UNIVERSAL
LIBRARY

OU_166710

UNIVERSAL
LIBRARY

OSMANIA UNIVERSITY LIBRARY

Call No 635 9672/P92N Accession No 11972

Author Preece, Wm A

Title North American Rock Plants

This book should be returned on or before the date last marked below

# NORTH AMERICAN ROCK PLANTS

*(First Series)*




THE MACMILLAN COMPANY
NEW YORK · BOSTON CHICAGO · DALLAS
ATLANTA · SAN FRANCISCO

MACMILLAN & CO, LIMITED
LONDON · BOMBAY CALCUTTA
MELBOURNE

THE MACMILLAN COMPANY
OF CANADA, LIMITED
TORONTO

# NORTH AMERICAN
# ROCK PLANTS

(*First Series*)

BY W. H. A. PREECE

*"God grows weary of great nations,*
*but never of little flowers."*
SIR RABINDRANATH TAGORE.

ILLUSTRATED WITH PHOTOGRAPHS
BY A. NICHOLLS

New York 1937
THE MACMILLAN COMPANY

*Copyright, 1937,*
BY THE MACMILLAN COMPANY.

All rights reserved—no part of this book may be reproduced in any form without permission in writing from the publisher, except by a reviewer who wishes to quote brief passages in connection with a review written for inclusion in magazine or newspaper

*Set up and printed. Published September, 1937*
*First printing*

PRINTED IN THE UNITED STATES OF AMERICA
NORWOOD PRESS LINOTYPE, INC
NORWOOD, MASS., U.S.A.

TO

EVE

# FOREWORD

A glance through the illustrations in this book, or an inspection of American alpines and rock plants in their native haunts, is sufficient to convince any gardener that North America abounds in first class rock-garden plants of surpassing beauty, admirably adapted for rock-garden planting—if they could be grown easily. True, many of them are not too difficult, but it has long been a matter of comment among rock gardeners that North American alpines and rock plants are less in evidence under cultivation because they are "miffy" compared with those originating elsewhere. Mr. Preece in his preface quotes a letter from a British horticulturist complaining that they "are too difficult for the ordinary gardener," and, speaking for the northeastern part of the United States, I believe I am safe in saying that most rock gardeners find that plants from the Alps and Himalayas thrive with less fuss and bother than most North American alpines, especially if those from the western mountains are included. These last, in general, are notably perverse and inclined to either sulk or die under eastern conditions. Why this is so is a moot point. Probably, as the author suggests, it is due in part to a lack of knowledge of their requirements, and to the use of plants collected from the wild instead of using material which has been propagated and partly acclimated in a nursery.

If lack of knowledge is the cause of our failures it is high time for it to be remedied; and it seems to me that this book fills the bill and will go far towards solving the problems attached to the cultivation of the intractable kinds included in the "First Series" of one hundred American Rock Garden Plants. I have had the privilege of seeing Mr. Preece's collection and know he can grow difficult alpines. The book is a record of first hand experiences in growing these plants and this alone makes it extraordinarily valuable. The cultural suggestions should be valid with but few modifications for conditions in

the British Isles, but, as Mr. Preece would be the first to admit, for the larger part of the United States changes in practice must be made to suit local conditions. But even so, the illuminating directions given by the author should enable those who have had some experience in growing alpines (to whom the book will make its greatest appeal) to modify their procedures to fit their own soils and climate. Frankly, I am not quite so optimistic as Mr. Preece concerning the possibility of growing the really difficult alpines from the Rockies and western mountains—at least not under our conditions in the East south of Boston in areas not much above sea level—but this book will be a real help in cultivating those that *can* be grown, and I am sure that, if Mr. Preece's directions are followed, many plants formerly considered impossible will now find happy homes in eastern rock gardens.

I think that the author's selection of plants for this first series is on the whole admirable. Personally I would have preferred to have him restrict himself to the lesser-known and more difficult species; but he has preserved a nice balance between the "miffs" and the "easy doers" which is doubtless much better than catering to any one person's predilections.

We seem to have passed through that faddish phase of rock gardening when almost everyone thought it necessary to have one—alas! in most cases without having the least idea of what it was all about. Serious and genuine interest in rock gardening is growing, and therefore this is the kind of book that American rock gardeners need—one written from first hand practical experience and dealing with thoroughly worthwhile and appropriate native rock garden plants which include some of the most fascinating material for the garden. That it is attractively written with a charming combination of fact and airy persiflage is an additional recommendation. It is the first of a series which Mr. Preece expects to produce—I hope he won't keep us waiting too long for the next volume!

MONTAGUE FREE

Horticulturist, Brooklyn Botanic Garden
Honorary Life Member Alpine Garden Society

# PREFACE

Some months ago I received a letter from an eminent British horticulturist and in it he stated:—"We are finding more and more that most American and Canadian alpines and woodlanders are too difficult for the ordinary gardener." This statement requires careful consideration and cannot be allowed to pass unchallenged. Assuming it to be a fact that a large number of gardeners have failed to grow North American plants successfully, the question naturally arises whether the fault lies with the plants or their would-be growers. I have been growing plants for a good many years and, in my experience, North American plants as a whole have certainly not proved more difficult than those from Europe or Asia. Why then have English gardeners failed since many of them, no doubt, are far more skilful growers than I. For one thing, there seems to be little doubt that there is little understanding of the requirements of our native plants amongst growers in England, many have an *idée fixe* that all American plants are strongly calcifuge and insist on super-acid conditions. One of the Old Country's most expert growers of and leading authorities on alpine plants who came out here recently on a plant-collecting expedition, told me that his trip had been an eye-opener to him and that, having seen our plants growing in their natural habitats, he realized how very far most English gardeners were from understanding the needs of American plants. I am strongly of the opinion that much of the non-success on the part of would-be growers of our native plants on both sides of the Atlantic is due to the sale of collected plants which may or may not have been properly re-established prior to being shipped. As a general rule the only value of collected plants lies in their ability to produce growths suitable for propagation and I would strongly advise prospective purchasers to insist on nursery-propagated plants.

Not only are the depredations of wholesale commercial collectors a serious menace to the existence of many of our rarer species but a collected plant is rarely a success in the garden even if it does manage to survive.

This book has been written for the use of gardeners and my object has been not only to foster interest in the native plants of North America but to give practical assistance to those who wish to grow and propagate them. A sincere effort has been made to include under each plant dealt with the information which I myself always hope to find when I turn to my library for information about a species with which I am unfamiliar. In the following pages each plant is represented by a portrait and a page of text: the text includes sufficient descriptive matter to round out the portrait, full information regarding cultivation and propagation, details as to range, habitat, habit, and flowering season.

The selection of plants was governed by three factors: there had to be a good portrait available; the plant had to be of proven garden value; the plant had to be well-known to me personally so that I could speak of its culture and propagation at first hand. The descriptions are based on my own notes but I must admit that I have, in some cases, drawn freely on the works of other authors for information with regard to nomenclature, range and habitat. It will be found that I do not invariably see eye to eye with other authors either in my opinion of a species or in my advice as to growing and propagating but I can only speak on these matters as I have found them and cannot see that any good purpose would be served by hewing down my observations to fit other peoples' ideas.

The question of nomenclature is a difficult one and I do not suppose that the names I have used will all be passed entirely unchallenged. My purpose has been to employ the names generally accepted by horticulturists and to allude, in the text, to other names which may be found in literature and trade-lists though no exhaustive synonymy has been attempted.

Since rock-gardeners are to be found in almost every temperate country, it did not appear that any useful purpose would be served by giving definite dates for the flowering-periods of the various plants, so the season of the year has been indicated instead.

The exposures and situations in sun or shade recommended, are those that have been found suitable on Southern Vancouver Island and will doubtless require slight modification in other climates and latitudes: for instance, more sun may be appreciated in many parts of the British Isles, less sun in Southern California.

The soil mixtures and conditions should hold good everywhere for a plant requiring an acid diet will not become a lime-lover nor a desert plant a yearner after bog no matter to what changes of climatic conditions it may be subjected.

One hundred species of plants are included in this series but it is not implied that they are the hundred "best" North American species for the rock garden; I would hesitate a very long time before attempting to make such a selection but no plant is included which is not considered well worth a place in the garden. To a not inconsiderable extent the choice of species was governed by the availability of suitable portraits and many plants originally intended for inclusion have had to be held over for a later series owing to my inability to obtain good enough pictures.

The plates are from photographs of plants growing in my garden or alpine house and it will be noticed that a large number of them are in pans; this is not to be taken as an indication that alpine house treatment is in any way necessary: it is usually easier to obtain a satisfactory photograph of a plant in a pan than of one growing in the garden since a pan can be moved around and placed in any desired position and in front of any background likely to show the plant to best advantage. In several cases plants were lifted from the garden and placed in pans while their pictures were being taken.

The plants of which I have written in these pages, are my friends and I would like them to be your friends, too: to me each species has its own personality and this personality I have endeavoured to convey to you. Whether or no I have succeeded is for you to judge. If what I have written brings new friendships to you and my plants alike, I shall be very happy.

I wish to take this opportunity of expressing my sincere thanks to Mr. A. Nicholls who, apart from supplying the illustrations for this book, has been of great assistance to me in the preparation of

the text. I wish, also to express my heartiest thanks to Mrs. A. C. U. Berry, Mr. A. B. Morkill and all the many others who have been so ready to help me with encouragement, criticism, information and advice.

W. H. A. PREECE

Victoria, B.C.
31st. December, 1936.

P.S. I am aware that the title of this book is open to criticism since many of the plants discussed are by no means saxatile by nature, and, in the following pages, you will find denizens of woodland and bog, desert and meadow intermingled with alpines from the mountain heights and crevice-dwellers from lowland gorge and sea-girt cliff: no species, however, has been included which I do not consider suitable for and do not myself grow in the rock garden.

At the time of writing, I had in mind some such title as "Studies in North American Rock Garden Plants" which, needless to say, though accurate proved far too cumbersome; unfortunately it has not been possible to abbreviate this, to a sufficient extent, without sacrificing the precise shade of meaning it was desired to convey. It seemed that the title had to be either "North American Rock Plants" or "American Rock Garden Plants": the latter would have warranted the inclusion of species from Patagonia, the Andes, Guatemala and so forth; consequently the former appeared preferable though, I freely admit, not strictly accurate.

W. H. A. P.

# CONTENTS


| | PAGE |
|---|---|
| *ACONITUM DELPHINIFOLIUM COMPACTUM* | 2 |
| *ANDROMEDA POLIFOLIA* | 4 |
| *ANEMONE DRUMMONDII* | 6 |
| *ANEMONELLA THALICTROIDES* | 8 |
| *AQUILEGIA JONESII* | 10 |
| *ARCTOSTAPHYLOS UVA-URSI* | 12 |
| *ASCLEPIAS TUBEROSA* | 14 |
| *ASTER FOLIACEUS* | 16 |
| *BOYKINIA JAMESII* | 18 |
| *BRODIAEA GRANDIFLORA* | 20 |
| *CALLIRHOE INVOLUCRATA* | 22 |
| *CALYPSO BULBOSA* | 24 |
| *CHEILANTHES GRACILLIMA* | 26 |
| *CHIMAPHILA UMBELLATA* | 28 |
| *CHRYSOGONUM VIRGINIANUM* | 30 |
| *CORNUS CANADENSIS* | 32 |
| *CYPRIPEDIUM ACAULE* | 34 |
| *CYPRIPEDIUM MONTANUM* | 36 |
| *CYPRIPEDIUM PASSERINUM* | 38 |
| *CYPRIPEDIUM PUBESCENS* | 40 |
| *CYPRIPEDIUM REGINAE* | 42 |
| *DELPHINIUM MENZIESII* | 44 |
| *DICENTRA EXIMIA* | 46 |
| *DISPORUM SMITHII* | 48 |
| *DODECATHEON LATIFOLIUM* | 50 |
| *DODECATHEON PAUCIFLORUM* | 52 |
| *DODECATHEON SPECIES, MT. ARROWSMITH* | 54 |
| *DOUGLASIA LAEVIGATA "VERA"* | 56 |
| *DOUGLASIA NIVALIS "LAEVIGATA"* | 58 |
| *DRYAS OCTOPETALA* | 60 |
| *DRYOPTERIS OREGANA* | 62 |

PAGE

*EPIPACTIS GIGANTEA* 64
*ERIGERON AUREUS* 66
*ERIGERON SALSUGINOSUS GLACIALIS* 68
*ERIOGONUM OVALIFOLIUM* 70
*ERIOGONUM UMBELLATUM* 72
*ERYTHRONIUM HENDERSONII* 74
*ERYTHRONIUM OREGANUM* 76
*ERYTHRONIUM REVOLUTUM SMITHII* 78
*GALAX APHYLLA* 80
*HABENARIA MICHAELII* 82
*HEMIEVA RANUNCULIFOLIA* 84
*HEMIEVA VIOLACEA* 86
*IRIS CRISTATA* 88
*IRIS CHRYSOPHYLLA* 90
*IRIS DOUGLASIANA* 92
*IRIS GORMANII* 94
*IRIS INNOMINATA* 96
*IRIS SETOSA* 98
*IRIS TENAX* 100
*IRIS TENUIS* 102
*JEFFERSONIA DIPHYLLA* 104
*KALMIA POLIFOLIA MONTANA* 106
*LEIOPHYLLUM BUXIFOLIUM PROSTRATUM* 108
*LEWISIA BRACHYCALYX* 110
*LEWISIA COTYLEDON* 112
*LEWISIA HECKNERI* 114
*LEWISIA NEVADENSIS* 116
*LEWISIA REDIVIVA* 118
*LEWISIA TWEEDYI* 120
*LILIUM MONTANUM* 122
*LITHOPHRAGMA PARVIFLORA* 124
*LUINA HYPOLEUCA* 126
*MONARDA MOLLIS* 128
*PENTSTEMON BARRETTAE* 130
*PENTSTEMON CARDWELLII* 132

PAGE

*PENTSTEMON FRUTICOSUS ALPINUS* 134
*PENTSTEMON GAIRDNERI HIANS* 136
*PENTSTEMON MENZIESII* 138
*PENTSTEMON NEWBERRYI* 140
*PENTSTEMON NEWBERRYI RUPICOLA ROSEUS* 142
*PENTSTEMON SCOULERI* 144
*PETROPHYTUM HENDERSONII* 146
*PHACELIA SERICEA* 148
*PHLOX CAESPITOSA* 150
*PHLOX DIFFUSA* 152
*PHLOX DOUGLASII* 154
*PHLOX SPECIOSA* 156
*POLEMONIUM ARCHIBALDAE* 158
*POLEMONIUM MELLITUM* 160
*POLYGALA PAUCIFOLIA* 162
*PRIMULA ANGUSTIFOLIA* 164
*PRIMULA SUFFRUTESCENS* 166
*ROMANZOFFIA SITCHENSIS* 168
*SANGUINARIA CANADENSIS FLORE PLENO* 170
*SAXIFRAGA NEWCOMBEI* 172
*SHORTIA GALACIFOLIA* 174
*SIEVERSIA CILIATA* 176
*SILENE HOOKERI* 178
*SISYRINCHIUM DOUGLASII* 180
*SPHAERALCEA COCCINEA* 182
*SPHAERALCEA MUNROANA* 184
*TALINUM OKANOGANENSE* 186
*TALINUM SPINESCENS* 188
*TRIENTALIS ARCTICA* 190
*TRILLIUM RIVALE* 192
*VACCINIUM CAESPITOSUM* 194
*VIOLA FLETTII* 196
*VIOLA PEDATA* 198
*XEROPHYLLUM TENAX* 200
*INDEX* 203

# NORTH AMERICAN ROCK PLANTS

(*First Series*)

# Aconitum delphinifolium compactum

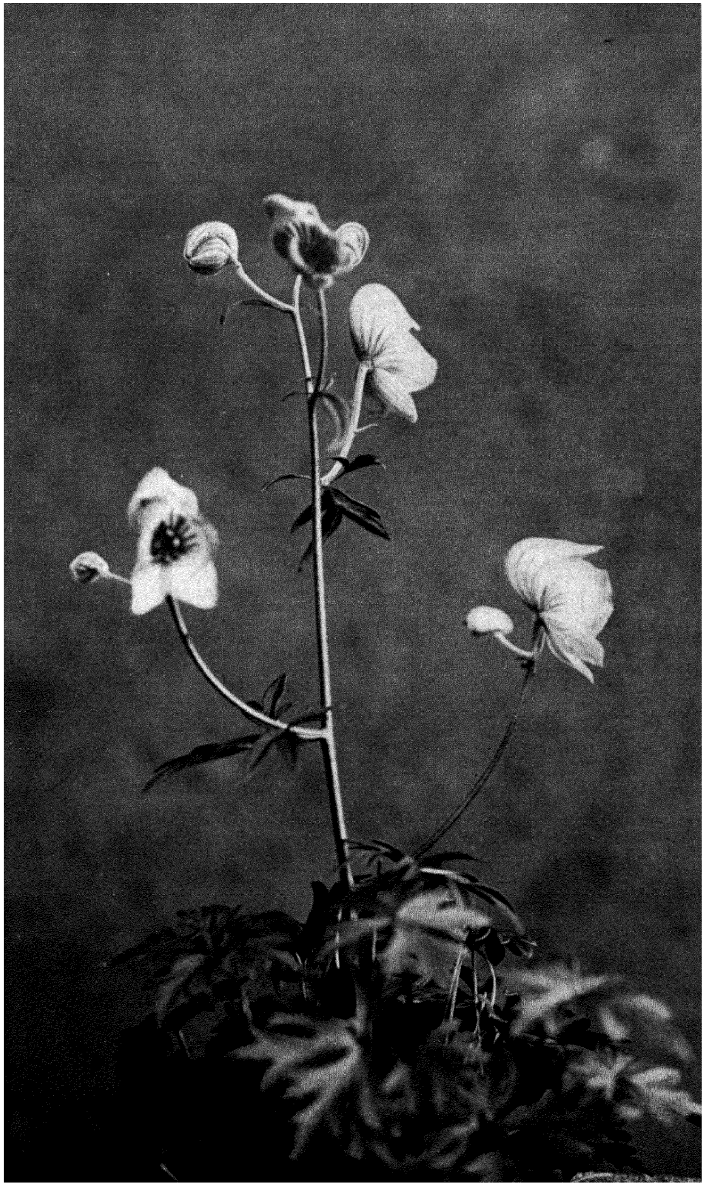
## (*Ranunculaceae*)

*A. delphinifolium,* which occurs in varying abundance throughout Northern British Columbia, the Yukon Territory and Alaska, is too tall of stature and too sparse of habit to merit a place in the rock garden but the form, here designated *"compactum,"* has no such defects: here we have a tight little clump of deciduous foliage only a couple of inches high. From this jolly little clump, in early summer, rise 6 inch, branching flower-stems adequately furnished with typical Monkshood blossoms of deep, rich midnight-blue. This is a veritable gem of a plant and, in all probability, the most notable find of the 1934 Lohbrunner-Nicholls plant-hunting expedition to the Cassiar district of British Columbia, inland from Alice Arm. It was found growing in the short alpine turf on steep slopes at considerable altitudes just below the summit of Mount McGrath.

So far this alpine development of *A. delphinifolium* shows no sign of forsaking its compact habit in cultivation and I can see no reason to apologize for adding *"compactum"* to the name to distinguish it from the typical form for garden purposes. It is, perhaps, worthy of note that these two forms also have certain differences in their respective root-systems and it is possible that the form from Mt. McGrath will eventually be accorded specific rank.

*A. d. compactum* has proved quite amenable to cultivation and, if it is planted in sunny scree, no difficulty need be anticipated; nevertheless, should you be lucky enough to acquire a plant, the alpine house will be the safest place to keep it for the time being, at least until its foothold in cultivation is more assured. It is likely to be a number of years before this treasure becomes available for general distribution.

Propagation by division in late summer has proved perfectly easy but seed remains to be tried and there is always a possibility of the seedlings of forms reverting to type: should this prove to be a separate species, there will, of course, be no such danger.



ACONITUM DELPHINIFOLIUM COMPACTUM

# Andromeda polifolia

## (*Ericaceae*)

The Bog Rosemary is not exclusively North American being also found both in Northern Europe and Northern Asia: on this continent it grows in the sphagnum bogs of Canada from the Atlantic to the Pacific and in the Eastern United States ranges south to New Jersey and Michigan.

*A. polifolia* forms an open-habited, evergreen shrub and rarely attains to a height much exceeding a foot; no subject can be more delightful than this for the miniature bog garden. The narrow, inch-long leaves are dark green above and silvery beneath, becoming purplish-bronze in winter. The ½ inch, dangling, urn-shaped blossoms, varying in colour from blush-white to shell-pink, are borne in profusion in late spring and grow in umbels of from 4 to 12.

Genuine bog conditions are by no means essential to the well-being of this species in cultivation; it will be quite happy in any cool, moist, peaty situation: when grown in bog or planted beside water it has no objection to being fully exposed to the sun.

*A. polifolia* spreads by underground runners and, in course of time, will attain to a yard and more in diameter: it cannot, however, be considered a ramper and any tendency to encroach may be checked by the removal of runners or by a few rocks strategically placed.

Cuttings, taken in summer, make no bones about producing roots or, should only a few young plants be required, an established plant will usually provide sufficient rooted runners which, after removal from the parent, quickly take hold and soon form nice little plants.

*A. polifolia* is a charming feature when grown as a specimen but is equally delightful and, perhaps, even happier growing in a mixed Liliputian thicket with dwarf Kalmia, Cassiope, Loiseleuria, Phyllodoce, Empetrum and other subjects of like stature and habit.



ANDROMEDA POLIFOLIA

# Anemone Drummondii

## (*Ranunculaceae*)

Close to the perpetual snow, on the highest peaks of British Columbia and of the Cascade Mountains southward to Northern California, you may find this little Anemone dauntlessly pushing up its blossoms through the melting snow. Its dainty, creamy-white chalice-blossoms, stained blue without and half-filled with green and golden stamens, are carried aloft on sturdy fur-coated stems, three or four inches in stature. A couple of inches below the flower the stem is set with a circle of deeply though not very finely cut leaves. The plant, out of bloom, makes quite an attractive little tuffet of green foliage similar to that of *A. Pulsatilla* but considerably smaller and less finely divided: in late summer the foliage dies down and the plant disappears. The normal flowering period is in early spring but a second crop of blossoms is not infrequently produced shortly after midsummer. This species belongs to that group of the genus which has little, compact, conical seed-heads; when the seeds are ripe the cone bursts and fluffs out and, until a strong wind comes along and blows the seeds away, the plant has the appearance of having had its flowers replaced by little dabs of cotton-wool.

Seed, sown as soon as ripe, gives a very good percentage of germination and is, almost certainly, the best means of increasing stock. It is possible to divide established clumps with comparative safety but the plants resent disturbance and, since most of the seedling plants will give bloom in their second year, it seems poor policy to risk upsetting happy plants.

*A. Drummondii* is not a bit fussy in cultivation; it is a joy in the alpine house and grows quite happily out of doors in a sunny situation either in scree or in a "screeish" mixture in the rock garden.



ANEMONE DRUMMONDII

# Anemonella thalictroides

## (*Ranunculaceae*)

When first I made the acquaintance of this dainty species, it was called *Thalictrum anemonoides,* if my memory is correct but in recent years it has become generally known as *Anemonella thalictroides.* I understand that its latest name is *Syndesmon thalictroides.* Its popular name is Rue Anemone, so, if you want to be safe, call it that.

This delightful little woodlander is found from Ontario in the North to Florida in the South and westward to Minnesota and Kansas.

*A. thalictroides,* if you continue so to call it, is very happily named since it combines anemone-like flowers with thalictrum-like foliage. Flowers and foliage alike appear in earliest spring and develop together. The dainty, white, inch-wide blossoms, carried in loose umbels above the equally dainty, pale green foliage are inexpressibly charming and the embodiment of airy grace. The plants vary in height from 6 to 10 inches.

Any shady, not too dry, woodland corner, where the soil is rich in humus, makes an acceptable home for this species and it may well be grown amongst the larger deciduous ferns for its flowering season will have passed by the time the croziers have unrolled and the new fronds hidden the ground from sight.

Below ground *A. thalictroides* consists of a cluster of funny little tubers which may be lifted and divided at any time after the foliage has died down in summer and before the new growth starts in early spring. Stock may also be raised from seed without difficulty, indeed, if the seed is not gathered and the plants are happily situated, numerous self-sown volunteers will spring up to swell the ranks of your colony.

As the tubers keep very close to the surface, they are apt to be bared by the drip from trees and heaved out by frost, consequently it is advisable to treat them to a good top-dressing of leaf-mould in the fall.



ANEMONELLA THALICTROIDES

# Aquilegia Jonesii

## (*Ranunculaceae*)

Allow me to introduce you to a very famous and distinguished little rarity: *Aquilegia Jonesii.* This engaging tot is known from a very few localities high up in the Rockies and fortunately its best known station is within the confines of a National Park where it is strictly protected. Recent discoveries tend to show that the species is not quite so rare as is generally supposed. So tiny is the plant and so well does it blend with its surroundings that even an experienced collector, unless making a special search, might easily walk over a colony of *A. Jonesii* and never see a plant of it, assuming, of course, that it was not the flowering season.

On its native heights the flower is produced before the foliage is fully developed but in cultivation *A. Jonesii* may burst into bloom at any time; they have flowered here in every month from March to October and on one occasion a plant made an abortive attempt to bloom in November but was literally nipped in the bud. The up-turned, short-spurred blossoms, comparable in size to those of *A. pyrenaica,* are clear lavender-blue, beautifully displayed above the silvery, lace-like foliage: even in bloom the plants rarely exceed a height of 2½ inches. In nature each rosette produces one blossom a year only but in cultivation with a longer growing-season a second is occasionally produced after an interval of several months.

*A. Jonesii* is very content in the alpine house and equally happy outside if grown in scree in a cool exposure or protected by a large rock on the sunny side.

Large plants are amenable to careful division and seedlings are not hard to raise though seed is capricious about germinating, some seedlings appearing in a few weeks, others hanging fire for a couple of years.

Beware of slugs! or you will obtain no seed: they never interfere with the foliage but they dote on the flowers and seem able to scent them from a mile away.



AQUILEGIA JONESII

# Arctostaphylos Uva-ursi

## (*Ericaceae*)

The Bearberry or Kinnikinnick is a very well-known plant though but few seem to have realized its garden possibilities. As a ground-cover it has few rivals though it needs to be used with a certain amount of discretion lest it hide more than is desired. It will show irrepressible enthusiasm in carpeting areas of dry, poor soil, hot banks, bare rocks, old stumps and any other undesirable objects: a plant, in my garden, growing in pure gravel is seven yards across and still growing.

*A. Uva-ursi* is a prostrate, evergreen shrub which makes a dense mat of reddish branches, thickly clothed with deep green, leathery, oval leaves which sometimes, but not invariably, assume brilliant autumnal tints. The little, blush-white to pink, heather-like blossoms in tight racemes are borne profusely in early summer and are followed by large, scarlet berries, beloved by bears and birds but without appeal to the human palate; unfortunately these berries are rather apt to be obscured by the foliage.

Although an ericaceous plant, the Bearberry shows no apparent yearning for an acid diet, indeed the prime essential for success with this species seems to be to give it the poorest, driest, most meagre fare you can devise; never a blossom will you behold if you give it soil which contains anything which might be suspected of providing nourishment.

Summer cuttings strike so readily that I have never tried to raise plants from seed though, I imagine, it would be perfectly easy to do so if, perhaps, rather a slow process. Usually there are quite a number of self-rooted layers to be found around established plants and these can, of course, be removed.

*A. Uva-ursi* is circumpolar in distribution and found in nearly all the cooler regions of the Northern Hemisphere.



ARCTOSTAPHYLOS UVA-URSI

# Asclepias tuberosa

## (*Asclepiadaceae*)

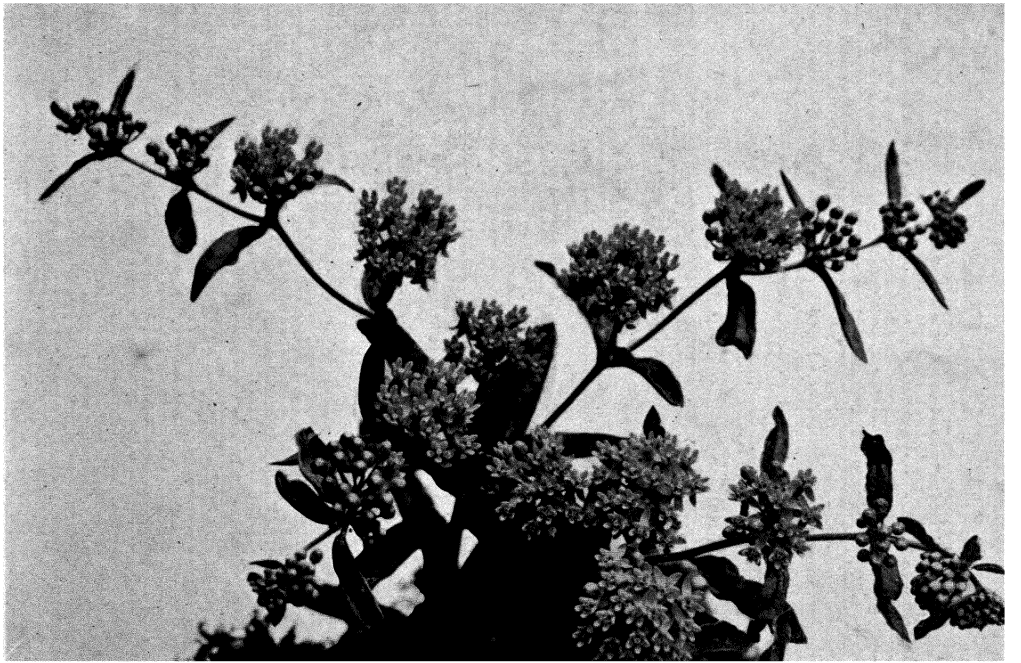
There are few herbaceous plants finer or more valuable than this for the large rock garden but, even if your rock garden is small, there is still no need to deprive your garden of so glorious a plant; it will be perfectly happy and not at all out of place in a sunny border. It is not only an outstanding ornament in the garden, but also simply magnificent and long-lived as a cut flower. Another excellent trait is the attraction it holds for bees and butterflies so that a plant in bloom is always a centre of great activity and interest. Yet another point in its favour is its blooming from mid-summer onwards so that a few plants studded here and there through the rock garden do much to brighten the picture during what is apt to be a dull period.

*A. tuberosa* has a long fleshy root somewhat similar to that of the Horse Radish; it is, therefore, best to obtain young plants or raise your own from seed: the roots go so deep that it is impossible to move an old plant without breaking most of them. Though by no means fussy about either soil or aspect, this species is happiest, fully exposed to the sun in rather dry, sandy soil.

The Butterfly Weed, as this plant is popularly called, sends up stout hairy stems, about 18 inches tall, adequately clothed throughout their length with deep green, hairy leaves and crowned in late summer with immense, flat, branching umbels composed of innumerable little, flaming-orange flowers. The flowers are followed by quaint beak-like seed-pods which later burst and scatter the seeds, each equipped with a silken parachute.

Seed is the simplest way of increasing stock, seedlings often blooming in their second year; root cuttings may be struck without difficulty.

*A. tuberosa* is widely distributed in Eastern North America from Ontario and Maine southward to North Mexico and westward to Minnesota.



ASCLEPIAS TUBEROSA

# Aster foliaceus

## (*Compositae*)

This truly magnificent daisy is widely distributed throughout the North-West, occurring at the higher altitudes from Alaska southward through British Columbia to Nevada and Northern California.

*A. foliaceus* is in bloom during the latter part of summer and early autumn. The florescence rises to a height of from 12 to 15 inches above the clump of foliage which consists of rather large, deep green leaves. The rich violet daisies, borne in comparative abundance in pyramidal heads on branching stems, are 2 to 3 inches in diameter: there is some colour variation, almost any shade of mauve may be found but none of them can compare with this violet form which, fortunately perhaps, seems to be the only form which has been at all generally distributed in cultivation.

This species does best in a moist soil, rich in humus, and will prove happy in almost bog conditions, in fact in its natural state it is almost invariably found growing where its feet are wet: it must be given ample moisture during the periods of growth and blossom. Plants will thrive best if pulled to pieces and replanted every spring since, if allowed to form mats, they soon exhaust the soil and you get all foliage and no flowers. In very moist spots plants may be grown in full sun but otherwise should be shaded during the heat of the day: the plant illustrated receives sun in the late afternoon only.

This species may be classed as herbaceous since the bulk of the foliage dies down in autumn, though close examination reveals the green of the next year's foliage at the extremities of the growths.

Division in spring is the most satisfactory method of propagation since, if seedlings are raised, you cannot surely depend on their colour being an exact repetition of that displayed by the parent plant.



ASTER FOLIACEUS

# Boykinia Jamesii

## (*Saxifragaceae*)

High on Pike's Peak in Colorado is the best-known home of this startling species which is, comparatively speaking, a new-comer to cultivation and so it is more than likely that we still have much to learn with regard to its treatment in our gardens. Here it grows luxuriantly enough but so far has failed to flower as freely as I could wish; this reluctance to bloom may be due to the plant requiring several years in which to become acclimatized and thoroughly established. Now that my plants have at last started to bloom, I am hoping that as they increase in age so will they increase in flower production. To see *B. Jamesii* blooming in your garden is ample recompense, no matter how much trouble you have taken nor how many years you have had to wait.

*B. Jamesii* is a deciduous plant, nearly related to the Alum-roots (Heuchera); a relationship more clearly shown by other members of the genus such as *B. occidentalis*. The blossoms of this species, which appear in late spring, are far from such as might be expected from such a kinship: the portrait is approximately life-sized. The quaintly formed flowers have petals of richest carmine-pink, almost the shade which *Primula rosea* has seemed to monopolize in the garden hitherto, and a greenish centre.

A moist, well-drained soil, rich in humus and a position in partial shade appear to be the conditions *B. Jamesii* prefers in cultivation it may well be treated as a somewhat temperamental mossy saxifrage

Division in late summer or early spring is the simplest way of increasing stock. My experience with imported seed has not been satisfactory; probably it is necessary to sow the seed as soon as it is ripe to obtain satisfactory germination.

*B. Jamesii* was, at one time, believed to be confined to Pike's Peak but recent discoveries have extended its known range northward along the Rocky Mountains well into Montana.



BOYKINIA TAMESII

# Brodiaea grandiflora

## (*Liliaceae*)

This is possibly the finest of all the species of *Brodiaea* with which Western North America has been so richly endowed and is certainly one of the easiest to grow. Many of our Western bulbs are inclined to be fussy about soil, drainage, ripening periods and such-like trifles but *B. grandiflora* is contemptuous of any such fastidiousness. Plant the bulbs in any sunny spot and not only will they bloom freely every year and increase by bulblets where you planted them but will seed themselves all around and grow serenely in the most unpropitious-looking places.

The long, fine, grass-like foliage commences growth in earliest spring and dies away by the time the flowers are ready to open in mid-summer; it is, therefore, best to provide a ground-cover to camouflage the nakedness of the flower stems and furnish a background for the blossoms; the dwarf Western phloxes are admirable for this purpose.

*B. grandiflora* is in bloom for a long period in summer and makes an excellent subject for cutting, remaining fresh for several weeks. The exquisite, lily-like, blue blossoms, over an inch across, are carried in ample heads on 8 inch wiry stems; each head from mature bulbs containing from 8 to 12 flowers: the exterior of each perianth segment is marked with a wide stripe of purplish-brown: the combination of unopened buds, striped purplish-brown and lavender-grey, and widespread flowers of agapanthus-blue is singularly beautiful and the pedicels being of varying length adds grace to what might otherwise be a crowded bunch of blossom.

This species is popularly known as the Harvest Brodiaea and is found from British Columbia southward to California. It is abundant on dry hillsides on the southern end of Vancouver Island though according to some authorities it likes a moist clayey soil in its California stations.



BRODIAEA GRANDIFLORA

# Callirhoe involucrata

## (*Malvaceae*)

Few species can equal, let alone surpass, this Poppy Mallow in providing a long and brilliant floral display in the rock garden. It produces an endless succession of blossoms throughout the summer, blossoms of true, glorious, much-maligned magenta; these are saucer-shaped and nearly 2 inches across; though usually entirely magenta, forms are sometimes found having the lower half of the petals white. In catalogues the colour of this species is almost invariably described as red-purple, rosy purple, crimson-purple or deep crimson and rarely, if ever, as magenta: how popular prejudice makes liars of otherwise reputable and estimable nurserymen!

In habit *C. involucrata* closely resembles its kinsman, *Sphaeralcea coccinea,* sending out prostrate stems and producing its flowers in the leaf-axils as well as in a terminal cluster; it also likes similar hot, dry soil-conditions and full sunshine. It is an excellent plant for a dry wall with a southern exposure but, unless it is near the top of a high wall, nothing should be planted below it as it will form a hanging curtain anything from 18 to 36 inches long. The long flowering stems die back in the autumn, only the crown of the plant remaining evergreen.

In my experience, *C. involucrata* has never increased by underground runners as does its relative *Sphaeralcea coccinea.* Propagation by means other than seed has not been tried here: it is possible that cuttings of the young growths in spring would root without difficulty but these are always full of flower buds and I have never had the heart to sacrifice them on experiments which are not really necessary since plants are so easy to raise from seed.

*C. involucrata* is widely distributed over the plains of the Middle West, being found all the way southward from Minnesota to Mexico.



CALLIRHOE INVOLUCRATA

# Calypso bulbosa

## (*Orchidaceae*)

This is a plant of the primeval forests and, in British Columbia, is usually found beneath the shade of the Arborvitae, *Thuja plicata;* it occurs sparingly all over the North Temperate zone and is, perhaps, most abundant in the unsettled districts of the Pacific North-West. This species is also known as *Calypso borealis* and *Cytherea bulbosa.*

The plant consists of a little, glossy bulb with coralloid roots which in autumn produces a single, deep green, roughly heart-shaped leaf, 1½ inches long and about an inch wide; in early spring it sends up a stem to the height of some 3 inches bearing its grotesque yet beautiful blossom; occasionally stems are found with more than one bloom. The colouring of the flower is an exquisite blending of mauve, pink and yellow; its shape defies description so it is fortunate that the illustration makes any attempt to describe it quite unnecessary.

The bulbs must not be planted in soil but gently inserted in moss or coniferous refuse in a moist shady place: an old, moss-grown log is often favoured in nature. Bulbs are best put in in early autumn. Keep a look-out for slugs for they will devour leaf, bud and bulb with the greatest gusto.

I do not know any way of propagating this species but neither does anyone else so far as I can discover so I do not mind admitting my ignorance! In the wild, of course, they must perpetuate themselves by seed.

This tiny woodland elf is feared to be in considerable danger of extermination. Wholesale picking of the blossoms not only renders increase by seed impossible but frequently destroys the plant itself since the flower is attached to the bulb more securely than the bulb is attached to its moorings and so, as often as not, is torn loose and left to wither and die. Another matter of grave concern is the reported, annual shipment of many thousands of bulbs to the Orient for "medicine." Pheasants constitute another serious menace, eating every bulb that they can find.



CALYPSO BULBOSA

# Cheilanthes gracillima

## (*Polypodiaceae*)

Surely no excuses or apologies can be necessary for including so charming a little fern in this galaxy. *C. gracillima* is to be found on most of the mountains of southern Vancouver Island; Mt. Finlayson is its station nearest to Victoria: it is also found in Washington and Oregon. It is popularly and aptly known as the Lace Fern; the close-ranked, daintily-cut, three-inch fronds certainly have a charmingly lace-like appearance splayed against the grey rock of the cliff faces where they dwell.

*C. gracillima* is evergreen and, though lovely all the year round, is especially beautiful in early spring when the onrolling croziers and the backs of the new fronds are bedecked with silvery down and gleam against the olive-grey of the mature foliage.

This little treasure has forsaken the established traditions of the ferns and instead of shade and moisture demands heat and aridity; a sunbathed crevice instead of a sunless grotto. This truant trait gives it unusual value for the rock garden and enables you to grow ferns as a background for heat-loving bulbs like *Calochortus* and *Brodiaea:* associations which may sound incongruous but are, in fact, delightful.

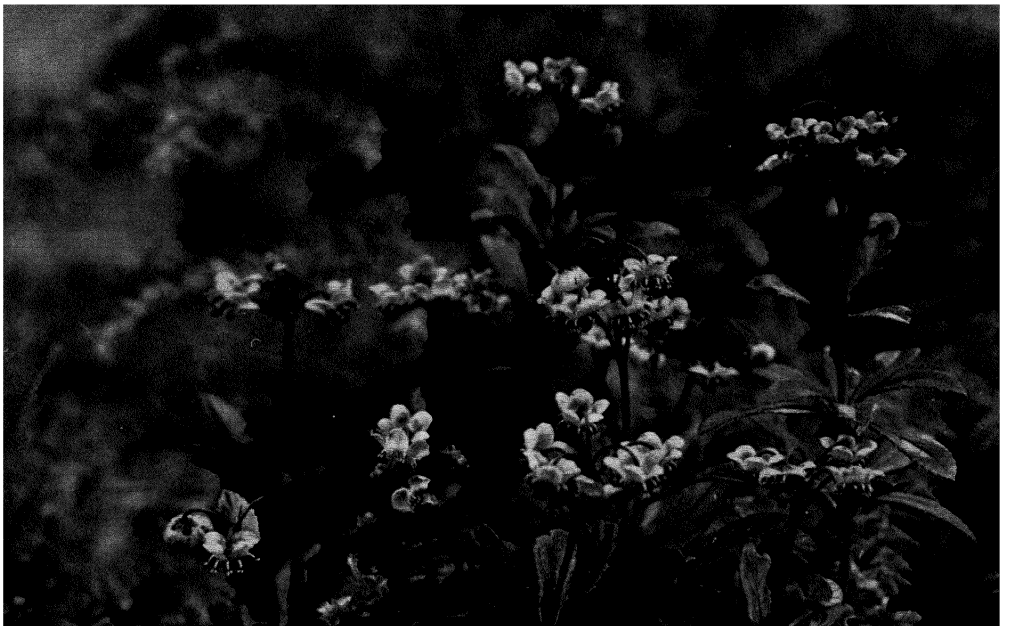
Give these ferns light soil enriched with leaf-mould and be sure the drainage is perfect. Autumn planting is advisable to permit the roots to obtain a firm hold before the hot weather starts and be sure that any plants you acquire come to you out of pots. Propagation is by division and requires considerable care; the plants so obtained are very slow to establish themselves and even under the most expert handling the casualties will not infrequently outnumber the successes. The amateur with just a few established plants will be well advised to refrain from interfering with them.



CHEILANTHES GRACILLIMA



CHIMAPHILA UMBELLATA



CHIMAPHILA UMBELLATA

# Chrysogonum virginianum

## (*Compositae*)

I must admit that I do not quite know why I am so fond of this little plant: it has neither splendour nor prodigality of blossom; it gives forth no intriguing perfume; it has neither airy grace nor stately form; the rather coarse foliage is produced with abandon, the dainty golden blossoms with considerable restraint; its habit is humble and lowly; just the same, to grow it is to love it. Sometimes you meet an attractive girl; you analyse her features and find she has not one good point, then you consider the *tout ensemble* and find her altogether adorable: so it is with *C. virginianum,* though, in addition to its indefinable charm, it does have some very good points. Its most endearing quality, perhaps, is its persistency in blooming for, though it never covers itself with a garment of Midas, there is rarely a day from mid March to late November when you cannot find a few five-pointed, golden stars gleaming amidst the olive-green foliage.

*C. virginianum* makes a splendid ground-cover in light shade, forming widespread mats, some 4 to 6 inches thick; a single plant will soon cover an area of several square feet; the growths layer themselves as they go so a top-dressing of sifted leaf-mould and sand in autumn helps to keep the mats green and healthy. Although a rich woodland soil is the natural diet, it is by no means necessary and plants grown under poorer, drier conditions are more floriferous and show off their flowers to better advantage since the exuberance of the foliage is held in check. This species thrives in sun or shade but best justifies its claim to a home in the garden when grown in light or partial shade.

*C. virginianum* is an evergreen woodland plant of wide distribution throughout the South-eastern States of the U.S.A.

Propagation may be effected by division in spring or early autumn, summer cuttings or removal of rooted layers: I have not tried seed but do not imagine the raising of seedlings would present any difficulties.



CHRYSOGONUM VIRGINIANUM

# Cornus canadensis

## (*Cornaceae*)

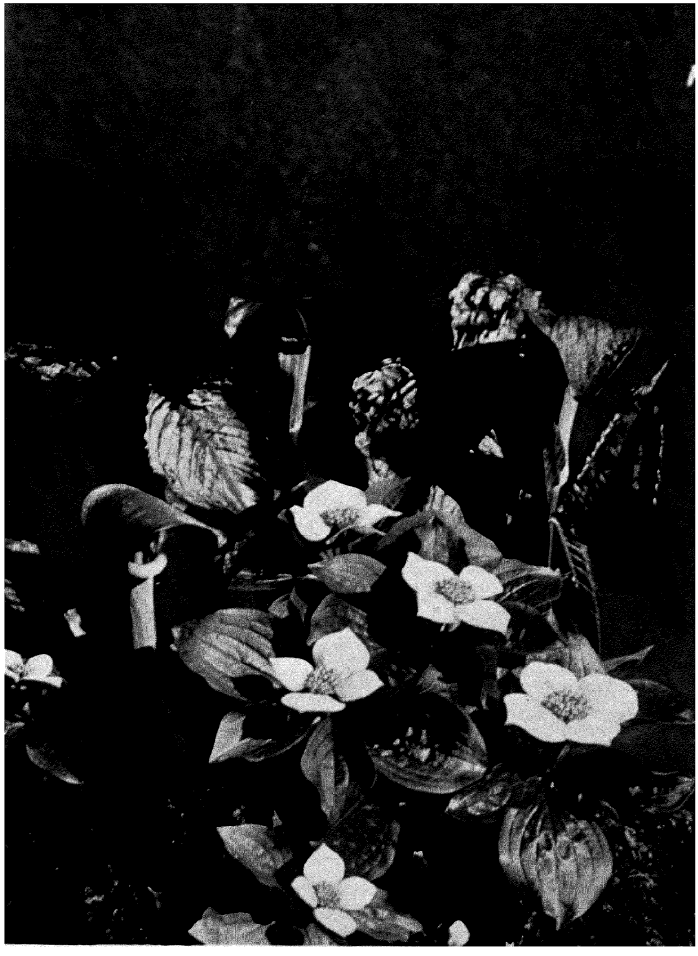
This baby Dogwood is one of the jolliest of all carpets for the shady parts of the garden. Once established, it spreads by creeping woody root stalks just below the surface of the soil. At intervals of an inch or two, erect stems arise to a height of some 3 inches, crowned with whorls of leaves; from the centre of each whorl arises the florescence, a tight bunch of wee, greeny-yellow flowers, encircled by large, white, petal-like bracts, the whole having the appearance of a single blossom of 2 inches or slightly less in diameter. Seen in the woods, when in bloom in late spring or early summer, this species is amazingly beautiful; it covers the ground with a carpet of rich green starred with white, ramps over logs, smothers decaying stumps and even attempts to climb living trees. In late summer the flowers are replaced by bunches of brilliant scarlet berries, hence the popular name—Bunchberry; in human estimation the berries are insipid and tasteless but birds love them and do not long permit them to decorate the garden. The leaves turn purple and crimson in autumn and stay on the plants through much of the winter unless very hard weather intervenes.

Stock is most simply increased by removing runners, equipped with fibrous roots; this is best done in the latter part of summer since runners potted up then will be ready for planting out in spring.

*C. canadensis* should be planted in rather acid soil in shade and does best if kept moist; it will survive dry conditions but obviously does not appreciate them.

This species is found over most of North America, Japan and Eastern Asia where suitable, moist, woodland conditions exist.

The latest name for this species is, I believe, *Chamaepericlymenum canadense*. Isn't that nice?



CORNUS CANADENSIS

(Arisaema triphyllum in background)

# Cypripedium acaule

## (*Orchidaceae*)

If you take your nomenclature very seriously, I am afraid that you will now have to call this species—*Fissipes acaulis*. It differs from the other North American species of the genus *Cypripedium* in habitat as well as in foliage and florescence. Besides being a denizen of mixed woodlands, the Moccasin Flower is to be found throughout the pine barrens of Eastern North America, wherein quite arid conditions are not infrequently its portion during the summer months. Whether the differences are of sufficient importance to necessitate generic distinction is open to question: in cases of this kind, it seems to me that the erection of a sub-genus should be adequate for botanical purposes and, since it would involve no change in nomenclature, would cause no horticultural confusion.

Their native habitat notwithstanding, it is better not to allow the plants to become very dry in the garden where they will flourish in light soil well impregnated with coniferous refuse and mulched in autumn with fir or pine needles; they are and look most at home beneath conifers.

Each growth-bud produces a pair of large, medium green leaves from between which rises the naked flower stem, to the height of some 12 inches, carrying a solitary, grotesque blossom. The sepals are purplish-green and the 2 inch long, dangling pouch rose-pink of varying shade, specimens with a white pouch are not infrequent, particularly in the northern stations of the species. The blossoms, which are slightly fragrant, are to be looked for towards the end of spring.

*C. acaule* is a striking and handsome plant which never fails to attract attention when in bloom in the garden but, while it has many ardent admirers, it must be admitted that there are not a few people to whom its weird *bizarrerie* is definitely repulsive.

The suggestions given with regard to the planting and propagation of *C. montanum* apply equally to this species.



CYPRIPEDIUM ACAULE

# Cypripedium montanum

## (*Orchidaceae*)

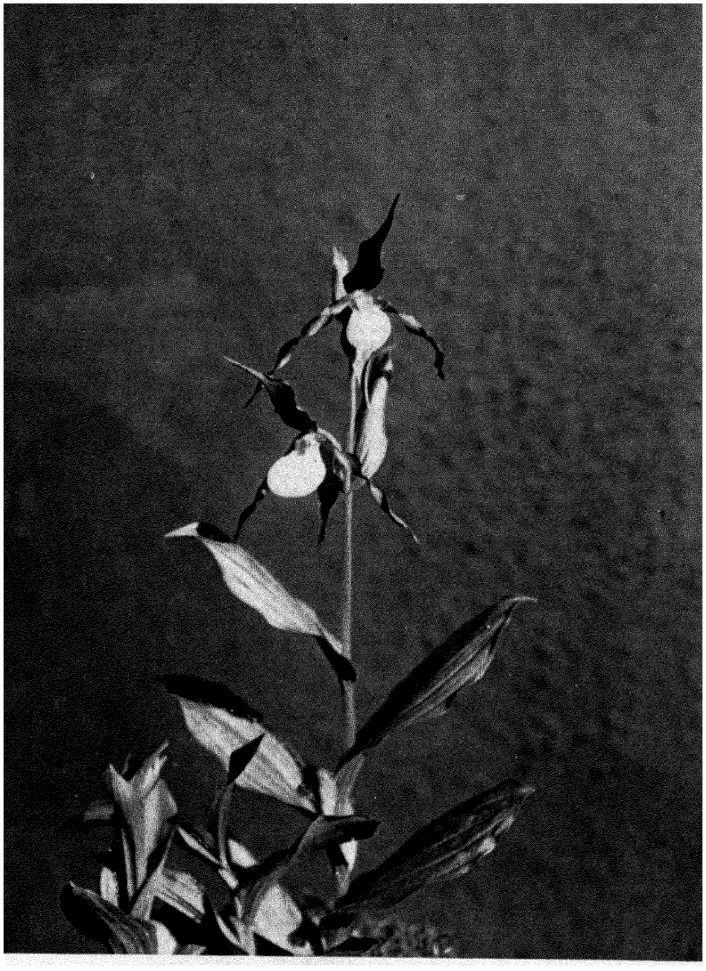
This is, in my opinion, the loveliest of all the North American *Cypripedium* species: many will not agree with me and claim the Crown of Beauty for *C. Reginae.* The beauty of *C. Reginae* is beyond denial and dispute but, to my mind, it is just a trifle too bold, a shade too opulent and a little too Teutonically blonde and buxom whereas that of *C. montanum* is as of some svelte brunette of the *pur sang,* naturally gracious, essentially well-bred.

*C. montanum* is found from British Columbia south to Sonoma County, California.

The blossoms of this species, which are produced in late spring, are usually carried two to a stem; they have a pouch of dazzling white, faintly marbled within with pale pink, and twisted sepals of rich chestnut-brown. The large, alternate, pale green leaves are carried up the flowerstem which rises to a height of from 8 to 12 inches.

*C. montanum* will succeed admirably in any fairly moist, lime-free soil well enriched with humus and shaded during the heat of the day. When planting, a shallow, flat depression should be scooped out and the roots spread out flat; the tips of the growth-buds should be not more than an inch below the surface; deep planting is absolutely fatal to *Cypripedium* species. Once planted, these orchids should be left severely alone, all the attention they need is a top-dressing of leaf-mould in autumn: if undisturbed, they increase quite rapidly and soon form nice clumps.

Propagation is by division and can be most easily and safely accomplished if the roots are washed off; they can then be teased apart and each growth-bud will be found to be equipped with its own root-system. Division is best effected in late summer after the foliage has died down.



CYPRIPEDIUM MONTANUM

# Cypripedium passerinum

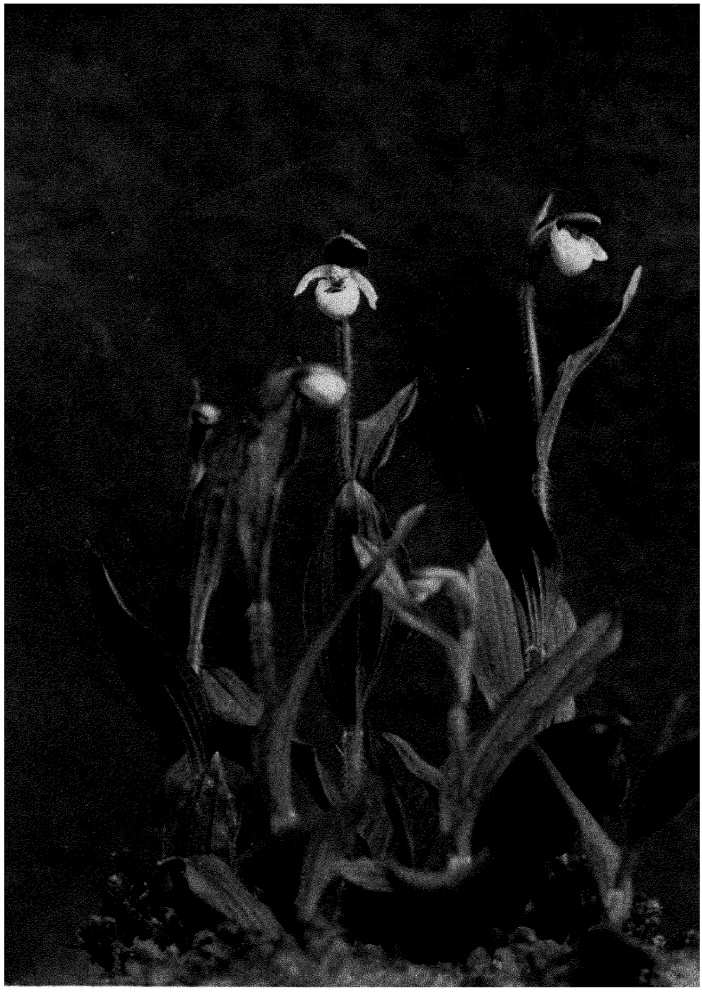
## (*Orchidaceae*)

It cannot be claimed for this species that it is notable either for outstanding beauty or for grace of bearing, yet it has undeniable charm and is quaintly attractive; perhaps it would be more correct to say that it is attractively quaint. Its charm is elusive and hard to define: viewed dispassionately, the flowers are much too small for the foliage but somehow that does not seem to matter. An aura of mystery surrounds these hooded blooms; with helmet visors down and half-hidden amid the foliage, they keep their life-long vigil in the forest depths: I like to think of them as the souls of King Arthur's knights, patiently awaiting his second coming, ready for when the time shall come to again couch lance in defence of the Red Dragon of Wales.

When there has been more botanical exploration, it may be found that *C. passerinum* occurs throughout the breadth of Canada; so far it is known from scattered localities in British Columbia, Alberta and Quebec: it is found in comparative abundance in some parts of Alaska. It is, perhaps, the rarest of the North American Ladyslippers in nature and still but little-known in cultivation.

This species increases fairly rapidly and soon forms thick clumps of 8 inch, sturdy stems, swathed in large, hairy leaves; each stem carries one or two blossoms in early spring. The pouch of the flower is white, thickly dotted with purple within, the petals also are white and the rounded sepals pale green.

In cultivation, *C. passerinum* is one of the easiest of the native species of this group: its treatment in the garden and propagation are similar to that recommended for *C. montanum* but it may also be grown on a slight elevation in a sunny bog or close beside water.



CYPRIPEDIUM PASSERINUM

# Cypripedium pubescens

## (*Orchidaceae*)

This species bears a considerable resemblance to the European *C. Calceolus* and, like it too, has fragrant blossoms. It is another hardy Ladyslipper quite easy to satisfy in the garden and, though best in moist, acid, woodland conditions, may often be grown with complete success in a shady herbaceous border.

*C. pubescens* is very widely distributed over the eastern half of the United States and across Canada from the Atlantic to the Pacific. It varies greatly both in the size and colour of the blossoms; some botanists consider the form with smaller and more brightly coloured flowers to be a separate species and it has been named *C. parviflorum* but, as every possible intermediate form can be found, it is difficult to see what value such a distinction can have. The pouch, 1 to 2 inches long, varies from palest primrose to deep butter-yellow and is sometimes marked with crimson-purple while the twisted sepals may be any shade from greenish-fawn to dark tan. The Slipper flowers are carried singly or in pairs on leafy stems a foot or more high; they appear in late spring or early summer.

Once planted, it is best to leave the clumps undisturbed, then year by year they will increase in size and magnificence. The correct method of planting is detailed under *C. montanum* where also will be found instructions as to propagation. It is well to bear in mind that the root-system is perilously close to the surface and consequently all weed-pulling should be done by hand, all hoes, forks and gadgets strictly banned. Apart from weeding, the only attention advisable is a good top-dressing of leaf-mould in the fall of the year.

Most of the hardy *Cypripedium* species set an abundance of seed but I have never heard of anyone who has succeeded in raising a seedling.



CYPRIPEDIUM PASSERINUM

# Cypripedium Reginae

## (*Orchidaceae*)

This most striking of the North American Ladyslippers is also known as *Cypripedium spectabile* and *Cypripedium hirsutum*. It is found over a very wide range, occurring in Newfoundland and on the continent from the Eastern Canadian Provinces southward to Georgia and westward to Minnesota of which State it has been adopted as the floral emblem.

*C. Reginae* grows in moist places in the forest depths and on slight elevations in boreal bogs. It is perfectly easy to grow in the garden under moist, acid, woodland conditions or, if grown in bog or beside water, will not resent full exposure to the sun. The plant illustrated is growing beside a pool where it is in the eye of the sun all day long. The procedure for planting and propagating *Cypripedia* is discussed under *C. montanum*.

*C. Reginae* is the largest of the native species and also the latest to bloom, rarely showing flower much before mid-summer. The opulent blossoms are carried aloft on stout, hairy, leafy stems, 24 to 30 inches in height: in established plants usually two blossoms are carried on each stem. Considerable variation is shown in the colour of the pouch which may be any shade from blush-white to deep, rich rose-pink; the remainder of the flower has the white purity and texture of freshly fallen snow. There is a record of an albino form of breath-taking loveliness, indeed so lovely was it that the discoverer, although a keen collector, was unable to find it in his heart to disturb it. I know no record of an albino form having been brought into cultivation so let us hope that this Queen of Queens still holds her court in that hidden forest glade, somewhere in the Province of Quebec.

The blossoms of this and several of the preceding species are delightful for house decoration and keep fresh in water for quite a long period; for this purpose they should be cut just before they are fully open since, once they are fertilized, they deteriorate very rapidly.



CYPRIPEDIUM REGINAE

# Delphinium Menziesii

## (*Ranunculaceae*)

This is one of the tuberous-rooted species of *Delphinium* which are so numerous in the West: it is of quite wide distribution being found from Vancouver Island eastward to the Rocky Mountains.

From a somewhat sparse tuft of deeply-cleft, rich green leaves it sends up 6 to 18 inch branching stems, bearing leaves near the ground and above them open spikes of deep azure blossoms, each petal of which is usually decorated with a spot of deep pink. As a general rule the colour of this species is fairly constant but sports do occur and I have found pale pink, pale mauve and pure white specimens. This species is abundant in the neighbourhood of Victoria, B.C., where it paints the dry hillsides with wide splashes of brilliant blue in late spring and early summer.

In nature it apparently prefers to grow in situations which dry right up in summer and where the tubers receive a thorough ripening: this ripening process, however, does not appear to be in any way necessary as plants, growing in the garden and receiving regular waterings during the dry season, make far finer plants than do those that are left to their own devices in the wild. A well-drained position is advisable or the tubers will be apt to rot in winter, otherwise *D. Menziesii* proves perfectly happy in any light soil and will grow in sun or shade; a sunny situation is to be preferred, however, as the plants are inclined to become somewhat leggy in shaded positions.

Propagation is by seed which is set in abundance; most of the seedlings will produce blossom in their second year. It may be well to note that the tubers in their dormant state are uncouth-looking objects and show no sign of life; indeed, some recipients have been known to throw them away in disgust, convinced that they must have died in transit.



DELPHINIUM MENZIESII

# Dicentra eximia

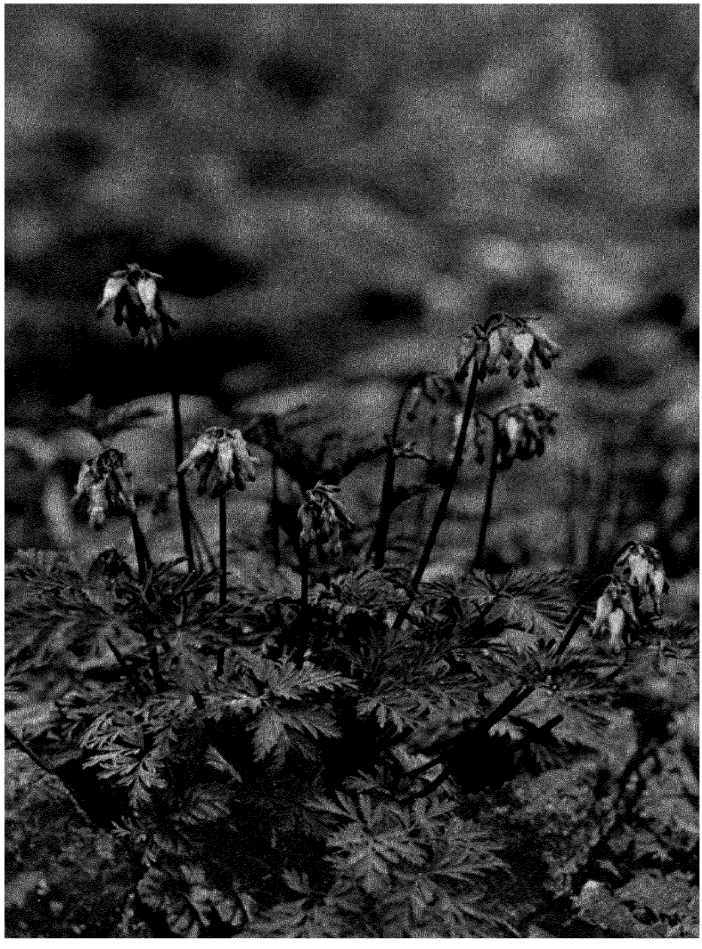
## (*Fumariaceae*)

This is one of the tuberous-rooted species of *Delphinium* which are so numerous in the West: it is of quite wide distribution being found from Vancouver Island eastward to the Rocky Mountains.

From a somewhat sparse tuft of deeply-cleft, rich green leaves it sends up 6 to 18 inch branching stems, bearing leaves near the ground and above them open spikes of deep azure blossoms, each petal of which is usually decorated with a spot of deep pink. As a general rule the colour of this species is fairly constant but sports do occur and I have found pale pink, pale mauve and pure white specimens. This species is abundant in the neighbourhood of Victoria, B.C., where it paints the dry hillsides with wide splashes of brilliant blue in late spring and early summer.

In nature it apparently prefers to grow in situations which dry right up in summer and where the tubers receive a thorough ripening: this ripening process, however, does not appear to be in any way necessary as plants, growing in the garden and receiving regular waterings during the dry season, make far finer plants than do those that are left to their own devices in the wild. A well-drained position is advisable or the tubers will be apt to rot in winter, otherwise *D. Menziesii* proves perfectly happy in any light soil and will grow in sun or shade; a sunny situation is to be preferred, however, as the plants are inclined to become somewhat leggy in shaded positions.

Propagation is by seed which is set in abundance; most of the seedlings will produce blossom in their second year. It may be well to note that the tubers in their dormant state are uncouth-looking objects and show no sign of life; indeed, some recipients have been known to throw them away in disgust, convinced that they must have died in transit.



DICENTRA **EXIMIA**

# Disporum Smithii

## (*Liliaceae*)

This gracious woodlander, though widely distributed throughout the forests of Vancouver Island and the coast area of the mainland from Alaska to Northern California, is of somewhat local occurrence and by no means common.

There has been considerable confusion over the nomenclature, indeed, this plant is still grown in many gardens under the name of *Prosartes oregana:* the situation has been clarified by J. M. Cowan of Edinburgh and those interested will do well to refer to his note on the subject, New Flora and Silva, Vol. VIII, p. 201, which is too long to quote in full here.

The illustration, which is slightly more than half life-sized, leaves little to be said as it clearly indicates the habit of the plant and the character of the florescence. The dangling, narrow flower-bells are palest creamy-yellow, sometimes tinted with just the faintest hint of green; they ring their noiseless chimes in the latter days of spring. The blossoms are succeeded by brilliant orange-scarlet berries which make a handsome addition to the woodland picture as summer wanes.

*D. Smithii* presents no cultural problems when grown under normal, cool woodland conditions: once well-established, it will increase by underground, rambling rootstalks and found prosperous colonies. These colonies may be lifted and split up after the foliage has died down in autumn or before growth commences in spring; plants may be raised from seed but to obtain it you must beat the birds to the berries!

These Fairy Bells are delightful plants for the woodland garden and deserve a much wider appreciation than has been their lot hereto: a scattered group of their 15 inch high clumps makes an altogether charming picture whether in flower or in fruit.



DISPORUM SMITHII

# Dodecatheon latifolium

## (*Primulaceae*)

This North American genus of the Primula family has its headquarters in the North-West where it is represented by an ever-growing host of species. The genus, as a whole, is most attractive and quaint but, while the many species will delight the heart of the ardent and persevering collector, there is so little obvious difference between the majority of them that most gardeners will be content with half a dozen species or less.

The power of this group to attract notice is indicated by the multitude of popular names: Shooting-Star, Peacock, Bird-Bill, Wild Cyclamen, and American Cowslip are a few of them; the last name which often appears in literature, lacks spontaneity and sounds as though it had been deliberately manufactured.

*D. latifolium* is also known as *D. Hendersonii* and is frequently found under that name, particularly in trade catalogues. The species is quite widely distributed, being found from British Columbia to Northern California; it is particularly abundant on the southern end of Vancouver Island.

The foliage which commences growth before winter has really relaxed its grip, consists of a tuffet of broad, thick, rich green leaves which have a tendency to hug the ground; from this tuffet the naked flower-stems rise in early spring to a height of 8 or more inches; each flower-stem is crowned with a chaplet of from 6 to 12 quaintly designed blossoms of deep, rich rose-purple ornamented around the base of the "beak" with circles of gold and umber. *D. latifolium* is, without doubt, one of the most richly coloured members of the genus and ranks high in garden value. After seeding, the plants quickly wither and have entirely vanished by mid-summer.

Suggestions for the planting, culture and propagation of the species of this genus are given under *D. pauciflorum*.



DODECATHEON LATIFOLIUM

# Dodecatheon pauciflorum

## (*Primulaceae*)

*D. pauciflorum* is even more widely distributed th
species, being found from British Columbia and Alberta southward to Colorado and California. Where its range coincides with that of *D. latifolium* as on Southern Vancouver Island, it shows a preference for somewhat moister conditions and grows in situations that are practically bog in winter and spring but that dry out in summer.

This differs in several ways from the preceding species; as a rule it is from 2 to 3 weeks later in coming into bloom; only from 2 to 6 blossoms are carried on each flower-stem; the colour of the blossoms is soft rosy-mauve and the golden circle at the base of the "beak" is wider and brighter than in *D. latifolium;* the long, rather narrow leaves which taper towards the base are somewhat less rich in shade, less shining in texture and tend to stand more erect; the flower-stems are somewhat taller usually reaching a height of from 12 to 15 inches. The two species have about equal garden value but by growing both the flowering season is extended to a quite considerable extent.

These species are delightfully easy in the garden, flourishing in any reasonably good garden soil and in any exposure. It is, perhaps, worthy of note that the range of *D. pauciflorum* embraces considerable areas of limestone formation. In their natural haunts these Dodecatheons grow in situations which dry up in summer; in the garden they seem able to dispense with so thorough a ripening but, to be on the safe side, it is well to plant them in close proximity to shrubs and like subjects which can be depended upon to absorb any surplus moisture in summer with the least possible delay.

Propagation is by seed or division of dormant crowns. The crowns, when planted, should be not more than 1½ inches below the surface.



DODECATHEON PAUCIFLORUM

# Dodecatheon species, Mount Arrowsmith

## (*Primulaceae*)

An "according to Hoyle" botanical description of an unnamed species would be outside the scope of this book even if I did consider myself qualified to write one: nearly ten years ago the authorities at the Smithsonian Institute expressed their opinion that this was probably a new species but I can find no record of any further action having been taken. Formerly this species was regarded as a high alpine development of *D. frigidum* and masquerades under that name in local check-lists; actually it does not even belong to the same section of the genus. *Dodecatheon* may be roughly divided into two main groups, one, moisture-loving plants, having woody, sometimes running, rootstalks, the other, plants with a taste for aestival aridity, having quaint crowns of starfish-like appearance which shrivel up in summer: *D. frigidum* belongs to the first group while this and the two preceding species belong to the second.

The portrait is just a shade less than life-sized; the pan in which the specimen is growing is 6 inches in diameter. In my opinion, this is much the best of the Dodecatheons for the rock garden and is especially charming in scree, trough or alpine house. Its culture and propagation are precisely the same as outlined for *D. pauciflorum*.

The blossoms are much the same shade of rose-purple as those of *D. latifolium;* they are, however, more lavishly decorated with gold on the "beak" itself as well as around its base. The foliage, though proportionately narrower, is also similar to that of *D. latifolium* in general appearance, colour and texture.

This little treasure seems to have a very restricted range; so far it is known only from Mount Arrowsmith and some of the adjacent peaks of Vancouver Island, where it is to be found at high altitudes only.

In cultivation it blossoms in late spring, commencing to flower as the blooms of *D. pauciflorum* begin to fade and so still further prolongs the period over which species of *Dodecatheon* may be enjoyed in bloom.



DODECATHEON SPECIES, MOUNT ARROWSMITH

# Douglasia laevigata "vera"

(*Primulaceae*)

Listen to a Tale of Woe! The plant hitherto known to most of us as *D. laevigata* is not that species at all but the form of *D. nivalis* which grows in the Olympic Mountains of Washington whence came most of the plants now in our gardens. The type locality of *D. laevigata* is Mitchell Point in the Columbia River Gorge and the only species found in that locality is that which has been referred to in catalogues and literature as *D. laevigata* "Columbia River form" or *D. laevigata "delicata."* The addition of *"vera"* is not intended to be permanent but merely a temporary expedient to clarify the situation for the gardening fraternity.

Considered from the gardener's viewpoint, the chief characters which separate this species from that of the Olympics are:—close evergreen tuffets, made up of tight rosettes of pale green foliage; pale shell-pink blossoms having a distinct carmine eye and longitudinal carmine stripes on the corolla tube; the ¾ inch wide blossoms, carried in loose trusses, are so freely borne as to completely hide the foliage and appear in early spring several weeks ahead of those of the Olympic species; it is a saxatile plant, found only at rather low altitudes. The compact tufts of foliage will rarely exceed 6 inches in diameter.

This very rare species is known only from the type locality and some precipitous rock-faces on the north bank of the Columbia River. Mrs. A. C. U. Berry, who introduced this species to cultivation, tells me that all reasonably collectible specimens have been taken though there is no danger of the species becoming extinct as many plants remain in inaccessible crevices and if I want any more I must risk my own neck to get them.

Seed is the best method of propagation; cuttings do not strike readily nor do they make such thrifty plants. In the open plants do best in scree mixture where they are exposed only to early morning or late afternoon sun. It is charming in the alpine house but fiercely resents stagnant air which quickly causes the plants to become mildewed.



DOUGLASIA LAEVIGATA "VERA"

# Douglasia nivalis "laevigata"

(*Primulaceae*)

This is the sub-species which has been generally regarded as the typical form of *D. laevigata* and which is grown under that name in most of our rock gardens: it is, however, the form of *D. nivalis* indigenous to the Olympic Mountains of Washington and some botanists regard it as an intermediate between *D. nivalis* of the Wenatchee Mountains and *D. laevigata* of the Columbia River Gorge. It is believed that, for the present and for horticultural purposes, the use of *"laevigata"* as the sub-specific name will be less likely to add to the existing nomenclatural confusion than would an entirely new name.

*D. nivalis "laevigata"* differs from *D. laevigata "vera"* in many particulars. The evergreen clumps, reaching a foot in diameter, are somewhat lax in habit and deep green in colour; the blossoms, somewhat larger and uniform deep rose-pink, are borne in tighter, few-flowered heads; though very free-flowering, it has not that gay abandon so characteristic of *D. laevigata "vera"* and when the two species are grown side by side in the garden it is from two to three weeks later in coming into bloom; it is a true alpine and found only at considerable altitudes.

Its wants in cultivation are very similar to those of the preceding species and it will be found to succeed admirably in scree provided that it is not exposed to the direct rays of the midday sun. As with the preceding species also, seed is the best method of increasing stock though the more lax rosettes make more cutting wood available and cuttings are less difficult to strike; with care, division is sometimes possible but is most decidedly not recommended.

My neighbour, Norman Rant of the Rockhome Gardens, has a perfectly lovely albino form which he collected a few years ago; needless to say this has been a source of much breaking of the tenth commandment, so it is to be hoped that he will have stock available for distribution ere long.



DOUGLASIA NIVALIS "LAEVIGATA"

# Dryas octopetala

(*Rosaceae*)

This delightful, reliable and thoroughly useful shrublet is of perfectly prostrate habit and conscientiously conforms to every contour of the ground it carpets and of the rocks it curtains. It is happy in full sun or in partial shade and asks only a well-drained soil, enriched with a little peat or leaf-mould. It layers itself quite freely as it goes and so may be propagated by the removal of rooted pieces which should, however, be established in pots before re-planting as the Mountain Avens strongly resents having its roots disturbed. This species may also be propagated by summer cuttings or raised from seed.

Besides being generally distributed over the highlands of North America, *D. octopetala* makes its home on many European mountains and is a rare native of Great Britain. It is a denizen of the alpine meadows and sloping mountainsides.

In the garden it makes spreading, dense mats of ¾ inch long, shining-green leaves, like miniature oak leaves except that those of the dryas are silvery beneath. In late spring and early summer these mats are gayly bespangled with a host of snow-white, 1½ inch wide, cup-shaped blossoms, carried singly on short stems and baring their golden hearts to the sun. After the main display of blossoms is over, occasional flowers continue to appear throughout the summer and well into the autumn; the mats of foliage are rarely entirely without bloom. After the flowers have faded they return again to beauty, producing silken, fluffy seed-heads of shining, silvery-grey. Few plants are capable of attracting interest over so long a period.

*D. octopetala* can hardly be classed as an evergreen since the old foliage turns russet in late autumn and only the younger growths remain green through the winter and they too will turn brown, should a hard frost catch them unprotected and unawares.



DRYAS OCTOPETALA

# Dryopteris oregana

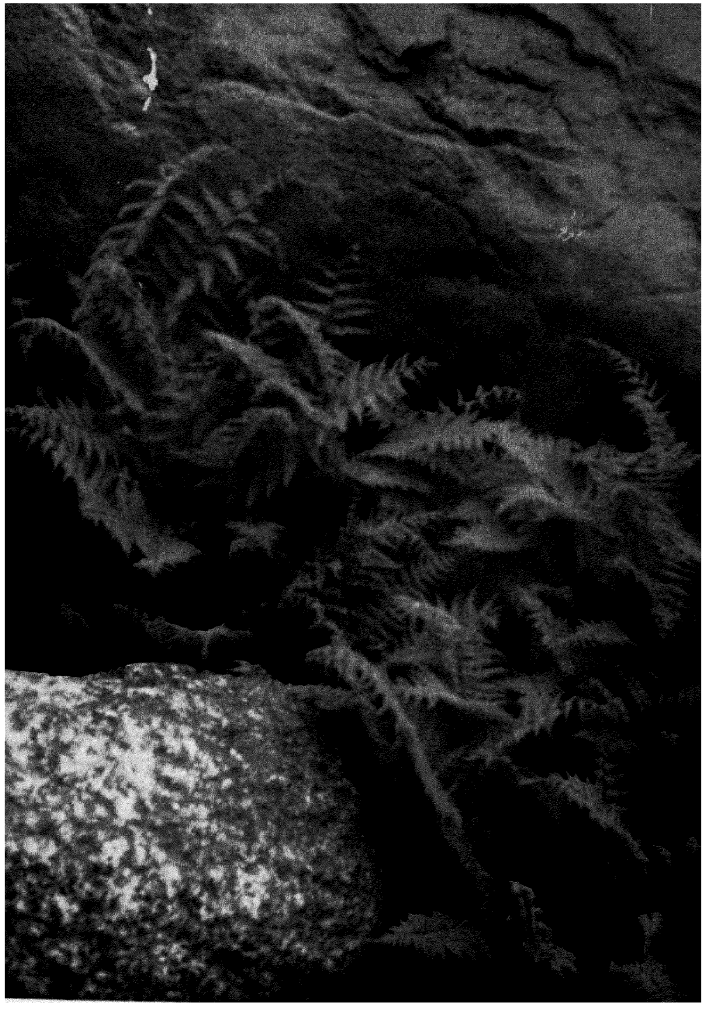
## (*Polypodiaceae*)

To the plant-lovers of Vancouver Island this species has, in recent years, become popularly known as the Sooke Fern: its only known station on the Island being the gorge of the Sooke River, the home of a number of rare and attractive plant species, where it was first discovered in 1924. *D. oregana* is also of local occurrence in Southern Oregon and among the Sierra Nevada Mountains of Northern California: at one time the species was known as *D. nevadensis.* This species is considered to be quite closely allied to the better known New York Fern, *Dryopteris Novaborencis,* and, like it, spreads by underground stolons; it differs from the eastern species, however, by its habit of forming large tufts.

In its natural habitat, *D. oregana* occupies rock crevices by the waterside and actually grows in the river-bed where it is completely submerged throughout the winter months. In the garden, it is altogether charming and presents no difficulties if treated as a woodland plant and given a moist soil, rich in humus. If there is plenty of room to spare, it is magnificent as a water-side plant or grown under bog conditions in sun; in such places it makes itself very much at home and spreads both widely and rapidly.

The Sooke Fern is deciduous and is most easily propagated by the removal of creeping stolons in early spring just as growth is commencing, the tufts may also be divided at that time but so matted and strong are the roots that the job requires either the patience of Job or the brawn of Hercules.

The long, rather narrow, pale green fronds stand nearly erect and reach a height of a foot or rather more; they have a peculiar habit of keeping their pinnae folded together during the early hours of the day.



DRYOPTERIS OREGANA



EPIPACTIS GIGANTEA

# Erigeron aureus

## (*Compositae*)

I must confess that most daisies leave me rather cold and that it is very nearly as hard for a composite to get into my garden as for the proverbial camel to pass through the eye of a needle. No doubt it is very foolish of me but there it is: I cannot help it if things like Farrer's Big Bear and *Inula Roylei* affect me like a dirty Channel crossing. Despite all this there are a few daisies that have caught me unawares and stolen into a place in my affections and chief of them all is this wee golden erigeron. There is something particularly winsome, appealing and altogether loveable about *Erigeron aureus.* He is such a bright, jolly, little chap and rare indeed are the occasions when you pass him by and find no little, golden faces smiling up at you; you just cannot help loving him, even if you are afflicted with daisyphobia.

*E. aureus* is a high alpine from Alberta, British Columbia and Washington. It forms a tight, tidy, little tuffet of grey, spoon-shaped, evergreen foliage above which it displays its inch-wide, golden sunflowers in endless succession from March to November and sometimes right through the winter, should the weather be mild. If the drainage is perfect, it will give no trouble in any sunny spot in the rock garden; it is also an admirable plant for the scree while its free-flowering proclivities make it a treasure beyond price for the alpine house.

*E. aureus* does not take kindly to being divided but cuttings root readily. Plants are easily raised from seed though good seed is by no means always available: collected seed seems more to be relied upon than that from cultivated plants.

If the *Compositae* provided no species worth growing other than this gem of a plant we should still owe them a debt of deep gratitude: indeed, I know of no Western alpine that can be rated higher than this for all round excellence as a plant for the rock garden.



ERIGERON AUREUS

# Erigeron salsuginosus glacialis

## (*Compositae*)

Another daisy has crept in! This also is a British Columbian from the mountain-tops and a very lovely one too. Typical *E. salsuginosus* ranges far and wide and is to be found in suitably moist situations at medium and high altitudes from Alaska and Alberta to California and New Mexico, a vast area indeed.

*E. glacialis* varies to some extent both in the stature of the plant and in the colour of the blossoms. The best form, known to me, came from high up on Mount Arrowsmith on Vancouver Island. It has blossoms, nearly 2 inches across, of luminous shell-pink and of crystalline texture, set on sturdy, 4 inch stems which rise from a compact tuft of lustrous, dark green, spatulate, more or less evergreen foliage. The blossoms are unusually neat and rounded in outline with none of that raggedy look which detracts so much from the beauty of most of the erigerons.

If anything this species is even easier to satisfy in cultivation than the preceding. It does best in a well-drained but rather moist soil, rich in humus; with abundant moisture it will succeed in full sun but is really better grown in a cool exposure where the delicate colour of its blossoms cannot be impaired by excessive sunshine. The stems layer themselves freely and periodical top-dressings of sand and leaf-mould are obviously beneficial.

It is fortunate that the clumps of this species have not the least objection to being divided since this provides a very simple means of increasing your stock of selected forms. Seed cannot be relied upon to reproduce any particular form, in fact progeny from the seed of cultivated plants shows considerable deterioration both in habit and colour when compared with specimens collected in the mountains. Collected plants are apt to attain a slightly higher stature when brought into the garden but will retain their other characteristics.



ERIGERON SALSUGINOSUS GLACIALIS

# Eriogonum ovalifolium

## (*Polygonaceae*)

The flowers of this little Eriogonum, perhaps the loveliest and most desirable of its race, are carried, all summer long in thrift-like heads on 4 to 5 inch, downy, procumbent stems; these heads appear blush-pink but, on close examination, will be found to consist of innumerable tiny creamy-white blossoms, ¼ inch across, each having a minute orange eye and a purple-pink central stripe on the exterior of each petal. The stripes showing through the expanded petals and visible on the buds, together with the pink-tipped anthers, give the general effect of pink.

*E. ovalifolium* makes an inch-high, "evergreen" mat of tiny, close-set, silvery rosettes which consist of wee, oval, grey leaves, densely covered with fine, white pubescence. It is a slow-growing treasure, very suitable for sunny scree, trough or alpine house and neither difficult to establish nor keep but it abhors winter wet so perfect drainage must be provided.

There is still a lot to be learnt about the propagation of species of this genus. After many dismal failures to strike cuttings of this species, I have only achieved enough success to convince me that it can be done. Cuttings were taken in August, inserted in a mixture of equal parts fine sand and coarsely-ground quartz and placed in a frame in full sun: examination at the end of November showed 60% dead but the remainder rooted: had the cuttings been taken earlier it is probable that much more satisfactory results would have been obtained. Plants may be raised from seed but good seed is rarely obtainable.

*E. ovalifolium* is widely distributed through the mountain ranges of the North-West and I rather suspect that more than one species nestles under its name.

The plant illustrated is one of a jolly little colony in my garden where they are among its most treasured inhabitants. The portrait is about half life-sized.



ERIOGONUM OVALIFOLIUM

# Eriogonum umbellatum

## (*Polygonaceae*)

Here is another fine Eriogonum and an ornament to the garden whether used to clothe a hot, dry bank, a purpose for which it is well adapted, or as a feature in the higher parts of a large rock garden: it is hardly suitable for a small rockery since it will form an evergreen mat 5 feet across.

The plate is approximately life-sized and shows the mat-forming habit of the foliage as well as the character of the florescence. The bold heads of pale primrose-yellow, plentifully studding the deep-green carpets of foliage, make a striking picture throughout the months of summer. The leaves are leathery in texture and quite thickly felted with white pubescence beneath. The foliage, while completely covering the ground, does not always lie flat nor conform to the contours but humps itself up here and there to a height of 6 or 8 inches: the most prominent of these humps appears at the centre of the plant while lesser hummocks usually indicate a point where layering has occurred.

*E. umbellatum* does best in a warm, well-drained position and is content with meagre fare, a sandy or gravelly soil being most to its liking; it will grow under less Spartan conditions but it will be less generous with blossoms and less inclined to deck its foliage with those autumn tints which are one of its chief attractions. It has no objection to growing in quite shallow soil over bed-rock.

Cuttings, taken soon after mid-summer, root quickly and are ready to be potted up in a month or six weeks. Plants may be raised from seed but this is hard to obtain since seed is rarely set in cultivation and wild plants also seem to be somewhat temperamental in this respect. Sometimes it is possible to steal a few layers from established plants.

*E. umbellatum* is found throughout the dry uplands of the North-West.



ERIOGONUM UMBELLATUM

# Erythronium Hendersonii

## (*Liliaceae*)

The earliest of the Western Dog's-tooth Violets to come into bloom, *E. Hendersonii* is also the most floriferous and one of the very loveliest; mature bulbs will produce stems carrying at least four or five blossoms and quite frequently more; I had one in my garden which rang a peal of eleven bells while Gabrielson records a specimen with thirteen blooms.

The enchanting lily-like blossoms are pale lilac, fading to white around the eye which is richest black-purple and from which dangle inch-long anthers, laden with plum-purple pollen. It can hardly be necessary to advise planting this species in a position that will enable a "worm's eye view" to be obtained. The stems are lilac-pink as is also the foliage but the leaves are so heavily mottled with plum-purple that but little of the ground colour is visible. The portrait which is approximately half life-sized, was taken in early April.

*E. Hendersonii* grows quite happily in sun or shade and its preference is, no doubt, governed by local conditions and must be discovered by experiment: in my garden it is, perhaps, better in full sun. The bulbs work downwards year by year so that a good depth of soil is required; the soil should be rich in humus and well-drained. The bulbs should be planted about 4 inches deep and, thereafter, left severely alone; interference is resented and this, in addition to the fact that most of the bulbs in commerce were probably collected in bloom, prevents them from giving a genuine display in their first year. If you must move bulbs, replant as soon as possible. Propagation is by seed and several years are needed to produce a bulb that will flower.

*E. Hendersonii* appears to be restricted in nature to the Rogue River valley in Southern Oregon.



ERYTHRONIUM HENDERSONII

# Erythronium oreganum

## (*Liliaceae*)

A new name for an old friend for until recently this species has been widely known and loved as *E. giganteum;* another synonym is *E. Watsonii.* This glorious species is found on Southern Vancouver Island, Western Washington and Northern Oregon west of the Cascade Mountains.

Though naturally a plant of the woodlands, *E. oreganum* may be grown in sun and, so placed, will make a good showing but will not attain such stature and magnificence as do shaded plants; a sylvan setting also seems more suitable; in the open, this queen of the woods, though retaining her beauty, loses much of her charm. Without doubt, it is best to plant this species in rich, well-drained woodland soil in dappled shade. The bulbs should be planted at least 4 inches deep; each year they will work themselves a little deeper; once planted they should never again be disturbed: bulbs of this genus should never be kept out of the ground a moment longer than is absolutely necessary.

Each bulb produces a pair of large, shining leaves, rich green beautifully mottled with brownish-purple; between these, in early spring, rises the naked flower-stem to a height of from 8 to 15 inches. The marvellous, creamy-white blossoms, decorated with a zone of golden-brown around the eye, are often as much as 3 inches in diameter. Established plants which have not been subjected to annual "picking," will usually carry three flowers to a stem, occasionally four or even five but wild plants, growing within easy motoring distance of a town, rarely carry more than one or two and frequently none at all. So many people lose all sense of decency and proportion when picking wild flowers, they grab everything in sight: time and again I have seen cars returning from the country with foot-thick bunches of fast-withering Erythroniums tied all along both running-boards!

Seed is the only means of propagation, a very slow process, since bulbs require from five to seven years to reach flowering size.



ERYTHRONIUM OREGANUM
(in natural habitat)

# Erythronium revolutum Smithii

## (*Liliaceae*)

For its home, this species chooses the rich sandy silt of shady river bottoms. It is found over most of Vancouver Island, except in the Southeast: in the Jordan River district, its haunt that I know best, it is to be found blooming in the later part of spring, along the stream marges which, though dry throughout the summer, are flooded during the winter months. Fortunately it does not demand such conditions in the garden, where they would be neither easy nor cheap to reproduce, but is quite happy in any shady nook with deep, rich, well-drained woodland soil.

*E. Smithii* is one of the less robust members of the genus, rarely attaining a height of more than 8 inches and normally carrying only one or two flowers to a stem; stems with three or more flowers are decidedly rare. The flowers vary in diameter from 1½ to 2 inches, much of the petal-length being absorbed by their recurving habit; they show considerable colour variation, from almost white through pale to deep shell-pink and have a rather faintly defined yellow eye and dangling yellow anthers. The foliage is bright green, handsomely marbled with purplish-brown. A riverside glade aglow with a shimmering carpet of these bewitching little beauties makes a picture to be treasured for ever in the gallery of memory.

As with most of this genus, bulbs of *E. Smithii* produce only one pair of leaves and a single flowering stem and do not increase by offsets or bulblets; for increase they depend entirely upon seed. Unless strong measures are taken for their protection, there is a very real danger of many of the *Erythronium* species becoming extinct. In addition to the wholesale collecting of bulbs for sale, the indiscriminate picking of flowers and foliage requires checking since it tends to weaken the bulb as well as to prevent it setting seed and so deprive it of any chance of reproduction and increase.



ERYTHRONIUM REVOLUTUM SMITHII

# Galax aphylla

## (*Diapensiaceae*)

The flowers of this species may not be very exciting but it is one of the loveliest, hardy, foliage plants in existence and a thing of perfect beauty in the garden from year's end to year's end. Although *aphylla* (leafless) presumably refers to the florescence, it can hardly be regarded as a very happily chosen name for a plant whose principal claim to fame is based on the outstanding glory of its foliage.

This species comes from the woodland areas of the Southern Appalachian Mountains of the Southeastern States where it is found growing under deciduous trees and amongst rhododendrons. This definitely indicates the conditions it needs in cultivation; that is to say moist, acid, typical rhododendron soil and shade. In my experience, it does not like being planted under conifers since each time I have tried to persuade them to grow there, they have made haste to seek a better land.

When established and happy, *G. aphylla* quickly goes ahead and forms wide-spread colonies by sending out underground runners in all directions: these runners make propagation very simple as it is easy to remove pieces with growth-buds and fibrous roots; it is advisable to establish such pieces in pots before replanting. Summer cuttings strike quite readily and plants may be raised from seed, a long and tedious process.

The plants form fine clumps of magnificent leaves, leathery in texture, rounded in outline and some 3 inches in diameter; these are vermilion in their extreme youth, deep green at maturity and turn to most gorgeous shades of crimson and purple in the fall of the year. These leaves create quite an industry in their native haunts where they are gathered in autumn and shipped by the car-load to the florists of the big cities for use in winter decorations.

The blossoms, though pretty and graceful, fall short of the standard of perfection attained by the foliage; they are carried in close-set spikes on foot-high stems in early summer.



GALAX APHYLLA

# Habenaria Michaelii

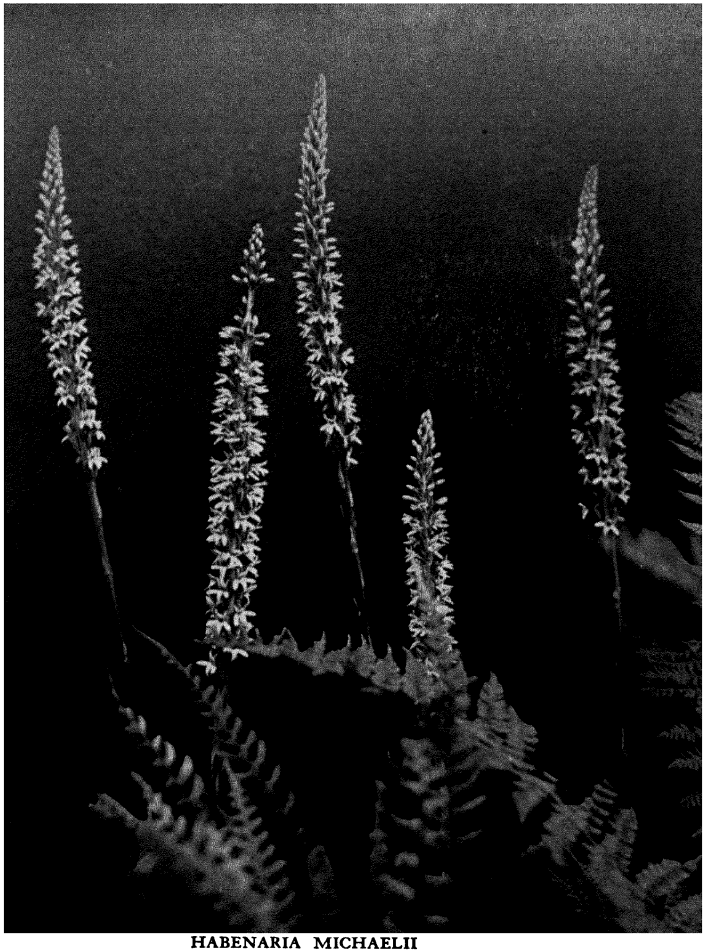
## (*Orchidaceae*)

This most uncommon, hardy orchid grows in the district around Victoria, British Columbia and is found in the open groves of Garry oak which are such a characteristic feature of that area.

The rich-green, shining leaves appear soon after the commencement of the autumnal rains and attain their full growth about midsummer when the flower-spike appears, after which they wither and have entirely disappeared before the flowers are over. The comparatively large flowers are carried in well-furnished, graceful spikes on stems, 18 to 24 inches high; as with so many of the white-flowered species of this genus, the blossoms are not entirely guiltless of a greenish tinge but are, nevertheless, most attractive. One of the most charming attributes of this orchid is the fragrance of its blossoms, widely diffused through the garden on warm July evenings. It is, however, better not to investigate this scent at very close quarters; if you put your nose against the flowers, you will discover that it has an unpleasant pungency and seems to catch you in the back of the throat. Two or three spikes in a vase, placed out of reach, will fill a large room with delightful perfume and a few potted plants will serve a like purpose in the alpine house.

Light shade and light, somewhat acid soil will be found suitable for *H. Michaelii* in cultivation and it should be kept as dry as possible during the summer, particularly after flowering, in order to permit the tubers to obtain a thorough ripening.

This species is somewhat slow to increase but the tubers sometimes make offsets which may be removed. I have not attempted to raise plants from seed but an old colony, growing on a part of my property which has never been cultivated, is evidently increasing by self-sown seedlings: up to now I have allowed this colony to do most of my propagating for me!



HABENARIA MICHAELII

# Hemieva ranunculifolia

## (*Saxifragaceae*)

Some day, I feel sure, this charming little mountaineer from British Columbia will come into its own and achieve wide-spread popularity. It is hard to understand why it has been so long neglected and its praises left unsung while many rarer but less attractive plants have been made much of and are tenderly cherished in many gardens. True, *H. ranunculifolia* has none of the flaunting splendour of the Lewisias nor does it paint the mountain peaks and hill-sides with acre-wide splashes of colour as do many of our Phlox and Pentstemon; instead, it has a quiet charm and winsomeness all its own and a little group illuming some damp, shady nook makes an irresistible appeal.

*H. ranunculifolia* is charming in foliage and beautiful in flower: its baby-buttercup leaves, whence its name, are rich, glossy, dark green; its blossoms, carried in many generous heads on 6 inch stems, are snowy-white of dazzling purity and, though just a little smaller, have more than a slight resemblance to those of the well-known *Saxifraga Wallacei*. This little plant revels in leaf-mould and should be planted in full shade. The blossoms make their appearance in the latter part of spring and, after the seed has ripened, foliage and everything disappears and no more is seen of the plants until the following spring. Plenty of moisture is needed during the growing season but the plants should be permitted to dry out as much as possible in summer.

Propagation may be easily effected by division of the roots in late summer: the roots will be found to consist of a loose mass of little tubers, like tiny potatoes. Plants may also be raised from seed without the least difficulty, indeed if the seed is not gathered, many self-sown seedlings will spring up around established plants.



HEMIEVA RANUNCULIFOLIA

# Hemieva violacea

## (*Saxifragaceae*)

Rarity of rarities is this pixy of a plant which holds its loveliness aloof from all things mundane, screening itself amid the mist-like spray of unnamed cataracts in uncharted mountain gorges. Look for it near the Columbia River along the British Columbia—Washington border and, perhaps, this shy beauty will reveal itself to you. I do not feel that it would be in the best interest of the species to be more exact as to the localities it graces; there are too many collectors, commercial and otherwise, and all too few of them seem able to exercise a decent restraint.

*H. violacea* can hardly be recommended for general garden use for there its piquant charm would almost certainly be overlooked and the plant itself, in all probability, destroyed during its long season of dormant invisibility: but grow it in your alpine house and see how swiftly it will creep into the heart of you.

The ½ inch wide, starry blossoms, cool, pale lilac-pink, hearted with palest green, are borne on slender, branching, few-flowered, 2 inch stems which lengthen as the flowers fade and the seeds ripen. The dark ivy-green, scalloped leaves are much smaller than those of *H. ranunculifolia* and tend to lie flat on the ground.

Despite its natural predilection for waterfalls, *H. violacea* is not difficult in cultivation and will be found to succeed under conditions similar to those already recommended for *H. ranunculifolia.* The two species, while differing quite widely in appearance, particularly in the arrangement of the florescence, are in other respects almost identical; flowering periods, dormant periods, root systems, cultural wants are all the same and they may be propagated in the same ways.

Grown in the alpine house, they rejoice in a mixture of equal parts leaf-mould, sand and granite chips. The pans should be kept in a dry but shaded place throughout the summer.



HEMIEVA VIOLACEA

# Iris cristata

## (*Iridaceae*)

This delightful dwarf which comes from Eastern North America, well deserves a prominent place in the rock garden for it is easy, hearty and floriferous in addition to possessing both charm and beauty. In nature, it is usually found growing in rather rocky localities in open woodland and in the garden does best in full sun or very light shade. A well-drained, sandy loam, with a generous portion of leaf-mould incorporated, is thoroughly to its liking but care should be taken to see that it is not allowed to dry out.

*I. cristata* forms widely-spreading mats of somewhat lax foliage which attains a height of some 6 inches; since, however, the fans of foliage tend to lean outwards and bend over at their tips, the blossoms are in no way hidden. These pale horizon-blue blossoms are decorated on the falls with a blotch of white and yellow outlined with dusky-violet pencilling; they are about 2½ inches across and are carried on sturdy, erect, 3 inch stems. The flowers are borne in profusion in late spring.

Like most irises, *I. cristata* is somewhat of a ground-robber and should be given a good top-dressing of sifted leaf-mould and sand in the autumn; if this is not done the centre of the plant is liable to die out, leaving a blank space surrounded by a fringe of foliage. Even with conscientious top-dressing, it is inadvisable to leave the plant to its own devices for long and it will be found best to lift, divide and replant after three years. This operation is most safely accomplished in the latter part of summer but the replanted pieces must be carefully watched and not allowed to dry out.

In addition to the typical blue, there is an exquisitely lovely white-flowered form sometimes obtainable, usually listed as *I. cristata alba.*



IRIS CRISTATA

# Iris chrysophylla

## (*Iridaceae*)

These Western Irises are really most exasperating, it is impossible to decide which one you love the best. With most groups of plants, if you ask yourself which you would choose if you could only keep one, the answer is comparatively easy but not so with these irises. They are all so lovely yet all so different; Douglasiana, cool and aloof; tenax, sparkling and gleeful; Gormanii, gentle and gracious; chrysophylla, fragile and wayward; and so it goes; peers in peerlessness but apart as the poles in personality.

The narrow, arching, more or less evergreen foliage of *I. chrysophylla* is leathery in texture and while somewhat scant is still sufficient. The comparatively immense flowers, carried in twos or threes on 2 to 3 inch stems in earliest summer, are soft creamy-white, their falls decorated with a pale orange blotch and delicate pencillings of faintest violet or softest sepia. There is an elusive charm about these pale beauties that defies definition; they seem aquiver, poised for instant flight like hovering Papilios, ready to vanish at a breath.

*I. chrysophylla* does best in a light, well-drained soil in which a generous amount of leaf-mould has been incorporated and, while dense shade is not to be recommended, it is best planted out of direct sunlight. It must be noted that this species is somewhat slow in becoming established in new quarters and so, once planted, should be left severely alone; for this reason it is better to raise plants from seed than to attempt to divide established clumps. Division is possible but the pieces take so long to re-establish that it is just as quick to raise plants to flowering size from seed; what is more, the seedling will make the better plant.

This is one of the many iris species which have come to us from the State of Oregon.



IRIS CHRYSOPHYLLA

# Iris Douglasiana

## (*Iridaceae*)

A fine, upstanding species is *I. Douglasiana,* very valuable for a large rock garden where bold effects are required but to be used with discretion where space is limited. Take warning! The little fan of foliage, you may receive from your nurseryman, will give no indication of the massive, evergreen clump, 18 to 24 inches in height and as much in diameter, into which it will develop in a couple of years or so.

*I. Douglasiana* is found in the coastal region of Southern Oregon and Northern California. It is reliably hardy on Southern Vancouver Island and, presumably, will prove hardy enough in the British Isles but is not quite to be trusted in regions afflicted with sub-zero temperatures.

The large flowers, over 3 inches across, are carried well in view and are in no way obscured by the moderately wide, deep green foliage, abundant though it is. The colour of the blossoms varies from white through mauves and lavender to bluish-purple; most of the shades are good and well worth growing; my favourite is a soft, delicate lavender-blue.

In cultivation *I. Douglasiana* is easily satisfied, flourishing in any well-drained, lime-free soil, enriched with leaf-mould, and appears about equally happy in full sun or partial shade.

Division after flowering is necessary if it is desired to propagate a particular colour form and the operation requires no more than ordinary care. Plants can be grown from seed easily enough and will usually flower in their third year.

This species is in bloom for several weeks in early summer and, like most of the so-called "California" Iris species, normally carries two flowers to a stem. This group would have been better designated the "Oregon" Irises since that State, rather than California, is their headquarters.



IRIS DOUGLASIANA

## Iris Gormanii

### (*Iridaceae*)

There can be no gainsaying that this is one of Oregon's outstanding contributions to our gardens. A very rare plant, it is confined to a restricted area in the Coast Mountains.

In common with most of the Western Iris species, *I. Gormanii* shows some variation in the colour of its flowers which run the shade gamut from bluish-white through cream to pale apricot; all forms are decorated with a soft orange blotch. Best known and best loved is the pale apricot form, a truly wonderful shade and very similar to that found in the blossoms of *Lewisia Tweedyi*. The flowers are nearly 4 inches across and are carried on 10 inch stems rising just comfortably above the nearly evergreen, grassy foliage. As a rule two flowers are born on each stem, the second unfolding as the first fades. The plants are in flower over a considerable period in late spring and early summer: an established clump about two feet across with anything from sixty to a hundred flowers open at a time is one of the loveliest features of my garden.

*I. Gormanii* is possibly the easiest and best-tempered of the Western Irises in cultivation: all it asks is well-drained, sandy loam, enriched with humus, and plenty of moisture during the growing season. Here it is equally happy in sun or partial shade.

Propagation is by division after flowering: plants may be raised from seed but, if other Western species are growing nearby, you will find that you have mostly hybrids on your hands; nearly all of them will be very lovely but hardly *I. Gormanii!* It is advisable to pick the seed-pods before they start shedding seed for every self-sown seed seems to grow and, unless you are unusually stony-hearted, your garden will soon contain nothing else. I have already abandoned one entire rockery to *II. tenax, Gormanii* and their individual and combined progeny!



IRIS GORMANII

# Iris innominata

## (*Iridaceae*)

This Southern Oregonian is of quite recent introduction to cultivation and, in its various forms, shows almost every colour and shade imaginable in an iris flower. First to reach our gardens and perhaps most generally esteemed is the so-called yellow form which is actually a rich golden-orange, a gorgeous colour which may be equalled in some of the new German Iris varieties; it is hard to imagine it being surpassed. Almost equally beautiful are some of the shades found in the "lavender" form which, incidentally, varies from pale opalescent blue to deep violet and in all shades has most of the ground colour of the falls obscured, the central two-thirds consisting of a white feather-shaped marking, the pinnae outlined with violet, the haft of pale gold: in the darker forms the contrast is particularly striking and lovely. I have never been able to decide which of these shades I like best; some of the pale blues are simply exquisite.

The plants make thick, heavy clumps of narrow, wiry, evergreen foliage over which the blossoms dance in late spring and early summer. In my garden the yellow form has proved in every way less luxuriant than the lavender; it neither makes such heavy clumps nor flowers so profusely.

A light soil, enriched with humus, in sun or partial shade will provide a home acceptable to this species but it must be well-drained since winter wet is an abomination and apt to prove disastrous as I discovered to my cost a few winters ago.

Division is possible though resented, the pieces being slow and reluctant to re-establish, but it is necessary if a particular colour form is to be increased. Plants are easily raised from seed but vary widely in shade though as a rule they come true to colour: that is to say that a lavender plant will produce seedlings of various lavender shades, a yellow various yellow shades.



IRIS INNOMINATA

# Iris setosa

## (*Iridaceae*)

This handsome species has a somewhat peculiar distribution; it is found in Labrador and North Eastern Asia as well as Alaska where it is the most notable plant in many districts and of which there is talk of its adoption as the floral emblem.

In its Alaskan stations, at any rate, *I. setosa* varies greatly in the colour of its blossoms which may be almost any shade of blue, lavender or purple while albino forms are by no means uncommon. The colour form most usual in cultivation is a rich violet-blue with a bronzy suffusion and dark violet veinings at the base of the falls and a very handsome form it is. The rather compact flowers with their full, rounded falls give an impression of sturdy independence, no doubt a very necessary trait for existence in such rigorous climates as pertain in their native lands. The quite wide, typically iridaceous foliage is rich green and though, no doubt, naturally deciduous, shows a tendency to become evergreen in more southern climes. The plants make stiff but attractive clumps of 12 inches or so, above which the blossoms rise in early summer, usually two to each stem.

*I. setosa* is not in the least degree fussy in cultivation and will thrive in any light, well-drained soil in a sunny position. A top-dressing of leaf-mould, compost or even very well-rotted manure in autumn will be much appreciated.

Clumps may be divided after flowering or new stock may be raised from seed which is set quite freely; many of the seedlings will bloom in their second year so that you frequently obtain flowering plants as quickly from seed as you do from divisions and the seedlings almost invariably make the thriftier plants.



IRIS SETOSA

# Iris tenax

## (*Iridaceae*)

Another lovely Western species, indeed all these Western Irises are lovely and all well merit a place of honour in the garden. *I. tenax* is another of those species which show wide variation in the colour of the flowers, those from different localities being purple, blue, white or yellow; different colours do not occur together. There is some doubt as to whether these forms retain their distinct colours in cultivation or revert to, what some regard as the original colour of the species. All plants of *I. tenax* which I have grown myself or seen in the gardens of others have had blossoms of glowing vinous-purple, veined and reticulated with deepest violet, the falls adorned with a white blotch splashed with gold; this, despite many of my seedlings having been raised from seed reputed to come from wild plants of various other shades.

*I. tenax* is one of the daintiest of its group, making well-furnished but far from dense, semi-evergreen tufts of fine grass-like foliage and displaying its splendid, 3 inch wide flowers atop wiry, 6 inch stems towards the end of spring.

Well-drained soil, enriched with humus, in light shade are the conditions most suitable for this species. A woodland glade dappled with sunlight and agleam with a host of these jewel-like blossoms is a prevision of such loveliness as we may hope to see when our time comes to wander in the Elysian Fields.

Propagation is by division after the flowers have faded and seed germinates well, the seedlings soon making flowering plants but, as in the case of *I. Gormanii*, it is absolutely essential to obtain seed from segregated plants, as this species is also very prone to hybridise.

*Iris tenax* is to be found in the coastal area, west of the Cascade Mountains, from British Columbia south almost to the California border.



IRIS TENAX

# Iris tenuis

## (*Iridaceae*)

*I. tenuis* is one of the rarest, as well as very loveliest, of the many exquisitely beautiful Iris species with which the Pacific North West is so richly endowed: its range is very limited being confined to a restricted area at the head-waters of the Clackamas and Molalla Rivers in Western Oregon. It is invariably found growing in the forest depths at the higher altitudes and heavy shade is strongly advisable if it is to succeed in our gardens. Once established it will colonize quite rapidly; the meandering wiry rootstocks quest around, sending up at intervals fans of pale green, fragile-looking leaves and angular-branching stems. Each stem carries aloft two comparatively large, somewhat flat, Japanesey Iris flowers; white ghosts splashed with pale violet and gold: breath-takingly lovely are these frail flowers as you see them through the dusky aisles of the tree-trunks gleaming in the darkness of the forest floor.

*I. tenuis* is not often generous with seed but compensates by being easy enough to propagate otherwise. It is only necessary to lift and detach rooted sections from the parent plants immediately after flowering and such sections settle down in their new quarters without fuss and grow away rapidly. The Iris species from this section are often reported to be very intolerant of division and transplanting but I can find little basis for such statements as applied to the majority of the species though there are several which are inclined to be temperamental: these operations must, however, be carried out either immediately after flowering or just as activity is commencing in spring; if interfered with during the dormant period the plants will rot before they have a chance to establish.

The flowers appear in late spring and early summer and the foliage dies down in early fall. During winter clean-up operations you may uncover the new growths waiting for spring; very quaint they are, like tiny green hands with outstretched fingers.



IRIS TENUIS

# Jeffersonia diphylla

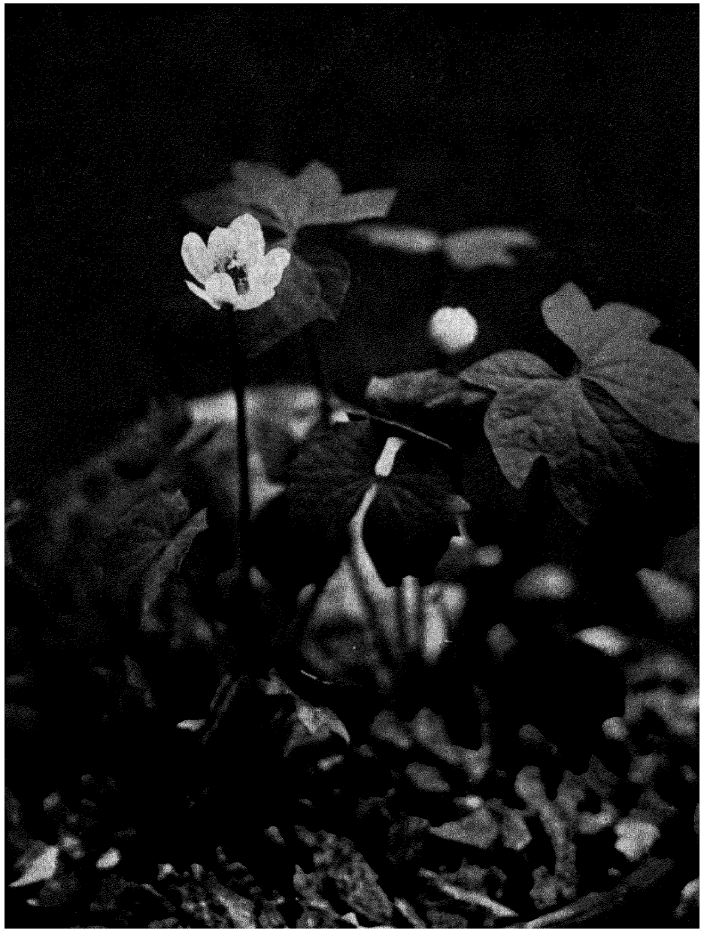
## (*Berberidaceae*)

The very first warm day of spring seems to arouse the Twin-leaf from her hyemal slumbers and presently appear frail flower-bud and folded foliage; with dainty disdain they discountenance the roarings and ravings of the lion winds of March.

Most of the little people of the woodlands are shy, modest, retiring folk no matter whether they deck themselves in feathers, fur or foliage; harmony not contrast is their watchword. True to this tradition the Twin-leaf entrances us with delicacy of shade and daintiness of form; in earliest spring her young growths, bud, leaf and stem alike, are lovely in palest lavender-grey. By the time the blossoms open this mauve remains only on the stems, the undersides of the leaves and in a narrow band edging the upper surface of the leaves; at maturity it is entirely lost, the foliage being pale green above and slightly glaucous below. Very lovely are the inch-wide blossoms, true flowers of Faerie from whose pale petals, perchance, Titania's tirewomen fashioned her bridal array. Sole, they are carried on 8 inch stems above the still immature foliage which will later attain a height of some 12 inches. Very curious is the top-shaped seed capsule, "opening at maturity near the summit by a half-circumscissle cleft." Lest some should credit me with a depth of erudition which I do not possess, I will admit that I cribbed that botanical *bonne bouche* from House's "Wild Flowers."

*J. diphylla* grows happily in the garden under rich woodland conditions and soon forms large clumps which may be lifted and divided after the foliage has died down in late summer. It may also be raised from seed which sets quite freely on established plants. In my garden it has shown no objection to growing under conifers as have a number of the woodland plants from Eastern North America.

The Twin-leaf ranges from Ontario southward through the New England States to Virginia.



JEFFERSONIA DIPHYLLA

# Kalmia polifolia montana

(*Ericaceae*)

This sub-species is not to be confused with *K. polifolia microphylla* which has leaves only ½ inch long, a somewhat horizontal and tortuous habit, almost mat-forming at very high altitudes, and which is found in the coastal mountain ranges of the Pacific North-West and the Southern Rocky Mountains.

*K. polifolia montana* which grows in the Northern Rockies of Alberta, forms a sturdy, erect, somewhat candelabrum-shaped little shrub, attaining a height of some 8 inches. Early in the latter part of spring, the deep rose-pink, balloon-shaped flower buds transform themselves into ¾ inch wide blossoms of slightly lighter shade, fading to white around the pale green eye. These impish, puckered blossoms are carried in loose heads of half a dozen or so on inch-long stems, stained with orange-red. The inch-long leaves are deep green above and glaucous on their undersides; the foliage is evergreen. The buds are formed in autumn which produce flowers in the spring.

This is the jolliest little shrub imaginable for a miniature bog, if you have such a feature in your rock garden, although genuine bog conditions are far from necessary; in cultivation it is perfectly happy and will be entirely satisfied planted in a cool, moist, peaty soil with northern exposure: so treated, it will blossom profusely every spring and not infrequently again in late summer: tree-shade is tolerated but the plant will retain its character better in a cold exposure.

Seed is usually set in fair quantity from which plants may be raised easily enough though they are slow to reach flowering size: cuttings are much quicker and, if taken in early summer, will soon root in a mixture of sand and peat. In propagating this species, it will be found that the normal procedures followed with the dwarf rhododendrons are eminently suitable and successful.



KALMIA POLIFOLIA MONTANA

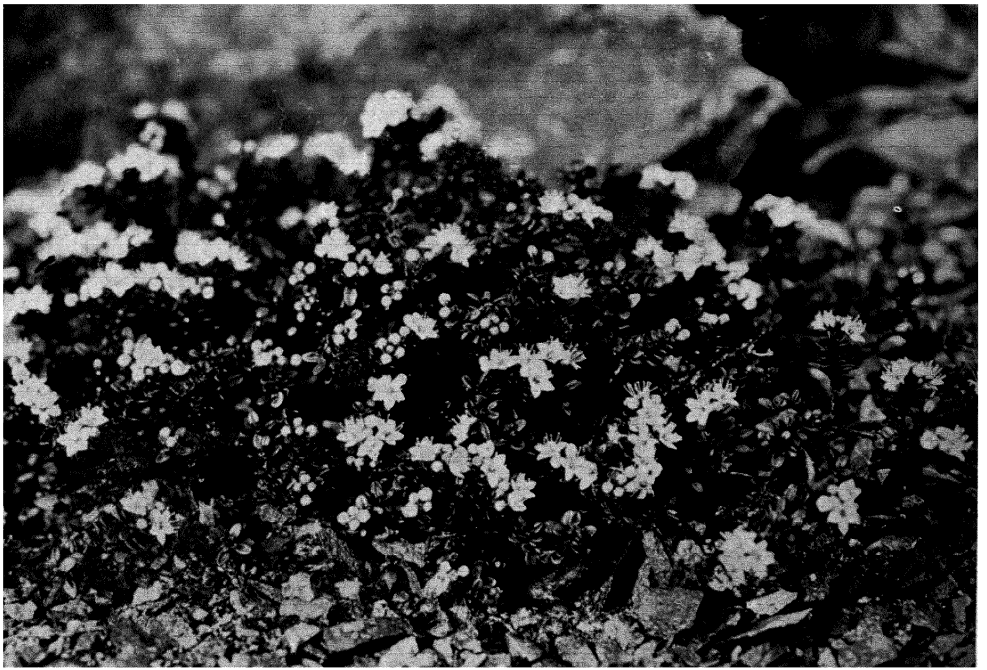
# Leiophyllum buxifolium prostratum

(*Ericaceae*)

This prostrate form of the Sand Myrtle from the Southern Appalachian Mountains of Eastern North America is an evergreen shrublet, *par excellence* for the rock garden where it is a perennial delight and an object of beauty through all the seasons; it displays its tiny, close-ranked, lustrous leaves, deepest green in spring and summer and bronze in fall and winter when it is also adorned with seed-pods of brilliant orange-red. It forms gradually-spreading mats, an inch or two thick, which will cover an area of several square feet in the course of time. In late spring these mats are be-jewelled with a countless host of wee vermilion buds that soon burst into tiny blush-white stars, ½ inch across.

The plant, shown in the picture, is growing in full sun in screeish mixture with which a considerable quantity of peat was incorporated at the time of planting. *L. prostratum* is an ericaceous plant and enjoys those acid conditions so dear to the hearts of most of the members of this fascinating family though it is cheerfully prepared to endure drier conditions than are most of its cousins. It is delightful planted in the lower levels of the heath garden or amongst the more open-habitted and deciduous species of dwarf rhododendrons.

Probably there would be no great difficulty entailed in raising plants from seed but having never attempted it, I am unable to speak with any authority; I imagine it would be a slow business. I do know that cuttings will strike readily if taken in very early summer; if left later than midsummer, results will be very far from satisfactory. Large plants may be divided without any particular difficulty though it is not a method to be commended. Possibly I am unduly and unreasonably prejudiced but, except in a few cases, such as propagation of colour forms of certain Iris species, I regard division as a last resort and a confession of incompetence.



LEIOPHYLLUM BUXIFOLIUM PROSTRATUM

# Lewisia brachycalyx

## (*Portulacaceae*)

It has been no easy matter to find suitable words or to coin adequate phrases competent to portray the ethereal beauty, the ineffable purity, the gleaming loveliness of this Lewisia's exquisite blossoms. It might be said that they are translucent, ice-white and crystalline but the portrait would still be obscure, even misleading, for they have a softness of texture hardly to be associated with ice-white or crystalline. For many months I have put off writing this description, sure that there was something that I should connect with these blossoms, making vain efforts to capture a Will o' the wisp in the marshes of memory. The other day I happened to glance, in passing, at the window of an Oriental Curiosity shop and saw there, displayed on black velvet, several pieces of white jade. The hunt was over.

*L. brachycalyx* is one of the deciduous members of the genus. Growth commences in late autumn and the plant forms a rosette of pale green, flat, lanceolate leaves, 1½ to 2 inches long. The blossoms are 1½ inches in diameter and similar in form to those of the well-known *L. rediviva* but jade-white with a tassel of primrose-tipped anthers in the heart: almost stemless, they are borne in such profusion as to hide all but the tips of the leaves. The plants are in bloom in late spring and early summer and unlike *L. rediviva* retain their foliage until after the seed has ripened. In this species the flower stem is not jointed below the calyx as is the case with *L. rediviva,* so there is no danger of the seed being blown away before you can collect it.

*L. brachycalyx* will respond to treatment similar to that recommended for *L. rediviva* and a little colony makes a lovely feature in the scree; I like it best in the alpine house where its loveliness cannot be impaired by any inclemencies of weather and I can gloat over it to my heart's content. Plants are not difficult to raise from seed and I know no other way of propagating them though leaf cuttings may prove satisfactory.

This species occurs locally in California, New Mexico and Utah.



LEWISIA BRACHYCALYX

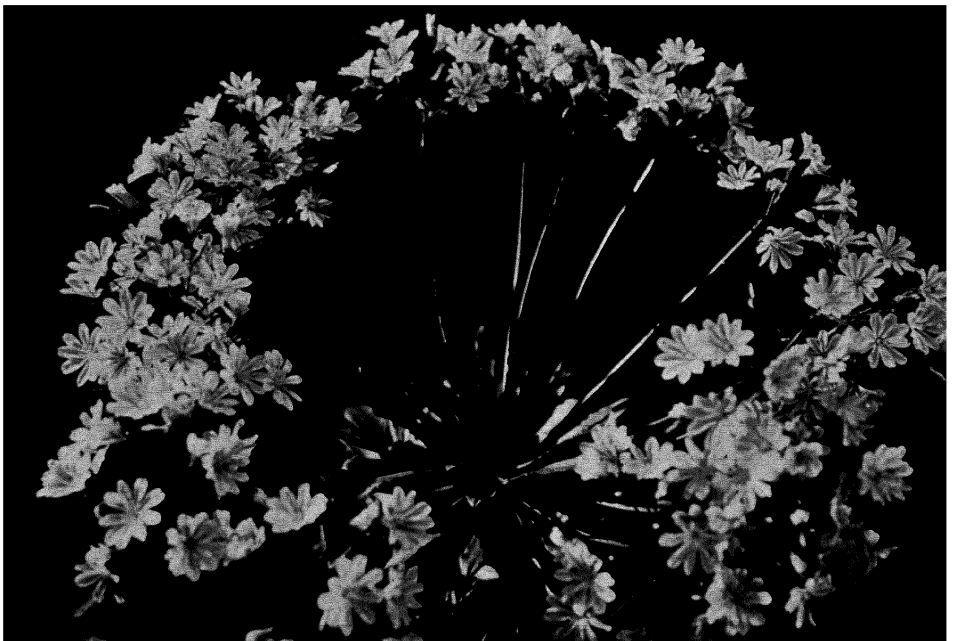
# Lewisia cotyledon

## (*Portulacaceae*)

The instability of this species has been used as an excuse for many sins by both botanists and nurserymen. With but few exceptions, it is possible that all the evergreen "species" belong to it: their name is already legion and the legion continues to grow. We have *LL. Howellii, Finchae, Purdyi, Ingramii, Mariana, crenulata* and so on and it seems likely that all these names represent nothing more than varieties of *L. cotyledon,* not even sub-species. Gabrielson, in "Western American Alpines," points out that, in the Siskiyou Mountains, you can find not only all these "species" but also intermediate forms growing together in the same colonies. If these do represent more than one species, it will be hard to discover which are the species and which the hybrids since typical plants of the various "species," even when segregated, produce very mixed bags of seedlings. Blooms of these "species" vary almost as much as the foliage, upon which the "specific" distinctions are so largely based, and the variations are in no way parallel; apparently identical flowers appear with widely different types of foliage and *vice versa.* Since these Lewisias have a very definite value for the decoration of the garden in winter owing to the beauty of their evergreen rosettes, a certain amount of naming is valuable to distinguish the most outstanding foliage forms such as *Howellii* and *Finchae* but it is being very much overdone. All these "species" carry their blossoms in large open heads on 8 to 10 inch stems in late spring and early summer while a second crop of flower in late summer is by no means unusual. The blossoms vary in colour and may be white, pink, orange-buff or apricot with longitudinal stripes of deeper shade.

Typical *L. cotyledon* may be distinguished from her sisters by the 6 inch long, narrow, smooth-edged leaves which make up her rosettes.

Propagation and cultivation are similar to those recommended for *L. Heckneri.*



LEWISIA COTYLEDON

# Lewisia Heckneri

## (*Portulacaceae*)

It has been suggested that *L. Heckneri* should possibly be included in the *L. cotyledon omnium gatherum* but it is my opinion that it is entitled to its specific rank since it comes true from seed if the plants are segregated, though it must be admitted that it will hybridize with *L. cotyledon et al.*

The rather flat rosettes of this species consist of strap-shaped, fleshy leaves, nearly an inch wide and about 4 inches long; these leaves are edged all round with even, fleshy spines, about one-sixteenth of an inch in length. The blossoms, carried in open heads on 6 inch stems are white to pale pink with deeper pink stripes and are borne in almost endless succession from early summer to late autumn.

In cultivation, quick and efficient drainage is of the utmost importance; it must be remembered that the crown is the most vital spot and not only must great care be taken to prevent dead foliage collecting and rotting around it but it is also well to remove the soil from around it to the depth of 2 inches and to fill the excavation with chips. Plants will thrive in sun or part shade and do best in sandy loam enriched with leaf-mould. This, like so many Lewisias, makes an excellent crevice or dry-wall plant.

Plants come freely from seed and leaf cuttings are not hard to strike; large plants may be lifted and divided, in which case a sharp knife should be used and each rosette allotted a portion of rootstock complete with lesser roots; such rosettes can be potted at once. Rosettes, lacking lesser roots, may be treated as cuttings, placed in moist sand and kept in shade; they will make roots in a very few weeks.

*L. Heckneri* is found in the mountains of Northern California.

Strictly and botanically speaking, both this and the preceding species belong in the genus *Oreobroma* which actually contains the bulk of the species regarded by most people as Lewisias and although this genus was separated quite a number of years ago it has never been adopted by gardeners.



**LEWISIA** HECKNERI

# Lewisia nevadensis

## (*Portulacaceae*)

It is essential to plant this little species in colonies of quite considerable size if it is to show to advantage in the garden; it is such a tiny mite and its flowers, though plentiful and beautiful, are neither large nor brilliant enough to arrest attention should the plants be grown singly or in small groups. Fortunately there is nothing to prevent us from having such colonies; the matter of expense does not arise since plants are easy to raise from seed. From a winter or early spring sowing many of the seedlings obtained will bloom when only six months old. The best way to obtain good seed is to acquire two or three plants, grow them in a pan in the alpine house, and save your own. In any event *L. nevadensis* is a treasure beyond price for the alpine house and, grown under such conditions, plants have been known to bloom as many as five times during the course of a season, the first blooming commencing in mid-spring: under garden conditions plants will, almost invariably, bloom twice and often three times.

The accompanying plate is life-sized. The foliage is deep green and the blossoms are white with purple-tipped anthers; rain or overhead watering washing the pollen down the petals tends to stain them faint lavender. It is often stated that but one flower is borne on each stem; in cultivation three flowers are not infrequent though but one is open at a time.

Grow this little chap in sunny scree and he will thrive and increase by self-sown seedlings. In winter he will disappear, being naturally a deciduous species but judging from his behaviour in the alpine house he will tend to become evergreen and everblooming in lowland gardens and southern climates.

*L. nevadensis* is to be found over a wide territory being known from Washington to California, Colorado and New Mexico.

As has been indicated, seed is the best means of propagation but division of old clumps is possible though not to be recommended.



LEWISIA NEVADENSIS

# Lewisia rediviva

## (*Portulacaceae*)

First acquaintance with this astonishing plant in bloom is apt to be a little startling; you may well be forgiven if you jump to the conclusion that someone is having a little joke at your expense. There before you, apparently just sitting on the ground, you see a bunch of 2 inch wide chalice flowers fashioned of pale shimmering silk and blushing faintly at having to appear in public with their nether limbs unprotected by orthodox raiment.

Below ground the plant consists of a woody rootstock from which radiate several meandering, fleshy roots: the leaves which resemble portly pine needles, commence to grow with the arrival of the autumnal rains. The greyish-buff flower buds appear in late spring and with their coming the leaves wither and die. The blossoms which open with the sun and close in the evening, are borne over a long period through early summer.

In cultivation, this species should be provided with a hot spot, perfect drainage and an opportunity to ripen in late summer: a generous measure of humus incorporated in the soil will pay dividends in extra flowers.

Stock may be raised from seed without much trouble but it is necessary to be on the alert to harvest it since the flower stem is jointed just below the calyx and directly the seed is ripe, the head drops off and blows away, seed and all.

*L. rediviva* was the first Lewisia to be discovered and brought into cultivation: it is very widely distributed being found from the Dry Belt of British Columbia to Northern California and Colorado.

Its popular names are Bitter Root and Sand Rose and it has the distinction of having had a river and the mountain range, that divides Montana from Idaho, named in its honour. It has been adopted as the State Flower of Montana.

The fleshy roots were formerly used by some of the Indian tribes as a tonic and by others as an ingredient in making bread.



LEWISIA REDIVIVA

# Lewisia Tweedyi

## (*Portulacaceae*)

*L. Tweedyi* is not so hard to grow as many people imagine and may be planted in sun or partial shade. No Lewisia will succeed unless very quick drainage is provided and this is one of the most pernicketty of all about it; let the mixture in which this species is planted be rich in humus; do not allow dead foliage to accumulate and rot around the crown, for lack of attention to this is almost certainly responsible for a very large proportion of the deaths of members both of this and many other Lewisia species. It is a good plan, when cleaning off the dead foliage in autumn, to remove the soil from around the crowns to the depth of 1 or 2 inches and to fill the excavations with chips. This, like most evergreen Lewisias, will flourish in a dry wall and so planted shows to excellent advantage. Under alpine house conditions, *L. Tweedyi* is simply magnificent and its culture presents no difficulty though, in common with other members of the genus when grown under glass, it is beloved of green aphis. In the alpine house the blossoms can be depended upon to outstrip the foliage whereas in the open they are frequently obscured, particularly in backward springs which seem to retard the flower buds to a greater extent than the leaves; the blossoms appear quite early in the spring.

Seed is the best means of increasing stock but to obtain it in quantity hand-pollination is necessary. Division is possible but fraught with peril and this also holds good with growth cuttings. Leaf cuttings are said to be satisfactory but that is a method I have yet to try.

The blossoms of *L. Tweedyi,* a good 2 inches across, are pale peach-colour, sometimes ornamented with a faint green central stripe on each petal and are of satiny texture and incredible beauty. The foliage forms large rosettes of broad, deep green leaves and is neither definitely deciduous nor evergreen though usually classed as the latter; "sub-evergreen" might do.

*L. Tweedyi* comes from the Wenatchee Mountains of Washington.



LEWISIA TWEEDYI

# Lilium montanum

## (*Liliaceae*)

Whether *L. montanum* is a true species or a Western alpine development of *L. philadelphicum* and where the one ends and the other begins are matters for the botanists to dispute about and need not concern us here: the chief difference seems to be in the scales of the bulbs which are jointed in *L. philadelphicum* and unjointed in *L. montanum*. Whatever its botanical standing, *L. montanum* is very near the top of the list of lilies which are suitable for the rock garden.

From a scaly bulb, less than an inch in diameter, a slender, somewhat wiry stem rises to a height of from 9 to 15 inches bearing an erect lily-bloom of dusky tawny-orange, much bespeckled within with markings of purplish-brown at the base of the perianth segments: occasionally plants are found with more than one flower to a stem. Whorls of stiff, narrow, dark-green leaves are borne at intervals up the stems of flowering plants while on stems from bulbs of less than flowering size, the leaf arrangement is irregular as may be seen in the accompanying picture.

This little lily should be planted in well-drained soil enriched with leaf-mould and is best planted on the north side of a large rock or beneath the shelter of a dwarf, rather dense shrub, if grown in a sunny position. In shade such protection is unnecessary and these blossoms make a delightful picture rising through a ground-cover of low-growing ferns.

*L. montanum* increases but slowly in cultivation which is much to be regretted. It may be increased both by seed or scales but both methods are slow and several years are required to form a bulb of flowering size so there is little likelihood of the species becoming generally available let alone common in cultivation for many a long day yet.

This species is found, usually at considerable altitudes, in the mountains of Alberta and British Columbia.



LILIUM MONTANUM

# Lithophragma parviflora

## (*Saxifragaceae*)

At one time this attractive little plant was included in the genus *Tellima* which further weighted the scales against its chances of attaining popularity. Already handicapped by a ridiculously inappropriate specific name, it was pushed even more into the background by the existence of a *Tellima grandiflora.* Naturally anyone wishing to acquire a representative of the genus would choose a "grandiflora" in preference to a "parviflora" and no one who had once flowered *T. grandiflora* and gazed in disgust upon its dingy, if graceful, heuchera-like spike of greenery-yallery jaundiced blossoms, could ever be expected to desire to acquire a "parviflora" of similar ilk.

*L. parviflora* puts up its little, trifoliate, velvety leaves during late winter and the dainty, pale pink flowers, like little Ragged Robins, appear in early spring in few-flowered racemes on hairy, 4 inch stems.

In cultivation this species requires exactly similar treatment to that recommended for *Sisyrinchium Douglasii* with which species it is often associated in the wild. Fortunately the two species do not bloom at the same time; the colour combination would be simply appalling.

*L. parviflora* is abundant in suitably rocky locations on Southern Vancouver Island and in British Columbia and with it is often associated the very closely allied species, *L. tenella.* The latter species is more slender in habit, a little later in bloom and bears bulblets in the axils of the florescence. The two species have almost exactly the same garden value and, unless you are an ardent collector, it is hardly worthwhile to grow both though so doing does prolong the flowering season another couple of weeks or so.

Propagation is by division of the bulb-like tuberous roots or plants may be raised from seed or allowed to sow themselves, as they will do if the seed is not gathered.



LITHOPHRAGMA PARVIFLORA

# Luina hypoleuca

## (*Compositae*)

This quaint little composite bases its chief claim to a place in our rock gardens on the outstanding beauty of its foliage. The grey-green leaves and stems are so densely coated with long white pubescence that no trace of the ground colour at all shows through, indeed the plant looks almost as though it was thickly covered with hoar frost. In some of their native haunts these plants are positively startling; in the somewhat gloomy gorge, through which flows the Sooke River on Vancouver Island, they are to be found growing in hair-cracks and crevices where the silvery tracery of their foliage gleams brightly in contrast to the rock faces against which they are splayed. In such situations the foliage tends to hug the rock face but, when the plants are growing on the flat, it is more inclined to stand erect. The plant shown in the plate is approximately a foot in diameter.

The queer spidery blossoms are carried in branching heads on procumbent, 8 inch stems which stiffen erect as the seed ripens: these flowers are pale straw-yellow in colour and, though possessed of a certain quiet beauty, are neither brilliant nor distinguished.

This species is deciduous and plants may be divided after the leaves have been shed in the autumn; plants may also be raised from seed.

*L. hypoleuca* does best grown in scree mixture and planted in a narrow crevice either in sun or shade; it should be kept as dry as possible since excessive moisture reduces the pubescence and robs the plants of their most outstanding charm.

This species is decidedly rare; it is reported from scattered localities in the Coast and Cascade ranges and from a few of the mountains of Vancouver Island: as stated above, it is also found in the Sooke River Gorge but little above sea-level, an extraordinary locality in which to find a species which in its other stations is a high alpine.



LUINA HYPOLEUCA

# Monarda mollis

## (*Labiatae*)

This species is, perhaps, the rarest in nature and the least known in cultivation of the North American Bergamots although it occurs over a very considerable area, being found locally from British Columbia, in the North-West, southward to Texas.

In cultivation, it is possibly just a shade too easy, being rather prone to take possession if treated to good living. It simply loves bog and is quite capable of looking after itself there and of holding its own with the strong-growing denizens; under such conditions it will reach a height of a couple of feet. It will generally be satisfied with half that stature and still grow quite happily in poorish soil but it must never be allowed to become dried out or its foliage will wither and its general sorrowful appearance will reproach you for so neglecting it. When planting *M. mollis* it is well to bear in mind that it increases by far-questing, underground runners and so requires watching: it is not advisable to plant it in the neighbourhood of very choice and not overly robust treasures.

*M. mollis* is a really beautiful species and has only the one drawback, otherwise all its qualities are excellent: it is hardy and long-lived, easy to grow and easy to propagate, valuable for cutting, most pleasantly aromatic and has a long season of bloom in summer. It is herbaceous in habit and from the running rootstocks sends up, in late spring, a close clump of erect, four-sided stems, well furnished with pale grey-green foliage and crowned with a large head, some 3 inches across, of soft lilac-pink bugles of traditional Bergamot design: not infrequently smaller, additional flower-heads arise from the axils of the upper leaves.

Propagation is by lifting and division of the clumps or removal of outlying portions of the running rootstocks. No doubt plants can be quite easily raised from seed but, having always had all the runners I needed for increasing stock, I have never experimented.



MONARDA MOLLIS

# Pentstemon Barrettae

## (*Scrophulariaceae*)

This simply magnificent species is possibly the best of all the pentstemons for the rock garden; it comes to us from the gorge of the Columbia River, the natural boundary between Washington and Oregon.

Its large, oval, occasionally toothed leaves are olive-green, overlaid with a silvery sheen and stained with vinous-purple; the silvery sheen is most noticeable in very hot weather and the purple staining is much intensified in fall and winter. The leaves, too, are thick, somewhat brittle and have a succulent appearance so that, at first glance, you are apt to think that you are looking at some strange giant sedum rather than at a pentstemon.

*P. Barrettae* forms a compact shrub 15 inches high and a couple of feet across: it is evergreen and decidedly ornamental all the year round; it is very prodigal of its fine rosy-lilac trumpets in spring and early summer. In cultivation, it is longer-lived than any other pentstemon of my acquaintance and absolutely hardy despite its distinctly tropical appearance. Give it a place in the eye of the sun and perfectly drained, poorish soil and it will be perfectly happy. It does not need quite such drastic pruning after flowering as is essential to the well-being of most of the shrubby pentstemons but a slight shortening of the main branches and removal of some of the older wood is beneficial. Many alpines appear to best advantage when grown in colonies but *P. Barrettae* is more effective as a specimen, emerging from a vertical crevice or beside a massive boulder where its silhouette cannot be obscured by intrusive neighbours.

Cuttings of the current year's growth strike quite readily and this is the simplest and most satisfactory method of propagation. Seed germinates freely but, unless saved from segregated plants, is liable to produce a very mixed bag if other species of the *fruticosus* group, to which *P. Barrettae* belongs and which are terrors for hybridizing, are growing in the vicinity.



PENTSTEMON BARRETTAE

# Pentstemon Cardwellii

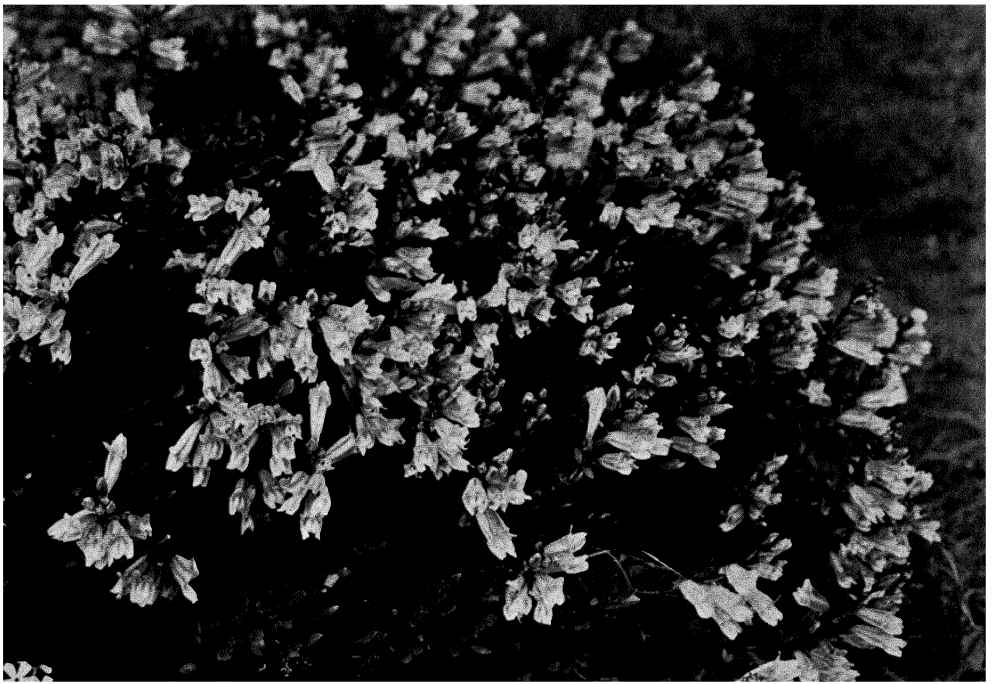
## (*Scrophulariaceae*)

Some authorities regard this species as a form of *P. fruticosus;* very possibly it is but, in the garden, it is, without doubt, sufficiently different from all the other forms of *P. fruticosus* to deserve a distinctive name. Perhaps a day will come when somebody will be found gallant enough to tackle and brilliant enough to unravel the chaos which is the genus *Pentstemon.*

*P. Cardwellii,* a native of the Cascade Mountains, is a fine, upstanding, shrubby, evergreen species of compact habit. The foliage is luxuriant, an abundance of irregularly-toothed, rich dark green, leathery leaves, about 2 inches long and over ½ inch wide. It is one of the most floriferous of all pentstemons and, in early summer, literally smothers itself under a blanket of 2 inch, purple trumpets, arranged in short, dense spikes; occasional spikes continue to appear until early autumn when a second crop of bloom is produced, though with less abandon than the earlier display. In common with most of the shrubby pentstemons, this species should be pruned quite drastically immediately after flowering; this keeps the plants compact and shapely and in addition, since it prevents the setting of seed, tends to improve the fall flower-display.

Owing to the hybridizing propensities of the plants of this genus, seed is of little value from gardens where a number of different species are grown in proximity. Cuttings of the current year's growth, taken in early summer, soon make root and this is the safest and surest way of increasing stock.

In the garden, *P. Cardwellii* will prove a most satisfactory plant if given precisely the same treatment as that recommended for *P. Barrettae* and like that species is also most effective when grown as a crevice plant in a cliff-face. These two species are of about the same stature.



PENTSTEMON CARDWELLII

# Pentstemon fruticosus alpinus

## (*Scrophulariaceae*)

*P. fruticosus,* in its various forms and varieties, is widely distributed throughout the whole Pacific North-West and may be found at almost any altitude from mountain-top nearly to sea-level.

*P. fruticosus alpinus* is a dwarfed development from the highest altitudes and retains its character in cultivation. It makes a moderately dense, compact, evergreen sub-shrub of semi-prostrate habit; the prostrate portions of the branches which come into contact with the soil, layer themselves freely. Plants may attain as much as a yard in diameter but seldom exceed 4 inches in height. This little shrublet is more adequately provided with foliage than are the taller-growing forms of the species and is likewise considerably more floriferous: the accompanying picture proves it to be no niggard when it comes to blossom. The lavender-purple, tubular flowers are about 1½ inches long and appear in late spring and early summer, carried in short, close spikes. The leaves, barely an inch long are smooth, leathery and deep green but stained with vinous-purple during the autumn and winter months.

Any light, well-drained soil in sun suits this species in the garden and but little attention is required beyond the cutting off of old flower-heads and removal of dead wood. As with other species of *Pentstemon* which layer themselves, an occasional top-dressing of sand and leaf-mould is most beneficial and helps to keep the plants healthy and prosperous.

Stock may be increased by cuttings taken in summer and rooted pieces may be stolen from established plants but such thefts must be perpetrated with care as the branches are very brittle and a little clumsiness may cause a lot of damage. As with the preceding species and for the same reason, it is of little use to raise plants from seed.

*P. fruticosus alpinus* is a first-class plant for the alpine lawn and makes an effective carpet for bulbous plants which attain a height of not less than 6 inches.



PENTSTEMON FRUTICOSUS ALPINUS

# Pentstemon Gairdneri hians

## (*Scrophulariaceae*)

This is one of those tantalizing beauties of which we seem to have a full share in the Pacific North-West: some of them manage to retain a precarious footing in cultivation, others hover on the brink, time and again they are brought in by collectors, some to die at once, others to tarry unhappily a while ere they too fade away; a few occasionally find their way into commercial lists and catalogues.

*P. Gairdneri hians,* from the Washington-Idaho border, has once or twice been offered to the public but it is doubtful if it will ever become generally available; more is the pity. Its propagation is far from easy, cuttings being most temperamental about rooting and seed, if and when you can get it, equally temperamental about germination. Should a thrifty plant be acquired, it will be found not overly hard to satisfy if it be borne in mind that the species is a desert-dweller; plant it in poor sandy soil in the hottest spot available, preferably on the south side of a large rock and see to it that the drainage is perfect as perfect can be. At the best of times and under the best of conditions this is not likely to prove a very long-lived plant. This is a very rare species and but seldom obtained by collectors. Not a very inspiring picture so far but let us look on the bright side. There is a breath-taking loveliness about this shrublet when in bloom in late spring that more than atones for all the trouble, expense and pains to which you may have been put in obtaining and growing it; to have once seen it in its glory is ample compensation. It forms a compact little bush of some 9 inches, clothed with narrow grey leaves and adorned with many large blossoms of softest, palest lilac. These blossoms have the appearance of a mimulus rather than a pentstemon; indeed, one might almost believe this beauty to have sprung from a union of Musk and Rosemary.



PENTSTEMON GAIRDNERI HIANS

# Pentstemon Menziesii

## (*Scrophulariaceae*)

*P. Menziesii* is a very widely distributed species and occurs generally throughout the Pacific North-West. It is exceedingly variable, which is not altogether surprising since it may be found from the highest peaks right down to sea-level: at least three distinct and easily separable forms are to be found growing on Vancouver Island alone. The plant may be a dense mat of tiny leaves, less than an inch high and some 18 inches across, on the other hand it may be a sprawling mass of 6 or 8 inches and cover several square yards. Plants from some stations are very grudging of bloom and hardly flower at all while those from other localities completely smother themselves with blossom. The flowers vary greatly in colour, almost every imaginable shade of lavender and purple being found, some of these shades are excellent others simply too horrible. White, pink and blue forms are said to exist; the white I know and have, but I have yet to see anything approaching a true blue or a clean pink. One of the forms has been named; this is *P. Menziesii Davidsonii* which has paler green leaves than the more typical forms and has the leaf-margins entire and lacking the definite indentations so noticeable in all other forms of the species. This form is not to be confused with *P. Davidsonii* of English gardens of which the correct name is *P. Newberryi rupicola. P. M. Davidsonii* is a delightful plant but is not so free-flowering as some of the other forms. Late spring and early summer is the season of bloom for *P. Menziesii* though a few blossoms are usually to be found decorating the evergreen mats throughout late summer and early autumn.

*P. Menziesii* is often confused with *P. Scouleri,* a very different species: this is discussed under *P. Scouleri.*

This species appreciates soil and exposure similar to that recommended for *P. Barrettae* and may be similarly propagated. The dwarfer forms are specially charming when planted to form lawns around dwarf conifers and the like.



PENTSTEMON MENZIESII

# Pentstemon Newberryi

## (*Scrophulariaceae*)

The typical form of this species, while undoubtedly a thing of beauty, can scarcely be regarded as a joy for ever; just how long ever is, of course nobody knows, but it is a whale of a lot longer than the period during which *P. Newberryi* will condescend to gladden your eyes in the garden. It is hard to keep for long and the plants which you do succeed in keeping alive are hard to retain in good shape as they are inclined to die back here and there which gives them a ragged, unkempt appearance. Still, the species is lovely enough to warrant our taking an infinity of trouble to make it feel at home and success will be most likely if it is planted in scree in the eye of the sun and cut back with ruthless savagery immediately the flowers have faded: do not allow it to waste valuable energy setting seed since seed is not needed, summer cuttings are quite easy to strike.

*P. Newberryi* makes an erect sub-shrub of some 9 inches or more in height, the lower branches quite thickly and the flower-stems somewhat sparsely clothed with grey-green leaves. The blossoms are 1½ inch long bugles of brilliant ruby-red, their beckoning flames a lodestone drawing all garden visitors to worship at their shrine. Chief among the worshippers in my garden are the humming-birds which always seem particularly fascinated by red flowers. These blossoms are quite plentifully displayed over a considerable period in late spring and early summer.

*P. Newberryi* makes its home in the mountains of Northern California.

Beautiful as this species is, it is surpassed by some of its forms and varieties, *P. Newberryi rupicola* (*P. Davidsonii* of English gardens), *P. N. rupicola roseus* and *P. N. rupicola albus*. *P. N. rupicola roseus* is discussed on the following page. *P. N. rupicola albus*, the lovely albino form is a newcomer to cultivation and not likely to be generally available for some little time to come.



PENTSTEMON NEWBERRYI

# Pentstemon Newberryi rupicola roseus

## (*Scrophulariaceae*)

What a name! But what a lovely thing! *P. Newberryi* was discussed on the preceding page and needs no further mention. *P. N. rupicola* from the Cascade Mountains of Washington and Oregon has similar flowers but its habit is procumbent and its foliage slate-grey; the individual leaves are usually somewhat larger than those of typical *P. Newberryi*. This variety is better known in English gardens as *P. Davidsonii*, a name which properly belongs to an entire-leaved form of *P. Menziesii*.

*P. N. rupicola roseus* may well be bracketed with *P. Barrettae* to stand at the head of the list of pentstemons having garden value; they deserve to be rated as absolutely first-class garden plants. This form was found in the mountains on the Oregon-California border. The habit is entirely prostrate, the foliage pearl-grey, the leaves smaller and rounder than those of the other forms and the comparatively larger blossoms, borne in late spring and early summer, are a most enchanting shell-pink. A very lovely effect may be achieved by planting this form in colonies to form a carpet on a gentle southern slope in the rock garden but it is even lovelier when allowed to fill a narrow crevice and spill over the edges.

Its cultural needs are similar to those of *P. Barrettae* and propagation presents no difficulty. Summer cuttings strike readily and plants are easily raised from seed which is useless unless saved from segregated plants on account of the hybridizing propensities of the genus. This species layers itself freely and rooted pieces may be detached from established plants and potted up.

Some protection from the full power of the sun is advisable in hot climates and may be obtained by planting on the north side of a large rock. This has not been found necessary on Vancouver Island and is not likely to be needed in England but will, without doubt, be found beneficial in the southerly parts of the U.S.A.



PENTSTEMON NEWBERRYI RUPICOLA ROSEUS

# Pentstemon Scouleri

(*Scrophulariaceae*)

Certain botanists and authorities to the contrary, notwithstanding; I consider it absurd to regard this species as a form either of *P. Menziesii* or of *P. fruticosus:* all three have a few characters in common but there the resemblance ends. However, this is no place for a discussion of botanical differences or of botanistical vagaries.

*P. Scouleri* is a plant of the lesser altitudes and is abundant in part of the Kootenay District of British Columbia and adjoining territory in the State of Washington. Left to its own devices, it forms a low spreading, sprawling mass, a yard or more across but if it is to give of its best it should not be left to itself but should receive a drastic pruning immediately after flowering and be given a heavy top-dressing in autumn. These two operations tend to keep the plant compact and healthy; it has a tendency to layer itself in any event and top-dressing helps this process; the increased root-system that results, is most beneficial and undoubtedly helps to prolong the life of the plant.

This species is so floriferous that often the mass of blossom will completely hide the foliage in late spring and early summer. The flowers vary much in colour, almost every imaginable shade of mauve is to be found and there are both pale flesh-pink (Mrs. Rutherford) and ivory (albus) forms in commerce; there are rumours, too, of deep pink and pure white forms soon to be placed on the market. The evergreen leaves are much toothed, rather narrow and a little over an inch long.

Cultural requirements and methods of propagation are similar to those given for *P. Barrettae*. This species is seen at its best if planted where it can tumble down over a cliff-face.

*P. Scouleri* has an unfortunate habit of "dying on you" without apparent cause but since it comes so easily from cuttings and makes such a marvellous mass of colour, we would be foolish indeed to deny it a home in our gardens.



PENTSTEMON SCOULERI

# Petrophytum Hendersonii

(*Rosaceae*)

In the past this jolly little shrub has been better known and more usually listed as *Spiraea Hendersonii* and as *Spiraea Hendersonii* most of its old friends and admirers still refer to it. It takes very high rank amongst alpines as do several other notable treasures that have come to us from the high peaks of the Olympic Mountains of Washington, species such as *Campanula Piperi* and *Viola Flettii*.

*P. Hendersonii* is inclined to be of somewhat prostrate habit when growing on its native heights but is less noticeably so in cultivation; with me it forms tidy, compact, dome-shaped little bushes some 6 inches high and rather more in diameter. The silky, evergreen foliage is an unusual shade of blue-green flushed with rosy-lavender on the undersides of the leaves; this flushing is particularly marked in autumn and winter. The flowers, produced in late spring and early summer, form tight, jolly, little bottle-brushes some 3 inches long and ½ inch thick; they stand erect but arch over near the tip and are composed of a dense mass of tiny little spiraea flowers. A little bush, some 7 or 8 inches in diameter, bearing half a dozen or more of these baby bottle-brushes is not only strikingly beautiful but absolutely unique. The flowers remain in good condition for a remarkably long period, especially if protected from direct sunlight during the heat of the day.

*P. Hendersonii* will grow quite happily in any part of the rock garden where it can obtain a cool root-run and be shaded from the full blast of the sun; it will succeed admirably in scree mixture. This treasure well merits a place in the alpine house.

Cuttings, taken when the flowers begin to fade, root easily and quickly but will prove very stubborn if left until later. Plants may be raised from seed quite easily but only patient gardeners are advised to try as flowering plants are not produced in a mere year or two.



PETROPHYTUM HENDERSONII

# Phacelia sericea

## (*Hydrophyllaceae*)

A fascinating and beautiful plant which is all too rare in cultivation. It is to be found gh altitudes throughout a very large area, occurring from the s of Vancouver Island, British Columbia and Alberta southw Nevada and Utah.

*P. sericea* forms a st beautiful rosette; the deeply-cleft leaves thickly covered ry down look as though they had been fashioned from old plants consist of a number of rosettes forming a tu vidual rosettes being some 6 inches across. The florescenc pears in late spring, is fantastically quaint and lovely; th densely clustered in spike-like panicles which may rom a few inches to a foot in height. The indi d blossoms are deep blue-violet and their exserte fila s and orange anthers give them a fringed appearance, very dainty and delightful.

Propagation is by seed which is usually set in abundance and germinates freely but seedlings must be given plenty of air and watering from below is strongly advisable; stagnant air and superfluous moisture are anathema to the plants at all stages of their existence. If these points are borne in mind no great difficulty will be experienced in growing this species in the alpine house; they should be potted in scree mixture.

It must be frankly admitted that there is still much to be discovered before the problem of growing *P. sericea* in the garden can be considered satisfactorily solved. The best results to date have been obtained by growing the plants in sunny scree in specially constructed crevices beneath overhanging rocks where no moisture at all can reach that part of the plant which is above ground save by way of the root-system.

Plants of *P. sericea* are very poor travellers and prospective growers would be well-advised to concentrate on seed.



PHACELIA SERICEA

# Phlox caespitosa

## (*Polemoniaceae*)

It is far from easy to explain how to differentiate between this and the two following species of needle-leaved phlox. After a period of years of close personal acquaintance a kind of instinct is acquired which enables one to assert with confidence that a particular plant belongs to this or that species: while such decisions are possibly accurate enough for the ordinary run of horticultural purposes, not only possibly the decisions themselves but certainly the method by which they are reached would horrify a conscientious systematic botanist!

*P. caespitosa* is the most distinct and constant of the three species and may be separated by its forming a very compact, furry, dome-shaped hummock, by its smaller, silkier and more silvery-green leaves, by its being more nearly evergreen, by its somewhat smaller blossoms of uniform pale lavender which shows almost no variation in depth of shade, by its coming into bloom several weeks earlier and by its greater prodigality of blossom. It is inconceivable that any plant can be more floriferous; not only do the blossoms hide every trace of foliage in late spring and early summer but they overlap and obscure one another. I consider this gem of a plant to be one of the most satisfactory and delightful of all the young Lochinvars. I am aware that other authors have expressed quite contrary opinions but we all have to write in the light of our own experience.

*P. caespitosa,* whose home is in the mountains of Oregon, insists on certain conditions but, when given them, is perfectly happy in the garden; all it needs is full sun with perfect drainage: scree or scree mixture and a sun-bathed ledge are ideal.

Propagation presents no difficulties; summer cuttings root quickly. Plants may also be raised from seed but gathering seed of these dwarf phloxes requires the patience of Job and the fingers of a pick-pocket.



PHLOX CAESPITOSA

# Phlox diffusa

(*Polemoniaceae*)

The habit of this species may be regarded as more or less intermediate between those of *PP. caespitosa* and *Douglasii*. It makes a sub-shrubby irregular mass of semi-erect branchlets, a dense mat about 3 inches thick. This is another fine rock garden plant for similar conditions and positions to those suggested for *P. caespitosa* than which species it is but slightly less floriferous and has rather larger blossoms. The flowers of *P. diffusa*, somewhat star-like in outline and about ¾ inch in diameter, are profusely produced in early summer and continue to be displayed, on and off, until the autumn. They vary greatly in colour and may be almost any shade of lilac, lavender, pink or white; a very lovely rose-purple form is known as Dr. R. N. Stoker's variety in honour of its discoverer who collected the original plant on Vancouver Island. This species is widely distributed through the mountains of the Pacific North-West.

As has been indicated *P. diffusa* responds to quite similar conditions to those recommended for *P. caespitosa* and it is not more difficult to grow: it may also be similarly propagated.

This and the following species have a common drawback; the foliage of some individuals insists on turning pale brown very soon after the flowers have faded though other plants growing side by side with them remain quite green until late autumn. This fault can doubtless be remedied in time by propagating only from plants which retain their verdancy; this is a point which nurserymen will do well to bear in mind.

These low-growing phloxes, in addition to their great value as flowering plants, make admirable groundcover for the fine-foliaged summer-flowering bulbs, native and otherwise, for which purpose they are admirably adapted; they are dense enough without being too dense and are equipped with deep-thrusting roots which have but little fibre.



PHLOX DIFFUSA

# Phlox Douglasii

## (*Polemoniaceae*)

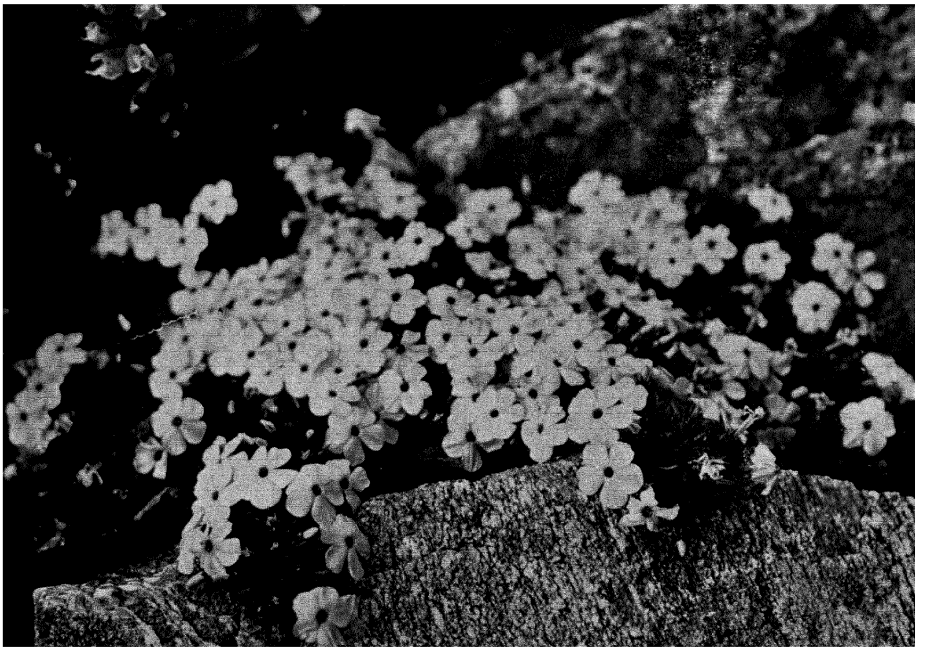
*P. Douglasii* is, perhaps, the least floriferous of these three closely allied species though a glance at the picture on the opposite page will give assurance of its being no niggard in production of blossom: though it may be surpassed by its kin in quantity of bloom, it surpasses them in quality. The blossoms of this species are more rounded in outline, more solid in appearance and somewhat greater in size than those of the two preceding species: the colour range is parallel to that of *P. diffusa.*

In habit *P. Douglasii* is the most prostrate of the three and is sometimes a little inclined to straggle; this tendency, however, can be easily checked by a little judicious pruning and is of insufficient importance to be regarded as at all detrimental to the high value of this species as a garden plant.

Some botanists regard *PP. diffusa* and *Douglasii* as forms of the same species and it is to be noted that they are both widely distributed through the North-West; where their ranges coincide all intermediate forms are to be found which may or may not be of hybrid origin. At any rate, since the two species, assuming them to be species, are so variable and unstable as to confuse the botanists, surely a mere gardener may be forgiven if he admits his inability to clarify so murky a situation. Whether *PP. diffusa* and *Douglasii,* as I have here differentiated them, represent different species or forms of the one species is rather a matter of academic interest: viewed as garden plants they are sufficiently distinct to merit separate names.

The treatment of this species in the garden and the methods of propagating it are identical to those given for *P. caespitosa.*

Collected colour forms of these species frequently fail to maintain their quality when brought into the garden but you often obtain equally good forms from seed and several of my most cherished varieties originated as self-sown seedlings in my own garden.



PHLOX DOUGLASII

# Phlox speciosa

(*Polemoniaceae*)

Nearly all the remarks included in the first paragraph under *Pentstemon Gairdneri hians* might well be repeated here. If anything this species is even less tractable than the pentstemon: its cuttings are certainly no less difficult to strike and it is even shyer in seed-production, though seed, when produced, can be relied upon to germinate. As there is some variation in the colour of the blossoms, it is highly desirable that some way be found to induce a greater percentage of cuttings to form roots: though, at its best, this phlox produces magnificent, inch-wide blossoms of pure, rich rose-pink, there are forms in which the purity of shade is marred by a bluish tinge. There can be no plant more intolerant of root-disturbance so that on those rare occasions when you do manage to achieve a rooted cutting or a seedling your troubles are by no means over; not infrequently the normally harmless operations of shifting from a small to a larger pot or transferring from a pot to a position in the rock garden are seized upon by the plant as an adequate excuse for turning its face to the wall: unceasing vigilance must be exercised with pot plants lest a questing root find the drainage hole and anchor itself beneath the pot, for this is a very highly esteemed method of *felo-de-se*. It is hardly necessary to add that attempting to move an established plant or to collect one in the wild is tantamount to murder.

Plants, once acquired and established, will be found to be long-lived and by no means exacting in their demands; in my garden they seem to be quite happy in sun or shade; perfect drainage is, of course, essential and the soil should be a light one, moderately enriched with humus.

*P. speciosa* is a shrubby deciduous species of a foot or less with long linear leaves and is usually found growing at the base of some stronger-growing shrub. It may be seen, blooming in late spring, in Washington and Oregon at low to moderate altitudes.



PHLOX SPECIOSA

# Polemonium Archibaldae

## (*Polemoniaceae*)

The West abounds in *Polemonium* species and almost all of them are well-worth a home in the garden, though some take none too kindly to cultivation and others, particularly some of the high alpines, show their resentment by refusing to bloom. *P. Archibaldae,* however, is perfectly easy and an excellent doer. It is a pleasant plant for the front of the border but infinitely more desirable growing on a sunny shelf in the rock garden in light, sandy soil, but slightly enriched with leaf-mould; under such conditions it attains a height of from 12 to 15 inches though in rich border soil it is apt to grow to a couple of feet or more.

It is believed that we have to thank Mr. D. M. Andrews of Boulder, Colorado for the introduction of this species to our gardens and it was first distributed as *P. occidentale* of which it was thought to be a form. It has also been known as *P. grande* a name now consigned to the synonymy. This species is found in Southern Colorado.

*P. Archibaldae,* which is herbaceous in habit, forms a fine clump of the fern-like foliage, so typical of the genus, anything from 9 to 12 inches in diameter; the first flowers appear in late spring and from then until autumn the plants are rarely out of bloom. The blossoms, carried in generous heads, are over an inch in diameter and are deep, soft violet-blue in colour with a conspicuous orange-yellow eye, a truly lovely combination of colours.

This is a most accommodating plant, neither fussy about soil nor aspect and equally happy in sun and shade. Good drainage is advisable but the plants should not be permitted to get very dry. Clumps may be divided but there is no necessity to disturb established plants since seed is freely produced and seedlings are easy to raise; volunteers will often appear around established plants.



POLEMONIUM ARCHIBALDAE

# Polemonium mellitum

## (*Polemoniaceae*)

It has been suggested that this species is simply a colour form of *P. confertum* but, though they are obviously closely allied, the vastly different ways in which they behave in cultivation alone tend to show certain fundamental differences not to be accounted for by a mere change of colour in the blossoms: for instance, the difficulty with *P. confertum* is to persuade it to bloom at all while the trouble with *P. mellitum* is to prevent it from flowering itself to death.

*P. mellitum* is one of those species which, though apparently sound perennials under natural conditions, at once exhibit markedly monocarpic tendencies when raised in cultivation: possibly good living and lack of competition goes to their heads. It will be found that most seedlings, if allowed to do so, will come into bloom when a year old and die immediately after seeding. This can generally be prevented by potting the seedlings into a hungry soil mixture in as small a pot as possible and then, when danger of flowering is passed, quite late in summer, potting on into a better mixture and larger pots or planting out into the permanent positions which they are to occupy. The plants will then tend to stool out and form several rosettes and danger of monocarpism is over.

*P. mellitum* makes pleasing little, nearly evergreen rosettes of fresh-green, fern-like foliage from which in mid-spring arise stout, 8 inch stems carrying generous heads of 8 to 12 deliciously scented, old ivory, trumpet blossoms.

Cool scree or light well-drained soil in cool exposures seem best for this species in cultivation. As has been indicated, plants can be raised from seed which usually germinates freely: division of clumps is possible but inadvisable as monocarpic tendencies may re-assert themselves with disastrous results.

*P. mellitum* is found at moderate altitudes in the Colorado Rockies.



POLEMONIUM MELLITUM

# Polygala paucifolia

## (*Polygalaceae*)

It should be noticed that the specific name of this species is *paucifolia* and not *pauciflora* though it is frequently listed in English catalogues and referred to in literature under the latter name. The name *pauciflora* is not only incorrect but so inappropriate as to be positively libellous; a plant could hardly be more prodigal of bloom.

*P. paucifolia* is a widely distributed woodland species and is found from New Brunswick southward to Georgia and westward to the Great Plains. In nature it is generally found growing in rather dry woodlands which may account for the sparsity of foliage for such sparsity is far from evident in cultivated plants growing in moderately rich, moist, woodland soil. Aiken, writing of this species in his "Pioneering with Wild Flowers," states:—"the Fringed Polygala has so very few leaves that it makes a poor carpet," and so I remember it in Ontario but this is far from being the case in my garden here on Vancouver Island: my plants form a solid mass of evergreen foliage two feet or more across and yet retain their floriferousness.

The exquisite flowers, several to each procumbent 6 inch stem, are rosy-purple, fantastically winged and with daintily fringed crests; they are in bloom for several weeks in late spring and often a second crop appears in late summer. The smooth, deep-green leaves are stained wine-purple beneath. The plant spreads by underground runners and bears cleistogamous flowers concealed beneath the foliage. Beautiful albino forms are reputed to occur, but I have not yet succeeded in obtaining any such treasure despite many tearful appeals to collectors and nurserymen in the Eastern States.

*P. paucifolia* is easy in any shady corner in soil consisting entirely or almost entirely of leaf-mould.

Plants may be raised from seed or propagated by cuttings which, if taken in summer, placed in moist sand and kept in shade, will make root in a very short time. Irishmens' cuttings are usually available in fair quantities from the underground runners; these may be potted immediately.



POLYGALA PAUCIFOLIA

# Primula angustifolia

## (*Primulaceae*)

This is a particularly lovely and lovable little fellow and, considering that it belongs to the Nivales Section of the genus, has a most unusual and altogether admirable trait—it is perfectly easy to grow. Plant it at the foot of a rock on a steep slope facing north; so situated and growing in a mixture of granite chips and leaf-mould with a dash of peat it will be perfectly happy, bloom freely every spring and, year by year, steadily increase in girth. After the flowers have faded the foliage soon withers and the plant becomes dormant until the autumnal rains recall it to life and activity. It is on account of the dormant period in summer that planting on a steep slope is advisable since any excessive moisture from overhead watering will drain away from such a situation with the least possible delay. If stock is to be increased by division, it is most safely accomplished as near the end of the dormant period as possible. Good seed is hard to obtain and, in my experience, such is rarely set in cultivation; should any be set, it is best sown as soon as ripe. Seedlings will, as a rule, be found to take at least three years to reach flowering size.

The plant makes a tight, tidy, little tuftet of erect, narrow, shining, medium-green leaves from 1 to 1½ inches high, above which the flowers rise on 2 to 3 inch stems in the early days of spring. The ¾ inch wide, starry blossoms are of softest rose-pink with a deep yellow eye. Altogether a most attractive little plant and, though it is quite happy in the garden, is such a midget that it is seen to better advantage in the alpine house or in a trough.

*P. angustifolia* is to be looked for at high altitudes in the Rocky Mountains from British Columbia and Alberta southward to Colorado.

It is probable that there are no more than a scant half dozen North American Primulas worthy of a place in our gardens and among them this little treasure deserves high rank.



PRIMULA ANGUSTIFOLIA

# Primula suffrutescens

## (*Primulaceae*)

The *Primula* genus is very poorly represented on the North American continent and very few of the species that do grow there have any real garden value. Most outstanding is *P. suffrutescens* which is not only first in loveliness but easiest to grow and easiest to keep. While one of the Cuneifolia Section, it differs greatly from all other known members of that group by its woody branches and sub-shrubby habit. A happy plant is capable of forming a rambling procumbent bush 3 inches thick and a yard across; the branches layer themselves wherever they come into contact with the soil. Care should be taken when handling the plants as the branches are exceedingly brittle and will break at the least touch.

The branches, well-clothed throughout their length with inch-long, olive-green, wedge-shaped leaves, terminate in rosettes from which arise the few-flowered heads of blossom on wiry, 2 to 6 inch stems. The blossoms are solid in substance and rounded in outline though each of the petals has a distinct central notch in the outer margin: in colour, they are rich soft pink, only a shade less intense than the brilliant carmine-pink of *P. rosea,* the eye is bright orange-yellow and curiously beaded in outline. The flowers are displayed in late spring.

This species may be grown in full or partial shade or in a cold exposure; with me it thrives and spreads quite rapidly in the rather dense shade beneath Douglas Firs. Quick drainage is essential as anything approaching stagnant conditions in winter are more than likely to prove fatal. The best results have been obtained in light sandy soil with the addition of leaf-mould and peat and a top-dressing of sand and leaf-mould in autumn.

Stock may be increased by the careful removal of rooted layers, by cuttings taken in summer or by saving and sowing your own seed.

In nature *P. suffrutescens* grows in the Sierra Nevada Mountains of Northern California where it can be found at medium to high altitudes.



PRIMULA SUFFRUTESCENS

# Romanzoffia sitchensis

## (*Hydrophyllaceae*)

No plants could be daintier than the Mist Maidens who, in early spring, raise their myriad tiny chalices aloft on 3 inch stems over tufts of rich green foliage. These golden-hearted chalice blossoms have just the exquisite colouring and just the satiny texture of pearls: the little leaves, rounded, scalloped and lustrous form a fitting background for the gleaming blossoms. Nothing could be more charming than a tiny colony of these peerless little plants irradiating the darkness of some moist, moss-grown rock-crevice in the mountains or bravely smiling amid the gloom of some deep gorge, gayly defying the turbulent waters that brush them in passing and drench them with flying spray.

*R. sitchensis* is quite content provided with a moist, shady nook and is equally happy beneath the shade of trees or in a sunless northern exposure. Any well-drained soil, rich in humus, is to its liking while leaf-mould and granite chips in equal parts seem to constitute the perfect diet.

The root-system appears to have been unable to make up its mind whether to be a bulb or no, but the crowns are quite easily divided in late summer or early spring when the plants are comparatively dormant: this species does not always attain a state of complete dormancy and some years, should the weather be mild, the foliage persists all through the winter. Seed germinates freely and a colony in congenial surroundings will increase rapidly by self-sown seedlings.

*R. sitchensis* has a wide distribution throughout the Pacific North-West, being found from Alaska to California and from Vancouver Island to the Rocky Mountains. It appears to have no preference for any particular altitude; you may find it growing in moist woodland almost at sea-level or climb the highest peak and find it equally happy in the role of an alpine: the only difference is that plants from the lower levels are more lush in growth and may attain a height of 6 to 8 inches.



ROMANZOFFIA SITCHENSIS

# Sanguinaria canadensis flore pleno

(*Papaveraceae*)

*S. canadensis* is a typical woodland dweller, widely distributed throughout the eastern portion of the North American continent: in the Southern States it has been found growing at an altitude of 2,500 feet. It is popularly known as the Bloodroot on account of the reddish fluid which is exuded from the rootstock if it is injured during the active period.

Propagation is by division of the rhizone-like rootstock and this must be done shortly after the foliage has died down in late summer and the plant become dormant; interfered with at any other time the rootstock will "bleed" to death.

The Bloodroot is a truly delightful plant and is perfectly easy to satisfy in the garden since all it requires is a moderately rich, somewhat moist, woodland soil and a shady nook to grow in. The blossoms which appear in mid-spring before the leaves are fully developed are fragile and beautiful but very fleeting. The glaucous, palmately-lobed leaves are a handsome feature in the woodland garden for several months after the flowers have faded.

The double form is a miracle of loveliness, the blossoms, for all the world like tiny double white peonies set on 3 inch stems, are far less fugitive than those of the ordinary single plants. I consider this treasure to be the most astounding and outstanding contribution that North America has offered to the gardens of the world. The original plant from which all those now in cultivation are believed to be descended, was discovered by Mrs. Pauline Kempf growing in the woods near Ann Arbor in Michigan.

Words seem but feeble, futile things with which to convey the wondrous perfection, the gleaming purity, the peerless loveliness incarnate in these superb blossoms; of what avail can anything be that I may say since, until you, with your own eyes, behold them, it is impossible for you to realize one tithe of their preciousness.



SANGUINARIA CANADENSIS FLORE PLENO

# Saxifraga Newcombei

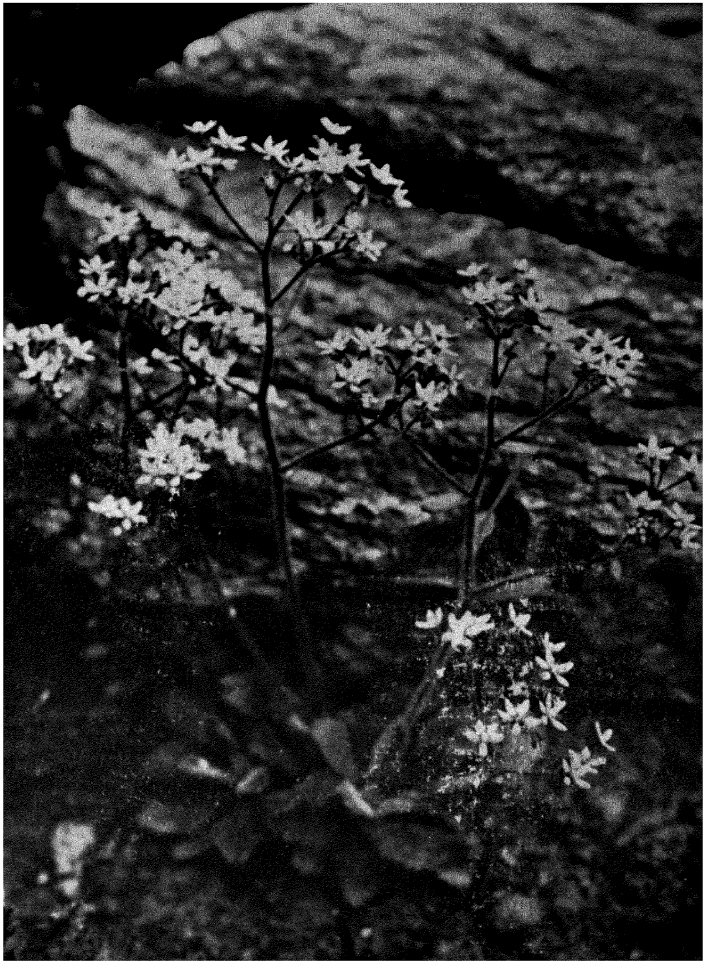
## (*Saxifragaceae*)

While this is unquestionably one of the best of the North American saxifrages and, incidentally, one of the very few which are worth a place in the garden, I must admit that, to a considerable extent, my fondness for it is inspired by my affection for its discoverer, the late Dr. C. F. Newcombe, in whose honour it is named. When I first came to the West, I spent many delightful, never-to-be-forgotten days in the forests of Vancouver Island in the company of the doctor than whom no one had then or has now a wider knowledge of our native plants. There are many of us who owe a debt of deep gratitude to his memory for all he taught and showed us.

*S. Newcombei* is found on Triangle Island and the Queen Charlotte Islands where it grows in rock-crevices almost down to sea-level, at least low enough to be drenched by the salt sea spray whenever the weather is at all turbulent and it usually is in those parts. From the appearance of the plant and its behaviour in cultivation such an habitat is just about the very last you would expect: it has the furriness of an androsace and shows a like resentment of excessive moisture on its foliage. The plant makes flattish rosettes up to 7 inches across, consisting of large, serrate, grey-green leaves, often flushed with pink and densely coated with long, silky pubescence. The starry, blush-white blossoms, ½ inch in diameter are borne in airy, graceful clouds on hairy, branching stems to a height of 8 or more inches.

*S. Newcombei* is happy in scree or scree mixture in a well-drained crevice and may be grown in sun or shade though sun is preferable since shaded plants make more luxuriant growth and seem more susceptible to winter wet: in any case the very quickest of quick drainage is absolutely essential to keep the rosettes in good heart during wet weather.

Plants are easily raised from seed and division is perfectly simple; indeed, annual division is desirable as small plants are less vulnerable since there is less chance of moisture accumulating among the rosettes.



SAXIFRAGA NEWCOMBEI

# Shortia galacifolia

## (*Diapensiaceae*)

We should spare no pains to make this elfin woodlander at home in our gardens for it is charming all the year round and very nearly as beautiful in foliage in autumn and winter as it is in blossom in early spring. The dainty white flowers, frilled and bell-shaped, are borne in great profusion, rising above the foliage on 6 inch stems. The somewhat leathery leaves, though always distinctly ornamental, are especially lovely during the dark days of the year; in the early autumn they turn a brilliant vermilion and remain so until spring; the strongly accentuated veining is always a shade or two paler than the remainder of the leaf-surface, so giving a marbled effect which is most attractive.

The Oconee Bells, the name by which this species is popularly known, has a very interesting history. First discovered by Andre Micheaux in the mountains of Carolina in 1789, all trace of it was lost and it was believed to have become extinct until it was rediscovered by Professor C. S. Sargent in the Great Smoky Mountains of North Carolina in 1886, very nearly a hundred years later. It is without doubt one of the very rarest of all our floral treasures, being confined in nature to the one restricted locality in Sapphire County, North Carolina.

Collected plants are not easy to establish but no difficulty should be experienced in making nursery-grown stock happy, particularly if the plants are "ex pots." Full shade is essential to their well-being and for their sustenance is recommended pure well-rotted leaf-mould to which has been added just sufficient coarse sand to provide free drainage.

Propagation may be by careful division if you are sufficiently hard-hearted to do it. Cuttings, taken in early summer and inserted in a mixture of three parts peat and one part coarse sand, will be found to root quite readily, kept moist in a shaded frame. Fresh seed germinates readily but the seedlings are somewhat temperamental and grow very, very slowly.



SHORTIA GALACIFOLIA

# Sieversia ciliata

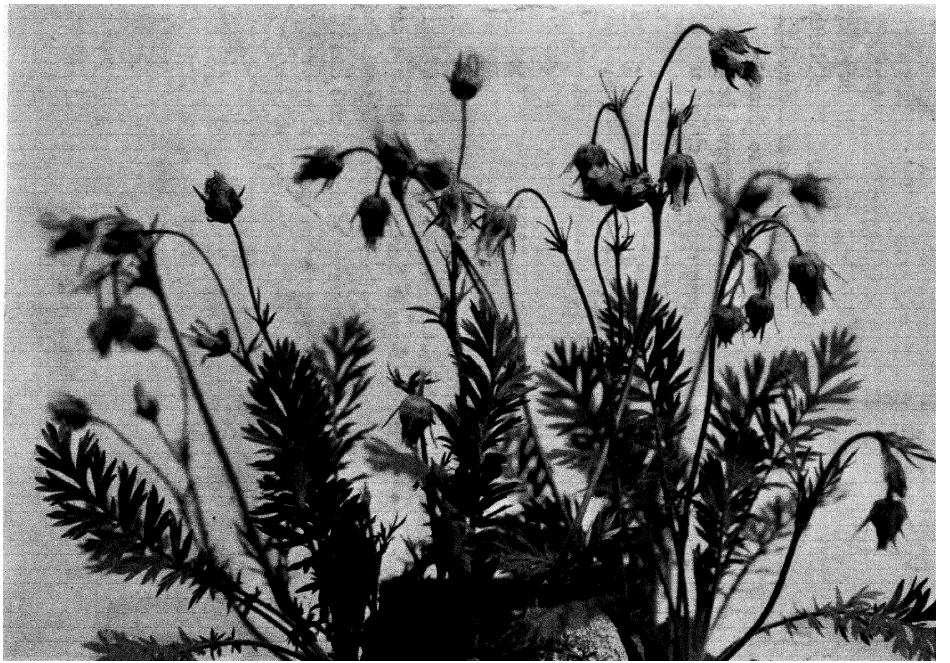
(*Rosaceae*)

This plant will not appeal to those who insist on brilliancy of colour as the essential ticket of admission to their gardens but those who appreciate daintiness of form and beauty of line will swiftly fall beneath its spell. Careful placing is necessary to enable this species to display its charms to the best advantage; a sky-line silhouette is ideal but rarely attainable, however, a single plant standing alone with a large rock in the background is almost equally effective.

A light, sandy, well-drained soil and a warm exposure are everything necessary to make *S. ciliata* feel at home in the garden. Strictly speaking, this is not an alpine plant; it comes from the rolling uplands and foothills rather than the high peaks of the West but it looks thoroughly at home in the rock garden and that, to my mind, is the main consideration. This species is found over a wide area, from Alberta and British Columbia to Washington, Utah and New Mexico. It is sometimes referred to as *Geum ciliatum:* the genera *Geum* and *Sieversia* are very closely allied.

The graceful, dangling, urn-shaped blossoms of pale pink are carried in few-flowered heads on slender, 6 inch stems in the latter days of spring; they always remind me of *Geum rivale.* On reaching maturity the blossoms stiffen erect and soon thereafter erupt into fascinating, fuzzy seed-heads, silken and silvery-grey. Close examination of the blossoms shows the calyx and sepals to be of crushed-strawberry-pink and the petals cream with a faint pink flush. The foliage consists of rosettes of 3 inch long leaves which look, for all the world, like soft green feathers.

Young plants are easy to raise from seed and plants are easily divided in spring or late summer. It is really best to divide the old plants every year or two since they not only do better but small plants are much more comely and graceful than big ones where you cannot see the wood for the trees.



SIEVERSIA CILIATA

# Silene Hookeri

## (*Caryophyllaceae*)

A much maligned plant is this, handicapped by an undeserved reputation for "difficulty." Actually it is easy enough to manage, provided the conditions it requires are understood and supplied. Since it comes from the dry, sandy hillsides of the Pacific North-West we must do our best to mitigate the far-from-arid conditions that usually pertain in our gardens. The best place to plant it is on a high ridge with full southern exposure; drainage must be perfect; the soil should consist largely of coarse sand and chips: artificial watering is rarely necessary or advisable and if practicable should be withheld after midsummer to enable the rootstocks to ripen; if not practicable, the plants should be in close proximity to shrubs or other thirsty subjects that will dispose of surplus moisture.

Plants should be obtained in late summer and planted by the end of September as the roots become active with the first fall rains and the young shoots are pushing through the ground ere winter has gone. Spring planting, except out of pots, should never be attempted. When dormant roots are planted, the crown should be at least 2 inches below the surface since from it fine, fleshy, root-like shoots rise to the surface where they burst into leaf and bloom. As the plant ages and the rootstock thickens, the number of these shoots increases until you have what looks like a colony but is really only one plant.

New stock must be raised from seed which should be sown in winter and the seedlings potted individually as soon as large enough to handle. The young plants should be kept dry during the latter part of the summer and may be planted out in fall or transferred to larger pots and held over until spring.

The accompanying portrait is approximately half life-sized and renders much description superfluous; all that need be said is that the foliage is grey and that the flowers which appear in late spring and early summer, vary from blush-white to deep salmon-pink and are simply exquisite.



SILENE HOOKERI

# Sisyrinchium Douglasii

## (*Iridaceae*)

This species is neither new nor rare but it is an outstanding beauty and does not enjoy the popularity it deserves: this neglect is doubtless due to so many people having failed to grow it successfully; such failures are believed to be due to lack of understanding on the part of the would-be growers rather than to any fault of the plant. It is essential to the well-being of *S. Douglasii* that it be permitted to dry out and get thoroughly ripened in summer. Though it does not always choose such meagre fare, it is by no means unusual to find it growing in nature in moss on rocks with very little or no soil at all and where it goes without moisture of any kind from early May to late October. Quite such Spartan treatment is unnecessary in cultivation but it is advisable to approach such conditions as closely as possible. Shallow depressions in the rock, capable of holding soil to the depth of a couple of inches, make admirable homes for this species since they dry right out very rapidly after rain or artificial watering which should, however, be avoided unless needed for the welfare of neighbours.

*S. Douglasii* occurs locally on Southern Vancouver Island and in Oregon, Washington and Northern California. Wherever it grows it is one of the very first harbingers of spring which, together with its striking beauty, doubtless accounts for its many popular names of which Satin Flower and Grass Widow are the most appropriate. The 8 inch clumps of sturdy rush-like foliage appear in late winter and the first warm days of spring persuade them to dangle out their rich crimson-purple bells, inch-wide, silken of texture and hearted with clappers of gold. The clumps will be found to consist of a tight mass composed of individual plants so that propagation by division is a very simple matter and is best done shortly after growth commences in earliest spring. Plants may also be raised from seed.

This species has been better known to most of us as *S. grandiflorum* and was also for a while called *Olsynium grandiflorum*.



SISYRINCHIUM DOUGLASII

# Sphaeralcea coccinea

(*Malvaceae*)

People who have hot, dry, gravelly banks in their gardens and experience difficulty in providing them with adequate floral raiment, will do well to turn their eyes to the plains and dry hillsides of the West. The lower levels and desert areas of these regions are rich in species that delight in just such conditions; *S. coccinea* is not only one of these but an exceptionally beautiful plant with blossoms of a most unusual colour. It is a little difficult to know how best to describe their shade which is not quite orange, nor apricot, nor vermilion yet is akin to all three. These lovely blossoms, 1¼ inches across, are typical of the Mallow family, to which the genus *Sphaeralcea* belongs, and are carried in endless succession and profusion all summer long. The finely-cut, pale-grey foliage is just the right foil for the flowers and further enhances their loveliness; in habit this species is deciduous.

*S. coccinea* makes large clumps of foot-long procumbent stems well furnished with foliage; the blossoms are carried in the axils of the upper leaves and in terminal spikes, indeed the florescence is very similar to that of a hollyhock but prostrate and, of course, in miniature. Not content with forming clumps, this species also increases and spreads quite widely by underground runners, once it is well established, and in a few years will form a colony of quite considerable extent.

Seed is set freely, particularly in hot dry summers, and is the best means of increasing your stock: colonies can be dug up and separated or rooted runners removed but it will be found that fibrous roots are few and far between, consequently the new plants are apt to be slow in becoming re-established.

*S. coccinea* is to be looked for throughout the Great Plains from Alberta southward to Mexico. *Malvastrum coccineum* is another name under which this species is frequently found in literature and trade lists.



SPHAERALCEA COCCINEA

# Sphaeralcea Munroana

## (*Malvaceae*)

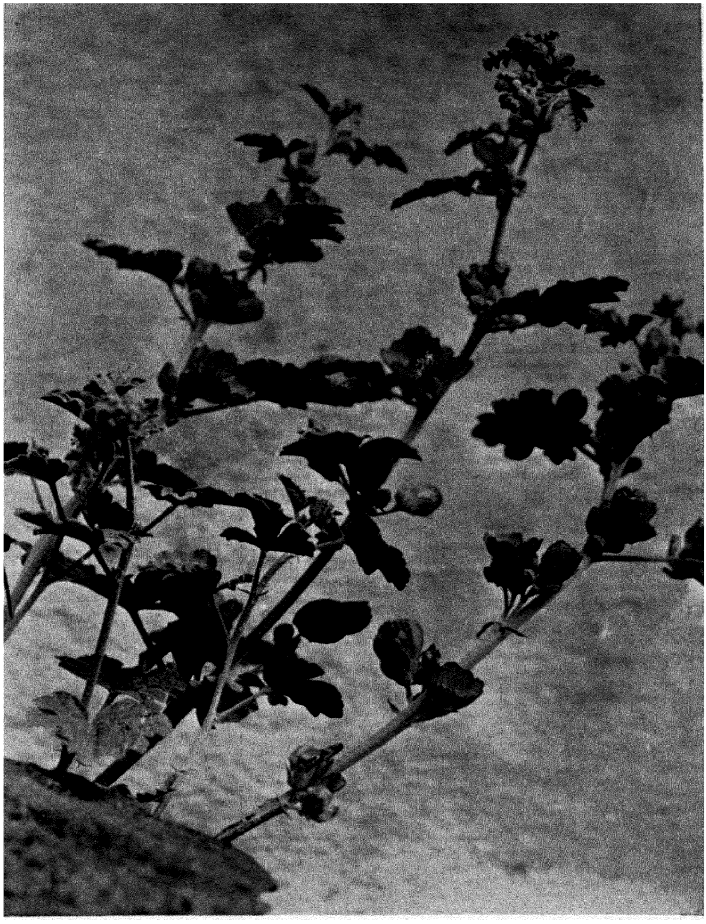
Although this Globe Mallow is one of the few suitable species which are willing and able to brighten our rock gardens with an abundant and continuous display of blossoms from midsummer to frost, it appears to be almost unknown to the majority of rock-gardeners. When well and happily established this plant likes plenty of elbow-room for, during the latter part of the flowering season, it will cover an area some 5 feet across. The branches lengthen as the plant blooms and when out of bloom very little space is required so that spring-flowering subjects may be planted quite close to it; the summer growth is light and open so it is probable that the light shade it gives during the heat of the day is beneficial rather than otherwise to any plants growing beneath.

*S. Munroana* is sub-shrubby and semi-erect in habit; the branches prostrate near the base then curving upwards. The florescence is similar to that of the preceding species though the spike is even more pronounced and hollyhock-like. When a branch has finished blooming it is best cut out since fresh growths continue to thrust up from the base throughout the summer. The foliage is very decorative, being daintily scalloped and having the colour and texture of silver-grey velvet, making a lovely foil for the brilliant apricot-vermilion blossoms.

A well-drained, protected position in full sun with poor gravelly soil and ample root-run is needed to ensure success with this species. It displays itself to best advantage when planted in a crevice between a couple of good big rocks.

Plants are easily raised from seed and possibly cuttings of the new growths taken in late spring may root without difficulty; summer cuttings have not proved successful. This species, with me, has shown no tendency to spread by underground runners as does *S. coccinea.*

*S. Munroana* is found in arid areas from British Columbia to Utah.



SPHAERALCEA MUNROANA

# Talinum okanoganense

## (*Portulacaceae*)

It is most unfortunate that this jolly little species had to make its bow to the horticultural world under the burden of two names. It was discovered almost simultaneously by Carl S. English Jr. in the Highlands of Okanogan County, Washington, and by Mrs. Way on Mount Baldy near the Thompson River, British Columbia: these are still the only known stations. Mr. English, himself, named this species *T. okanoganense* and described it in the Proceedings of the Biological Society of Washington, D.C., Vol. 47, published October 2, 1934. The material collected by Mrs. Way was submitted through C. W. Armstrong of Vancouver, B.C., to Miss Alice Eastwood who named it *T. Wayae* and described it in Leaflets of Western Botany, November, 1934. The name *T. okanoganense,* therefore, has priority by one month and *T. Wayae* must be placed in synonymy.

This mite, when not in bloom, might easily be mistaken for a sedum consisting, as it does, of a close mat of branching succulent stems and tiny succulent, blue-green leaves. In bloom, however, its affinity to the Purslanes becomes evident since its mats are plentifully be-spangled all summer with exquisite gleaming saucers of mother-of-pearl, ½ inch or more across. As summer ends the leaves wither and the plant looks so dead that it is a very pleasant surprise when you see it burgeon forth again in spring. The accompanying portrait is life-sized.

*T. okanoganense* is an easy treasure in the scree, trough or alpine house, asking only a somewhat protected place in the sun and perfect drainage. Pieces may be removed from the plant and struck as cuttings but these are very slow to get away after rooting; seedlings are much more satisfactory. Seed is produced in quantity and germinates freely and from sowings in January a large percentage of the young plants will bloom in the latter part of August.



TALINUM OKANOGANENSE

# Talinum spinescens

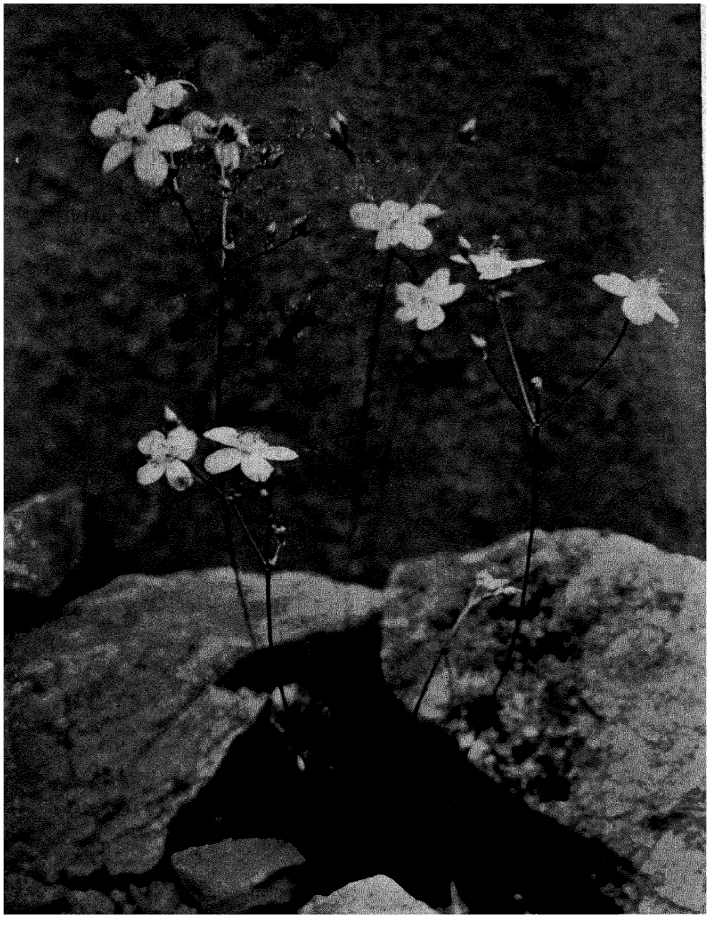
## (*Portulacaceae*)

When you examine this little plant it is easy to believe that perhaps in the dawn of time Sedum and Calandrinia met and loved and gave us this beauty as the fruit of their union. Here we have the quaint succulent foliage of Sedum combined with Calandrinia's lovely blossoms, silken and purest magenta, hearted with gold. Magenta is a much-maligned colour and only because about ninety-nine out of every hundred people do not know what it really is and habitually misuse the name, applying it to all the dirty blue-pinks and objectionable pinky-blues with which some flowers choose to degrade their natural beauty. It cannot be denied that magenta calls for very careful placing in the garden but that in no way detracts from its loveliness as a colour.

*T. spinescens* which comes from the Wenatchee Mountains in Washington, forms a clump of branching succulent stems which end in clusters of long narrow succulent leaves; without close examination it is hard to tell what is stem and what is leaf. The blossoms, nearly an inch across, are carried in few-flowered open heads on wiry, 5 inch stems. In winter the plant is apt to be a messy looking object, an uncouth mass of limp, succulent stems which erupt in a rash of pink pimples in spring; these pimples are the new growths and are rapidly transformed into leaves.

This species, like its relatives the Portulacas, loves heat and aridity and, if such conditions can be provided, will give no trouble but much pleasure, blooming all summer long. To be reliably hardy it requires either a blanket of snow all winter or else no hard frost at all: here and in England where we are treated to alternate frosts and mild spells, the plants rarely survive a winter but, with me, self-sown seedlings always appear in spring and bloom prolifically in late summer.

Plants come readily from seed and the species gives very satisfactory results treated as an half-hardy annual.



TALINUM SPINESCENS

# Trientalis arctica

## (*Primulaceae*)

This dainty, fairy-like midget will appeal irresistibly to all lovers of the exquisite and tiny. It is found on the high mountain plateau and in the boreal bogs throughout the Pacific North-West from Alaska to Northern California. It appears to be equally at home in a certain boreal bog, very little above sea-level, a few miles from Victoria, B.C., and at several thousand feet up in the mountains of the Cassiar District in Northern British Columbia.

The little, pinky-white, tuberous rootstocks send up, in earliest spring, wiry stems of an inch or slightly more in height, crowned with a whorl of little lanceolate leaves, usually seven in number. Above the leaves, in mid-spring, are carried the three or four dainty, little, star-like blossoms, pure glistening white on the heights and in the far north but frequently flushed with delicate pink at low levels and under conditions of cultivation. So frail and thread-like are the flower-stems that the merest hint of a breeze causes the blossoms to quiver and nod.

*T. arctica* is no trouble at all in cultivation; if you cannot supply it with a home in a sunny open bog, it will be quite content in any moist, shady nook planted in good loam, well enriched with a generous amount of leaf-mould or peat; it is best given a little nook to itself where it will not be overwhelmed by more boisterous neighbours. Under these woodland conditions it will thrive and increase rapidly, soon forming jolly little colonies.

Alpine house treatment is, of course, in no way necessary but a little colony in a pan makes a delightful picture and under no other conditions can *T. arctica* be observed to such advantage.

It is highly probable that plants of this species can be raised from seed without much trouble but the rapidity with which the tubers increase renders any such trouble at all, quite unnecessary.



TRIENTALIS ARCTICA

# Trillium rivale

## (*Liliaceae*)

There are already a considerable number of North American species of the genus *Trillium* in cultivation and it is by no means improbable that there are more to come. Most of these species are more suitable for the woodland than the rock garden but there are two which may well be treated as alpines. Similarity of name as well as stature has given rise to some confusion which is easily understood and quite excusable since one is *T. rivale,* the other *T. nivale;* a most unfortunate effort in nomenclature.

Both species come into bloom early in the spring and reach a height of from 4 to 6 inches. The flowers of *T. nivale* are pure white and it comes from the Middle West: those of *T. rivale,* when they first open, are pale lavender-pink flecked and dotted with vinous-purple particularly about the base of the petals; as the blossom ages it fades to white but the spotting is always discernible and is a reliable guide in distinguishing between the two species; *T. rivale* is found in the Siskiyou Mountains of Southwestern Oregon.

These charming little fellows are delightful subjects for growing in shady corners or pockets in cool exposures in the rock garden and a pan of them in the alpine house is a positive joy. They are far from difficult to grow and will flourish in any moist soil rich in humus; for the alpine house I give them leaf-mould and chips in equal parts.

Propagation is by careful division of the rootstocks in summer when the plants are dormant; this should not be left too late as activity commences soon after the autumn rains start: plants may also be raised from seed but the process is rather a slow one, however, if they are in congenial surroundings, they will usually sow themselves around quite freely and soon form prosperous little colonies without any effort on your part.

The trilliums are frequently referred to as bulbs, which they are not: tuberous-rooted perennials is the correct designation.



TRILLIUM RIVALE

# Vaccinium caespitosum

(*Ericaceae*)

There is no plant growing in my garden that attracts more attention than does a pan of this species in my alpine house and there is no time of the year when it is not beautiful. It makes an intricate, twiggy, little bush from 3 to 7 inches high; in earliest spring it bursts into leaf, fresh cool green, obovate leaves about an inch long; in late spring it decks its branches with innumerable, little, blush-white heather-bells soon to be followed by comparatively huge, globular, blue berries covered with thick greyish bloom. The berries are sweet but rather insipid and will remain on the plants until December if the birds do not interfere. Soon after midsummer the foliage begins to colour and the little bushes are a blaze of vinous-crimson through all the latter part of summer and autumn until a severe frost causes the leaves to fall. Even in winter the plants are most attractive, their fine, tan-coloured twigs thickly overlaid with rosy-pink bloom and studded with an abundance of coral buds.

*V. caespitosum* is perfectly easy in the garden if grown in moist, somewhat acid soil with a cool exposure; as has been indicated, it is a treasure second to none for the alpine house but such treatment is not in the least degree necessary for its well-being.

Since this species increases by underground runners, it may be propagated by the removal of rooted pieces. Summer cuttings root quite readily and seed though slow presents no difficulties.

*V. caespitosum* is found on most of the mountains of the North-West and though at its best at high altitudes, is not restricted to them, being sometimes found quite near sea-level.

This little species is one of my extra particular pets and I was delighted to have my opinion of it endorsed by Will Ingwersen who completely lost his heart to the actual plant shown in the accompanying portrait, when he visited my garden in the summer of 1936.



VACCINIUM CAESPITOSUM

# Viola Flettii

## (*Violaceae*)

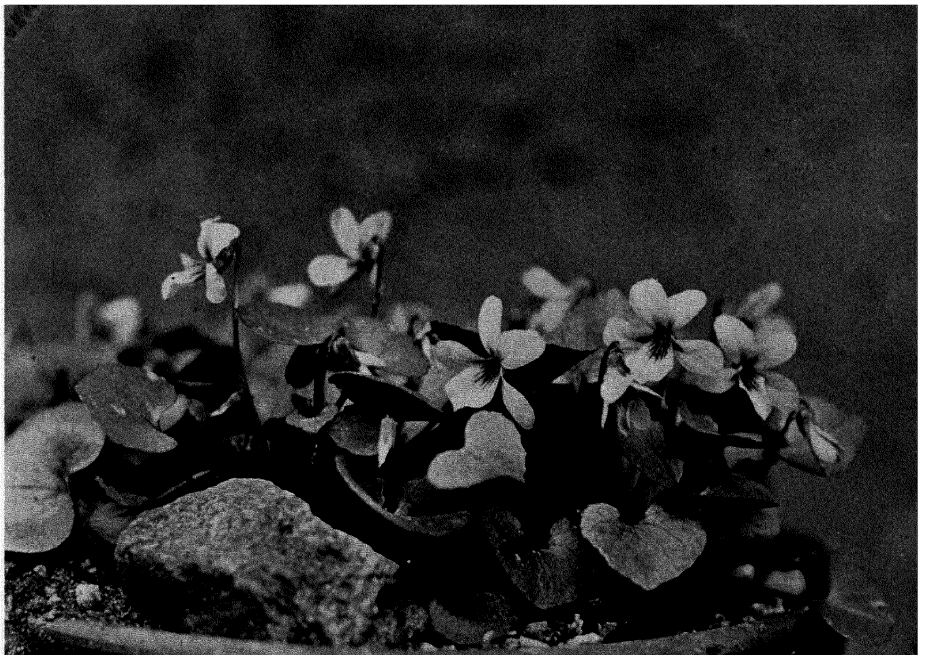
This little violet is, without doubt, one of the most precious jewels from the floral diadem of the Olympic Mountains of Washington. Very rare in nature and even rarer in cultivation, it is confined to a very restricted locality. The continued scarcity in cultivation is due to the difficulty of propagation by means other than seed and the fact that seed is set in very meagre quantities only.

In their youth the leaves are rich vinous-purple but with maturity they become deep metallic green with purple veins above but flushed with purple beneath and on the stems. The leaves of *V. Flettii* are the normal shape that one expects a violet's leaves to be; they have none of that fantastic cutting and slashing affected by so many American species. The flowers, a good inch across, very large in comparison with the leaves, are a glorious red-purple and are borne over a considerable period in spring and early summer.

In nature, *V. Flettii* is usually found growing in narrow crevices in cool exposure, where it defies the collector, and will be found to do best when given a similar position in the rock garden. The soil must be well-drained and the plants will show their appreciation if you are open-handed in the provision of leaf-mould. A few plants in a pan are a joy in the alpine house and from them you are more likely to capture the seed-pods before they pop than you are from plants growing in the garden; that at any rate is my experience.

*V. Flettii* dies down in late summer and if you wish to see it again in the spring, beware of slugs! The fleshy crown, just below the surface seems to be a delicacy of which they will travel far and take endless pains to partake nor will they be content with an *epicurean soupçon* but will scoff the lot unless steps are taken to forestall their gluttony.

The chief difficulty in raising plants of *V. Flettii* from seed, is obtaining the seed from which to raise them.



VIOLA FLETTII

# Viola pedata

## (*Violaceae*)

The Birdsfoot Violet cannot be described as a rarity but it is not nearly so common in cultivation as it deserves to be. Possibly this lack of popularity is due to its cultural wants being misunderstood. It is natural to expect a violet to want a shady position and soil rich in humus; such conditions are precisely those which this species does not want. In nature *V. pedata* is found growing in dry sandy soil in open woodlands from Southern New England to the Gulf of Mexico. In cultivation it thrives best in well-drained gravelly soil in the full eye of the sun and with no shade at all. Give it shade and you get rank foliage which completely hides the few flowers but in full sun the plant is neat, compact and but 2 to 3 inches high and, so grown, it is far more usual for the flowers to hide the foliage than the foliage the flowers. Several times plants have been tried out in shady positions in my garden but have always gradually dwindled away while those in full sun have sent out underground runners and established colonies. The plant shown in the accompanying plate is growing in what is absolutely the hottest spot in my garden; can anyone doubt that it likes it?

The popular name is taken from the deeply cut leaf which does bear a strong resemblance to a bird's foot. The blossom in the typical form which is usually considered a variety and listed as *V. pedata bicolor,* has the upper petals deep, rich pansy-violet and the lower clear, pale lavender-blue; in good forms the blossoms measure 1½ inches across. The form, usually regarded as typical, with all the petals of pale lavender-blue is correctly *V. pedata linearıloba.* Plants of this species come into bloom in early spring and continue to bear flowers until well on in summer.

I understand that plants are quite easy to raise from seed but as my plants have never yet set any, I have had no opportunity to try. Clumpy plants are quite easily divided when dormant and runners are sometimes available for increasing stock.



VIOLA PEDATA

# Xerophyllum tenax

## (*Liliaceae*)

The deluge of popular names, chief of which are Bear-Grass and Squaw-Grass, with which this plant has been showered, tend to prove the conspicuousness of the species on its native heath. Indeed, when in bloom it is one of the most outstanding features of the hillsides of the North-West.

It has been suggested that it takes from 5 to 7 years for *X. tenax* to reach maturity and that having blossomed, it dies. Not having grown plants from seed I am unable to disprove the first part of this assumption, in fact I am quite prepared to believe it, but to say that the plant dies after flowering is utterly ridiculous: apart from the fact that the plant, here portrayed, was, at the time of being photographed, blooming for the fourth successive year, the most cursory examination of a plant will show the sheer unlikelihood if not absolute impossibility of its being a monocarp. *X. tenax* makes a close evergreen clump of wiry, grassy foliage about a foot high which consists of a dense mass of individual rosettes, each of which is equipped with its own root-system: the individual rosettes which carry flowers, die after flowering but they are only a very small percentage of the rosettes which constitute the plant. The foliage is used by the Indian tribes for making baskets.

In the garden the flower spikes will not usually exceed 2 feet in height though in the wild they frequently attain much more. The massive clubs of fragrant, creamy-white blossoms vary in length from 6 to 10 inches and maintain their beauty for a long period in summer.

The Bear-Grass fiercely resents disturbance and consequently is somewhat difficult to establish but once you have surmounted that hurdle it will give you no further cause for anxiety. For some reason it seems to disapprove being moved in the spring rather less than it does in the autumn; probably winter wet causes the roots to rot before they have a chance to take hold. Any warm, sunny, well-drained position suits them.

Propagation is by careful division in spring: seed is probably slow.



XEROPHYLLUM TENAX

# INDEX


Aconitum delphinifolium compactum, 2
Andromeda polifolia, 4
Anemone Drummondii, 6
Anemonella thalictroides, 8
Aquilegia Jonesii, 10
Arctostaphylos Uva-ursi, 12
Asclepias tuberosa, 14
Aster foliaceus, 16
Bicuculla eximia, 46
Boykinia Jamesii, 18
Brodiaea grandiflora, 20
Callirhoe involucrata, 22
Calypso borealis, 24
  bulbosa, 24
Chamaepericlymenum canadense, 32
Cheilanthes gracillima, 26
Chimaphila umbellata, 28
Chrysogonum virginianum, 30
Cornus canadensis, 32
Cypripedium acaule, 34
  hirsutum, 42
  montanum, 36
  parviflorum, 40
  passerinum, 38
  pubescens, 40
  Reginae, 42
  spectabile, 42
Cytherea bulbosa, 24
Delphinium Menziesii, 44
Dicentra eximia, 46
Disporum Smithii, 48
Dodecatheon frigidum, 54
  Hendersonii, 50
  latifolium, 50
  pauciflorum, 52
  species, Mt. Arrowsmith, 54
Douglasia laevigata "vera," 56
  nivalis "laevigata," 58
Dryas octopetala, 60
Dryopteris nevadensis, 62
  oregana, 62
Epipactis gigantea, 64
Erigeron aureus, 66
  salsuginosus glacialis, 68
Eriogonum ovalifolium, 70
  umbellatum, 72
Erythronium giganteum, 76
  Hendersonii, 74
  oreganum, 76
  revolutum Smithii, 78
  Watsonii, 76
Fissipes acaulis, 34
Galax aphylla, 80
Geum ciliatum, 176
Habenaria Michaelii, 82
Hemieva ranunculifolia, 84
  violacea, 86
Iris cristata, 88
  chrysophylla, 90
  Douglasiana, 92
  Gormanii, 94
  innominata, 96
  setosa, 98
  tenax, 100
  tenuis, 102
Jeffersonia diphylla, 104
Kalmia polifolia microphylla, 106
  polifolia montana, 106
Leiophyllum buxifolium prostratum, 108
Lewisia brachycalyx, 110
  cotyledon, 112
  crenulata, 112
  Finchae, 112
  Heckneri, 114
  Howellii, 112
  Ingramii, 112
  Mariana, 112
  nevadensis, 116
  Purdyi, 112
  rediviva, 118
  Tweedyi, 120

Lilium montanum, 122
philadelphicum, 122
Lithophragma parviflora, 124
tenella, 124
Luina hypoleuca, 126
Malvastrum coccineum, 182
Monarda mollis, 128
Olsynium grandiflorum, 180
Oreobroma, 114
Pentstemon Barrettae, 130
Cardwellii, 132
Davidsonii, 138, 142
fruticosus, 134
fruticosus alpinus, 134
Gairdneri hians, 136
Menziesii, 138
Menziesii Davidsonii, 138
Newberryi, 140
Newberryi rupicola, 140, 142
Newberryi rupicola albus, 140
Newberryi rupicola roseus, 142
Scouleri, 144
Petrophytum Hendersonii, 146
Phacelia sericea, 148
Phlox caespitosa, 150
diffusa, 152
Douglasii, 154
speciosa, 156
Polemonium Archibaldae, 158
confertum, 160
grande, 158
mellitum, 160
occidentale, 158
Polygala pauciflora, 162
paucifolia, 162
Primula angustifolia, 164
suffrutescens, 166
Prosartes oregana, 48
Romanzoffia sitchensis, 168
Sanguinaria canadensis, 170
canadensis flore pleno, 170
Saxifraga Newcombei, 172
Shortia galacifolia, 174
Sieversia ciliata, 176
Silene Hookeri, 178
Sisyrinchium Douglasii, 180
grandiflorum, 180
Sphaeralcea coccinea, 182
Munroana, 184
Spiraea Hendersonii, 146
Syndesmon thalictroides, 8
Talinum okanoganense, 186
spinescens, 188
Wayae, 186
Tellima grandiflora, 124
parviflora, 124
Thalictrum anemonoides, 8
Trientalis arctica, 190
Trillium nivale, 192
rivale, 192
Vaccinium caespitosum, 194
Viola Flettii, 196
pedata, 198
pedata bicolor, 198
pedata linearíloba, 198
Xerophyllum tenax, 200