses nearly all of them during the winter. Under favourable conditions, however, its flowers are very handsome, and freely produced. They are large, and pink or white in colour. Of a more evergreen character is *S. l. var. speciosa*, with large panicles of rosy purple flowers, opening rather later.

Others of this section are *S. purpurascens*, a handsome plant from the Himalayas, with foliage richly tinted with purple, and rosy purple flowers, and *S. Stracheyi*, one of the smallest, with smooth obovate leaves, and panicles of pure white or pink-tinted flowers.

SMALL TUFTED SILVERY SAXIFRAGES

To this section belong all those small flowering kinds that are so beautiful in early and late spring. Botanically they are classed as *Kabschia* Saxifrages. They require

more attention in the way of careful planting, and must have a gritty, well-drained soil, containing a good proportion of lime rubble for most kinds. The best position for planting these in is either a western or eastern aspect, where they get the sun for only a portion of the day, and do not suffer from drought. The species in this section are numerous, whilst the hybrids which have been raised during the last few years are still greater



Saxifraga Burseriana, that blooms in earliest spring.

in number. They may be divided into three sections according to colour :

With White Flowers.—The best-known sort with white flowers is *S. Burseriana*, from Eastern Europe. It is one of the loveliest of alpines. It forms rosettes of sharp-pointed glaucous leaves, while the large pure white flowers are borne singly on slender ruby-red stems. There are many varieties of this with larger flowers, including *S. B. Gloria*, and *S. B. major*. Another neat

plant is *S. caesia*, from the European Alps, with small white flowers. Very beautiful is *S. marginata*, from Central Italy, with rosettes of green leaves dotted on the margins with white. The large flowers are produced in loose panicles of five or six. *S. Rocheliana*, from Eastern Europe, is another closely allied form with smaller flowers, while *S. Salomoni* is a hybrid of *S. Burseriana*. There are many others in this section with white flowers well worth growing.

With Yellow Flowers.—The yellow-flowered members of this section are of greater garden value than the white. They are of freer growth, making large carpets of foliage which are very ornamental in winter. One of the best is *S. apiculata*, with green foliage, and masses of primrose-coloured flowers in March and April. It is of garden origin. *S. aretioides*, from the Pyrenees, is more compact and slow-growing, with golden-yellow flowers. A lovely plant is *S. Boydii*, with large primrose-yellow flowers; an improvement on this is *S. Faldonside*. Both are supposed hybrids of *S. aretioides* and *S. Burseriana*. *S. sancta*, from Macedonia, forms dense tufted cushions of deep green pointed leaves, and bears its deep yellow flowers on short stems. Of yellow hybrids there are many, including *S. Elizabethae*, and others.

Red Flowers.—Those with red flowers are very distinct. *S. Grisebachii* comes from Macedonia. It has rosettes of silvery leaves, while the flower stalks are about six inches or more high when fully developed. On the upper part is the nodding inflorescence of purplish-crimson

flowers. From the same region comes *S. Stribrnyi*, with a branching inflorescence covered with white hairs. *S. media* comes from the Pyrenees. It has erect stems and smaller rosettes with recurved leaves. These are best grown in limestone fissures where there is little soil, but where the roots can travel far in search of moisture.

All Saxifrages of this section are readily raised from seed, which should be sown in sandy soil in spring. The seedlings are very small, and must be left in the seed pots until large enough to handle well. Cuttings should be taken in summer, inserted in sandy soil, and kept in a closed frame until rooted.

OPPOSITIFOLIA SECTION

The plants of this section, botanically known as *Porphyron*, have prostrate creeping stems, which root into the soil and quickly form large mats of brown stems, clothed with tiny rosettes of deep green leaves. The best, *S. oppositifolia*, is a native of the European Alps, and found also on some of the highest mountains in Britain. It should be grown in a partially shaded position, planted in gritty soil, with which leaf-mould is freely mixed, and kept moist, especially in early summer. Here it will produce its lovely rosy purple flowers in plenty during the early spring. *S. o. alba* has pretty white flowers, whilst the largest form is *S. o. pyrenaica*, sometimes called *major*, or *maxima*, with very large richly coloured flowers. *S. retusa*, from the Pyrenees, is a minute kind with crimson-purple flowers, the whole plant

being scarcely an inch in height, whilst the highest alpine form of *S. oppositifolia* is *S. biflora*, with more fleshy leaves and beautiful large flowers.

Mention should be made of the London Pride section, represented by *Saxifraga umbrosa*, native of Western Europe, which is valuable for edging or for growing under the shade of trees. The plants of this group are evergreen, and produce light and graceful inflorescences in May. The latest to flower come from Japan, and are sometimes injured by early frost. The best known is *S. Fortunei*, with large, rounded leaves on long stalks, and branching panicles of unequal flowers, two petals being long, while the other two are very short. It blooms in late autumn.

CHAPTER XXVIII

Sedum (Stonecrop)

THE Stonecrops are very numerous. There are over a hundred species, many of which are essentially rock plants. They belong to the natural order *Crassulaceae*. They are amongst the easiest of plants to grow, and succeed in establishing themselves on any position, such as old walls, or rocky ledges and dry banks. Many are valuable for their evergreen character, and help to furnish the rock garden during the winter months. It would be superfluous to give any directions for cultivation, as the merest bit of most of the kinds will grow in ordinary soil. The following are a few of the best :

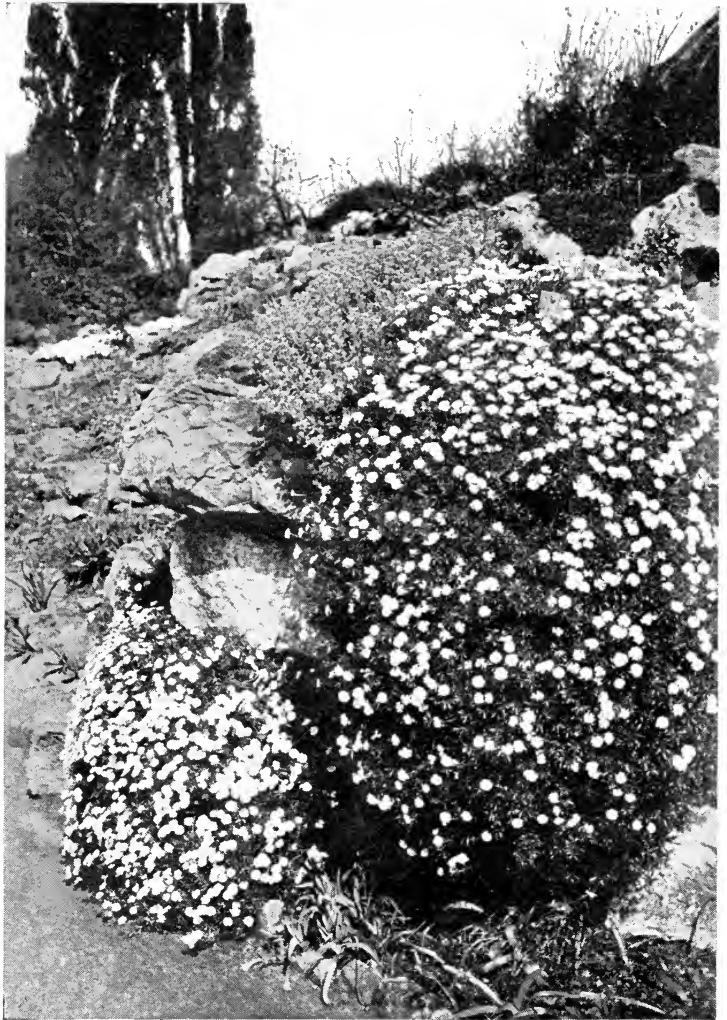
S. acre (Wall Pepper).—A native plant of creeping habit, quite covered in spring with a sheet of yellow. The var. *aureum* has golden-tipped foliage.

S. album (Worm Grass).—A quick-growing native carpeter, with short, fleshy leaves, and panicles of white flowers in June. It is very handsome when in flower, and is quite evergreen. *S. Alberti* is a closely allied plant, while the var. *brevifolium* has shorter leaves than the type.

S. Anacampseros.—The Evergreen Orpine is a hand-



EVERGREEN CANDYTUFT (*IBERIS CORREAEFOLIA*)



EVERGREEN CANDYTUFT IN THE ROCK GARDEN

THE
WILL
AND
THE
WILL

some procumbent kind from Central Europe, with purplish flowers in July, and glaucous leaves.

S. anglicum.—A native Stonecrop; has small, fleshy leaves, and white-tinted flowers in July.

S. asiaticum is an attractive plant from the Himalayas, growing about twelve inches high, bearing in July yellow flowers having orange-brown stamens.

S. brevifolium.—The Mealy Stonecrop is a pretty evergreen from France which looks like a mass of silvery rose-tinted globules of meal, the leaves being rounded and covered with powder. The flowers are pink-white, and appear in July, but the chief attraction is in the foliage. It must be given a ledge in full sun. Closely resembling this is—

S. dasyphyllum, having small, rounded leaves and whitish flowers in July. It is a native of this country, found on old walls.

S. Ewersii.—A very ornamental plant from the Himalayas, with rounded, glaucous foliage, and clusters of purplish flowers. It is of somewhat trailing habit, and flowers in July and August. There is a variety with rosy purple flowers, called *turkestanicum*.

S. kamtschaticum.—A Sedum from Kamtschatka, bearing numerous prostrate stems with bright green leaves, and yellow flowers in August and September.

S. middendorffianum.—A most distinct plant from Amoor, with short, erect stems, and narrow leaves that assume a bronze tint in autumn. The yellow flowers are produced in flat heads in July.

S. obtusatum.—A charming plant from California. The evergreen leaves are bright green in spring, while the stems are crimson-red. In the autumn the leaves also assume the same tint, which persists during the winter. It must have a sunny position on a rock ledge. The flowers are yellow, and appear in June.

S. oppositifolium.—A strong-growing trailing plant, native of the Caucasus, soon covering a large space, with evergreen leaves and whitish flowers in August.

S. pulchellum.—One of the prettiest of the whole family, from the United States, with trailing stems and bright rosy purple flowers in large spreading heads. It must have a sheltered, well-drained position.

S. rupestre.—A native plant that is very useful for covering bare, stony banks. It makes a carpet of trailing tresses, with narrow leaves in rosettes at the top of the stems, and yellow flowers in the summer.

S. spathulifolium.—One of the most distinct Stonecrops, from North-western America. It has fleshy, glaucous leaves on pinkish stems, and bears citron-yellow flowers in May. Likes a warm, dry place.

S. spectabile.—This is a well-known kind from Japan, flowering in autumn, with large heads of densely packed rosy pink blooms. The stems are clothed with broad glaucous foliage. It is better suited to the flower border.

S. spurium.—This is one of the most useful plants for covering moist or half-shady walls. It has evergreen foliage on long, trailing stems, and pink or rose-coloured flowers in large heads. It is a native of the Caucasus.

CHAPTER XXIX

Sempervivum (Houseleek)

PERHAPS the best-known member of this family (natural order *Crassulaceae*) is the common Houseleek (*S. tectorum*), which makes such an interesting picture on old thatched roofs and walls in this country. The

plants are capable of existence under what might be considered the reverse of favourable conditions, while many kinds are attractive at all seasons. In winter the dense rosettes of succulent leaves, varying in colour with the different kinds, from the red-purple of *S. triste*, to the white cobwebby *S. arachnoideum*, are very ornamental; while in the spring and summer an additional attraction are the yellow and rose-coloured flowers of many shades. The Houseleeks may be used in many ways, and are valuable for furnishing the bare stones and tops of old walls. Small tufts established in lumps of reten-



Houseleek (*Sempervivum*)
in bloom.

tive soil, placed on a flat or sloping rock, soon form mounds of evergreen rosettes, whilst they may also be planted in the crevices of walls, or sunny ledges where there is little or no soil. As long as there is the smallest roothold, these hardy little plants will thrive. There are a great number of species in cultivation, as well as hybrids innumerable, and there is probably more confusion of names in this genus than in any other. The character of the rosette alters from time to time, and two plants that are identical at one period of the year are totally distinct at another. Some of the most distinct are named below.

S. Allioni is an Austrian plant, also known as *S. cornutum*, with globular rosettes of incurved leaves, and yellow flowers.

S. arachnoideum.—The Cobweb Houseleek is a great favourite, and is very common in the European Alps, growing on rocky ledges in full sun, forming large masses of rosettes. In such positions they are very beautiful, each rosette having a maze of white threads connecting all the leaf-tips together. The flowers, which open in June, are bright red in colour, several on a short, leafy stem. There are other forms of this, including *S. Laggeri*, a large variety, only differing in size from the type.

S. arenarium.—The sand-loving Houseleek is a neat little plant from the Austrian Alps, with small rosettes of green leaves, and pale yellow flowers during the summer months.



A ROCK-GARDEN YARROW (*ACHILLEA AGERATIFOLIA*)



LEBANON CANDYTUFT (AETHIONEMA)

70 511
AETHIONEMA

S. atropurpureum has dark purple rosettes of leaves, and is a very effective plant.

S. calcareum is a vigorous species with rosettes of broad glaucous leaves having red-brown tips. The flowers open in July, and are of a pale red colour. This plant is much used for edging purposes, and comes from the Dauphiny.

S. fimbriatum is a distinct plant, also from the Alps of the Dauphiny, with green rosettes, and bright red flowers in July on stems clothed with red-tinted leaves.

S. flagelliforme, from Siberia, has rosettes of pale green leaves produced on long, trailing stems, and red flowers.

S. Funckii is one of the freest growers, soon making large mounds of rather globular rosettes of pale green leaves, covered in summer with red-purple flowers. It is found on the Alps of Europe.

S. globiferum.—Known as the Hen-and-Chicken Houseleek, has rosettes of red-brown tipped leaves, surrounded by smaller clusters of prostrate stems. The flowers, which open in July, are pale yellow, flushed with purple.

S. hirtum.—A yellow, July-flowering kind, native of Austria, with small rosettes of leaves, which are clothed with short hairs and faintly tinged with red.

S. Lamottei is one of the most vigorous of all, and comes from Central France; it often grows twelve inches high. The rosettes are four inches or more in diameter.

S. Moggridgei is somewhat closely allied to the Cobweb Houseleek, native of the Alps, but the tips of the leaves

are not connected by the threads. The red flowers are produced in September.

S. montanum is one of the commonest kinds on the Alps, having bright mauve-purple flowers in June, on stems clothed with red-brown tipped leaves. It is a very variable plant with green rosettes.

S. Pittoni is a neat and pretty kind from the Styrian Alps, having pale yellow flowers in July, and rosettes of green leaves tipped with purple-brown.

S. Reginae-Amaliae forms a handsome plant, from Greece, with large rosettes of purplish-brown leaves, and pale yellow flowers in June.

S. tectorum.—The Common Houseleek, often found wild on the roofs of houses, forms large tufts of green rosettes, the leaves of which are often tipped with red-brown.

S. triste, of garden origin, is very distinct, with red flowers in June, on stems thickly clothed with reddish-brown leaves, and rosettes of the same colour, three inches or more across.

CHAPTER XXX

Hardy Orchids

SOONER or later the rock gardener is attracted by the hardy Orchids, some of which are beautiful, others curious, while most of them are intensely interesting. It is usually somewhat late in his career that the amateur feels competent to attempt to grow the hardy Orchids, chiefly from a mistaken conviction that they are difficult, while the truth is that many of them, given suitable conditions, are quite easy. This diffidence probably arises from the fact that the greenhouse and hothouse Orchids are generally thought to be amenable only to the care of the skilled grower. However that may be, and it is not altogether true, no such consideration need deter even the beginner from attempting the hardy Orchids. The best time to plant is early September or March, the former for preference. It is best to purchase them in pots, so that the roots may be disturbed as little as possible, though it is not essential. If plants from a border are purchased in late summer or early autumn, it is just as well to pot them up and keep them plunged in ashes in a cold frame during the winter, planting out in spring. By this method one loses very little if any time, and the roots are safe.

Orchis.—The easiest of all are some of the *Orchis*. The Madeira *Orchis* (*O. foliosa*) is exceptionally handsome, having large attractive leaves, and spikes of rosy purple flowers, some eighteen inches or more high, in May. The Marsh *Orchis* (*O. latifolia*) is a showy purple sort, some twelve inches high, while *O. maculata*, of similar height, has prettily spotted leaves, and pale rose-purple blooms. Both these grow wild in Britain, and bloom in June. A variety of *O. maculata* called *superba* is especially fine; the flower stem reaches a height of eighteen inches or two feet, and the blooms are lilac spotted with purple. Other pretty native kinds are *O. mascula*, only four or five inches high, bearing spikes of purple blossom in April; *O. pyramidalis*, twelve to fifteen inches high, with rose-red flowers in June; and *O. militaris* (the Soldier *Orchis*), about eighteen inches high, bearing a spike of purple blossom in April. *O. spectabilis*, native of North America, is a pretty pinkish kind, only some six inches tall, and blooming in May.

All these may be grown in deep, moist soil, consisting of turfy loam with which some peat and sand are intermixed. They should be given a sheltered but not a shady spot, though they are better when not exposed to the midday sun.

Cypripedium.—The *Cypripediums*, or Lady's Slipper *Orchids*, are perhaps the most fascinating of all. Some are easy, while others are just the reverse. The Moccasin Flower of North America (*C. spectabile*), with white sepals

A SHOWY YELLOW FLAX (*Linum flavum*)

160 ROCK GARDENING FOR AMATEURS

O. foliosa.—The earliest of all are some of the Orchids. The *Leire Orchid* (*O. foliosa*) is exceptionally handsome, having large attractive leaves, and spikes of rosy flowers, some eighteen inches or more high, in the month of May. The *Marsh Orchid* (*O. luteola*) is a showy purple one, twelve inches high, while *O. maculata*, of height, has prettily spotted leaves and pale rose-colored flowers. Both these grow wild in Britain, and are common in the vicinity of *O. maculata* called *the Beech*, the flower stem reaches a height of about a foot, and the blooms are yellow.

A SHOWY YELLOW FLAX (*Linum flavum*)

This is a native of the British Islands, and is a very common plant in the woods. It is a pretty yellow-flowered plant, about eighteen inches high, and blooms in April. It is a very hardy plant, and is a pretty common plant in the woods, and blooms in April. It is a very hardy plant, and is a pretty common plant in the woods, and blooms in April.

They should be grown in deep, moist soil, consisting of peat and sand, in which some peat and sand are intermingled. They should be given a sheltered but not a sunny position, though they are better when not exposed to the midday sun.

Cypripedium.—The *Cypripediums*, or *Lady's Slipper* orchids, are perhaps the most fascinating of all. Some are easy, while others are just the reverse. The *Moccasin Flower* of North America (*C. spectabile*), with white sepals



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NO. 1000
AMERICAN

and petals and rosy pouch, is especially beautiful; it is grown without much difficulty in a shady border of peat with which a few pieces of sandstone are mixed: I have it in a bog border made up of peat and a little loam. It grows about two feet high, and blooms in June. *C. acaule*, also from North America, is very attractive: it is only five or six inches high, and has but one flower on a stem; this is of greenish colour, the pouch being rosy purple. A shady spot, and soil composed of peat and leaf-mould, are essential. *C. Calceolus* (a native kind) grows about fifteen inches high, and bears its charming blossoms in May; these are dark purplish-brown with yellow pouch. A loamy soil with which limestone is freely mixed suits it, and a south-east aspect is best. *C. macranthum* is a big-flowered kind from Siberia; it grows some ten or twelve inches high, and bears purple flowers in May. Loamy soil, and a half-shady place fulfil its needs. *C. pubescens*, a North American Lady's Slipper, has purplish brown blossoms with yellow pouch; it is grown in loamy or peaty soil containing a fair quantity of sand, and should have a sunny spot.

Epipactis.—Two native *Epipactis*, *E. latifolia* and *E. palustris*, are worthy of inclusion in the moist, peaty soil of the bog garden. Both grow about twelve inches high, and bloom in July. The flowers of *E. latifolia* are purplish-green, those of *E. palustris* are of purplish tint.

Ophrys.—The quaint little Bee Orchis, found wild on limestone hills in Southern England, is *Ophrys apifera*.

The colouring, brownish-green, is not showy, but the mimicry, in the resemblance of the flower to a bee, is very striking. It should be grown in a sunny spot, in turfy soil containing limestone.

The curious Man Orchis (*Ophrys anthropophora*) is of greenish colour, with yellow lip, while the Spider Orchis (*Ophrys aranifera*), of green and brown shades, is also very curious, if not remarkably attractive. Both these need loam containing chalk or limestone.

Gymnadenia (*Habenaria*) *bifolia* is our native Butterfly Orchis. It is about twelve inches high, and has small white flowers. *G. conopsea* and *G. odoratissima* have purplish fragrant blossom. They bloom in May and June, and thrive in peaty soil in half-shade.

Serapias is an interesting hardy Orchid from Southern Europe, suited only to gardens in warm districts. *Serapias lingua* is, perhaps, the chief species; it grows some twelve inches high, and bears reddish-lilac blooms in May. This Orchid thrives best in a sunny spot in sandy loam containing limestone.

PART IV

Descriptive List of the Best Kinds

Acaena (New Zealand Bur).—A creeping plant, native of New Zealand, belonging to the rose family (*Rosaceae*), that is of the easiest cultivation in light sandy soil, and useful for the margin of the rock garden. The leaves are tiny, and the leaflets, having prettily incised margins, show a fern-like appearance. The flowers, which appear in May, are small and inconspicuous on two-inch stalks; the chief beauty of the plant lies in the brownish or reddish spines which develop on the flower heads in late summer, and continue attractive throughout autumn. This is a dainty little plant that spreads rapidly. Roots form on the creeping stems, and an increased stock is easily raised by cutting off and replanting pieces of stem having roots attached. There are several sorts, of which the best is *Acaena Novae Zealandiae*, with brownish foliage and crimson spines. *A. microphylla* is similar, but with less brilliant spines; *Buchanani* has pretty glaucous green leaves and brownish heads of spines. *A. argentea* has also nice glaucous leaves.

Acantholimon (Prickly Thrift).—An attractive little plant, native of Armenia, forming spreading tufts of

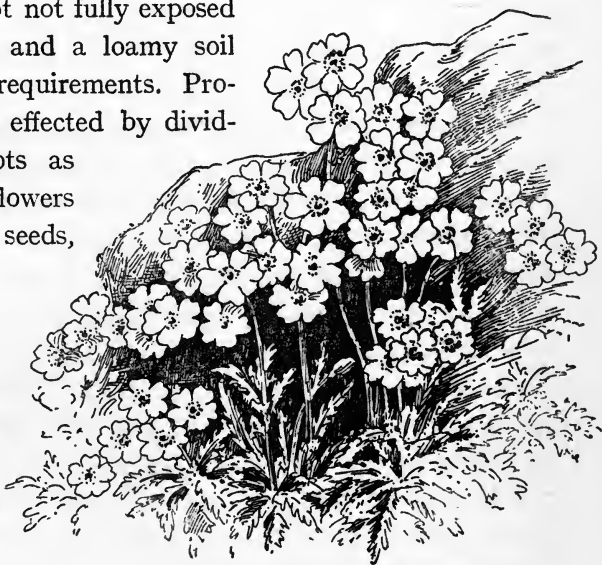
Thrift-like spiny foliage, and bearing small heads of rose-coloured or white blossoms in May on stalks about three or four inches high; it belongs to the same family as Thrift and Sea Lavender (*Plumbaginaceae*). This plant dislikes disturbance, and needs to be firmly planted in light, well-drained soil, in a sunny position. In wet ground it is rarely satisfactory. *Acantholimon glumaceum* is the one most generally grown, though there are two others worthy of mention namely: *A. Kotschyi*, having white blooms; and *A. venustum*, pink. Propagation is not easy, though a certain proportion of cuttings will form roots if taken after the flowers are over and inserted in sandy soil beneath a shaded bell-glass.

Achillea (Milfoil or Yarrow).—The Yarrows are represented among our own wild flowers by the common kind of the fields with pink-white blooms (*A. Millefolium*), and by the bolder Sneezewort (*A. [Ptarmica]*). They are a race of plants characterised by silvery grey foliage and flattish bunches of white or yellow flowers. They belong to the great Daisy family (*Compositae*), and the dwarf kinds are native of the European Alps. Only a few are of sufficiently compact growth for the rock garden, and even these are liable to become weedy unless planted in poor, stony, sandy soil and a sunny position. They are all the better for a covering of glass during winter; in the absence of this the leaves are liable to decay. A little limestone mixed among the soil has the effect of brightening the tone of the grey leaves. The best method of propagation is by

dividing the plants in early September, or seeds may be sown in late summer or spring. Perhaps the daintiest of all is the Grecian *Achillea ageratifolia* (known also as *Anthemis Aizoon*); it is low-growing with silvery leaves and pretty little white flowers. *A. Clavennae*, white; *A. rupestris*, white; *A. tomentosa*, yellow; and *A. umbellata*, white, complete a selection of the best for the rock garden.

Adonis.—The plants form tufts from ten to twelve inches high, with beautiful leafage, deeply cut or fringed, and yielding in April large golden-yellow Buttercup-like flowers on tall stems. They belong to the Buttercup family (*Ranunculaceae*), and are native chiefly of the European Alps. A spot not fully exposed

to the sun, and a loamy soil meet their requirements. Propagation is effected by dividing the roots as soon as the flowers are over, or seeds, which are often slow to germinate, may be sown in autumn or spring. The best sorts are Adonis



A Rock Yarrow (*Achillea Clavennae*).

vernalis, *A. pyrenaica* and *A. amurensis* and its double-flowered variety. The latter come from the Amoor River district.

Aethionema (Lebanon or Persian Candytuft).—The numerous *Aethionemas* are pretty rock-garden plants, near relatives of the common garden Candytuft, and belonging to the Wallflower family (*Cruciferae*). They are natives chiefly of the Eastern Mediterranean district. They vary in height from a few inches to a foot. Several of them are very attractive, and blossom most freely from April to July; they are almost shrubby in character, having wiry stems and a loose habit of growth. They are improved by being cut back slightly after flowering; without this attention the plants are apt to become straggling and untidy. Stony, sandy loam is suitable soil, and a dry sunny spot where the trailing stems may fall over the face of a rock the best place for them. They do well also in a moraine. The usual means of propagation is by cuttings formed from the fresh growths that develop after the flowering season is over. They should be some two inches long, and, if inserted in sandy soil in a closed, shaded frame, soon take root. Seeds may also be sown either in September or early spring. There are some forty species, but the two most attractive are *Aethionema pulchellum* and *A. grandiflorum*; the former has pink, and the latter rose-coloured blossoms. *Aethionema coridifolium*, pink-flowered, and *A. iberidifolium*, white, are two others that should be in every collection, while *A. armenum*, rose, is also very showy.

Ajuga (Bugle).—A common and easily grown plant, native of this country, that is useful for filling odd corners in the rockery. It belongs to *Labiatae*, which includes Mint, Dead Nettle, etc. Ordinary soil and almost any situation, even a shady one, are suitable. The flowers, in upright spikes, are blue or purple, though the varieties generally grown are valued chiefly for the colouring of the foliage. An increased stock is readily obtainable by dividing plants in spring. *Ajuga reptans purpurea* has purplish leaves, and those of *Brockbanki* are dark rich green. The beauty of the foliage persists during the winter. *A. reptans variegata* has prettily variegated foliage.

Alchemilla (Lady's Mantle).—This is of value only for its leaves, which are prettily rounded, green above and silvery beneath. It is native of the Alps of Europe, and member of the Rose family (*Rosaceae*). The flowers, which are small and green, are of no beauty; they add nothing to the decorative value of the plant, and are usually cut off. This *Alchemilla* grows in any ordinary soil, and may be increased by dividing the roots in spring or late summer.

Alyssum (Madwort).—The *Alyssums* are among the showiest and easiest of all plants to grow in rock gardens. They are native of South and Eastern Europe, and the flowers are white or of some shade of yellow. They belong to the great Crucifer family (*Cruciferae*), which numbers among its members the Wallflower, Stock, and *Arabis*. Growth is rapid in well-drained soil, though

the plants are liable to damp off in heavy ground. Even in light land, they often have a woebegone appearance after a very wet winter, but recover in a remarkable manner in spring. An increase is effected by means of seeds sown in autumn or in spring, or by cuttings taken after the flowers are over. The cuttings form roots quickly in sandy soil in a cold frame. The most popular is *Alyssum saxatile*, with grey leaves and a profusion of golden-yellow blossom in spring. It grows quickly in light ground, soon forming a mass several feet in diameter. When in full bloom it is exceptionally brilliant. There are several varieties of *Alyssum saxatile*, the most charming of which is *sulphureum* with sulphur-yellow blooms. Another variety called *compactum* is of exceptionally dwarf and compact growth. *Alyssum argenteum* forms a little stiff-branched shrub covered with small grey leaves, and in June bears an abundance of small yellow flowers. *A. montanum* forms a compact, small tuft not more than three or four inches high, having yellow blossoms in May; *Alyssum spinosum* develops into a prickly little plant, and bears white blooms in May. *A. serpyllifolium* is neater than *A. montanum*, and has small yellow flowers.

Antennaria (Mountain Everlasting).—A grey-leaved creeping plant, belonging to the Daisy family (*Compositae*); it is found growing wild in mountain pastures in this and other European countries. It is admirable for carpeting the ground where bulbs are planted, and its bright grey leafage is attractive all the year round. The

white or rose-coloured blooms in bunches, on stems some six or eight inches high, are curious rather than attractive, being small and woolly. It spreads rapidly, and soon forms a good-sized patch. A poor, gritty soil is essential, or the plant loses its compactness, and the leaves their fine colouring. Increase is easily effected by dividing the tufts in early autumn or in spring. Seeds, too, are obtainable, and should be sown as soon as ripe, or in spring in sandy soil in a frame. *Antennaria dioica* has rose-coloured flowers, and the variety *tomentosa*, white flowers. *A. margaritacea* is of more vigorous growth, reaching a height of two feet or more. It is more commonly known as *Anaphalis margaritacea*, and is grown for its white "everlasting" flowers.

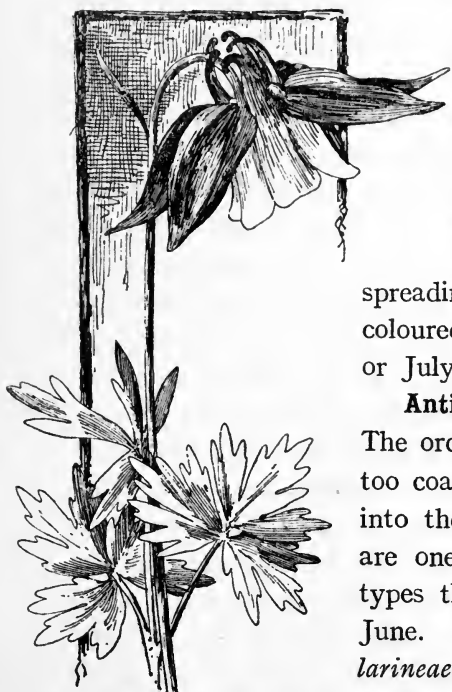
Anthemis (Chamomile).—The dwarf Chamomiles, having finely cut and fragrant leaves, are useful for the rock garden. They belong to the Daisy family (*Compositae*) and are native of Southern and Eastern Europe. The plant known in gardens as *A. Aizoon*, is properly *Achillea ageratifolia*, and is referred to under *Achillea*. *Anthemis cupaniana* is a charming plant of trailing habit. It has silvery foliage and large Ox-eye Daisy-like flowers. *A. macedonica*, about nine inches high, has pretty white flowers in June. *A. montana* (flowering in July and August), about a foot high, has also white flowers, and *A. pedemontana*, a choice alpine, is about six inches high, having silvery leaves and white flowers in June. All these can be cultivated in the ordinary soil of the rockery. They like sun, and are more silvery if a little

lime is mixed with the compost. They can be propagated by seeds, or division in spring, and by cuttings in summer.

Anthyllis (Kidney Vetch).—This is one of the few members of the Pea family (*Leguminosae*), that are useful in the rock garden. The plant is native of the European Alps, and not at all difficult to grow on a dry sunny spot, and in well drained loamy soil. It is of dwarf growth, and has attractive grey, downy leaves, and small

Pea-shaped flowers in June. The way to propagate is to divide the plants in late summer, or to sow seeds as soon as ripe or in spring. *Anthyllis montana* is the only one commonly grown; it is of

spreading growth and bears rose-coloured scented flowers in June or July.



Aquilegia or Columbine.

Antirrhinum (Snapdragon).—The ordinary Snapdragons are of too coarse growth to be admitted into the rock garden, but there are one or two species or wild types that are very charming in June. Natural order *Scrophularineae*, the Foxglove family. *A. Asarina*, a trailing plant from

the South of France, with very attractive foliage and creamy white flowers, is perhaps the best of those suited to the rock garden; another one worthy of mention is *A. glutinosum* having white blossoms and trailing growth. *A. sempervirens* has cream-coloured blossoms with purple lip. A dry sunny spot and well-drained soil are essential to success, while it is wise to protect the plants in winter by placing a pane of glass over them to keep off excessive wet. Plant so that the shoots may trail over the face of some rock. Propagation is easily effected by means of seed sown in late summer or in early spring.

Aquilegia (Columbine). — The *Aquilegias* (which belong to the Buttercup family, *Ranunculaceae*) need no praise; they appeal to everyone by their grace and by the beauty of their flowers. Neither do they need any detailed description, as everyone is acquainted with their appearance. They are widely distributed on the mountains of Europe and North America. All the Columbines may be used with satisfaction on the rockery, but it is better to leave the larger species and their varieties to the border, although some of them are very attractive when perched on some high spot. For this purpose *A. vulgaris*, the common Columbine found wild in England, *A. caerulea* (native of the Rocky Mountains), and *A. caerulea hybrida* (the handsome long-spurred hybrids); and *A. chrysantha* (from California), yellow, may be employed. For the rockery the following are very suitable: *A. alpina*, blue and white (the Swiss Alpine Columbine); *A. canadensis*

nana, orange red (native of Canada); *A. flabellata*, white; *A. glandulosa* (from Siberia), blue and white, *A. pyrenaica* (native of the Pyrenees), blue and white; and *A. Stuarti*, blue and white. Most of these can be raised from seeds, sown under glass or in the open, as directed in the chapter on Alpines from Seeds, but unless the seeds have been saved from plants kept apart from others the seedlings may not come true. Division of large plants in early spring may also be practised, the division being carefully performed, so that each piece is left with a growing point or crown. Most of the *Aquilegias* like a cool and rather moist spot, and a little lime in the soil is helpful. They flower in early summer. Some of the finest are short lived, the most troublesome in this respect being the true *A. caerulea*, the charming *A. glandulosa*, and the lovely *A. pyrenaica*. Seeds are the best means of increase, but, as already mentioned, the seedlings may not come true.

Arabis (Rock Cress).—This is the commonest of all rock garden plants, member of the natural order *Cruciferae*, and found wild on the Alps of Europe, Asia, and America. Ordinary soil is suitable, but a sunny situation is desirable to ensure free flowering. Propagation is readily effected by cuttings taken in July; they soon root under a bell glass in a shady border. *Arabis albida* and its double variety *flore pleno* are the most popular, the latter is the finer plant, and lasts in bloom for many weeks. The chief fault of these plants is that they grow too rampantly.

They should be cut well back after the flowers are over, otherwise they are apt to overrun and smother their neighbours. *Arabis alpina* is similar to but less vigorous than *A. albida*, and not so showy. There are two varieties possessing beautifully variegated leafage, that of *albida foliis variegatis* is silvery and green, and of *lucida variegata* green and yellow. *Arabis blepharophylla* bears rose-coloured blooms, but it is difficult to obtain true.

Arenaria (Sandwort).—Among the most valuable of all rock-garden plants, member of the Pink family (*Caryophyllaceae*), and native chiefly of the mountains of Europe. *Arenarias* vary considerably in manner of growth, and in their requirements. *Arenaria montana*, found wild in Spain, is the finest of them all; it is a creeping plant, forming a big loose tuft, and bearing in May a profusion of fairly large white blooms. It is happiest in a sunny position among the rocks in well-drained sandy loam. When so placed that it grows over the face of the rocks it is, when in bloom, a lovely sight. *Arenaria purpurascens*, from the Pyrenees, with purplish-rose flowers, is altogether of more compact growth. It forms a neat tuft of low close-growing leafage, and in May becomes smothered in small rose-purple blooms. It needs similar conditions to *A. montana*. *Arenaria balearica*, native of the Balearic Isles, is one of the most bewitching alpiners. It forms a close carpet of exquisite green over steep rock faces, and in spring the green is jewelled with myriads of tiny white flowers. It loves the shady side of a rock, and if a plant is put out in the soil

on the north or east side of the rock or stone, it quickly covers them with its charming leaf tracery. *A. laricifolia*, from Switzerland, forms a loose tuft of fine foliage, bears small white flowers, and thrives in sandy loam. *Arenaria caespitosa* provides a perfect carpet of emerald green, having tiny white blooms in summer, while its variety *aurea* becomes a tuft of lovely yellow, moss-like leafage. Both these look very beautiful when planted near a rock and have partly covered it. They are of the easiest cultivation in ordinary sandy, loamy soil, and are increased by division or seeds.

Armeria (Thrift, Sea Pink).—The Thrifts belong to the Sea Lavender (Statice) family (*Plumbaginaceae*). The best known member is the common Sea Pink (*A. vulgaris*), which is so abundant in many places on the seacoasts of this country, whilst it is also found on the tops of the Scotch mountains. It is a pretty and useful plant, forming cushions of grass-like leaves, from which are produced the heads of rosy-lilac flowers. In cultivation there are many forms varying from deep rose to pure white. All are useful as edgings for borders, or for groups in the rock garden, where they will flower for many years without attention. The plants may be increased by division in autumn or spring, and it is advisable to do this every two or three years, as old plants do not flower so freely as young divided ones. The most charming of all the Thrifts is *Armeria caespitosa*, a rose-coloured kind from Spain and Portugal, where it is only found at fairly high elevations. Its flower heads, each nearly

one inch in diameter, are borne on slender stems an inch or so high. The narrow grassy leaves are produced in dense tufts. It is an excellent rock garden plant, thriving in any well-drained gritty soil. Pieces of stones should be buried where *A. caespitosa* is planted, as they tend to keep the ground cool, and at the same time ensure perfect drainage. In too rich or stagnant soil it is apt to damp off during the winter. Seeds are produced freely. One of the largest is *A. latifolia*, from Portugal, with large heads of rosy-lilac flowers through the summer. It must be planted in well-drained sandy loam in a sunny position. Even then it sometimes perishes during cold winters, so reserve plants should always be kept in a frame. A pretty little rock garden plant is *A. juncea*, which is found in Southern France on barren, stony ground. It has narrow grassy leaves with heads of lilac flowers. There are two forms of this, one known as *setacea*, with shorter leaves and stems. Like the others it prefers dry, stony ground.

Arnebia (Prophet Flower).—The only kind usually seen in rock gardens is *Arnebia echioides*; it is native of the mountains of Western Russia, and belongs to the Borage family (*Boraginae*). The curious popular name of Prophet Flower is derived from the fact that, after the yellow flower has opened, five dark spots appear on the petals and subsequently fade away; in legendary lore they are said to represent the marks of Mahomet's fingers. The flowers are produced in May on stems twelve or fifteen inches high, which die down in autumn. A well-

drained loamy soil, and a partially shaded spot meet its requirements. Propagation is best effected by cutting up the roots in autumn, potting each piece with the top just beneath the soil, and keeping them in a cold frame until spring. It is known also as *Macrotomia echioides*.

Artemisia.—Half shrubby plants, chiefly European, belonging to the Daisy family (*Compositae*). *Artemisia abrotanum* is the well-known fragrant-leaved Old Man or Southernwood. They are valued for the sake of their pleasing grey foliage which is more or less scented. *Artemisia alpina*, from the Caucasus, growing some nine inches high, and bearing yellow flowers in July; *sericea*, a dwarf kind from Siberia, with beautiful silvery leaves; *frigida*, native of Siberia, nine inches high, having yellow blooms in July, and *vallesiaca*, with graceful silvery leaved stems about ten inches high, are the best for the rock garden. They thrive best in a sunny situation, and in rather poor soil. An increased stock may be raised by taking cuttings in September. They are placed in pots and kept in a cold frame during winter.

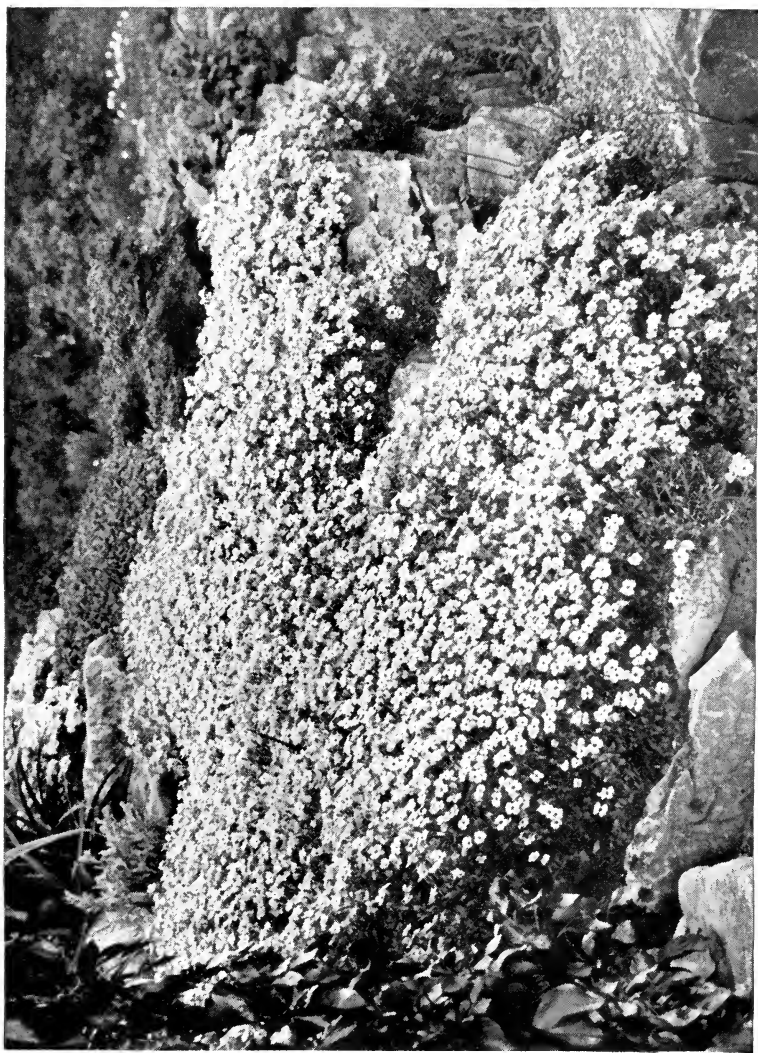
Asarum (Wild Ginger or Snake Root).—The *Asarums* are more prized for their singularity than their beauty, and they are not at all attractive to the ordinary cultivator of rock plants. They belong to the natural order *Aristolochiaceae*. Only a few of the small number of species are procurable, and but few are hardy. They like a little shade, and are best in rich, moist soil on the level. They are of creeping habit, and bear curious bell- or urn-shaped flowers. *A. canadensis*, native of Canada, is

most easily procured. It has dull purple flowers, almost hidden by the leaves, in May. *A. europaeum*, found wild in England, bears greenish-purple flowers in the same month. *A. virginicum*, from North America, gives its purple-brown flowers at the same time. These three are hardy. They are increased by division after the flowers are over.

Asperula (Woodruff).—The *Asperula* (members of the natural order *Rubiaceae*) are best known by our native Woodruff (*Asperula odorata*), whose charming heads of white flowers on dainty leaves, fragrant when withered, adorn so many shady woods and banks. It is not to be despised as a rock plant, but it spreads quickly. There are two or three remarkably choice kinds among those from abroad. The daintiest and prettiest rock plants cannot surpass such *Asperulas* as the following: *A. hirta*, from the Pyrenees, two inches high, making a dense carpet of little blush-white flowers in the month of May; *A. Gussoni* (syn. *A. nitida*), a low mound or carpet of dark green, moss-like foliage starred in summer with charming little pink flowers; and *A. suberosa*, a delightful plant from Greece, with pink flowers spangling low silvery carpets in summer, and only two inches or so high. The latter must be covered with glass in winter. A soil of loam, sand, and grit, with a little peat suits them well. They thrive in sun or in partial shade, and flourish best if well watered in dry weather. Seeds can be procured of one or two of these *Asperulas*, but they are best propagated by division in spring or in early autumn.

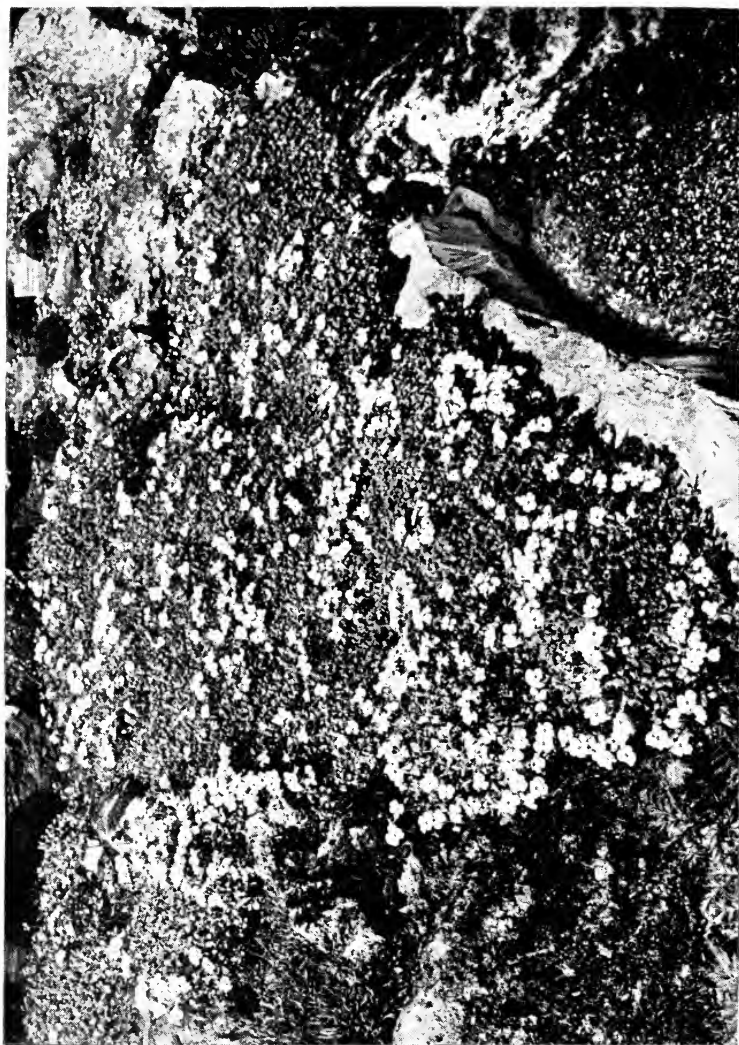
Aster (Starwort or Michaelmas Daisy).—The popular name of Michaelmas Daisy (natural order *Compositae*) is a misnomer when applied to the alpine species of Aster, as they flower earlier in the season than the true Michaelmas Daisies. Those mentioned here are attractive little plants of much value in the garden. They like a dry place and a sunny position, and they have been found to do well in the moraine. The latter place is, indeed, the best for the varieties of *Aster alpinus* (from the European Alps), not because it requires the moraine, but because slugs are less troublesome there than on rockwork. *A. alpinus*, in several varieties, is the best, and grows only a few inches high, giving nice leaves and large flowers. The type has purplish flowers, about two inches across. *A. a. albus* has pretty white flowers; *A. a. Gloire d'Orléans* has big lilac blooms; *A. a. speciosus* is violet-blue. *A. himalaicus*, really a variety of *alpinus*, has good blue flowers. *A. Fremonti*, one foot, violet, is good for large rockeries. These Asters are increased by division in spring or in summer after flowering.

Aubrietia (Wall Cress).—The rock garden could ill dispense with its wonderful masses of *Aubrietia* that give such a rare colour glow in the months of April and May; they are at once among the most easily grown and the most showy of all rock plants. They belong to the natural order *Cruciferae* (Wallflower family). They form spreading tufts that are never seen at their best on the flat; they should be so placed that they may droop over some mound of soil or cover the face of a rock. or



AUBRIETIA PRICHARD'S A 1 (DEEP PURPLE)





THE BEAUTIFUL AUBRIETIA "LAVENDER"

THE
GARDEN
OF
THE
MOUNTAINS

depend from the top of a rockery wall. They form a charming feature when planted on the summit of a rounded heap of soil, soon covering this and making a perfect mound of greenery, and in due season blossom. A light loamy soil meets their needs ; after the flowers are over all straggling growths should be cut back well, otherwise the tufts are apt to become bare in the centre, and then the effect is somewhat spoilt. But timely pruning keeps them close and tufted, full of fresh growth, and they blossom all the better for this attention. There are some splendid varieties, though not so many distinct varieties as there are names. The common sort is *Aubrietia deltoidea*, native of Italy, with lilac-coloured blooms, but it is easily excelled by the new variety *Lavender*, with large, lovely, soft lavender-blue flowers. The finest of the dark purples are *Lloyd Edwards* and *Dr. Mules*. The most brilliant of all is *Fire King*, with glowing rose-crimson blossoms ; *Leichtlini*, rose-pink, is very charming ; so, too, are *Bridesmaid*, rosy lilac ; *Moerheimi*, with larger rose-coloured blooms ; and *Pritchard's Ar*, violet-purple. The simplest way to raise a stock is to sow seeds in spring or to divide the plants when the flowers are over. The old tufts are taken up and pulled to pieces, care being taken that each piece detached from the parent plant has roots. If put out in a shady border they will soon make progress. Cuttings, too, may be inserted in June and July.

Calandrinia.—Only one species is commonly grown in rock gardens, *Calandrinia umbellata*. This is a showy

little plant belonging to the Purslane family (*Portulacaceae*), growing some six inches high, and bearing small blooms of brilliant magenta-crimson. It is a striking little flower, though only in bright weather does it deign to remain open for any length of time. The best plan is to treat it as a biennial, sowing the seeds in September of each year to produce flowering plants the following summer, or as an annual, sowing seeds in February for flowers the same year. A light soil and a dry, sunny spot suit it best, and there it may be expected to live for several years.

Calceolaria (Slipperwort).—It is not generally known that there are several hardy Calceolarias of considerable beauty suitable for the rockery. They belong to the natural order *Scrophularineae*, and closely resemble in many ways their sister-flowers, the bedding Calceolarias, though they are herbaceous, like the large-flowered Calceolarias. Of the hardy species the following, flowering in summer, are the best. Loam, leaf-soil or peat, and sand in about equal proportions, suit them.

Calceolaria plantaginea, native of Chili, is a handsome plant, with broad, wrinkled leaves, and yellow flowers. It is about six inches high, and likes a rather dry soil. *C. polyrhiza* is the hardiest, and is good on dry soil or in boggy ground. It is about six inches high, and has curiously formed yellow flowers. *C. Golden Glory* is an attractive kind, of garden origin, and one of the best for the rock garden. It has golden-yellow flowers; its height is six to nine inches. *C. kellyana*, with spotted

flowers, is also of garden origin, very rare, and not so easy as the others. *C. violacea*, a foot or more high, is a lovely flower with pale blue spotted blooms, from Chili. It is rather tender, but does well in the mild parts of the south-west of England and Ireland. They are propagated by seeds, division, or by root cuttings. Seed, not easily procured, should be sown very thinly in heat in spring, and barely covered with soil. Division is best effected in spring, and root cuttings are made in November.

Callirhoë.—The Callirhoë is native of North America and belongs to the Mallow family (*Malvacæe*). The most important member of this genus, so far as its value in the garden is concerned, is *C. involucrata*. This is a trailing perennial that dies down in winter; in July it bears purplish-red flowers. Ordinary well-drained soil in sunshine suits its needs. Propagation is by cuttings in September or by seeds sown then or in spring.

Carlina acaulis.—A curious Thistle-like plant, native of Europe, and member of the Thistle family (*Compositæ*). It forms a low, large-leaved rosette of shiny foliage, from which the whitish Thistle-like flower head rises in June. It is increased by seeds sown in autumn or spring.

Celmisia.—Handsome New Zealand plants for the rockery belonging to the Daisy family (*Compositæ*), having long, generally hoary leaves and white flowers. Not many of these plants are in cultivation, as they are difficult to raise from seeds, the seedlings being

peculiarly liable to damp off. They should have a dry, warm position in sandy soil; they dislike much wet in winter, hence some growers cover them with glass at that season. *C. holosericea* is the best, hardiest, and most easily grown. Others are *C. Mackayi*, *C. grandiflora*, *C. coriacea*, *C. Lindsayi*, *C. spectabilis*, and *C. Munroi*. Seed may be sown under glass in spring.

Cerastium (Snow in Summer).—The *Cerastiums* are native of European mountains, and found also in Britain; they belong to the Pink family (*Caryophyllaceae*). They are dwarf plants, soon spreading into large tufts and flowering in May and June. Plants look especially well when inserted in the crevices of an old wall or on some rocky mound, so that their growths may hang down, or they are suitable for planting near the margin of the walk. They should not be placed close to choice alpine. Often they spread so rapidly as to necessitate severe cutting back, which is best done as soon as the flowers are over. The most useful sorts are *tomentosum* and *Biebersteini*, with grey leaves and white flowers; *arvense* and its varieties *compactum* and *grandiflorum*, producing dwarf masses of green foliage, having small white flowers in early summer. Propagation is most readily effected by pulling off rooted portions, which establish themselves quickly. Ordinary well-drained soil, the poorer the better, is suitable, but a sunny spot should be chosen or the plants become weedy and straggling.

Ceratostigma plumbaginoides. See **Plumbago Larpentae.**

Cheiranthus (Wallflower).—The Alpine Wallflowers,



SNOW IN SUMMER (CERASTIUM BIEBERSTEINI)

UNIVERSITY OF MICHIGAN LIBRARY



SUN ROSE (*HELIANTHEMUM TUBERARIA*), A CHARMING YELLOW SORT

10 20
10 20

which belong to the natural order *Cruciferae*, are charming April flowering plants for the sunny rockery. A handsome one, though usually only a biennial, is *C. Allioni*, about twelve inches high, bearing yellow flowers. It likes a dry, sunny spot; if the growths are cut back after the flowers are over its life may be prolonged. *C. alpinus*, however, is the most generally useful. It has small leaves, and is of rather trailing habit, having beautiful clear yellow flowers. It is a perennial, lasting for years in a dry place. *C. Marshalli* is a hybrid plant, and does not seed. It is about a foot or so high, and has orange-yellow flowers. *C. variabilis* and *C. mutabilis* have blooms of varying shades. The plants are often confused, but the true *C. variabilis* is more of a trailer. The blooms change from red-brown to purple. All these may be raised from cuttings taken off with a "heel" of old wood just after flowering, and placed beneath a bell glass. *C. alpinus*, *C. Allioni*, and *C. variabilis* are raised from seeds. All may be kept compact by cutting back after flowering.

Chrysanthemum (Marguerite, Ox-eye Daisy).—Most of these are border plants (natural order *Compositae*), although a few are well adapted for the rock garden, and worth growing for their free-flowering qualities. *C. alpinum*, the Marguerite of the Alps, found in all the stony pastures, flowering soon after the snow has melted, is a charming little plant, only two or three inches high, with small leaves and large pure white flowers. It can be grown in a half-shady position in gritty soil where

there is plenty of moisture. Slugs are very fond of this plant. It may be increased by seed sown in the spring. *C. argenteum* is a sub-shrubby plant from Armenia, with silvery-grey leaves, growing about one foot high. It must have a well-drained position in full sun. *C. caucasicum* is a spreading plant, with finely cut leaves, and white flowers, useful for clothing a half-shady, moist bank. A taller plant is *C. cinerariaefolium* from Dalmatia, with branched stems, silvery leaves, and large white flowers. For the larger rockery where there is plenty of room, the perennial *C. lacustre* may be used with advantage. It does not grow too high, and produces its large white flowers very freely, and these come in useful for cutting. A dwarf growing plant is *C. Zawadskii*, from Eastern Europe, with distinct, cut foliage, and white flowers that are suffused with purple. All the *Chrysanthemums* are readily grown in well-drained but moist, loamy soil. They may be either increased by division in the autumn, or spring, like the ordinary border kinds, or raised from seed, which most of them produce freely.

Chrysogonum virginianum, the only sort in cultivation, is a very leafy plant, some nine to twelve inches high, that bears golden-yellow flowers in May, and throughout the summer. It is native of the United States, and belongs to the Daisy family (*Compositae*). In full bloom it is showy, but when the burst of blossom is past it loses much of its attractiveness. It thrives well in loamy soil in half shade. An increased number of plants is readily obtained by division in late summer or spring.

THE ENTRANCE TO A SUNK ROCK GARDEN,
SHOWING BROOM (*Cytisus*) ON THE OUTSKIRTS

there is plenty of moisture. Slugs are very fond of this plant. It may be increased by seed sown in the spring.

argenteum is a sub-shrubby plant from Armenia, with silvery grey leaves, growing about one foot high. It

must have a well-drained position in full sun. *C. caucasicum* is a spreading plant, with finely cut leaves,

and white flowers, useful for clothing a half-shady, moist bank. Another plant is *C. ciperariaefolium* from Dalmatia,

with broad, finely cut leaves, and large white flowers. For the best effect, these plants require plenty of room, the

perennial *C. luteum* is a very low growing plant. It

flowers in the autumn, and these flowers are useful for cutting.

A dwarf growing plant is *C. Zawadskii*, found in the Caucasus, with dissected, cut foliage, and white flowers that are suffused with purple. All these plants, so far as

we are able to grow them, require a rich, loamy soil. They may be cut in the autumn, or in the autumn,

or spring, and either raised from seed, or raised from seed, or raised from seed, or raised from seed.

Cheysogonum virginianum, the only sort in cultivation, is a very leafy plant, some nine to twelve inches

high, that bears golden-yellow flowers in May, and throughout the summer. It is native of the United States,

and belongs to the Daisy family (*Compositae*). In full bloom it is showy, but when the burst of blossom is

past it loses much of its attractiveness. It thrives well in loamy soil in half shade. An increased number of plants

is readily obtained by division in late summer or spring.



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Claytonia.—The Claytonias, which belong to the Purslane family (*Portulacaceae*), are distinguished by rather succulent stems and flowers that usually open only in sunshine. They are native chiefly of North and South America. *C. asarifolia*, a dwarf evergreen, with blush-coloured flowers in June; *C. caroliniana*, another dwarf grower, bearing rose-coloured blooms in May, and *C. virginica*, of rather taller growth, earliest of all, with whitish flowers in April, are chiefly worth growing among the perennials. A somewhat shady place and a soil of half loam and half leaf-soil suit them. They are propagated by dividing the plants in spring or late summer.

Codonopsis.—The one kind valued for the rock garden is *C. ovata*, native of the Himalayas. The *Codonopsis* belong to the Bellflower family (*Campanulaceae*). *C. ovata* grows some ten inches high, and has pale blue flowers in June. It needs only ordinary soil, and a fairly sunny position. Propagation is effected by dividing the roots in September or in March, or by seeds.

Conandron.—There is only one member of this genus, namely *C. ramondioides*. It is native of Japan, and belongs to *Gesneraceae*, to which family belong the greenhouse flowers *Gloxinia* and *Achimenes*. *Conandron ramondioides* forms a tuft of rather large leaves, and bears in June somewhat tube-shaped purplish-pink flowers. It is of doubtful hardiness, and is commonly protected with a bell glass in winter. A sheltered and partially shaded position and soil consisting of loam, peat and sand are necessary. It may be raised from seeds.

Coronilla.—Of the Coronillas (which belong to the Pea family, *Leguminosae*) only two or three are of value for the rock garden. *C. iberica* (synonym *C. cappadocica*) is perhaps the best; it is a trailing plant with greyish leaves and bearing yellow flowers in July. *C. varia*, of rambling growth, produces blush-coloured blooms in June. They need a sunny spot, and well-drained soil consisting of loam, peat and sand. Propagation is best effected by sowing seed in September or early spring.

Corydalis (Fumitory).—The Fumitories are members of the natural order *Fumariaceae*, which includes the well-known Bleeding Heart (*Dicentra* or *Dielytra*). They have prettily cut leaves and curiously spurred yellow blooms in May, and are suitable for old walls, for covering mounds of soil, and for grouping in odd corners of the rock garden, though not choice enough for the chief positions. The commonest sort is *Corydalis lutea* (widely distributed in Europe, and wild in Britain), with yellow flowers; *nobilis*, native of Siberia, is even finer, with blooms of deeper yellow; *cheilanthifolia* and *thalictrifolia* are newer sorts, with the same pretty foliage and yellow flowers. All those above named have fibrous roots. The best method of increase is by seeds sown in spring, or by division of the tufts in late summer. There are, however, numerous tuberous-rooted kinds, not commonly grown, of which the best are probably *Scouleri*, rose-purple flowers in May, and *tuberosa*, the smallest of all those described, growing not more than five or six inches high, and bearing purplish blooms in March. The latter

are increased by seed, or by small offsets taken from the tubers in September and grown in boxes for a season.

Cotula.—The Cotulas, of which two only are generally met with, are creeping plants with prettily cut leaves; they spread rapidly, and though possessing no especial claims to beauty are particularly useful for planting in chinks by the side of the paths that wind about the rock garden. They grow flat along the ground, will thrive even in a gravel path, and bear treading upon with impunity. Cotula acaenifolia and C. squalida are the names of those in common cultivation. Propagation is very simple; roots form on the creeping stem, and all one has to do is to cut off pieces of the latter having roots attached and plant them out forthwith.

Crucianella (Crosswort).—This belongs to the natural order *Rubiaceae* (which includes among its members the *Bouvardia*), and is native of the East Mediterranean district. *Crucianella stylosa*, which alone is usually grown, is a spreading plant of rapid growth, having slender procumbent stems covered with whorls of small rough leaves, and bearing in June small bunches of rose-pink blooms that some find unpleasantly scented. If planted near choice alpines it is apt to smother them, and is preferably placed near the walk or in some other position where there is ample room for its development. Ordinary soil suits it. It is apt to become straggling in growth, and should be renewed frequently from seed which germinates very readily.

Cyananthus.—The few kinds of *Cyananthus* are

native of the Himalayas and China, and belong to the Bellflower family (*Campanulaceae*). *C. lobatus* is chiefly valuable for the rock garden. It is quite a dwarf plant, only some three inches high, and bears purplish-blue flowers in late summer. It needs shade and a soil with which peat and sand are freely mixed. Seeds sown in spring form the best means of increase.

Daphne.—The Daphnes are attractive shrubs with fragrant flowers, and several are of value for the rock garden. They are native chiefly of hilly and woodland countries in Europe, and belong to the natural order *Thymelaceae*, which is closely allied to the Laurel family. The well-known Mezereon (*Daphne Mezereum*) is a stiff-growing, leaf-losing shrub, bearing fragrant purplish-red blooms in March, followed by red fruits; the white variety has yellow fruits. Both thrive in ordinary loamy soil. *D. Cneorum*, the Garland Flower, is the loveliest of all; it is a trailing evergreen shrub, bearing, in April, bunches of pink and very sweet blossom at the ends of the shoots. It needs peaty soil, and the little branches must be kept down close to the soil by stones or pegs. *D. blagayana*, a low shrub, needing similar treatment, bears creamy-white flowers in April. The two latter are increased by layering the trailing stems, *D. Mezereum* by seeds sown as soon as ripe.

Draba (Whitlow Grass).—The Drabas (natural order *Cruciferae*) are charming little alpine plants, mostly with yellow flowers, but there are some with white, and another, *D. pyrenaica*, with rose-lilac blooms. All are of dwarf

growth, and form compact cushions of bright green foliage, studded with numerous flowers in spring. They are excellent for dry walls, or may be grown in sunny crevices, planted in very gritty soil. In cracks where plants cannot be inserted seeds mixed with a little soil should be sown, and the plants will soon establish themselves. There are numerous kinds in cultivation. *D. Aizoon* is a native plant, found on old walls and rocks in the west of England. It forms a dwarf spreading tuft, which in spring is covered with bright yellow flowers; *D. bruniaefolia*, from the Caucasus, is a free growing kind, forming a low turf of deep green foliage, and producing large yellow flowers. *D. Dedeania*, from Northern Spain, is one of the most distinct, with white flowers crowded into a dense mass. It is an excellent subject for the moraine, growing freely, and flowering profusely under these conditions of gritty soil and moisture. *D. imbricata*, from the Caucasus, is an early-flowering species with heads of yellow flowers on slender stems. It is one of the prettiest and is a recent introduction. *D. pyrenaica*, well known as *Petrocallis*, is another moraine plant of great beauty, forming little tufts barely half an inch high. In April and May the pleasing rosy-lilac flowers are produced, forming quite a sheet of colour over the plant. *D. tomentosa* is a woolly leaved kind, much liable to damp off in winter. All the *Drabas* may be grown in very gritty, well-drained soil. Seeds are freely produced by most of the different kinds, and they germinate quickly when sown in the spring.

Dryas (Mountain Avens).—*Dryas octopetala* is the finest of the Mountain Avens. They belong to the rose family (*Rosaceae*), and are found in alpine pastures in the New and the Old World. *D. octopetala* is of trailing, evergreen growth, and in June bears its lovely, white, open blossoms on short stems, very freely, though each stem bears only one flower. *D. Drummondii* is of similar growth, but bearing yellow flowers, also in June. Both species like a soil of sandy loam and peat, and should not be in too sunny a place. Increased by seed.

Edraianthus. See *Wahlenbergia*.

Epigaea repens (May Flower).—This is a dainty evergreen creeper, bearing in June miniature sprays of pink-white and fragrant flowers. It is a weed in the woods of North America, and needs to be planted in peat in a shady position. It belongs to the Heather family (*Ericaceae*). The best method of increasing the May Flower is to divide the plants in late summer.

Epimedium (Barrenwort).—A charming group of graceful plants with pretty foliage and uncommon-looking, spurred flowers, belonging to the natural order *Berberideae*. A light soil, with some leaf-mould and sand in it, and half shade suit them well. They grow about a foot high. The leaves are beautifully tinted in spring and autumn. Among the best are *alpinum*, red and yellow; *coccineum*, scarlet; *luteum*, yellow and white; *musschianum*, dwarf, white; *niveum* is the same as *musschianum*; *pinnatum*, yellow; and *rubrum*, red. They bloom in early summer, and are increased by division in autumn.



A HANDSOME SPURGE (EUPHORBIA WULFENII)

Handsome Spurge
Euphorbia wulfenii



GROUP OF HERON'S BILL (*ERODIUM CHEILANTHIFOLIUM*)

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Erigeron (Fleabane).—The Erigerons, which belong to the Daisy family (*Compositae*), may be likened to miniature Michaelmas Daisies, with numerous narrow petals that give them a fringed appearance. Most of them are border flowers, though several are suited to the rock garden. Ordinary light loamy soil and a sunny situation suit them. They are readily increased from seeds sown in spring. Perhaps the showiest of all is *Erigeron aurantiacus*, native of Turkestan, bearing orange-coloured flowers on stems some ten inches high in July. *E. glaucus*, from North America, about ten inches high, bears its purple flowers very freely in late summer. A very dainty little plant is *Erigeron mucronatus* (known also as *Vittadenia triloba*). It is very commonly grown as an annual, seed being sown out of doors in March, where, in late summer, the plants are to bloom. The flowers are small, of rose-white colour, and very freely produced. All those named are readily increased by division in September, or from seed sown then or in spring.

Erinus alpinus.—An attractive, low-growing, spreading plant, native of Europe and member of the Snapdragon family (*Scrophularineae*). It is seen at its best in light soil in rock crevices or walls. *Erinus alpinus* has purplish flowers in May; there is a white-flowered variety, *alba*, and one with rose-coloured blooms called *carminea*. Propagation is by dividing the tufts in September, and by sowing seeds in spring.

Eritrichium nanum.—This charming little plant, belonging to the Forget-me-not family (*Boragineae*), so

well known by repute but seldom seen in good condition in our gardens, is one of the most difficult of plants to cultivate. In its home on the high Alps it is found in rocky crevices where, during the winter, it is covered with a thick mantle of snow. Here it is difficult to imitate those conditions, but a certain amount of success may be ensured by planting it in the moraine, in granite chippings, with which is mixed a small quantity of fibrous loam and sand. A spot should be selected where it will be fully exposed, but during its growing period moisture must be supplied from below, and none should be allowed to touch the foliage. In its home it does not appear to be a long-lived plant, for rarely are large specimens found; in this respect it is evidently like many of the Forget-me-nots to which it is closely allied. Plants procured in the spring may usually be kept through the summer, but the great enemy of this charming gem, as well as of other alpine plants with silky foliage, is damp in winter, which causes it to rot off. It may be kept during the winter by covering the whole plant with dry sand, and then placing a piece of glass over it to keep off the rain, while still allowing free access of air. It makes a small tuft of silky-leaved rosettes, covered in spring with beautiful bright blue flowers on short stalks.

Erodium (Heron's Bill).—Delightful little rock plants, allied to the Geranium (natural order *Geraniaceae*), and excellent for warm, sunny positions on the rockery. They thrive in light soil. The plants grow only a few inches high, have pretty foliage, generally finely divided

and fragrant, and plenty of flowers for a long time in summer. Numerous sorts are in cultivation, but among the best are the following: *E. chamaedrioides*, or Reichardi, white, requiring a warm place; *E. chrysanthum*, yellow, the most difficult to keep; *E. corsicum*, rose; *E. guttatum*, white with black blotches; *E. olympicum*, pink; *E. cheilanthifolium*, rose; and *E. trichomanefolium*, blush, with deeper veins. Raised from seeds, or increased by division in early spring or autumn.

Erysimum (Fairy Wallflower).—Natural order, the Wallflower family (*Cruciferae*). *Erysimum rupestre*, found wild on the mountains of Northern Europe, is the most valuable for the rock garden, since, unlike most others, it forms a compact mass of evergreen leaves that spreads quickly. It looks best when planted on top of a low bank or mound, and needs only ordinary soil. The light yellow flowers on stems several inches high resemble miniature Wallflowers, and give the finest display in April. It is easily raised from seed sown in spring or summer.

Erythronium. See Bulbs for the Rockery.

Euphorbia (Spurge).—Although some of the members of the Spurge family (natural order *Euphorbiaceae*) are handsome foliage plants, only a few may be considered of any great value for the rock garden. Among the taller kinds there is *E. Characias*, which is a handsome plant all the year round, forming a bushy mass of evergreen glaucous foliage, and producing reddish-brown inflorescences in early summer. Others of similar character

are *E. Sibthorpii* and *E. Wulfeni*. A pretty little plant is the Cypress Spurge (*E. Cyparissias*), widely distributed in Britain, with evergreen foliage and bright yellow inflorescences in spring. It is useful for planting on shady banks, where it will soon spread. Perhaps the most attractive of all is *E. epithymoides*. This grows about eighteen inches high, forming quite a bushy plant, covered with heads of bright yellow bracts in spring. These change to a rosy-bronze colour with age. One of the dwarfier kinds is *E. Myrsinites*, native of South Europe, with prostrate or trailing stems and glaucous leaves, while similar, but with erect stems, is *E. glandulifera*, which flowers during the winter. All the Euphorbias are easy to grow in any light, well-drained soil. Owing to the long roots they make, several are difficult to transplant, and take some time to recover. Plants may be raised from seeds sown in spring, potted off singly in sandy loam when large enough, and planted out when the pots are full of roots. *E. epithymoides* may be divided, but care must be taken that some roots remain on each separated piece.

Frankenia (Sea Heath).—*Frankenia laevis* (natural order *Frankeniaceae*), which is chiefly grown, is native of South and South-West maritime Europe, and is found in the south-eastern counties of England. It is a small, prostrate, evergreen plant, and bears, in July, tiny pink flowers. It is happiest in a shady spot, and in a soil composed of half peat and half sandy loam.

Fritillaria. See Bulbs for the Rockery.

Galax.—An attractive little North American ever-green plant, needing a cool spot and moist soil consisting of peat and leaf-soil. It belongs to the natural order *Diapensiaceae*. It has distinct, round leaves, and in July bears small spikes of white flowers on four-inch-high stems; in early autumn the leaves become finely coloured. It may be increased by division in September.

Gaultheria.—See "Shrubs for the Rock Garden."

Geranium (Crane's Bill).—The true Geraniums (natural order *Geraniaceae*) are widely distributed in temperate countries, and many are natives of Britain. There are innumerable species, some of which are of considerable value for the rock garden. They all like a well-drained and light soil; some of them are almost too vigorous for the small rock garden. *G. Endressi*, native of the Pyrenees, grows from eighteen inches to two feet high, and bears its rose-pink blossom freely. *G. ibericum*, found wild in Iberia, about eighteen inches high, has large purplish-blue blossoms. *G. armenum*, from Armenia, two feet high, has reddish-purple blooms. Among the best of the smaller sorts are *argenteum*, native of Northern Italy, with silvery leaves and pink-striped flowers; *sanguineum*, widely distributed in Europe, deep purplish red, and *sanguineum album*. All those named bloom in June. They are best increased by seeds sown in spring, or by division of the tufts in September.

Geum (Avens).—The Geums, which belong to the Rose family (*Rosaceae*), are chiefly valuable as border flowers, though one or two, notably *montanum* and

reptans, are rock-garden flowers. These are happiest in a light loamy soil and a sunny spot. *Geum montanum*, widely distributed on European mountains, has big Strawberry-like leaves that hide a somewhat woody, low stem; it bears, in May, fairly large golden-yellow blossoms. Frequent top dressing and occasional re-planting are necessary to keep the stem well covered. *Geum reptans* is a pretty little plant that produces runners like a Strawberry. It bears yellow flowers in June. Propagation is effected by seeds sown in spring, or by division in late summer.

Globularia (Blue Globe Daisy).—The *Globularias* are generally of low, somewhat shrubby growth, having glossy dark green leaves and rounded heads of blue flowers. They are native chiefly of Southern Europe, and belong to the natural order *Selagineae*. The choicest is *G. nana*, which is only about half an inch high and has Thyme-like leaves and heads of bluish-white flowers. The next best is *G. cordifolia*, which makes a carpet of small leaves studded with round clusters of little blue flowers. *G. bellidifolia*, *G. nudicaulis*, and *G. trichosantha* are moderately good, and have also blue or bluish-white flowers. *G. vulgaris* is the tallest, and the least choice for the rockery. All flower in early summer. They cannot be reckoned choice rock plants. They thrive in an open, sunny spot and a well-drained compost of sandy loam and leaf-soil. They are increased by seeds, sown under glass in spring; by cuttings in spring and summer; and by division as soon as the flowering is over.

Gypsophila.—Everyone, of course, knows *Gypsophila paniculata*, that is such a favourite border plant, and those having still to make the acquaintance of the rock-garden kinds will find them equally delightful. They belong to the Pink family (*Caryophyllaceae*). They thrive in well-drained sandy loam, with lime rubble intermixed, in a sunny place among the rocks, and look best when their trailing growths can hang over some rock face. *Gypsophila repens*, found on the European Alps, is a beautiful trailing plant with grey leaves, and a profusion of small pale pink flowers throughout summer; the variety *rosea* with deeper coloured blooms is even more attractive. *Gypsophila cerastioides*, from the Himalaya, forms a compact evergreen tuft bearing small white flowers marked with pink in May. *G. Sundermanni* forms a tuft of grey leaves and bears pink blossoms in June. *G. elegans* is a pretty little white-flowered sort, commonly treated as a hardy annual. Propagation is by seeds sown in spring and late summer.

Haberlea rhodopensis.—A dainty little plant, native of the Roumelian mountains, and belonging to the natural order *Gesneraceae*. Its flowers are not unlike those of a miniature *Gloxinia*. The *Haberlea* should be planted in a rock cleft or stony bank facing north, in peat and loam. From the tuft of leaves the short stems, bearing drooping lilac-coloured blooms, rise in April. It is increased by sowing seeds or by careful division.

Helianthemum (Sun Rose).—Trailing evergreen shrubs, belonging to the natural order *Cistaceae*; some of them

are found wild in this country. Generally they are easy to grow in light soil and a sunny position. The Strawberry-like flowers, though individually fleeting, are produced for weeks together, and are most attractive. The varieties of *Helianthemum vulgare*, native of Europe, including Britain, and North Africa, are chiefly grown, and they range through many colours from white to red and orange. There are numerous named sorts. Propagation is by cuttings taken towards the end of July.

Houstonia.—*Houstonia caerulea* is a dainty and tiny rock-garden plant from North America, forming a low cushion of minute evergreen leaves, from which in May rise little pale blue flowers. It is the only one commonly grown. *Rubiaceae*, to which belongs the *Bouvardia*, is its natural order. It needs well-drained, light, loamy soil and a position partially shaded by rock, so that it may not become dried up in summer. It is increased by division in September or by seeds.

Hutchinsia.—*H. alpina*, which alone is generally grown, forms a neat evergreen carpet in sandy loam and a sheltered spot, and in May bears tiny white flowers very freely. It belongs to the Wallflower family (*Cruciferae*), and is native of the European Alps. An increased stock is obtained by dividing the tufts in late summer, or by sowing seeds in spring. It is known also as *Nocca alpina*.

Hypericum.—The *Hypericums*, which belong to the natural order *Hypericineae*, contain some of the most charming of rock plants. Many of them are evergreen,

and the glaucous green foliage of some kinds is attractive throughout the winter. About nine sorts may be selected as the best for a small rock garden on account of their dwarf habit and freedom in flowering. A neat little plant is *H. crenulatum*, from Cilicia, with prostrate stems, pink buds, and yellow flowers. *H. empetrifolium*, native of Southern Europe, and *H. Coris*, from the Levant, form little tufted Heath-like plants, with abundance of bright yellow flowers during summer. *H. Kotschyannum*, from Syria, has prostrate stems, grey hairy leaves, and yellow flowers. A fine trailing species, making quite a carpet, is *H. nummularium*, from the Pyrenees, with little rounded leaves and bright yellow flowers in racemes in summer. Perhaps the best one of all, and most attractive for the rock garden, is *H. olympicum*, found wild on Mount Olympus in Greece. This is a very handsome glaucous evergreen, with fine large flowers of bright yellow colour in summer. Planted on a rocky ledge it makes a large tuft of spreading branches, each terminating in a bunch of flowers which open in succession over a long period. A smaller edition of the last is *H. polyphyllum*, one of the neatest and most compact for walls and similar places. *H. repens* is quite a distinct plant, with narrow, Heath-like leaves on prostrate stems, and rich yellow flowers. Of prostrate spreading growth, *H. reptans*, a Himalayan species, requires a more shady and moist position than any of the others. The golden-yellow flowers are very large for the size of the plant. All are easily raised from seed, and will grow in any light loamy

soil in full sun. Hypericums may also be increased by means of cuttings, inserted in sandy soil, in a close frame, in summer.

Iberis (Perennial Candytuft).—The Evergreen Candytufts rank high among the rock-garden flowers that are easily grown. They are of half-shrubby growth, and in April and May become smothered in bloom. They are native chiefly of Southern Europe, and belong to the Wallflower family (*Cruciferae*). Ordinary well-drained soil suits them, and they never look better than when planted above some rock ledge so that the growth may hang over its face. The best are *Iberis sempervirens* and its variety *garrexiana*, white; *gibraltarica*, white tinged with lilac; *correaefolia*, having larger flowers, white. They are easily raised from seed sown in spring or summer.

Jasione (Sheep's Scabious).—Useful rock plants, belonging to the Bellflower family (*Campanulaceae*). The flowers are blue, in rounded heads. They are easily grown in sandy soil in a sunny place. *J. perennis*, nine to twelve inches high, is attractive for bold rockwork; but a newer one is *J. Jankae*, which is dwarfer, giving deep blue globular flowers from tufts of narrow leaves in summer. Increased by division immediately after flowering, or by seeds, when these can be obtained.

Leontopodium (Edelweiss).—Owing to the legend that Edelweiss grows only on inaccessible rocks, it seems to have gained a reputation for being difficult to grow, though it is really easy if planted firmly in well-drained

stony loam in a sunny place among the rocks. It is native of the European Alps, and belongs to the Daisy family (*Compositae*). The woolly flower-heads, on stalks some six inches high, rise from a loose tuft of rather narrow grey leaves in June. *Leontopodium alpinum* is the favourite kind. It may be raised from seeds sown in late summer or spring, or the plants may be divided in early September. Lime is necessary in the soil.

Lewisia.—The *Lewisias*, which belong to the Purslane family (*Portulacaceae*), comprise some very interesting and beautiful plants; all are native of North-western America. One of the first to be introduced was *L. rediviva* (Bitter root), a native of the Rocky Mountain region, where it is found alongside rivers on dry prairies. All the *Lewisias* like a warm position in well-drained stony soil, with plenty of moisture when in full growth. Planted in rocky crevices they are also quite at home, and in such places they will survive our winters. After they die down the plants require to be kept quite dry till they start growing again, when water must be once more applied. There are eight species in cultivation, of which the four best are the following. *L. Cotyledon* is a beautiful plant from the Siskiyou Mountains of Northern California; it forms a rosette of leaves not unlike those of *Saxifraga Cotyledon*, but greener, more fleshy, and without the silvery edge. They are about four inches in diameter, while the much branched stems reach a height of six inches. The large flowers have eight to ten petals, which are rosy-purple with a broad white margin. *L. Howelli*

is very similar to the last, differing chiefly in the leaves, having a more distinct and wavy margin. *L. rediviva* is quite distinct from the last ; it forms a rosette of small terete leaves, which die down before the flowers appear. Each plant has usually two or three expanded blossoms at a time, each from two inches to three inches across, and soft rose in colour. It is a native of California, and requires similar treatment to *Calochortus*. *L. Tweedyi* is one of the most handsome, with smooth and fleshy leaves, and large buff and rose-tinted flowers. It is not so hardy as some of the others, and is best grown in a pot in a frame, where it gets shelter, although it has been grown outside in sheltered places. All flower in early spring.

All these plants must be grown in a sunny place, planted in very gritty, thoroughly drained soil. Stagnant moisture is fatal to them.

Lilium (Lily).—Liliums are not usually included amongst rock-garden plants, but in many parts of the rock garden there are often half-shady spots for such things as *Erythroniums* and the shade-loving *Primulas*. Here some of the Lilies may go. They belong to the natural order *Liliaceae*. Some of the Lilies prefer a peaty soil, and this applies more particularly to the North American kinds, of which there are some that do not grow too big. In a bog or moist peaty bed the Californian *L. Parryi*, having a slender stem, reaching three feet high, and bearing in June several trumpet-shaped, lemon-yellow flowers, that are sweetly fragrant, may be

used. Others are *L. parvum*, from the sub-alpine regions, with many small bell-shaped flowers, orange in the middle, with crimson tips; *L. columbianum*, native of British Columbia, with bright golden-yellow flowers, spotted with maroon, in July.

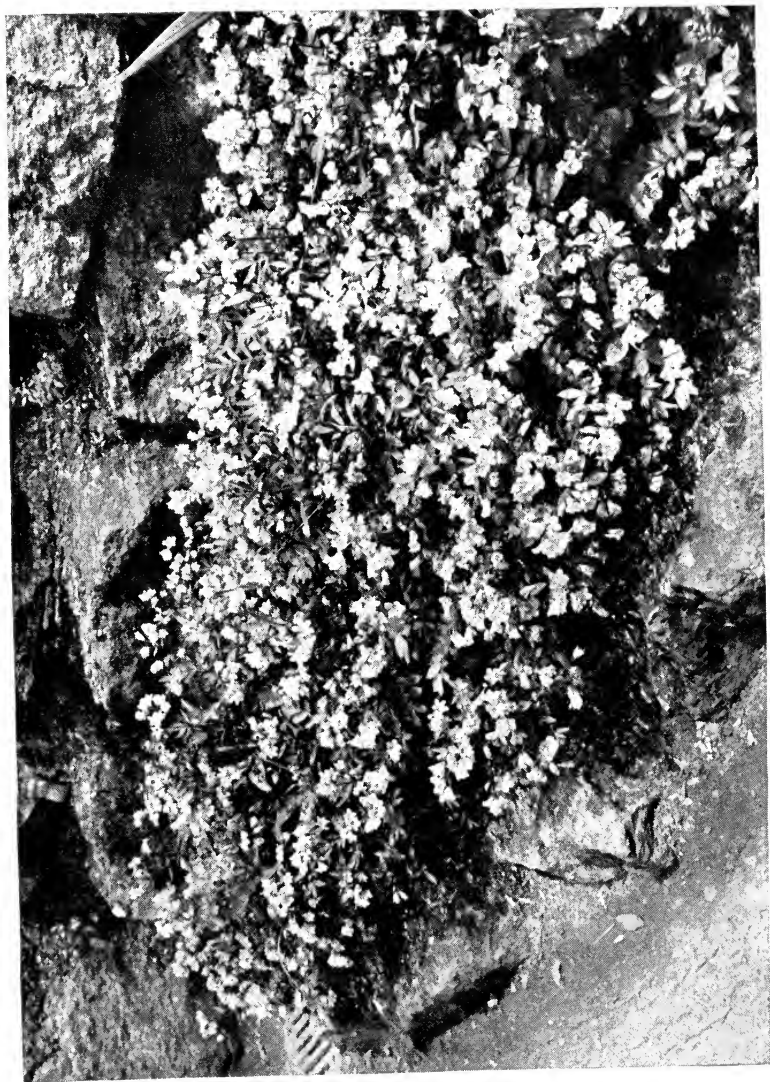
All these bog Lilies grow naturally along the banks of small streams, on the borders of lakes in alpine meadows, and the soil in these places is always rich in leaf-soil or humus. Low shrubs and other plants shade the ground and keep the bulbs from getting dry, and through them the stems push their way and open their flowers to the sun. Other Lilies that may be used are the charming little *L. concolor*, from China and Japan, only a foot or two high, with bright scarlet flowers in June. *L. chalcedonicum*, from Greece, with the same coloured flowers in July, but taller in habit; *L. pyrenaicum*, a free growing and bushy plant, from the Pyrenees, bearing, in May, bright yellow, spotted flowers having a very strong odour, and *L. tenuifolium*, a slender elegant plant from Siberia, only eighteen inches high, with narrow leaves, and bright scarlet flowers in July. These all like a deep loamy soil rich in humus, with plenty of moisture when growing. Low bushes are also an advantage to shade the ground and shelter the young stems from frost in spring.

Linaria (Toadflax).—The finest of the Toadflaxes (which belong to the Snapdragon family, *Scrophularineae*) for the rock garden is *Linaria alpina*, a charming low-growing plant with grey leaves and violet flowers having

an orange-coloured blotch in the centre; it blooms throughout many weeks. It is rather a doubtful perennial, but flowers in summer from seeds sown in the rock garden in March, or seeds itself very freely. Poor soil and a sunny spot suit it best. It is native of the European Alps. Our native Ivy-leaved Toadflax (*Linaria cymbalaria*), with rounded leaves and little lilac-coloured blooms, is very pretty for rock chinks, and will grow anywhere, in sun or in shade.

Linnaea borealis.—A very dainty little plant, native of the Swiss and other European mountains (natural order *Caprifoliaceae*, to which belong Honeysuckle and Weigela). It has small, rounded, evergreen leaves or creeping stems, and bears in June two pale pink fragrant blooms on each stalk. It loves a moist peaty soil and shade, and is increased by division in late summer.

***Linum* (Flax)**.—The Flaxes are generally graceful plants belonging to the natural order *Linaceae* (which is not far removed from the Pink family), widely distributed in Europe and other temperate countries. Those suitable for the rock garden thrive in a light sandy soil and a sunny position, and are of the easiest cultivation. *Linum narbonense*, a lovely blue-flowered plant, eighteen inches high, is one of the most attractive of all; the exquisite blossoms continue to open in succession throughout the summer. *L. perenne*, a native of Britain, is similar, though not so fine. *L. flavum*, from South Europe, is a handsome large-flowered yellow Flax, growing about twelve inches high, and blooming in July. *L. arboreum*,



AN ATTRACTIVE ROCKERY FLOWER (POLEMONIUM REPTANS)





A BOG BORDER AND WALL GARDEN

THE GARDEN

from Crete, is of sub-shrubby growth, some twelve inches high, and bears yellow flowers in May. The Flaxes are readily raised from seed sown in spring or summer.

Lithospermum (Gromwell).—*Lithospermum prostratum*, the only one in common cultivation, is a lovely evergreen, of low sub-shrubby growth, that bears flowers of brilliant blue in May and June. A variety called Heavenly Blue is finer than the type. It is native of Southern France, and belongs to the Borage family (*Boraginaceae*). A soil consisting of half peat and half sandy loam suits it; it should be among rocks so that its little branches may fall over them, or on a gentle slope. The site should be well drained, or the plant is apt to deteriorate in winter. It is propagated by cuttings of firm wood taken in July.

Lychnis (Campion).—Perhaps the greatest value of the Campions, which belong to the Pink family (*Caryophyllaceae*), lies in their usefulness for the herbaceous border. Many are of tall and striking habit, and the colour of the flowers ranges from pure white to scarlet and deep rose. They are amongst the easiest of plants to grow, doing well in light rich soil. Those of dwarf and compact habit, suitable for the rock garden, are comparatively few in number. *L. alpina* may be described as a very diminutive form of the well-known *L. Viscaria*. Native of the European Alps and found also in Britain, it is a pretty plant, only an inch or two high, and may be grown in very gritty soil. It yields seed freely, which should be sown as soon as ripe in order to have flowering

plants for next spring. There is also a charming white-flowered form, as well as one with double flowers. *L. grandiflora* is a Japanese plant, growing over twelve inches high, with a cluster of flowers on each stem in summer. Each flower is an inch or more across, fringed at the edges, and varies from deep crimson to scarlet, pink, and white. It is best grown in a shady place, planted in moist soil with plenty of decayed leaf-soil. Similar to this is *L. fulgens*, while the various forms of *L. Haageana* are the result of a cross between the two species. All are readily raised from seed, or may be increased by division in autumn or spring. *L. Lagascae* is a pretty dwarf plant from the Pyrenees, with bright rose-coloured flowers in May. It likes a sunny place, and should be planted in fissures or cracks between large stones, and here will produce masses of its lovely blooms. It may also be grown in sandy or stony soil in any exposed position in the rock garden; it commences to flower early in summer, and continues for a long period. It is readily increased by means of seeds sown in spring. *L. Viscaria* is one of our native plants; it has long, grassy leaves, and bears in early summer showy heads of rose-coloured flowers on stems about a foot high. It seeds very freely, and self-sown seedlings come up in quantity in rocky crevices round about old plants. It varies a good deal in colour, one of the most charming being the pure white form, var. *alba*. There is also a double-flowered form, which, like the other, is easily increased by division.

Mazus.—Delightful small rock-garden plants, members of the Snapdragon family (*Scrophularineae*), which have recently come into greater prominence. They are not reliably hardy, though likely to survive the winter in a sheltered position. A sandy or gritty soil is necessary, with plenty of water during summer, and protection from wet in winter. *Mazus pumilio*, only an inch or two high, is native of New Zealand, and was introduced nearly a century ago. It has creeping stems clothed with small wrinkled leaves, and in May bears pale violet flowers. *Mazus rugosus*, with lilac-blue blossom, is of recent introduction. The best method of increase is by division in late summer.

Meconopsis.—Nearly all the members of this handsome family of shade-loving plants are found in the Himalaya, and on the spurs of that range which run into China. They belong to the Poppy family (*Papaveraceae*). Until about eight years ago the best-known kind was the beautiful Satin Poppy from the Himalaya (*M. Wallichii*), but with the exploration of China some new and remarkable species have been brought into cultivation. A well-known member of the family is the Welsh Poppy (*M. cambrica*), which is such a useful and ornamental plant for shady banks. Including the annual (*M. heterophylla*) from California, all are well worth growing in shady corners in the rock garden, where, with the exception of the last named, they delight in moist, loamy soil. They are nearly all biennials, but fresh seed comes up freely if sown in a pot of sandy soil and put into a cold frame.

The seedlings may either be potted up singly in small pots or pricked out into shallow boxes, there to stop until they are large enough for planting out into the permanent quarters for flowering. Apart from *M. cambrica*, of which there are some varieties with beautiful double flowers, the following are the best. *M. aculeata* is a Himalayan kind, growing two feet high, with prickly, sinuate leaves and large blue flowers, about three inches in diameter, in May. The beauty of the flower is further enhanced by the ring of yellow stamens, which have blue filaments. *M. grandis* is a rare plant from Sikkim, with tufts of long narrow leaves, and purplish flowers on stems about one foot high. For seeds of *M. integrifolia* Mr. E. H. Wilson made a special journey for Messrs. Veitch and Sons to the borders of Tibet. When first shown in flower in 1905 this beautiful novelty excited much admiration. From a tuft of long narrow leaves, covered with hairs, the stout stems arise, bearing several large primrose-yellow flowers, often from eight to ten inches in diameter. *M. nepalensis*, from the Himalayan district, is a tall-growing plant, with beautiful foliage, and bears claret-coloured flowers in June. *M. paniculata* is a handsome kind, with yellow drooping flowers. *M. punicea* is another introduction from the borders of Tibet, with similar foliage to *M. integrifolia*, but with drooping scarlet flowers singly on stems about eighteen inches high. *M. racemosa* is a pretty plant with entire leaves and blue flowers with irregular petals. *M. sinuata* var. *latifolia* is similar in habit to *M. aculeata*, but has more

entire and prickly foliage, with light blue flowers. *M. Wallichii*, the Satin Poppy, is an old inhabitant of our gardens, and one of the most useful kinds. Native of Sikkim, it reaches a height of five feet or more, and in June bears numerous flowers on branching panicles. Like some of the others, the flowers vary in colour from purple to a lovely blue. Also a biennial, this plant dies after flowering, and as it takes two years usually to reach flowering stage, it is necessary to raise plants every spring and have them coming on in pots ready to plant out when of sufficient size. The annual *H. heterophylla* may be sown in the open sunny border in April.

Mertensia.—Attractive plants of easy cultivation in ordinary soil, and belonging to the Borage family (*Boraginaceae*). The most popular is *M. sibirica*, native of Siberia; it grows twelve or fifteen inches high, and has rough leaves, and bears in May and June purplish-blue flowers which become rose-coloured. *M. virginica*, native of North America, of similar height, has bluish flowers, and *M. echioides*, which grows only some six inches high, bears small blue blossoms, both in early summer. They may be increased by division in September or by seeds sown then or in spring.

Morisia hypogaea.—A beautiful little plant, native of the island of Sardinia, and belonging to the Wallflower family (*Cruciferae*). It forms quite a miniature tuft of finely divided leaves, and bears, in April, showy little bright yellow flowers. It needs a light, sandy, well-drained soil, and a sheltered though not shady nook.

Propagation is effected by seeds sown in late summer. The *Morisia* is a charming little alpine for pots.

Myosotis (Forget-me-not).—Nearly everyone is familiar with our native water Forget-me-not, *Myosotis palustris* (natural order *Boragineae*), which is so abundant in marshy places and on the edges of streams in various parts of this country. In the bog garden it is easily grown, and makes a charming display with its pretty blue flowers. There are about sixteen species found in Europe, but the greater majority have small and insignificant flowers. There are now in cultivation many beautiful cross-bred strains possessing compact habit with free-flowering qualities. The best species are the following : *M. alpestris*, one of our native plants, found on some of the Scotch mountains, varies a good deal in size—some of the smaller forms, to which the name of *M. rupicola* has been applied, barely reach the height of two inches—the beautiful blue flowers open in spring. Other forms are taller, and more branching, but no less beautiful. It is a perennial, and may be kept for years, but young seedlings raised annually do much better. The best place for this plant is in a select part of the rock garden, half shady, and planted in moist, gritty soil. *M. cespitosa* Rehsteineri is a dwarf-growing creeper, only found wild on the shores of Lake Geneva. It requires a very moist position, and makes a good carpeting plant ; it is covered in early summer with flowers varying in colour from blue to pink. *M. dissitiflora* is the handsome free-flowering Swiss Forget-me-not, much used for spring bedding, as it often begins

to bloom in February. Its dwarf and compact habit as well as free-flowering qualities render it especially valuable. The flowers are large, deep sky-blue in colour, and in shady, moist corners are produced in abundance for a long period. Seed is freely produced, and self-sown seedlings come up in plenty round old plants. Seeds sown in summer, and the seedlings pricked out in some shady moist spot, yield good flowering plants for the following spring. Of the biennial *M. sylvatica*, which grows wild in England, there are numerous varieties, elegant and compact, with flowers of various shades of blue and white. Seeds of nearly all the *Myosotis* should be sown as fresh as possible, then they germinate freely. They may be either sown in a shady border or in pots in a cold frame.

Oenothera (Evening Primrose).—Most people know the common Evening Primrose, *Oenothera biennis* (natural order *Onagrarieae*), which is so often met with on waste ground in this country. It is a plant of somewhat coarse habit, only fit for the wild garden, but there are several other species in this beautiful family which are of low-growing and compact habit and have very large flowers. These are nearly all natives of North America, and include some beautiful annuals which have bright yellow and white flowers, and which seed freely. They all grow well in a sunny position if planted in light, rich, well-drained soil. Below are a few of those of dwarf habit suitable for the rock garden. *Oe. caespitosa*, known also as *Oe. eximia* and *Oe. marginata*, is not more than twelve

inches high, bearing flowers four or five inches in diameter in May. On opening the flowers are pure white, but gradually change to a delicate rose colour. They are very sweet scented and handsome. It is a North American perennial, and may be increased by suckers from the roots, or by means of cuttings rooted in sandy soil. *Oe. missouriensis* is an attractive plant from the United States, with prostrate stems springing from a central rootstock, and having a profusion of clear yellow flowers in summer. For a sunny ledge it is very effective. Like those of the preceding, the flowers are at their best in the evening. It may be increased by cuttings in the spring, inserted in sandy soil under a bell glass. *Oe. Nuttallii* is of very compact habit, with tufts of jagged leaves, and yellow flowers produced from the base. *Oe. taraxacifolia* is a Chilian kind of trailing habit, with stems a foot or so long, and in summer large pure white flowers, which change with age to a delicate pink. It should be planted on a ledge so that the stems can droop over the sloping stones; a good perennial in a light, well-drained position, planted in light soil. There are many other attractive *Oenotheras* of neat habit. Among them may be mentioned *Oe. speciosa*, about eighteen inches high, with large flowers—white at first, then changing to pink; *Oe. fruticosa*, a handsome perennial with yellow flowers; *Oe. triloba*, a dwarf free-flowering species, with tufts of jagged leaves and numerous large yellow flowers.

Omphalodes.—This is a small group of plants belonging to the Borage order (*Boragineae*), and containing some

four or five species that are very useful in the rock garden. Excepting *O. Luciliae*, which does not flourish everywhere, they are all easy to manage, and will grow freely in sheltered borders. *O. cornifolia*, also known as *O. cappadocica*, is a pretty dwarf-growing kind from Asia Minor, with narrow ovate leaves. The flowers are of a lovely blue colour with white eye, and are produced very freely in summer. It is quite hardy and may be raised from seeds, or increased by dividing the plant in autumn or spring. *O. Luciliae* is a beautiful plant, from Greece and Asia Minor, that is quite hardy; it has blue-grey foliage, and large, pretty lilac-blue flowers in June. It likes a gritty or gravelly loam, with a half-shady aspect, facing east or west. Seed sown in early autumn will produce flowering plants within the year, but all the seedlings do not possess the same pleasing, glaucous tinted foliage. Cuttings strike freely in early summer if potted in sandy soil and put under a bell glass in the shade. The greatest enemy of this plant is the slug, which is very fond of it. *O. nitida* is a graceful plant from Portugal that is not quite hardy. It must be kept in a frame during the winter; it bears blue flowers in May. *O. verna*, the Creeping Forget-me-not, native of Southern Europe, is valuable for the rock garden or for shady banks. It is a spreading plant, growing freely in moist situations, where it spreads by means of runner-like stems. In the early spring it produces handsome flowers of a beautiful blue, with a white throat. There is also a variety with pure white flowers. It will grow in any light, moist

soil, especially amongst stones. *O. linifolia* is a pretty Portuguese annual, ten or twelve inches high, with glaucous green leaves and pure white flowers in summer. Autumn-sown seeds produce plants which flower in the late spring, while if seeds are sown at intervals from April to June a succession may be obtained throughout the summer and autumn.

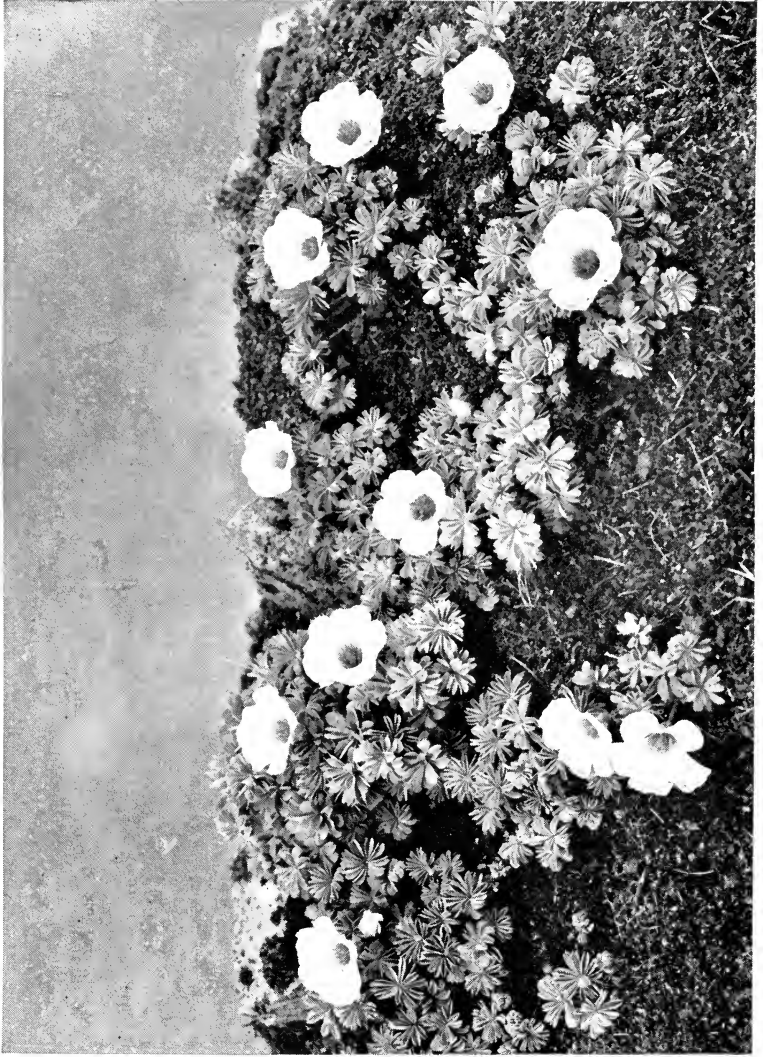
Ononis.—The species of chief value for the rock garden are low sub-shrubby plants, bearing Pea-shaped flowers (natural order *Leguminosae*). They thrive in light soil and a sunny spot. *Ononis fruticosa*, from Spain and Southern France, has purplish blooms in June, and grows about eighteen inches high. *O. rotundifolia* is rather smaller, having rose-coloured flowers, while *O. arvensis*, our native Rest Harrow, with pinkish blooms, is also worth growing in the rock garden. Propagated by seeds sown in late summer or spring.

Oxalis (Wood Sorrel).—Some of the hardy kinds of *Oxalis* are attractive rock plants (natural order *Geraniaceae*), notably *Oxalis enneaphylla*, from the Falkland Islands. This has beautiful, silvery leaves, and large pale rose flowers; there is a white variety. *O. adeno-phylla*, with rose-white blooms, is also very charming. The pink variety of the common wood sorrel (*O. acetosella rosea*) is worth growing, and *O. corniculata*, with yellow flowers, is useful for carpeting and planting in stone steps. The Wood Sorrels like a soil consisting of loam and leaf-mould or peat, with sand; they are happiest in half-shade. Propagation is by offsets or by seeds.



A CHARMING ROCKERY FLOWER (OXALIS ADENOPHYLLA)

OXALIS ADENOPHYLLA



A WOOD SORREL (OXALIS ENNEAPHYLLA) FROM THE FALKLAND ISLANDS

NO. 100
1910

Papaver (Poppy).—Natural order *Papaveraceae*. Three Poppies are conspicuously valuable for the rock garden. *Papaver alpinum*, native of the Swiss and other European Alps, is a delightful little plant, forming a low tuft of grey-green leaves, and bearing, in June and July, beautiful flowers rather less than an inch across, that vary in colour from white to pale rose and yellow. It is a doubtful perennial, but flowers in summer from seed sown in early spring. The Iceland Poppy (*P. nudicaule*) is said to be found farther north than any other flowering plant; this, too, is best raised from seeds, which should be sown in May for the following year's blossoms. *P. rupifragum* is a curious plant with low stems that creep along the ground for several inches before sending up the flower stems, which bear lovely apricot-coloured blooms during several weeks from late July onwards. This, in common with the other Poppies named, is best raised from seed, which should be sown in September or spring.

Platycodon (Balloon Flower).—The *Platycodons* (named Balloon Flowers from the appearance of the inflated flower buds) are handsome rock-garden plants



Alpine Poppy (*Papaver alpinum*).

belonging to the natural order *Campanulaceae*, and are often classed with the *Campanulas* under the name of *C. grandiflora*. They are native of China and Japan. For garden purposes, *Platycodon* is generally accepted as a suitable title. *Platycodon grandiflorum* has handsome blue flowers, and grows from 6 to 9 inches high. The best for the rockwork are the *Mariesii* varieties; they are dwarfer, and have large and handsome flowers in blue and white. These plants will thrive in common loam, though preferring a little peat intermixed. They flower in summer, and are hardy, but sometimes die after a few years, owing to the tuberous roots rotting. They are raised from seeds or increased by division. Some are successful in raising them from root-cuttings.

Polygonum (Knot-grass).—Several *Polygonums* are good rock-garden plants. They have generally rather cylindrical spikes of small flowers, and belong to the natural order *Polygonaceae*. With the exception of *P. sphaerostachyum*, the following, which comprise the only sorts worth having for the rockery, can be grown in common soil. The easiest is *Polygonum affine*, sometimes called *Brunonis*, native of Nepaul, which is of creeping habit. It has spikes of rosy-red flowers in late summer and autumn, and narrow leaves which become brilliantly coloured in autumn. *P. vacciniifolium*, from the Himalayas, also blooms late; it likes partial shade, and a rather moist place, is also of creeping growth, and has pretty Heath-like spikes of pink bloom. The Himalayan *P. sphaerostachyum* grows about 9 inches high,

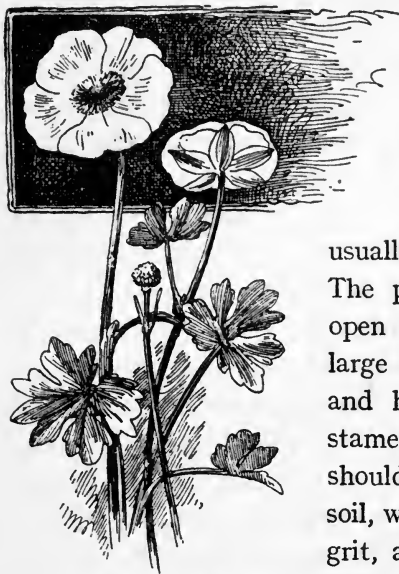
and has rounded spikes of bright crimson in summer. It needs peaty soil, and is rather difficult to establish. All are propagated by division, while the two first-named produce roots on the creeping stems.

Pratia angulata.—A pretty little creeping plant, native of New Zealand, and belonging to the Bellflower family (*Campanulaceae*). The flowers, small, white, spreading and pointed at the top, open in July; they are succeeded by small red fruits. It needs a cool, moist soil among rocks, such as is afforded by mixing in a little peat or leaf-soil, though the plant itself does not mind the sunshine. Propagation is by seeds or by layering the creeping stems.

Ramondia.—The Ramondias are charming little ever-green plants for the rock garden, members of the Gloxinia family (*Gesneraceae*). They form a tuft of rough leaves from which in May spring flower-stems some three or four inches long, bearing dainty flowers. The way to grow them is to plant the rosette flat against the face of rock crevices or a stony bank facing north or east, the roots being laid horizontally. A soil consisting of loam, leaf-soil, and sand is suitable. *Ramondia pyrenaica*, native of the Pyrenees, has exquisite purple-blue flowers with orange centre in May. *R. serbica*, native of Servia, has shorter flower-stems, smaller, pale violet blooms, though more of them. Increased by seeds, though this method is slow, or by division of old tufts.

Ranunculus (Crowfoot). — The Ranunculus or Crowfoot family (*Ranunculaceae*) includes some charming

and valuable plants for the rock garden. It is a large and varied genus, but the really good kinds are comparatively few. The alpine species are not grown to the extent that they deserve to be, yet their cultivation is attended by no great difficulty. Sandy loam with ample drainage, and plenty of moisture, will meet the requirements of most. *R. aconitifolius* (Fair Maids of France), although not an alpine, is a beautiful and useful plant for the edges of streams in the rock garden. It is widely distributed in Europe. Growing about two feet high, it forms a bushy plant, covered in spring with numerous



An Alpine Buttercup
(*Ranunculus*).

white flowers. It is increased by division.

R. alpestris only grows from four to six inches high, and is a true mountain plant from the Pyrenees, found

usually in a calcareous soil. The pure white flowers, that open in June and July, are large for the size of the plant, and have a cluster of yellow stamens in the centre. It should be planted in a loamy soil, with plenty of leaf-soil and grit, and have plenty of moisture when in growth. *R. amplexicaulis* is one of the best

as well as one of the easiest to grow; native of the Alps of Southern Europe. In deep and rich soil it will reach nearly a foot in height, with glaucous leaves, and large white flowers over an inch across in May. *R. glacialis* (the Glacier Crowfoot) is one of the fairest of mountain plants, though rare and very choice, that is found among the debris of glacial moraines in the European Alps. The whole plant is only about four inches high, with fleshy, dark green, deeply divided leaves, and white flowers in June or July; these are often suffused with pink, especially on the underside. It must be planted in a cool situation, in open, gritty loam, where it gets perfect drainage, but plenty of water when growing. *R. gramineus*, an attractive kind, with grass-like foliage, and stems about a foot high, bearing bright yellow flowers in spring, is an easy plant to grow in any good soil. It is native of Southern France and Spain. *R. montanus*: this has been described as a refined and dwarf form of the native Crowfoot, with much larger flowers. It is well worth growing for its freedom in flowering during May and June, as it is easy to manage. *R. parnassifolius*: this plant inhabits the high alpine regions of the Alps and Pyrenees, and is remarkable for its thick, entire heart-shaped leaves. The flowers are pure white and large, and produced several on a stem six inches high in June. It is one of the most charming of the family, and may be grown in moist and gritty, loamy soil. As for all the others, moisture is essential during growth. *R.*

pyrenaicus: anyone who has seen this lovely plant in the alpine pastures cannot fail to be charmed with the countless pure white flowers borne on slender stems. It may be grown under the same conditions as the preceding.

There are many other pleasing plants among the Crowfoots, including *R. carpaticus*, with large yellow flowers; *R. anemonoides*, with finely cut foliage and white flowers; and *R. nyssanus*, with large citron-yellow flowers, all of easy cultivation.

Rubus (Bramble).—One of the prettiest Brambles

(natural order *Rosaceae*) and quite a charming plant is *Rubus arcticus*, which is native of Arctic regions, having large rosy-pink flowers in June, and ternate leaves on slender stems. After the flowers are over in the autumn the rich tints on the foliage, with the amber-coloured fruits, are much admired. This little creeping plant is most at home in a moist, peaty soil, where it does not get too much sun. An ideal place is amongst dwarf growing *Rhododendrons* that are not planted too close together, or it may be used to furnish the ground in places where



Soapwort
(*Saponaria ocymoides*).

Erythroniums have flowered in the early summer, and have died down, leaving the ground bare. Another member of the family is the Cloudberry (*R. Chamaemorus*), with large white flowers on leafy stems in summer, five to seven lobed leaves, and orange-yellow fruits. It is a common plant on the moors of northern England, but is somewhat difficult to establish in the south. *R. pedatus* creeps about like a Strawberry, and also has white flowers, succeeded by bright red fruits. It comes from North America and grows very freely. *R. Xanthocarpus*, a Chinese species, is of a dwarf sub-shrubby habit, spreading about by means of underground stems. It also has white flowers followed by yellow fruits.

Saponaria (Soapwort).—Several of the Saponarias which belong to the Pink family (*Caryophyllaceae*), and are native chiefly of Southern Europe, are showy rock-garden flowers. Well-drained sandy loam suits them well, and they like a sunny position. They should be placed high up in the rock garden, so that their trailing stems may have plenty of rock face or bank over which to fall. Perfect drainage, so essential to their welfare, is thus also secured. *Saponaria ocymoides*, found wild on the Swiss Alps, bears rose-pink flowers very freely in May and June. There are several varieties, *alba*, *splendens*, and others. *S. caespitosa*, from the Pyrenees, is a dainty little tufted plant yielding rose-coloured blooms in July; but it is less hardy than *S. ocymoides*. *S. Boissieri*, of garden origin, is said to be a hybrid between *S. ocymoides* and *S. caespitosa*.

It is of less straggling growth than the former, and bears rose-pink blossoms in June. Propagation is by seeds sown in spring or summer, or by cuttings taken after flowering; the latter are inserted in sandy soil and kept in a closed frame.

Schizocodon soldanelloides.—Only one species of *Schizocodon* (which belongs to the natural order *Diapensiaceae*) is in cultivation. It is native of Japan, the flowers resemble those of *Soldanella* (*which see*), and the plant needs similar treatment to the *Shortias*, to which reference is made on the next page.

Senecio (Groundsel).—Very few of the Groundsels, which belong to the Daisy family (*Compositae*), are of value for the rock garden, but mention may be made of *Senecio argenteus*, a small Pyrenean plant, with silvery grey leaves, for which, indeed, it is chiefly valued, and



Schizocodon soldanelloides.

bearing yellow blooms in June. *S. incanus* and *S. uniflorus*, both native of the European Alps, the former with almost white and the latter with grey leaves, are pretty foliage plants; the

yellow flowers are not of much account and are commonly picked off. Sandy soil suits them, and they may be increased by seed in spring or summer or by division of the plants in early September.

Shortia.—The two *Shortias* in cultivation (natural order *Diapensiaceae*) are beautiful little alpines, one



Shortia galacifolia.

from the mountains of Carolina in North America, the other from Japan. They form low, loose tufts of evergreen leaves that are well coloured in the autumn and winter, and in April bear very beautiful fringed blossoms on stalks some four or five inches high. Those of *Shortia galacifolia* are white, and of *S. uniflora* pink.

A position not fully exposed to the sunshine and a soil composed chiefly of sandy peat are likely to ensure success, though, providing there is a fair depth of moist soil, a sunny spot may be chosen. Propagation is most easily effected by removing rooted offsets in late summer; these form on plants that have become well established.

Silene (Catchfly).—Of the perennial Catchflies, which belong to the Pink family (*Caryophyllaceae*), there are several of value for the rock garden. Some are easy, and some are difficult. Most tantalising of all is the Cushion Pink of the Alps (*Silene acaulis*); this forms tufts of minute evergreen leaves, and in May and June bears, or should bear, exquisite little pink blossoms. But the great trouble is to get it to flower freely; in fact, in gardens it never seems to give anything like the profusion of blossom that distinguishes it on its native heights. It is most successful in a moraine or in extremely well-drained, very gritty soil, and should be covered with glass from October until the end of February. There is a white variety, *Silene acaulis alba*. *Silene alpestris*, on the contrary, is delightfully easy in sandy, well-drained loam among the rocks; it is of altogether different habit, and from a leafy tuft sends up, in May and June stems six or eight inches high, bearing lovely little white flowers. *Silene Schafta* is a pretty little plant, native of Southern Russia, bearing purple rose blooms in July and August; it is quite easy in well-drained soil. *Silene Schafta* and *S. alpestris* are readily propagated from

seeds sown in spring or summer or by division in early September, the latter method only for *S. acaulis*.

Sisyrinchium (Satin Flower).—The Satin Flowers are Iris-like plants (natural order *Irideae*), native of North America. Only one kind, *S. grandiflorum*, is commonly grown, but it is of especial value. The narrow Iris-like leaves are evergreen, and the purple flowers open in spring. Well-drained sandy loam forms a suitable soil. An increased stock is obtained by dividing the plants when they have died down.

Soldanella.—The Soldanellas, members of the *Primula* family (*Primulaceae*), are very dainty and beautiful little alpines, found on high elevations in the European Alps, where in spring the flowers are often found peeping through the snow. The rounded evergreen leaves lie close to the ground, and in April the fringed flowers rise on stems some three or four inches high. *Soldanella alpina*, violet-blue, is the most popular of all; others are *S. montana*, purple, and *S. minima*, lilac with stripes of deeper shade within. A peaty soil seems essential to success with *Soldanella*, since it is so necessary to ensure against drought; a position sheltered from the midday sun, too, is needed. The *Soldanellas* are shy blooming, and often may be induced to flower more freely if covered with glass for the winter.

Trillium (Wood Lily).—The Wood Lilies or Trinity Flowers (natural order *Liliaceae*) are very lovely rock-garden plants, found wild in America, in India, and Japan. Most popular of all is *Trillium grandiflorum*,

from the woods of North America ; in April the succulent stem rises to a height of some six inches, the leaves, in a whorl of three, subsequently opening to expose one exquisite, white, three-petalled bloom. The variety roseum is also very attractive, the flowers being suffused



Wood Lily (*Trillium*).

with pinkish rose. Other Wood Lilies not so commonly grown are *T. erectum*, and *T. sessile*, dark purple. A soil made up of sandy peat and a shady border fulfil the needs of the Wood Lilies, which are then quite easy to grow. Pro-

pagation may be effected by division when the stems have died down.

Tropaeolum (Nasturtium).—Everyone is familiar with the common climbing *Tropaeolums* so largely used in gardens ; these, of course, are not to be thought of for the rock garden. But there are one or two perennial kinds of value for the purpose in view. The *Tropaeolums* are native of South America, and belong to the *Geranium*

family (*Geraniaceae*). *T. polyphyllum* is an attractive plant, with much divided grey leaves, and bearing a profusion of yellow blooms in June. It needs a dry, sunny place among the rocks, and a well-drained, sandy soil. *T. tuberosum* (the Peruvian Nasturtium) has, as its name implies, tuberous roots. They are not hardy, except under very favourable conditions, and it is wise to lift and store them in autumn. The plant is of slender climbing growth, but may be so planted that its stems fall over rockwork. The flowers, which are red and yellow, open in August and September.

Veronica (Speedwell).—Many of the herbaceous Veronics (as distinguished from the New Zealand shrubby kinds) are charming rock-garden flowers (natural order *Scrophularinae*). They are easy to grow in ordinary soil that is well drained, and like a sunny spot. The showiest of all is *V. rupestris* (synonym *V. Teucrium dubia*), a free-growing trailer that becomes smothered in little spikes of blue flowers in June. *V. repens* forms a very close evergreen carpet, studded in May with tiny pale blue blossom. Other good sorts are *V. pectinata*, blue, and its variety *rosea*, rose; *V. Allioni*, blue; *V. caespitosa*, rose; and *V. circaeoides*, blue and white. Propagation is most easily effected by division in September.

Viola.—There are some attractive rock-garden flowers among the Violas, which belong to the natural order *Violaceae*. Unless it is stated otherwise, they thrive in ordinary rock-garden soil. The twin-flowered Viola,

V. biflora, native of Europe, is a tiny plant with two-flowered stems of bright yellow blooms in May and June. It needs a moist place and partial shade. The Spurred Viola, found wild in Europe, *V. calcarata*, has purple or white flowers in spring; it likes a half-shady spot. *V. cornuta*, the Horned Viola, from the Swiss and other mountains, flowers throughout spring and summer; the blooms vary from white to mauve, blue and purple. It is too vigorous for a choice spot. Purple Robe and Papilio are good varieties. The lovely Grecian Viola *gracilis* has purple flowers in spring and summer, and will grow almost anywhere, though preferring slight shade. For a hot, dry bank *V. hirta*,



A Rock-Garden Viola

native of Europe, with blue, white, or red-purple flowers in spring, and of the type of our common Violet, is useful. *V. odorata* is, of course, the Sweet Violet of gardens, and is welcome on rockwork. *V. pedata*, a North American kind, loves a well-drained, peaty soil. It has lovely blue flowers in spring; the white variety, *alba*, is very fine. Other good Violas are *V. cenisia*, the Mont Cenis Violet, blue; the Canadian *V. canadensis*, of taller growth, blue and white; *V. lutea*, yellow; *V. pinnata*, a distinct kind with blue flowers and pretty foliage;

and the American *V. cucullata*, blue, white or striped. The *Violas* are easily raised from seeds, sown as directed in the chapter dealing with the subject; they may also be increased by division, or, in some cases, by pegging down the creeping stem-like growths called runners.

Wahlenbergia.—The *Wahlenbergias* bear a great resemblance to the *Campanulas*, and belong to the Bell-flower family (*Campanulaceae*). They are charming little plants of low growth, with comparatively large blooms. They are not difficult to grow in the moraine or in very gritty, well-drained soil. *W. pumilio* is the chief favourite; it has greyish leaves, and showy, lilac-blue, erect blossoms in May. *W. serpyllifolia*, with tiny leaves and purple-blue flowers, *W. Kitaibelli*, blue-purple, and *W. saxicola*, lilac-blue, are among the best of the other kinds. Propagation is effected by division after flowering, or, better still, by seeds in spring.

PAGES FOR READY REFERENCE

ROCK PLANTS THAT DISLIKE LIME

Some of these plants will grow in soil containing lime, but are not then likely to be so successful:

Androsace carnea	Geranium aconitifolium
Campanula alpestris (syn. Allioni)	Ranunculus crenatus and glacialis
Dianthus glacialis and neg- lectus [stellata	Saponaria lutea
Draba frigida, laevigata, and	Silene pumilio and rupestris

ROCK PLANTS THAT LIKE LIME

The following plants prefer lime, either in the shape of limestone, lime rubble, or chips, though many of them may be grown without it. It is not necessary to add any if the soil is naturally calcareous.

Acaena argentea	Anthyllis montana
Acantholimon (any)	Antirrhinum Asarina
Achillea (all silvery ones)	Artemisia sericea
Aethionema coridifolium	Campanula morettiana
grandiflorum	Zoysii
iberidifolium	Cerastium
pulchellum	Cheiranthus Allioni
Alyssum argenteum	Cyclamen
montanum	Dianthus (most)
saxatile	Draba maweana
serpyllifolium	Dryas octopetala
Androsace foliosa	Edraianthus
lanuginosa	Erodium chrysanthum
sarmentosa	guttatum
Anemone baldensis	Gentiana Clusii
Anthemis Aizoon	Geranium argenteum

ROCK PLANTS THAT LIKE LIME (*cont.*)

Geranium lancastriense	Primula Clusiana
Traversii	marginata
Gnaphalium Leontopodium	Ranunculus alpestris
(Edelweiss)	montanus
Helichrysum bellidioides	Saponaria ocymoides
frigidum	Saxifraga (all Silvery)
rupestre	Saxifraga burseriana
Linum salsoloides	Sedum spathulifolium
Lithospermum graminifolium	obtusifolium
Lychnis pyrenaica	brevifolium
Papaver alpinum	glaucum
Phlox subulata	Sempervivum (any)
Potentilla nitida	Silene Elizabethae
Valderia	Saxifraga
Primula Allioni	Veronica saxatilis
Auricula	

PLANTS THAT THRIVE WELL WHEN PLANTED FLAT
AGAINST A PERPENDICULAR ROCK FACE

(Those for which this method is most desirable are marked *. Some will do well in a moraine instead of this position.)

*Androsace alpina	*Erodium petraeum
ciliata	*Haberlea rhodopensis (shade)
cylindrica	*Jankaea Heldreichii (shade)
pubescens	*Lychnis Lagascae
*pyrenaica	*Onosma
*Armeria caespitosa	Primula auriculata
*Campanula Elatines	glaucescens
*fragilis	marginata
*isophylla	Palinuri
and other trailing sorts	pedemontana
*Conandron ramondioides	spectabilis
(shade)	viscosa
Dianthus arvernensis	wulfeniana
caesius	*Ramondia (shade)
*glacialis (half-shade)	Saponaria caespitosa
*suavis	ocymoides
*Draba alpina	*Saxifrage, Silver or Encrusted
*Erinus alpinus	Sempervivum

ROCK PLANTS PREFERRING PEATY SOIL

Androsace pubescens pyrenaica	Haberlea rhodopensis
Anemone baldensis palmata rivularis	Helonias bullata
Aquilegia glandulosa	Houstonia
Calceolaria plantaginea polyrhiza	Jankaea Heldreichi
Campanula Allioni excisa	Linnaea borealis
Conandron ramondioides	Lithospermum Gastoni prostratum
Cyananthus lobatus	Mertensia
Cypripedium	Mimulus
Daphne blagayana	Orchis (most)
Cneorum	Ourisia coccinea
Dianthus Freynei glacialis	Pratia angulata
Dryas	Primula capitata farinosa
Epimedium	glutinosa
Erica	hirsuta
Galax aphylla	latifolia
Gaultheria	Parryi
Gentiana bavarica Kurroo	viscosa
Pneumonanthe pyrenaica septemfida verna	Pyrola rotundifolia
	Ramondia
	Rhododendron
	Saxifraga aizoides Hirculus major
	Schizocodon soldanelloides
	Shortia
	Soldanella
	Tiarella cordifolia

PLANTS BENEFITED BY GLASS COVERING IN WINTER

(The glass is especially desirable for those marked *.)

*Acantholimon venustum	*Calandrinia umbellata
*Adonis amurensis	*Campanula petraea
Aethionema armenum	*Cerastium alpinum
*Androsace (practically all)	*Draba alpina
Anthyllis montana	*Eritrichium nanum
*Antirrhinum Asarina glutinosa	*Erodium chrysanthum
*Arnebia echioides	*Gentiana verna
Asperula suberosa	Gypsophila cerastioides
	*Helichrysum

PLANTS BENEFITED BY GLASS COVERING IN WINTER (*cont.*)

- | | |
|----------------------------|--|
| *Houstonia | *Petrocallis pyrenaica |
| Hypericum coris
reptans | *Potentilla nitida |
| *Jankaea Heldreichii | *Pratia |
| *Leontopodium alpinum | *Saxifrages of Cushion type,
e.g. burseriana, apiculata,
etc. |
| *Lewisia | *Schizocodon soldanelloides |
| Lithospermum canescens | *Sempervivums with cobweb
rosettes, e.g. S. arach-
noideum, etc. |
| Lychnis Lagascae | |
| Mazus | |
| Nierembergia gracilis | |
| *Oenothera speciosa | *Silene acaulis |
| *Omphalodes Luciliae | *Soldanella |
| *Onosma | |

ROCK PLANTS THAT WILL THRIVE IN ORDINARY
WELL-DRAINED SOIL

- | | |
|---|---|
| Acaena | Horminum pyrenaicum |
| Achillea | Iberis |
| Adonis amurensis
vernalis | Linaria pallida |
| Ajuga | Linum perenne |
| Anthemis | Lysimachia nummularia |
| Aquilegia (most) | Meconopsis cambrica |
| Arabis | Oenothera missouriensis
taraxacifolia |
| Arnebia echioides | Potentilla nivalis |
| Aster alpinus | Tonguei |
| Aubrietia | verna |
| Campanula caespitosa
carpatica
portenschlagiana | Primula frondosa
denticulata
and others |
| Cheiranthus alpinus
mutabilis | Pulmonaria arvernensis |
| Chrysogonum virginianum | Ranunculus amplexicaulis |
| Corydalis | Saxifraga, London Pride
section |
| Dianthus deltoides
graniticus | Megasea section |
| Epimedium | Mossy section |
| Erigeron | Sedum (almost all) |
| Geum Heldreichii
montanum | Thalictrum minus |
| Heuchera | Veronica |
| Hieracium villosum | Viola calcarata
canadensis
cornuta |

BOG OR MOISTURE-LOVING PLANTS

<i>Caltha palustris</i>	<i>Orchis foliosa</i>
<i>Cypripedium spectabile</i>	<i>maculata</i>
· <i>Epipactis palustris</i>	<i>Ourisia coccinea</i>
<i>Galax aphylla</i>	<i>Primula bulleyana</i>
<i>Gentiana asclepiadea</i>	<i>farinosa</i>
<i>Pneumonanthe</i>	<i>involutrata</i>
· <i>Helonias bullata</i>	<i>japonica</i>
<i>Iris cristata</i>	<i>pulverulenta</i>
<i>sibirica</i>	<i>rosea</i>
· <i>Leucojum aestivum</i>	<i>sibirica</i>
· <i>vernum</i>	<i>sikkimensis</i>
· <i>Linnaea borealis</i>	<i>Ranunculus aconitifolius</i>
· <i>Lobelia cardinalis</i>	and others
<i>Mimulus</i>	<i>Saxifraga aizoides</i>
· <i>Nierembergia rivularis</i>	<i>Hirculus major</i>
	· <i>Trillium</i>

PLANTS FOR POOLS AND PONDS

(Those suitable for 12 inches of water or less are marked thus *.)

<i>Alisma</i>	* <i>Iris sibirica</i> in variety
<i>Aponogeton distachyon</i>	* <i>Lysimachia thyrsiflora</i>
<i>Butomus umbellatus</i>	* <i>Myosotis palustris</i>
* <i>Caltha palustris</i>	<i>Nuphar lutea</i>
<i>Cyperus longus</i>	<i>Nymphaea</i>
<i>Epilobium hirsutum</i>	<i>Polygonum amphibium</i>
<i>Hippuris vulgaris</i>	<i>Pontederia cordata</i>
<i>Hottonia palustris</i>	<i>Ranunculus aquaticus</i>
* <i>Iris Pseudo-acorus</i>	<i>Lingua major</i>
* <i>Monnieri</i>	<i>Sagittaria sagittifolia</i>

ALPINES WITH GREY OR VARIEGATED LEAVES

Included in this list are several with variegated foliage; these give a white or silvery effect at a distance. Such plants generally prefer a dry soil, and

some lime will bring out the silvery colouring to a greater degree.

Achillea	Dianthus
Alyssum argenteum	Erodium chrysanthum
saxatile	cheilanthifolium
serpyllifolium	tanacetifolium
spinosum	Geranium argenteum
Androsace Chumbyi	Traversi
lanuginosa	Hieracium villosum
sarmentosa	Nepeta Mussini
Antennaria dioica	Potentilla nitida
tomentosa	Primula marginata
Anthemis	Santolina incana
Arabis albida variegata	chamaecyparissias
Artemisia argentea	Saxifraga (all the encrusted
pedemontana	ones)
sericea	Sedum brevifolium
Villarsi	glaucum
Cerastium Biebersteinii	Stachys lanata
grandiflorum	Thymus lanuginosus
tomentosum	Veronica incana

ROCK PLANTS OF DROOPING OR PROSTRATE GROWTH

Achillea argentea	Gypsophila prostrata
Alyssum montanum	repens
saxatile	Helianthemum
serpyllifolium	Hypericum reptans
Androsace lanuginosa	Iberis correaefolia
Arabis albida	sempervirens
Artemisia	Linaria cymbalaria
Aubrietia	Lithospermum prostratum
Campanula fragilis	Lysimachia nummularia
garganica	Oenothera missouriensis
portenschlagiana	Phlox reptans
Cerastium	subulata
Cyananthus lobatus	Polygonum vacciniifolium
Cytisus Ardoini	Potentilla alpestris
Kewensis	Tonguei
Dianthus (many)	verna (and others)
Dryas octopetala	Rubus arcticus
Euphorbia Myrsinites	Saponaria ocymoides
Genista tinctoria plena	Saxifrages (many)

ROCK PLANTS OF DROOPING OR PROSTRATE GROWTH (*cont.*)

Sedum Ewersii	Thymus lanuginosus
kantschaticum	Serpillum
rupestre	Tropaeolum polyphyllum
stoloniferum	Veronica prostrata

ROCK PLANTS WITH RED, ROSE, OR PINK FLOWERS

Acaena microphylla	Phlox reptans
Aethionema	subulata varieties
Androsace carnea	Polygonum affine
Armeria	vaccinifolium
Aubrietia Bridesmaid	Primula (various)
Fire King	Saponaria caespitosa
Moerheimi	ocymoides
Calandrinia umbellata	Saxifraga Grisebachii
Daphne Cneorum	Guildford Seedling
Dianthus	oppositifolia
Erinus alpinus	Rhei superba
Geranium lancastriense	and others
sanguineum	Sedum Ewersii
Lychnis alpina	pulchellum
Lagascae	Sieboldii
Viscaria splendens plena	stoloniferum coccineum
Ononis rotundifolia	Silene Hookeri
Ourisia coccinea	Schafta

ROCK PLANTS WITH BLUE, BLuish, OR PURPLE
FLOWERS

Anemone apennina	Globularia
blanda	Hepatica
nemorosa caerulea	Iris biflora
robinsoniana	cristata
Aquilegia (some)	pumila
Aster alpinus	Linaria alpina
Aubrietia	Lithospermum graminifolium
Campanula	prostratum
Cyananthus lobatus	Mertensia echioides
Edraianthus	Omphalodes verna
Gentiana acaulis	Plumbago Larpentae
verna (and others)	Veronica

ROCK PLANTS WITH YELLOW FLOWERS

Achillea tomentosa	Linum arboreum
Adonis amurensis	flavum
vernalis	Lysimachia Nummularia
Alyssum montanum	Oenothera missouriensis
saxatile	Onosma taurica
serpyllifolium	Primula Forresti
Anemone ranunculoides	Auricula
Calceolaria polyrhiza	Ranunculus (several)
Cheiranthus alpinus	Saxifraga aizoides
Coronilla iberica	Hirculus major
minima	sancta (and others)
Corydalis	Sedum acre
Draba aizoides	kamtschaticum
Aizoon	obtusatum
Epimedium pinnatum	rupestre

PLANTS FOR THE MORAINES .

Practically all rock plants that do not require loamy soil will grow in the moraine as well as, if not better than, on rockwork. The following have been fully tested :

Aethionema	Potentilla nitida
Alyssum	Primulas (most European kinds)
• Androsace carnea	Ranunculus alpestris
Chumbyi	crenatus
lanuginosa	glacialis
sarmentosa	Seguieri
Dianthus alpinus	Saponaria
glacialis	• Saxifrages (of the encrusted, Kabschia, Engleria, oppositifolia and Mossy sections)
microlepis	• Sedum (any)
zonatus	• Sempervivum (any)
etc. etc.	• Silene acaulis
• Douglasia vitaliana	alpestris
Draba (any)	Elizabethae
Edraianthus (any)	Hookeri
• Erodium (any)	Tunica Saxifraga
Gentiana angustifolia	Veronica (any dwarf)
• Geranium (any)	Viola cenisia
Geum montanum	
Helichrysum bellidioides	
Lychnis Lagascae	
Papaver alpinum	

ROCK PLANTS FOR SHADE

(These should not be planted under the drip of trees.)

Acaena	Mimulus
Adonis	Omphalodes verna
Ajuga	Oxalis enneaphylla
Anemone apennina	Primula acaulis
nemorosa	bulleyana
ranunculoides	involucrata
sylvestris	japonica
Aquilegia	pulverulenta
Campanula	Saxifrage cordifolia
Cyclamen Coum	London Pride section
europaeum	Mossy
ibericum	Symphyandra pendula
neapolitanum	Tiarella cordifolia
Daphne Cneorum	Trillium
Epimedium	Viola
Lysimachia nummularia	

EVERGREEN ROCK PLANTS

(These are exceedingly valuable during the winter months, their presence lends much beauty to the garden at that dull season.)

Acaena	Iberis correaefolia
Acantholimon glumaceum	sempervirens
Alchemilla alpina	Linum arboreum
Arabis	Phlox reptans
Arenaria balearica	subulata
montana	Saxifrages (all the Mossy sec-
verna	tion and most others)
Armeria	Sedum album
Asperula nitida	lydium
Cheiranthus alpinus	rupestre
Dianthus	reflexum
Draba	stoloniferum
Erinus alpinus	Sempervivum
Erysimum rupestre	Silene acaulis
Gaultheria procumbens	alpestris
Gentiana acaulis	Thymus micans
Helianthemum (most)	Serpyllum

INDEX

- ACAENA**, 193; *argentea*, 193; *Buchanani*, 193; *microphylla*, 193; *Novae Zealandiae*, 193
Acantholimon, 193; *glumaceum*, 194; *Kotschyi*, 194; *venustum*, 194
Achillea, 194; *ageratifolia*, 195, 199; *Clavennae*, 195; *Millefolium*, 194; *Ptarmica*, 194; *rupestris*, 195; *tomentosa*, 195; *umbellata*, 195
Aconite, Winter, the, 60
Adonis, 195; *amurensis*, 196; *pyrenaica*, 196; *vernalis*, 196
Aethionema, 196; *armenum*, 196; *coridifolium*, 196; *grandiflorum*, 196; *iberidifolium*, 196; *pulchellum*, 196
Ajuga, 197; *Brockbanki*, 197; *reptans purpurea*, 197; *reptans variegata*, 197
Alchemilla, 197
Alliums, the decorative, 56
Alpine flowers in pots, 107, 108
Alpine Pinks, 134
Alpines, increasing by cuttings, 48; by division, 47; raised from seed, 45
Alyssum, 197; *argenteum*, 198; *montanum*, 198; *saxatile*, 197; *sax. compactum*, 198; *sax. sulphureum*, 198; *serpyllifolium*, 198; *spinosum*, 198
Anaphalis margaritacea, 199
Andromeda polifolia, 53
Androsace alpina, 114; *carnea*, 112; *Chumbyi*, 112; *ciliata*, 114; *foliosa*, 112; *glacialis*, 114; *lanuginosa*, 113; *sarmentosa*, 113; *sempervivoides*, 113; *villosa*, 113
Androsaces, 6, 111
Anemone, the, 57; *alpina*, 117; *apennina*, 119; *Blue Apennine*, 119; *Halleri*, 117; *Hepatica*, 120; *patens*, 117; *pratensis*, 117; *Pulsatilla*, 118; *vernalis*, 118
Anemones, 116
Antennaria, 198; *dioica*, 199; *margaritacea*, 199; *tomentosa*, 199
Anthemis, 199; *Aizoon*, 199; *macedonica*, 199; *montana*, 199; *pedemontana*, 199
Anthyllis montana, 200
Antirrhinum, 200; *Asarina*, 200; *glutinosum*, 201; *sempervirens*, 201
Aquilegia alpina, 201; *caerulea*, 201; *caerulea hybrida*, 201; *canadensis nana*, 201; *chrysantha*, 201; *fiabellata*, 202; *glandulosa*, 202; *pyrenaica*, 202; *Stuarti*, 202; *vulgaris*, 201
Aquilegias, the, 201
Arabis, 36, 202; *albida*, 202; *flore pleno*, 202; *foliis variegatis*, 203; *alpina*, 203; *blepharophylla*, 203; *lucida variegata*, 203
Arenaria, 203; *balearica*, 203; *caespitosa*, 204; *laricifolia*, 204; *montana*, 203; *purpurascens*, 203
Armeria, 204; *caespitosa*, 204; *juncea*, 205; *juncea setacea*, 205; *latifolia*, 205; *vulgaris*, 204
Arnebia, 205; *echioides*, 205
Artemisia, 206; *abrotanum*, 206; *alpina*, 206; *frigida*, 206; *sericea*, 206; *vallesiaca*, 206
Artificial stream, an, 86
Asarum, 206; *canadensis*, 206; *europaeum*, 207; *virginicum*, 207
Asperula, 207; *Gussoni*, 207; *hirta*, 207; *nitida*, 207; *odorata*, 207; *suberosa*, 207
Aster, 208; *alpinus*, 208; *alp. albus*, 208; *alp. Gloire d'Orléans*, 208; *alp. speciosus*, 208; *Fremonti*, 208; *himalaicus*, 208

- Astragalus Tragacantha*, 53
Avens, 225; Mountain, 220
Aubrietia, 29, 36, 208; Bridesmaid, 209; deltoidea, 209; Dr. Mules, 209; Fire King, 209; Lavender, 209; Leitchlini, 209; Lloyd Edwards, 209; Moerheimi, 209; Prichard's Ar, 209
- BALLOON FLOWER**, 246
 Bee Orchis, the, 191
Bellflower, Allioni's, 127; alpine, 127; Bearded, 128; Carpathian, 122; Caucasian, 129; Clustered, 124; Flat-flowered, 125; Hill, 123; Host's, 124; Mont Cenis, 128; Moretti's, 129; Portenschlag's, 125; Stansfield's, 126; Tommasini's, 126; Waldstein's, 127; Woolly, 128; Zoy's, 130;
Bellflowers, the, 121
Bird's-eye Primrose, the, 166
Bitter root, 231
Bleeding Heart, 215
Blue Apennine Anemone, 119
Blue Globe Daisy, 226
Bog Border, a little, 100; plants for, 101; garden, how to make a, 76; Irises for, 147; plants for, 77; Primulas, 162
Border, a little bog, 100; Rock, the, 90
Bramble, 250
Brodiaea, the, 57
Brooms, 53
Bugle, 197
Bulbocodium vernum, 57
Bulbs among heaths, 52; in the Rock Garden, 55; planting, 63;
Bur, New Zealand, 193
Butterfly Orchis, 192
- CALANDRINIA**, 209; umbellata, 209;
Calathian Violet, 145
Calceolaria Golden Glory, 210; kellyana, 210; plantaginea, 210; polyrhiza, 210; violacea, 211;
Californian Lily Parryi, 232
Callirhoe, 211; involucrata, 211
Campanula, 121; abietina, 122; Allioni, 127; alpina, 127; barbata, 128; caespitosa, 122; carpatica, 122; cenisia, 128; collina, 123; Elatines, 128; excisa, 128; garganica, 123; G. F. Wilson, 123; glomerata, 124; grandiflora, 246; haylodgensis, 124; Hostii, 124; lanata, 128; linifolia, 124; mirabilis, 129; macrorhiza, 124; Morettiana, 129; planiflora, 125; Portenschlagiana, 125; pulla, 129; pusilla, 125; Raddeana, 126; Raineri, 129; rotundifolia, 126; Scheuchzeri, 126; Stansfieldi, 126; stenocodon, 130; Tommasiniana, 126; tridentata, 127; Waldsteiniana, 127; Zoyssii, 130
Campion, 235
Candytuft, Lebanon, 196; perennial, 230; Persian, 196
Candytufts, Evergreen, 230
Carlina acaulis, 211
Carnation, 135
Catchfly, 254
Celmisia, 211; coriacea, 212; grandiflora, 212; holosericea, 212; Lindsayi, 212; Mackayi, 212; Munroi, 212; spectabilis, 212
Cerastium, 212; arvense, 212; arvense compactum, 212; arvense grandiflorum, 212; Biebersteini, 212; tomentosum, 212
Ceratostigma plumbaginoides, 212
Chamomiles, the, 199
Cheiranthus, 212; Allioni, 213; alpinus, 213; Marshalli, 213; mutabilis, 213; variabilis, 213;
Chionodoxa, 58
Chrysanthemum, 213; alpinum, 213; argenteum, 214; cinerariaefolium, 214; lacustre, 214; Zawadskii, 214
Chrysogonum virginianum, 214
Claytonia, 216; asarifolia, 216; caroliniana, 216; virginica, 216
Cloudberry, 251
Clustered Bellflower, the, 124
Cobweb Houseleek, 6, 186
Codonopsis, 216; ovata, 216
Colchicum, 58
 Colour associations, some delightful, 55
Columbine, 201
Conandron, 216; ramondioides, 216
 Concrete, how to make, 83

- Conifers, pigmy, 52
 Coronilla, 217; cappadocica, 217; iberica, 217; varia, 217;
 Corydalis, 215; cheilanthifolia, 215; lutea, 215; nobilis, 215; Scouleri, 215; thalictrifolia, 215; tuberosa, 215
 Cotoneasters, the, 9, 52
 Cotula, 215, 216; squalida, 216
 Cowslip, the, 166; Sikkim, the, 166
 Crane's Bill, 225
 Creeping Forget-me-not, 243
 Cress, Wall, 208
 Crocus, 59
 Crosswort, 217
 Crowfoot, 247; glacier, 249
 Crucianella, 217; stylosa, 217
 Cupressus, the dwarf, 52
 Cushion Pink, 254
 Cuttings, propagation by, 48
 Cyananthus, 217; lobatus, 217
 Cyclamen, 59; cilicicum, 132; Coum, 132; europaeum, 131; Hardy, 131; neapolitanum, 131; repandum, 132
 Cypress Spurge, 224
 Cypripedium acaule, 191; Calceolus, 191; macranthum, 191; pubescens, 191; spectabile, 190
 Cypripediums, the, 190
 Cytisus Ardoini, 53; Kewensis, 53

 DAFFODIL, 59
 Daisy, Blue Globe, 226; Michaelmas, 208; Ox-Eye, 213
 Daphne, 218; blagayana, 218; Cneorum, 218; Mezereum, 218
 Daphnes, the, 53
 Decaying Leaves, removing, 39
 Dianthus alpinus, 138; arenarius, 135; calalpinus, 139; callizonus, 139; Caryophyllus, 135; cruentus, 135; deltoides, 135; dentosus, 139; fragrans, 136; glacialis, 139; graniticus, 136; hybridus, 136; Knappi, 137; microlepis, 139; monspessulanus, 137; neglectus, 140; petraeus, 137; plumarius, 137; suavis, 137; superbus, 138; sylvestris, 140; zonatus, 138
 Division, propagation by, 47
 Dog's Tooth Violet, 61

 Dovedale Moss, the, 175
 Draba, 218; Aizoon, 219; bruniae-folia, 219; Dedeana, 219; imbricata, 219; Petrocallis, 219; pyrenaica, 218, 219; tomentosa, 219
 Drainage, 22
 Dryas, 220; Drummondii, 220; octopetala, 220

 EDELWEISS, 6, 230
 Edraianthus, 220
 Empetrum nigrum, 53
 Encrusted Saxifrages, the, 168
 Epigaea, 220
 Epimedium, 220; alpinum, 220; coccineum, 220; luteum, 220; musschianum, 220; niveum, 220; pinnatum, 220; rubrum, 220
 Epipactis latifolia, 191; palustris, 191
 Eranthis, 60
 Eremurus, 60
 Erigeron, 221; aurantiacus, 221; (Vittadenia triloba), 221; glaucus, 221; mucronatus, 221
 Erinacea pungens, 53
 Erinus alpinus, 221; alpinus albus, 221; alpinus carmineus, 221
 Eritrichium nanum, 221
 Erodium, 222; chamaedryoides, 223; cheilanthifolium, 223; chrysanthum, 223; corsicum, 223; guttatum, 223; olympicum, 223; Reichardi, 223; trichomanefolium, 223
 Erysimum, 223; rupestre, 223
 Erythronium, 61, 223
 Euphorbia, 223; Characias, 223; Cyparissias, 224; epithymoides, glandulifera, 224; Myrsinites, 224; Sibthorpii, 224; Wulfeni, 224
 Evening Primrose, 241
 Evergreen Candytufts, 230
 Everlasting, Mountain, 198

 FAIR MAIDS OF FRANCE, 248
 Fairy Thimbles, 125; Wallflower, 223
 Flax, 234
 Fleabane, 221

- Flower, Balloon, 246; Garland, the, 218; May, 220; Prophet, the, 205; Satin, the, 255; Trinity, 255
 Forget-me-not, 240; creeping, 243; Swiss, 240
 Fortune's Saxifrage, 167
 Frames, alpine in, 40
 Frankenia, 224; laevis, 224
 Fritillaria, 61, 224
 Fritillaries, the, 61
 Fumitory, 215
- GALANTHUS**, 62
 Galax, 225
 Garland Flower, the, 218
 Gaultheria, 225
 Gentian, 141; Closed, 6, 142; Spring, 6; Willow-leaved, the, 143
 Gentiana acaulis, 141; Andrewsii, 142; asclepiadea, 143; bavarica, 143; decumbens, 143; Freyniana, 144; Kurroo, 144; lutea, 144; ornata, 145; Pneumonanthe, 145; Przewalskyii, 145; scabra, 145; septemfida, 145; verna, 145
 Gentianella, 141
 Geology of Rocks, 17
 Geranium, 225; argenteum, 225; armenum, 225; Endressi, 225; ibericum, 225; sanguineum, 225; sanguineum album, 225
 Geum, 225; montanum, 226; reptans, 226
 Ginger, Wild, 206
 Glacier Crowfoot, 249
 Globularia, 226; bellidifolia, 226; cordifolia, 226; nana, 226; nudicaulis, 226; trichosantha, 226; vulgaris, 226
 Grape Hyacinth, 62
 Grass, Whitlow, 218
 Greenhouses, alpine in, 40
 Gromwell, 235
 Growing Alpines from seeds, 41
 Gymnadenia bifolia, 192; conopsea, 192; odoratissima, 192
 Gypsophila, 227; cerastioides, 227; elegans, 227; repens, 227; Sundermanni, 227
- HABERLEA RHODOPENSIS**, 227
 Hardy Orchids, 189
- Harebell, 124; common, 126; Flax-leaved, 124; Radde's, 126; Scheuchzer's, 126; tufted, the, 122
 Heath, Sea, 224
 Heaths, 52
 Helianthemum, 227; vulgare, 228
 Hen-and-Chicken Houseleek, the, 187
 Hepatica, Anemone, 120
 Heron's Bill, 222
 Hosts' Bellflower, 124
 Houseleek, 6, 185, 186; Hen-and-Chicken, 187
 Houstonia, 228; caerulea, 228
 Hutchinsia, 228; alpina, 228
 Hyacinth, Grape, 62
 Hypericum, 228; Coris, 229; crenulatum, 229; empetrifolium, 229; Kotschyannum, 229; nummularium, 229; olympicum, 229; polyphyllum, 229; repens, 229; reptans, 229
- IBERIS**, 230; gibraltarica, 230; correaefolia, 230; sempervirens, 230; garrexiana, 230
 Iceland Poppy, 245
 Iris, the, 62, 147; alata, 150; aritaria, 148; Chamaeiris, 148; cristata, 148; Danfordiae, 149; graminea, 148; Histrio, 149; Histrioides, 149; humilis, 148; lacustris, 148; orchoides, 149; pumila, 148; reticulata, 150; Scorpion, the, 150; stenophylla, 150; Tauri, 150; unguicularis, 149
 Irises, 87; for bog garden, 147; rhizomatous, 148
 Ivy-leaved Toadflax, 234
- JASIONE**, 230; Jankae, 230; perennis, 230
 Jasmine, Rock, 111
- KABSCHIA SAXIFRAGES**, 177
 Kidney Vetch, 200
 King's Spear, 60
 Knot-grass, 246
- LADY'S MANTLE**, 197; Slipper Orchids, 190
 Large-leaved Saxifrage, 176
 Lebanon Candytuft, 196
 Leontopodium, 230; alpinum, 231

- Lewisia, 231; Cotyledon, 231; Howelli, 231; rediviva, 231; Tweedyi, 232
 Lilies, Water, 80
 Lilium, 232; chalcedonicum, 233; columbianum, 233; concolor, 233; parvum, 233; pyrenaicum, 233; tenuifolium, 233
 Lily, the, 232; Kaffir, 252; Parryi, Californian, 232; Wood, 255
 Linaria, 233; alpina, 233; cymbalaria, 234
 Linnaea borealis, 234
 Linum, 234; arboreum, 234; flavum, 234; narbonense, 234; perenne, 234
 Lithospermum, 235; Heavenly Blue, 235; prostratum, 235
 Loiseleuria procumbens, 53
 London Pride, 181
 Lychnis, 235; alpina, 235; fulgens, 236; grandiflora, 236; Haageana, 236; Lagascae, 236; Viscaria, 236; Viscaria var. alba, 236
- MACROTOMIA ECHIOIDES, 206**
 Madeira Orchis, the, 190
 Madwort, 197
 Maiden Pink, the, 135
 Man Orchis, the, 192
 Manure, 33
 Marguerite, 213
 Marsh Orchis, the, 190
 Masonry ponds, 82
 May Flower, 220
 Mazus, 237; pumilio, 237; rugosus, 237
 Meadow Saffron, the, 58
 Mealy Stonecrop, 183
 Meconopsis, 237; aculeata, 238; cambrica, 237; grandis, 238; heterophylla, 237; integrifolia, 238; nepalensis, 238; paniculata, 238; punicea, 238; racemosa, 238; sinuata var. latifolia, 238; Wallichii, 237
 Megasea Saxifrages, 176
 Mertensia, 239; echioides, 239; sibirica, 239; virginica, 239
 Mezereon, 218
 Michaelmas Daisy, 208
 Milfoil, 194
- Moccasin Flower, the, 190
 Moisture-loving Primulas, 162
 Moraine, the, 65; compost for, 69; favourite plants for the, 72; how to make a, 68; in a rock border, 96; position of the, 67; water through the, 70; when to plant, 71
 Morisia hypogaea, 239
 Moss, Dovedale, the, 175
 Moss Pink, 152
 Mossy Phloxes, the, 151; Saxifrages, the, 172
 Mountain Avens, 220; Everlasting, 198
 Muscari, 62
 Myosotis, 240; alpestris, 240; cespitosa Rehsteineri, 240; dis-sitiflora, 240; palustris, 240; rupicola, 240; sylvatica, 241
- NARCISSI, 59**
 Nasturtium, 256; Peruvian, 257
 New Zealand Bur, 193
 Noccaea alpina, 228
 Nymphaeas, the, 80, 83
- OENOTHERA, 241; biennis, 241; caespitosa, 241; eximia, 241; fruticosa, 242; marginata, 241; missouriensis, 242; Nuttallii, 242; speciosa, 242; taraxacifolia, 242; triloba, 242**
 Old Man, 206
 Omphalodes, 242; cappadocica, 243; cornifolia, 243; linifolia, 244; Luciliae, 243; nitida, 243; verna, 243
 Onions, the decorative, 56
 Ononis, 244; arvensis, 244; fruticosa, 244; rotundifolia, 244
 Orchids, Hardy, 189; Lady's Slipper, 190
 Orchis, Bee, the, 191; Butterfly, the, 192; foliosa, 190; latifolia, 190; maculata, 190; Madeira, the, 190; Man, the, 192; Marsh, the, 190; mascula, 190; militaris, 190; pyramidalis, 190; Soldier, the, 190; spectabilis, 190; Spider, the, 192
 Ophrys anthropophora, 192; apitera, 191; aranifera, 192

- Oxalis, 244
 Ox-Eye Daisy, 213
- PAPAVER, 245; alpinum, 245; nudicaule, 245; rupifragum, 245
- Pasque Flowers, the, 116, 117; the Common, 118
- Perennial Candytuft, 230
- Persian Candytuft, 196
- Peruvian Nasturtium, 257
- Phlox amoena, 152; divaricata, 152; dwarf, 36; ovata, 152; procumbens, 152; reptans, 152; Stellaria, 152; subulata, 153
- Phloxes, the Mossy, 151
- Pines, 52
- Pink, Blood-red, 135; Cushion, 254; Fragrant, 136; Fringed, 138; Garden, 137; Glacier, 139; Granite, 136; Maiden, 135; Montpelier, 137; the Moss, 152; Mule, 136; Sand-loving, 135; Sea, 204; Sweet, 137; Toothed, 139; Wood, 140; Zoned, 138
- Pinks, Alpine, 134; 138
- Planting, 26, 31; the best time for, 33; bulbs, 63; the moraine, 71
- Plants for bog border, 101; bog garden, 77; favourite, for the moraine, 72; rock border, 96; wall garden, 103, 105; water garden, 85
- Platycodon, 246
- Plumbago Larpentae, 266
- Polyanthus, the, 166
- Polygonum, 246; alpine, 247; Brunonis, 247; sphaerostachyum, 246; vacciniifolium, 247
- Ponds, masonry, 82
- Pool in the bog garden, 77
- Poppy, 245; Iceland, 245; Satin, 237; Welsh, 237
- Porphyron Saxifrage, 180
- Pots, alpine flowers in, 107
- Pratia angulata, 245
- Prickly Thrift, 193
- Primrose, the Bird's-eye, 166; the Common, 166; Evening, 241
- Primula, Allionii, 158; Auricula, 156, 158; Beesiana, 162; Bulleyana, 163; capitata, 163; carniolica, 159; Clusiana, 159; Cockburniana, 163; cortusoides, 166; denticulata, 164; farinosa, 166; Forrestii, 164; frondosa, 164; glaucescens, 159; hirsuta, 160; integrifolia, 160; involucrata, 165; japonica, 165; Juliae, 166; Littoniana, 165; luteola, 165; marginata, 160; minima, 160; Pali-nuri, 161; pedemontana, 161; pseudo-sikkimensis, 166; pulverulenta, 165; rosea, 166; saxatilis, 166; Sieboldii, 166; sikkimensis, 166; "Unique," 163; viscosa, 161; Winteri, 166
- Primulas, Bog, 162; in the bog border, 101; moisture-loving, 162; rock-garden, 154
- Propagation by cuttings, 48; by division, 47; by root cuttings, 49
- Prophet Flower, the, 205
- Protecting from Wet, 38
- RAMONDA, 247; pyrenaica, 247; serbica, 247
- Ranunculus, 247; aconitifolius, 248; alpestris, 248; amplexicaulis, 248; anemonoides, 250; carpaticus, 250; glacialis, 249; gramineus, 249; montanus, 249; nyssanus, 250; parnassifolius, 249; pyrenaicus, 250
- Red flowers, Saxifrages with, 179
- Removing decaying leaves, 39
- Rest Harrow, 244
- Rhododendrons, 52
- Rock border, the, 90; arrangement of rocks for, 94; plants for the, 96; soil for the, 92; stone for the, 93
- Rock cress, 202
- Rockfoil, the, 167; Burser's, 167; Stag's-horn, 175
- Rock garden, bulbs in the, 55; how to build a, 21; Primulas, 154; shrubs for the, 51; the sunk, 11; water in the, 79; where to make the, 8
- Rock Jasmine, 111; -loving Primulas, 156; Roses, the, 53
- Rocks, the geology of, 17; placing the, 23
- Rocksprays, the, 52
- Root cuttings, propagation by, 49
- Roses, Rock, the, 53; Sun, the, 53, 227

- Rubus*, 250; *arcticus*, 250; *Chamaemorus*, 251; *pedatus*, 251; *Xanthocarpus*, 251
- SANDSTONE**, 15, 16
- Sandwort*, 203
- Saponaria*, 251; *Boissieri*, 251; *caespitosa*, 251; *ocymoides*, 251
- Satin Flower*, the, 255; *Poppy*, 237
- Saxifraga*, *Aizoon*, 168; *Andrewsii*, 169; *apiculata*, 179; *aretioides*, 179; *balcana*, 169; *baldensis*, 169; *Bathonensis*, 174; *biflora*, 181; *Boydii*, 179; *Burseriana*, 28, 167, 178; *Burseriana gloria*, 178; *Burseriana major*, 178; *caesia*, 179; *caespitosa*, 173; *Camposi*, 176; *catalaunica*, 169; *ceratophylla*, 175; *Clibrani*, 174; *cochlearis*, 169; *cordifolia*, 177; *Cotyledon*, 170; *Cotyledon icelandica*, 170; *Cotyledon pyrenaica*; 170; *crassifolia*, 177; *exarata*, 174; *Faldonside*, 179; *flavescens*, 169; *Fortunei*, 167, 181; *gemmifera*, 175; *globulifera*, 174; *granulata*, 173; *Grisebachii*, 179; *Guildford Seedling*, 174; *Guthriana*, 169; *Hostii*, 170; *hypnoides*, 175; *Kingii*, 175; *lantoscana*, 171; *ligulata*, 177; *lingulata*, 170; *longifolia*, 171; *Macnabiana*, 170; *marginata*, 179; *media*, 180; *muscooides*, 175; *muscooides* var. *atropurpurea*, 174; *muscooides moschata* 175; *oppositifolia*, 180; *oppositifolia alba*, 180; *oppositifolia pyrenaica*, 180; *pectinata*, 169; *Porphyron*, 180; *purpurascens*, 177; *retusa*, 180; *robusta*, 169; *Rocheliana*, 179; *Salomoni*, 179; *sancta*, 179; *sanguinea superba*, 174; *sempervivoides*, 169; *Stracheyi*, 177; *Stribnyi*, 180; *trifurcata*, 175; *umbrosa*, 181; *Wallacei*, 176
- Saxifrages*, the *Mossy*, 172
- Scabious*, *Sheep's*, 230
- Schizocodon soldanelloides*, 252
- Schizostylis coccinea*, 252
- Scilla*, 63
- Scorpion Iris*, the, 150
- Sedum*, 182; *acre*, 182; *Alberti*, 182; *album*, 182; *Anacamperos*, 182; *anglicum*, 183; *asiaticum*, 183; *brevifolium*, 182; 183; *dasyphyllum*, 183; *Ewersii*, 183; *kantschaticum*, 183; *midden-dorffianum*, 183; *obtusatum*, 184; *oppositifolium*, 184; *pulchellum*, 184; *rupestre*, 184; *spathulifolium*, 184; *spectabile*, 184; *spurium*, 184
- Seed*, *alpines* readily raised from, 45
- Seedlings*, care of, 44; *watering*, 43
- Seeds*, growing *alpines* from, 41
- Selection* of plants, 27
- Sempervivum*, 185; *Allioni*, 186; *arachnoideum*, 185, 186; *arenarium*, 186; *atropurpureum*, 187; *calcareum*, 187; *cornutum*, 186; *fimbriatum*, 187; *flagelliforme*, 187; *Funckii*, 187; *globiferum*, 187; *hirtum*, 187; *Laggeri*, 186; *Lamottei*, 187; *Moggridgei*, 187; *montanum*, 188; *Pittoni*, 188; *Reginae-Amaliae*, 188; *tectorum*, 185, 188; *triste*, 185, 188
- Senecio*, 252; *argenteus*, 252; *incanus*, 252; *uniflorus*, 252
- Serapias*, 192; *lingua*, 192
- Shading*, 32, 36
- Sheep's Scabious*, 230
- Shortia*, 253; *galacifolia*, 253; *uniflora*, 253
- Shrubs* for the rock garden, 51
- Sikkim Cowslip*, 166
- Silene*, 254; *acaulis*, 254; *acaulis alba*, 254; *alpestris*, 254; *Schafta*, 254
- Silver Saxifrages*, small tufted, 177
- Sisyrinchium*, 255; *grandiflorum*, 255
- Slipperwort*, 210
- Slugs*, 37
- Snake Root*, 206
- Snapdragons*, the, 200
- Sneezewort*, 194
- Snowdrop*, 62
- Snow in Summer*, 212
- Soapwort*, 251
- Soil* for *Alpine flowers* in pots, 108; *bog border*, 101; *the rock border*, 92
- Soldanella*, 255; *alpina*, 255; *minima*, 255; *montana*, 255
- Soldanellas*, the, 39
- Soldier Orchis*, the, 190

- Southernwood, 206
 Speedwell, 257
 Spider Orchis, the, 192
 Spring Gentian, 6; Star Flower, the, 57
 Spruces, 52
 Spurge, 223; Cypress, 224
 Squill, 63
 Stag's-horn Rockfoil, 175
 Starwort, 208
 Stone for the rock border, 93; substitute for, 97
 Stone, the choice of, 15
 Stonecrop, 182; Mealy, the, 183
 Substitute for stone, 97
 Summer treatment, 35
 Sunk rock garden, the, 11
 Sun Rose, 227
 Sun Roses, the, 53

 TAXUS BACCATA ERICOIDES, 52
 Thrift, 204; Prickly, 193
 Toadflax, 233; Ivy-leaved, 234
 Top-dressing, 33, 35
 Trillium, 255; erectum, 256; grandiflorum, 255; roseum, 256; sessile, 256
 Trinity Flower, 255
 Tritelia, 57
 Tropacolum, 256; polyphyllum, 257; tuberosum, 257
 Tubs for water lilies, 86
 Tufa, 17
 Tufted Harebell, the, 122

 VACCINUM MYRTILLUS, 53
 Veronica, 257; Allioni, 257; caespitosa, 257; circaeoides, 257; pectinata, 257; repens, 257; rupestris, 257; Teucrium dubia, 257
 Vetch, Kidney, 200

 Viola biflora, 258; calcarata, 258; canadensis, 258; cenisia, 258; cornuta, 258; cucullata, 259; gracilis, 258; hirta, 258; lutea, 258; odorata, 258; Papilio, 258; pedata, 258; pedata alba, 258; pinnata, 258; Purple Robe, 258; Spurred, 258; twin-flowered, 258;
 Violas, 257
 Violet, Dog's Tooth, 61

 WAHLENBERGIA, 259; Kitaibelli, 259; pumilio, 259; saxicola, 259; serpyllifolia, 259
 Wall Cress, 208
 Wallflower, 212; Fairy, 223
 Wall garden, building a, 104; the ideal, 104; plants for the, 103, 105
 Wall Pepper, 182
 Water garden, the ideal, 80; plants for the, 85; in the rock garden, 79; Lilies, 80; Lilies, tubs for, 86; plants, care of, 88; when to plant, 88; through the moraine, 70
 Watering, 36; alpines, 31, 33; seedlings, 43
 Weeds in the bog garden, 77
 Welsh Poppy, 237
 White flowers, Saxifrages with, 178
 Whitlow Grass, 218
 Wild Ginger, 206
 Windflower, the, 57
 Windflowers, the, 116
 Winter Aconite, 60; treatment, 38
 Witches' Thimbles, 125
 Wood Lily, 255
 Woodruff, 207

 YARROWS, the, 194
 Yellow flowers, Saxifrages with, 179
 Yucca, 54



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