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C. R. Worth, Editor

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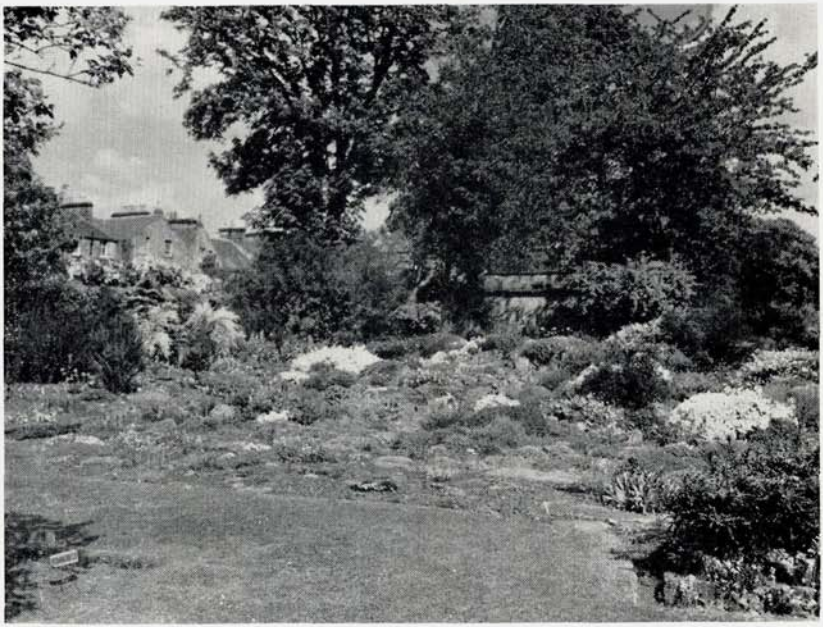
THE ROCK GARDEN AT ST. ANDREWS

J. L. MOWAT, *Curator of the University Botanic Garden, St. Andrews, Scotland*

ALTHOUGH THE University of St. Andrews was founded more than five hundred years ago, and is Scotland's oldest university, its Botanic Garden dates back little more than sixty-five years and in its early days consisted almost solely of a collection of plants for the teaching of Botany and for research. Some twenty years later it was considerably extended and certain amenities in garden layout were developed, among them its first rockwork — or 'rockery,' as the term was then — and collection of 'alpines,' then of course almost entirely of European or Near East origin.

In the last twenty-five years the rock-gardening aspect has been developed considerably as have various other features. The original 'rockery' has been extended several times and now includes screes, shade border, sun ledges, and similar specialised sections. In addition an entirely new rock garden, with water led through it to a small pond and bog bed, was constructed, and also a lengthy rock bank, half of which is in cool shade and given over almost entirely to a collection of species and varieties of hardy ferns. Some four or five years ago a peat wall garden was made in a shady part facing due north, and it has proved a most satisfactory home — apart from the attention of birds — for petiolarid primulas, cassiopes, vacciniums, gaultherias, dwarf rhododendrons, and other plants demanding cool shady conditions. The most recent additions are a peat garden — again intended to have a stream running through it — and a sunk heath garden, now nearing completion. It is hoped that by sinking the heath garden below the surrounding levels drying out by air currents will be reduced and soil moisture will be better held at the lower level. A few dwarf conifers, hamamelis, and corylopsis have been used to break up the tendency towards a uniform flatness which comes from the unrelieved use of large carpets of heath varieties. On the higher ledge in front of the beech hedge species such as *Erica arborea alpina, E. australis, E. lusitanica,* and *E. mediterranea* vars. have been planted to form a background, and in front of them *E. stricta* and several varieties of *E. vagans,* the 'Cornish Heath.' On the lower levels are planted varieties of *Calluna vulgaris* and *E. carnea, E. cinerea, E. tetralix,* with various hybrids, and also daboecia and cassiope.



G. M. Cowie

The Rock Garden, with scree in foreground, June 1956.

Before proceeding further and going on to mention particular plants or groups of plants it is probably advisable to give some idea of climate in this part of Scotland and of soil conditions in St. Andrews itself.

The coastal strip of land along the east of Fife, like its neighbouring coastal strips of Angus to the north and East Lothian to the south, is an area of very low rainfall compared with the country inland and in the west and a very high percentage of bright sunshine. We certainly get long spells of cold nor' easterly gales off the North Sea, particularly in April and May, but in most winters our frosts are moderate compared with those in most parts of Scotland or England, and many a winter snow is hardly seen at all except on the distant Grampians.

It is not unusual to have sweet peas and even dahlias blooming in sheltered gardens well into November, or a vase of roses picked from the open garden at Christmas. An American student here a year or two ago, whose home was in Texas, asked me when our plants rested because he was amazed to see a garden which he passed regularly still colourful with pansies and antirrhinums at the end of November. Of course every now and again, as in the winters of '47 and '54-'55, we get the exception to the rule and lose a good few of the more tender shrubs and plants we have got into the habit of trying to grow here. Last winter almost wiped out our collections of Cistus, Olearia (certain species), Hebe, Pittosporum and several other border-line shrubs of S. Africa and Australia; but we just start all over again and hope to get away with it for another ten, twenty years or so.

The old city itself is perched on the cliff top overlooking the sea to the north and east, and on the south the ground slopes down sharply to a shallow valley on the opposite side of which extends the new part of the town.

The soil of the district generally is rather light and slightly more alkaline

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A closer view of the rock garden, looking north; scree on right and primula border on left.

than neutral, with here and there local pockets of acid peat, but on the whole it is a fairly rich and fertile soil. In the old town itself set on its cliff matters are rather different. The soil, though usually of good depth, is fairly sandy, and has been cultivated for no one knows how much more than a thousand years so that now it is thoroughly spent and exhausted. The incorporation of humus and manure can certainly ensure the production of good crops but contributes little towards the mechanical rehabilitation of the soil. It has sometimes seemed to me that this soil characteristic, along with low rainfall and moderate frosts, has a certain bearing on the fact that, except for occasional setbacks in abnormally hard winters, we successfully grow shrubs and plants of borderline hardiness.

Some of the most colourful among the shrubs are probably the Olearias (particularly *O. gunniana* colour forms) and the brilliant varieties of *Veronica (Hebe) speciosa* from New Zealand, *Desfontainea spinosa, Escallonia macrantha, E. rubra* vars. from Chile, the *Ceanothus spp.* from California, varieties of *Hibiscus syriacus* (which does not come from Syria but from China), *Abelia floribunda* from Mexico and *A. schumannii* from W. China, and some of the many species of Cistus from Spain and the Mediterranean. Of all the shrubs mentioned some of these Cistus from S. Europe seem least able to resist cold, or wet winters.

Although many of these shrubs grow quite happily in fairly open borders we are fortunate in that we have south and west facing walls for those demanding that little extra shelter and warmth — things like *Drimys winteri, Salvia grahami, Teucrium fruticans, Carpentaria californica,* and *Solanum crispum.*

Sunny ledges and poorish soil in the rock garden have also proved good sites for the dwarfer borderline shrubs such as the smaller Veronicas (Hebe), *Convolvulus cneorum, Margyricarpus setosus, Coriaria terminalis, Aciphylla,*

Zauschneria, and many other plants of a xerophyllous character.

Many of the Tulipa and Crocus species from the Mediterranean and the Near East, which to do really well require a pretty good drying out and sun baking after flowering, have proved very successful in these sunny sites and light soil. We have built up quite an interesting collection of Crocus species with an almost unbroken flowering sequence from October, when the season is introduced by *C. zonatus,* carried on by *C. speciosus* vars., Cc. *laevigatus, longiflorus, imperati, sieberi, korolkowii,* and others, till the latest of the spring flowering species come to a glorious finish in April. Although the many varieties of bedding crocus are rich in colour and make a great show in the mass they seem to me completely lacking in grace of form and true 'quality' compared with species such as, say, *laevigatus, candidus* and its var. *subflavus,* or *ancyrensis* (so well named "Golden Branch").

The species tulips are also very fascinating and range in size from the dainty little *linifolia, kolpakowskyana, maximowiczii, pulchella,* and even smaller species, to the stronger growers like *kaufmanniana, praestans, greigii, eichleri,* and *fosteriana.* One of my first loves among species tulips and a very easy doer, *Tulipa dasystemon* or *tarda* — the "Fried Egg Tulip," is still high on my list of favourites although it has to share the honours with the lovely golden *kolpakowskiana* and scarlet *linifolia* and *maximowiczii* with their gracefully shaped flowers of elegantly pointed tepals, and the soft cream *batalinii.* In their original forms *Tt. kaufmanniana, greigii,* and *fosteriana* were all beautiful, as are many of their varieties, but some of the newer hybrids have attained a size more suited to the large herbaceous border or even the vegetable garden; I quite admit that in most cases the flowers, even though so huge, have retained their beauty of shape and are really handsome in both flower and foliage.

With the contrariness which seems to be a characteristic of the human race, instead of being content to confine ourselves to the type of plants likely to be suited to conditions such as we normally have in St. Andrews, I seem always to have had a hankering to try also those plants, many of them introductions from the Himalayas, which in nature like a moist atmosphere, an acid or at least neutral soil, and an altitude considerably more than the fifty feet above sea level of St. Andrews. This led, many years ago now, to the raising from seed of many species of Asiatic primulas and meconopses and the preparation of beds and borders in shady or semi-shady positions to meet, as nearly as we could, their probable needs. Experience proved that borders shaded by trees were usually also robbed of all moisture by the roots of those trees so that frequent replenishment of humus was necessary and regular watering in dry spells. In some ways we were much more successful, especially in dry seasons, with ground shaded from the south and west by our college buildings; but we have recently constructed a new peat garden at the foot of steeply sloping ground and just above the level of a nearby stream where we hope that primulas, meconopses, and ericaceae will do well — even though we know that this part is to some extent a frost pocket.

In various parts of our garden certain species of both meconopsis and primula have naturalised, and though I cannot definitely vouch for the age of all I can do so for one or two. One bed of *Meconopsis betonicifolia* has been growing unsupplemented for twenty-five years. The original plants are now large clumps and are surrounded by seedling offspring which have been a source of supply for many other plantings over the years. A planting of *Meconopsis prattii (horridula)* in a rhododendron border more than twenty years ago seeded itself year by year till, without any help from us, the whole border became a dense carpet of this dwarf monocarpic species.

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The Peat Garden, looking east — still under construction, June 1956.

Plantings of primulas which I can also date with certainty, and which have never been supplemented, are a twenty-two year old group of *Primula bulleyana* var. "Inverleith" and twenty-three year old groups of *Pp. poissonii* and *aurantiaca.* We also have a bed of *Pp. beesiana* and *alpicola* forms which has flourished without attention for over twenty years, but here so much natural regeneration has gone on constantly that I cannot vouch for the age of any individual plants. The same uncertainty of age applies to a nearby bed of *Primula florindae* which through the years has had no further attention than occasional thinnings when someone wanted plants. These are the easy ones which have never let us down in spite of neglect; we grow other species of widely different sections, but only by careful cultivation and attention, and frequent propagation, do we manage to maintain our collection.

When we come to gentians I am afraid that I must admit that our efforts with this family have only met with doubtful success. The only ones that have proved consistently reliable in growth and flower year after year are those of the strong growing, tap-rooted *septemfida* group, which come into flower in July with great profusion of bloom but are lacking that distinctive beauty and 'clean-ness' of colour which we associate with the word — 'gentian.' It is true that *Gentiana acaulis* has always grown well with us and made fine-looking, strong clumps every year; but till this year flowers have been quite another matter. Most years I have counted myself fortunate if our plants produced twenty blooms to the square yard. Whether last year's wonderful summer and autumn were responsible, or some other factor so far unrealised, I cannot say, but at the time of writing (mid May) our plants are a mass of bloom such as we in our garden have never had before. The aggravating thing about *G. acaulis* is that so often one finds it behaving perfectly and blooming profusely each year in "the garden over the way" or

"the garden next door." At an S.R.G.C. show some four or five years ago a local member showed an *'acaulis'* with over 70 open blooms in a six inch pan. *Gentiana verna* never lives very long or very happily with us; the cold, drying winds of April and May prove too much for such an aristocratic member of the family and its strength is sapped before summer begins.

The autumn gentians do grow with us, and with care and attention can be persuaded to flower reasonably well, but they are generally slow of increase and far from robust as they should be—and are in parts of Scotland away from the dry east coast. If we forget to keep a watchful eye on them, and let them dry out in late spring or early summer, it usually means that we have to go begging replacements from friends of more happily situated gardens. Of recent years it has seemed to me that some of the very attractive hybrids such as *X G. 'Farorna' (farreri x ornata), X G. Inverleith (farreri x veitchiorum), X G. Macaulayi (farreri x sino-ornata), X G. Caroli (farreri x laurencei),* and of course *X G. Bernardii (veitchiorum x sino-ornata),* in addition to their beauty, have a constitution which stands up to adversity better than many of the species. It may be that the *farreri* blood in most of these hybrids has improved their amenability to our slightly alkaline soil and dryish conditions. I find that *G. farreri* and *X G. hexa-farreri* are usually more reliable with us than *G. sino-ornata* and its variety, *praecox.*

In saying that many of the gentians have proved rather difficult, or at least doubtfully successful, I must except *G. saxosa.* This lovely white gentian from New Zealand, though not a long lived species, grows well and flowers freely, setting quantities of seed and, in favourable situations, reproducing itself readily.

Except for such late flowerers as *Serratula shawii* and *Senecio pulcher,* the autumn gentians end our flowering season in the rock garden. Even the latest of the cyclamen—*neapolitanum*—and *Polygonum vaccinifolium* are over by the time that the last of the *G. sino-ornata* blooms wither in the cold and wet of late November; but by this time the first of the winter crocus species, and the colouring buds of *Erica carnea* varieties are giving promise of another year to come.

CULTURE OF THE PINE BARREN GENTIAN

DAVID E. BURNS, *Barrington, N. J.*

THE PINE BARREN GENTIAN, *Gentiana autumnalis (porphyrio)* is not difficult to grow from seed if care is taken. I collected the seed one fall, and stored it in a sealed jar kept in an open shed where it would benefit by the low temperatures of winter, for, like other gentians, it requires low temperature to prepare it for germination. Along in January, I sowed it in a flat of Pine Barren soil, and at the same time sowed a flat in ordinary garden soil. These flats I kept in a cold frame and hand watered so that the seed would not wash out or blow away. They germinated in May, I believe. Later on I had to remove the glass completely, so that many of the tiny seedlings washed away, and I lost the whole flat that was in ordinary garden soil. This was, I believe, a coincidence, for I do not think that they need any special bacteria which are supposed to be in the Pine Barren soil.

The first year, the seedlings made one set of true leaves, the second year, three or four sets. The third year, several bloomed when I finally gave them some liquid fertilizer to make up for the leachings from the already poor Pine Barren soil. Actually, the tiny seedlings had made pretty good roots at the end of the first year, and they were pretty much neglected after that, except that I had lath shading over them and other seedling plants in the summers. Many times the flats were about as dry as they could get during the third year, because of more urgent activities.

GROWTH-FORMS OF ALPINE PLANTS

DONALD R. YEAGER, *Highland Park Herbarium, Rochester, N. Y.*

THE CLIMATE of alpine situations distinguishes itself from that of lower elevations through special characteristics such as: extreme variation of the daily and yearly temperature, high wind velocity, open exposure, intense radiation, and the limited duration of the vegetation cycle. Only plants in alpine situations where these extreme conditions are undisturbed are able to thrive. It is therefore expected that these extreme conditions exert an influence on plant organisms. Numerous investigations have indicated that under these influences, a plant organism will assume and exploit a growth-form which allows it to harmonize itself in respect to its environment. This exploitation of a particular growth-form is absolutely necessary if growth under the existing conditions is to be possible.

Most plants of the alpine situation distinguish themselves by a vigorous development of the root system and the lower compact growth of the epigeous, (above-ground), organs. This dwarfness is brought about by the suppression of the longitudinal growth of the internodes. The dwarf growth is induced by either alpine climate or heredity. In the first case it will disappear in culture under normal climatic conditions; in the last case it is retained in spite of culture under normal climatic conditions.

WOODY PLANTS

In alpine situations, woody plants are represented by dwarf shrubs and espalier shrubs.

A. *Dwarf Shrubs*

In this group are found the rhododendron and other representatives of the family Ericaceae. They are low shrubs which average 50 cm. high, but also attain as much as a full meter in height. This group of shrubs does not possess a main trunk other than the primary shoot which because of sympodial growth and the numerous over-lapping of branches takes the appearance of a main stem.

B. *Espalier Shrubs*

The few woody plants which ascend above the dwarf shrubs in the alpine situation, manifest themselves through a habit form, which is also exhibited by some trained cultivated shrubs. The abundant ramified branching system does not lift the shrub above the earth, but on the contrary extends it superficially in a plane on the substratum. Only the tip of the shoot and inflorescence are lifted a few centimeters above the earth. Consequently the shrub creeps, forming a carpet-covering on the surface of the soil. On motile slopes covered with rock debris, their ground covering progress is mechanized to a high degree by the continual shifting and sliding of the rock particles.

The following shrubs belong to this group:

Salix retusa
Salix reticulata
Dryas octopetala
Globularia cordifolia
Rhamnus pumila
Loiseleuria procumbens
Arctostaphylos uva-ursi
Arctostaphylos alpina

Espalier growth is not the exclusive product of environmental conditions. from the very beginning, plants receive on the basis of their structure and reactionability in respect to espalier growth, that which enables them to exist in the best possible manner under the most extreme high altitude conditions.

There are two different forms of espalier growth which exhibit their characteristics in the behavior of the primary sprout.

In the first case *(Salix retusa, Salix reticulata)* the primary shoot bursts forth from the ground and by means of sympodial growth branches itself horizontally along the surface of the earth taking root as it does so. Then regular dichasiale branching dominates and as the withering of the inflorescence shoot takes place, axillary buds force lateral shoots, one upward to form the mass of the plant and another horizontally over the earth to provide the spread of the plant. Dichasiale growth is repeated yearly and the plant may form an almost orbicular espalier sometimes attaining over a meter in diameter and an age of 80 years.

A second type of espalier growth is exhibited by *Dryas octopetala.* This type is represented by an erect but short primary sprout having basal lateral branches which distribute themselves over the ground and take root, finally assuming espalier form.

A common characteristic of all espalier shrubs is the development of a vigorous tap root which may attain a length of as much as four meters. In as much as espalier shrubs are pioneers of rock debris covered slopes, they perform a function necessary for stabilization of plants less adapted to colonizing.

First the root of an espalier shrub takes hold in the slope so as to anchor the plant while plant functions are performed. As rains and other elements induce locomotion of the slope, rock debris collects on the up-hill side of the shrub. As this rock debris increases and slides, the pressure gradually forces and encourages the root to lengthen and grow in a down-hill direction. Finally the root becomes woody enough and strong enough so that the plant may support the accumulation of gravel behind it, thus forming a nearly horizontal step in which non-motile plants may exist. It is interesting to note that the branch structure of the espalier shrub may be as much as several decimeters from the area where the tap root is anchoring and providing nutrients for the shrub.

HERBACEOUS PLANTS

A. *Cushion or Mat Plants*

Cushion plants are perennials, sometimes evergreen, having a vigorous tap root which penetrates deeply into rock debris or rock crevices. They develop an abundant and much articulated system of compressed sprouts having few main axes with numerous radial arranged branches of nearly equal height. The erect tips of shoots are usually the only parts of the plant having foliage, the underpart of the plant being devoid of leaves. On first appearance cushion plants appear to be cropped because of the closely packed foliage and sprouts. Upon touching these plants it is found that the surface is hard or crusty, and it is often possible to stand upon them without doing discernable damage. It is quite safe to assume that this condition is brought about by violent icy winds and snow blasts.

Cushion plants are spoken of as radial-flat and radial-sphere cushions. Individual radially arranged lateral branches in most cases are equipped with simple, often imbricated, overlapping leaves. Only the newly developed leaves in each vegetation period are capable of plant functions. The preceding generations of leaves drop off beneath the plant and may be blown out by the winds. The interior of the cushion plant then becomes hollow. In most cases however the dead leaves become wedged amongst the axes of branches and then the cushion fills up with humus. This humus understandably plays an important role in the plant's life by providing nutrients and retaining moisture. Hair roots usually arise from the branches and take nutrient from the humus filler. It is not unusual to see other herbaceous plants, as cushion epiphytes, which imbed their root systems in the humus filler inside of the cushion and withdraw nutrients. Cushion plants are thereby important in helping to colonize naked rock slopes.

Cushion growth is exhibited in such genera as: Saxifraga, Androsace, Draba,

Silene, Arenaria, Stellaria, and Eritrichium.

The cushion growth-form is a form which is the best and most appropriate form for the extreme conditions of alpine situations.

Hemisphere cushion plants:

The arching sphere cushion-form is due to the marginal growth of the plant. For instance, a hemispherical plant which has been torn out of a rock fissure by wind and/or snow and hangs by its long tap root, will ultimately by marginal growth become a complete sphere.

Radial hollow sphere cushions are represented by the Draba species: *Draba aizoides, D. hoppeana, D. tomentosa.*

Radial non-hollow sphere cushions are represented by the Saxifraga species:

Saxifraga moschata
S. Burseriana
S. caesia
S. muscoides
S. tombeanensis
S. squarrosa
S. Vandellii

In contrast to the radial sphere cushion's arched margin, the radial surface cushions develop a more flat though slightly arched appearance. They exhibit similarity to the espalier shrubs inasmuch as the marginal mass-growth is the first to expire each season while the surface or area-expanding growth carries on.

Creeping cushion plants:

Creeping cushions differ from surface cushions in that the cushion edge loosens and the peripheral branches take root by stolons. Later these rooted stolons break or are torn away from the mother plant. This group is represented by:

Saxifraga oppositifolia
Saxifraga aspera bryoides

Turf cushion plants:

Turf cushions distinguish themselves from surface and sphere cushions by means of the root system. A tap root forms the initial growth which then dies while adventitious roots anchor the plant in position. Therefore the plants are shallowly rooted, and accordingly colonize moist locations. As the older sprouting generations disintegrate they form humus which the younger generations perch upon. Many times avalanches and stone debris tear out pieces of the cushion and if they are deposited in a suitable location they will again root readily. This group is represented by:

Saxifraga androsacea
Saxifraga sequierii
Carex firma

Rosette cushion plants:

Rosette cushion plants distinguish themselves by a typical rosette foliage arrangement. Daughter rosettes are formed in the axil of the uppermost leaf rosette. These gradually develop adventitious roots as the parent plant dies, and ultimately bind themselves together in a more or less compact cushion. This group is represented by:

Saxifraga aizoon
Saxifraga cotyledon
Saxifraga crustata
Sempervivum arachnoideum

All cushion plants belong to the biological classification called Chamaephyten.

B. *Nest Plants*

This growth-form associates itself with the numerous grasses and sedges. Nest plants are similar to the group of cushion plants called turf cushions. Their similarity lies in the absence of a tap root. The individual lateral branches are

formed at the base of the mother sprout and between these and the intra-vaginal leaf sheaths, they are arranged in a thickly packed upright mass. Since the leaves as well as shoots are of varied length the entire nest plant does not have a clipped or "shorn" appearance such as the cushion plant, but has a more or less "porcupine" appearance.

In this group all of the following are included:

Sesleria coerulea — *Elyna myosuroides*
Carex curvula — *Poa alpina*

Nest plants also are important collectors of humus and are consolidators of motile rock slopes.

C. *Suffrutescent Plants*

Under this group of perennials there are found those plants of herbaceous growth, whose epigeous sprouting organ dies after fruiting and from year to year is perpetuated by a hypogeous situated "renewal bud." This group of plants falls under the classification of Geophytes. This type of growth-form is seldom found in the alpine region and is mostly limited to alpine pastures. The alpine lily flora belong in this classification and are only able to survive the unfavorable climatic conditions because of the deep soil-penetrating bulbs, tubers, and rhizomes.

ALPINE PLANTS AS STABILIZERS OF MOTILE SLOPES

Special mention must be given to those plants which are capable of consolidating and stabilizing motile rock debris on inclined slopes. These plants are usually pioneer vegetation as far as colonization of these slopes are concerned. They are, in the biologic literature, divided into groups according to their capacities to consolidate the soil.

The best idioms for describing these groups are taken from the German language. Before introducing these German terms I would like to enlarge upon the meaning of a German word which is the stem of the compound descriptive headings.

Schutt (pronounced "shoot") in German means rubbish, refuse, ruins or debris. When used with "halde" the German word for "slope" it literally means "debris of the slope." The German meaning of "Schutthalde" means "slope covered with rock debris." When this meaning is used in reference to alpine situations the term is often shortened to "Schutt" with the same meaning as "Schutthalde."

The following classifications of rock debris consolidators and stabilizers are listed in German with the English equivalent.

1. "Schuttwanderer"—Those plants which wander over rock debris slopes.
2. "Schuttkriecher"—Plants which creep over rock debris slopes.
3. "Schuttstrecker"—Plants which seem to stretch or extend over rock debris slopes.
4. "Schuttdecker"—Plants which cover or superimpose themselves over rock debris slopes.
5. "Schuttstauer"—Plants which bind or stabilize rock debris slopes.

The Schuttwanderer is a constant inhabitor of motile rock debris slopes. They are found exclusively on rock debris soil and only upon exception in turf communities. They all distinguish themselves by the development of stolons which arise and extend upward through the soil from a deeply situated root collar. The stolons upon reaching daylight develop vegetative shoots from which foliage and flowers appear. Often the above-ground shoots are a number of centimeters from one another so that it appears that several seedlings arise in a common area, when in reality they are all vegetative growth from the same root collar. Consequently the soil within the periphery of the plant is anchored; basically by the main root and secondarily by the underground stolons and their root hairs.

Schuttwanderer are represented by:

Thlaspi rotundifolium — *Rumex scutatus*
Achillea moschata — *Trisetum distichophyllum*

The Schuttkriecher are distinguished by compressed epigeous shoots which creep over the rock debris but are capable of developing stolon-like ramifications. *Linaria alpina* is a typical Schuttkriecher.

The Schuttstrecker stabilize the rock debris probably the least of any of the schutt-forms. They develop upright stems which work their way throughout the rock, but they seem to have a resistance to apply themselves. The following plants belong in this group:

Doronicum species — *Cryptogramma crispa*
Aspidium rigidum — *Cystopteris regia*

The Schuttdecker are distinguished by their low-lying sprouting system which colonize large surface by draping or spreading themselves over and on top of the rock debris. They were formerly mentioned as espalier shrubs. *Salix retusa* is a fine example of this type of growth.

In conclusion, the Schuttstauer group is represented by the nest grasses. They stabilize the rock debris through deep penetration of the roots and the formation of large and compact nests which congest or dam up the schutt behind them. Likewise included in this group are the espalier shrubs, previously mentioned, which when influenced by pressure of the rock debris above, extend their tap root until the branch system often lies many centimeters below the underground portion of the root. This network of branches retains the rock debris above as it is washed or slides down the slope.

All schutt plants develop vigorous root systems.

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"FLOWER HUNTING AS A HOBBY"

(Excerpt from a high school theme on Hobbies, written by a teen-ager after a rock garden collecting trip.)

A hobby, no matter what it is, is for relaxation to the person who is doing it. Others may think it silly, some may even think it is work, but if they stopped to think they would realize that their own hobby might seem strange to others.

Some people who have common interests in flowers may get together to go on a hike. This is usually called "flower hunting." These people will spend all day chatting about plants and leaning over or kneeling on the ground to dig up plants. An on-looker going on the hike will be very tired when it is over. Not being interested in plants to start with, he may hear them talking about names that can hardly be pronounced and mean nothing to him, but the plant seekers continue to talk in what seems to be a foreign language.

Probably before the on-looker gets back these people will ask him to carry bags, boxes and any other containers which can be filled with plants.

From the viewpoint of the plant finder, a wonderful day has been spent. When at home again each may be lame and worn out for days but is still happy. Some found new plants and some learned new methods of killing insects or planting with a special fertilizer.

Each plant grower is content as an individual. They will spend a long time debating where to set this and where to set that. One of these persons may be bored with life and very tired, but let them get out in their garden, and they will sparkle like a diamond!

MRS. CLEMENT S. HOUGHTON

DOROTHY E. HANSELL, *New Providence, N. J.*

MARTHA P. HOUGHTON, widow of the late Clement S. Houghton, of Chestnut Hill, Mass., and North Hatley, P.Q., Canada, died suddenly on Sunday, October 28, 1956. All the members of the American Rock Garden Society—those who knew her only by reputation as well as those who knew her personally—will be grieved to learn of the passing of this truly distinguished woman: her particular place in the horticultural world will not be filled.

Very vividly do I remember my first meeting with Mrs. Houghton in the spring of 1931. She called at my office—I was then Editor of the Gardeners' Chronicle—and in no uncertain terms expressed her objection to a statement in that periodical. It was evident, as the conversation continued, that we were not going to agree; and so I rose, abruptly terminated the discussion, and led Mrs. Houghton to the door. Those to whom I related the incident were aghast—I was told that one didn't contradict Mrs. Houghton.

That November I attended the autumn show of the Massachusetts Horticultural Society and again met Mrs. Houghton. Her first words to me were, "I still don't admit that you're right, but I'm willing to admit that my Boston pride in "Horticulture" may somewhat influence my opinion." Later that same afternoon at a tea in one of the rooms of Massachusetts Hall, Mrs. Houghton declared to the late William Craig, myself, and others that there ought to be a rock garden society in this country, but no one volunteered to take the initiative. (The late Mrs. C. I. DeBevoise of "Cronamere," Greens Farms, Conn., had previously suggested such a society, and, in consultation with Mrs. Houghton and myself, had directed a letter to people interested in rock gardening in all parts of the U. S. The idea appealed to many, but the effects of the depression were still being felt and it had seemed wise to postpone the matter.)

Time passed, and I visited Mrs. Houghton's beautiful rock garden and enjoyed her hospitality, and also visited Mrs. DeBevoise's garden. Then, one day, I received a telephone call, "This is Florens DeBevoise speaking. Mrs. Houghton will be here next week and I'd like you to join us at lunch—we have something to talk to you about." So I journeyed to Greens Farms and across the lunch table Mrs. Houghton said, "You are going to start to work on a rock garden society. Whom can you suggest to help form it?"

So in November 1933, Mrs. Houghton, Mrs. DeBevoise, Mrs. Agnes Selkirk Clark, the late Mrs. Charles H. Stout, T. H. Everett, Robert Lemmon, Montague Free and I met at the Hotel Commodore to set up the organization committee. At subsequent meetings, the Constitution and By-Laws were drafted, and on March 21, 1934, at the Hotel Commodore, in the presence of a large gathering of notable horticulturists, professional and amateur, from here and abroad, the American Rock Garden Society was formally created.

I have written of these past days because from the very first Mrs. Houghton was a prime mover in getting the society organized and throughout the succeeding years she always maintained a deep interest in it, morally and financially—she was, in fact, the society's "fairy godmother"; and because it was at the pre-organization meeetings, at lunches at the Barclay, sometimes with Mrs. DeBevoise and Mrs. Clark, sometimes just the two of us, that the friendship developed which I have cherished so greatly these twenty odd years. I shall miss the phone calls from Chestnut Hill and from the Colony Club in New York and the letters that began "Dear Dorothy," and closed with "Affectionately, Martha P. Houghton." There are many others who will surely miss her friendship—she was a remarkable person.

Mrs. Houghton was one of the charter members of the American Rock Garden Society, a member of the Board of Directors since its inception, and president for five years. She knew and loved rock gardens and alpine plants and her gardens, which have been described in the BULLETIN and in other publications, were renowned. In 1940 she received the Hunnewell Medal from the Massachusetts Horticultural Society for her estate with its alpine and moraine gardens.

Mrs. Houghton was a long time member of the Massachusetts Horticultural Society and received many medals for her exhibits in the Boston Spring Flower Shows. She also received, with Mrs. E. B. Dane, the Centennial Gold Medal of the Massachusetts Horticultural Society and the Mrs. Bayard Thayer Silver Cup, for a joint exhibit at the centennial flower show of that society.

Mrs. Houghton was a member of the Chestnut Hill Garden of the Garden Club of America, and a member of the Garden Club of America. She was a member of the Board of Associates of the latter organization—an honor of which she was especially proud—of the Board of Editors and edited the rock garden department of the Bulletin of the Garden Club of America; she was also a member of the horticultural committee for a number of years.

Mrs. Houghton was a life member of the New York Botanical Garden, a member of the Advisory Council, and of the corporation of the New York Botanical Garden, a member of the Alpine Garden Society, of the New England Farm and Garden Association, of the Horticultural Society of New York. She was for many years active in the National Civic Federation and in the Women's City Club of Boston, and a member of the Ladies' Board of the Free Hospital for Women in Brookline, Mass. She was also a fellow of the Royal Horticultural Society and judged at the Chelsea show in London, as well as at the spring shows in Boston, New York and Philadelphia.

She is survived by three sons, William M., Samuel G., John B., and a daughter, Mrs. Alan Martyr, and several grandchildren.

REPORT OF THE NORTHWEST UNIT

HELEN MORRIS, *Bellevue, Washington*

The new officers of the Northwest Unit, who will be taking office in January, are as follows:

Chairman.....Dr. J. D. Barksdale, 13226—42nd N.E., Seattle
Vice-Chairman in Charge of Program
Mrs. James Buzard, 4427 Hunts Pt. Rd., Bellevue
Secretary-Treasurer.....Mrs. Eddie Moulton, 8238—2nd N.E., Seattle
Hostess Chairman.....Mrs. S. A. McClanahan, 2643—38th W., Seattle
Corresponding Secretary...Mrs. Gregory Morris, 3858 Hunts Pt. Rd., Bellevue

Our September meeting was held at the home of Dr. and Mrs. C. Leo Hitchcock. Members arrived early to see as much as was possible of the garden before dark. The meeting featured a panel discussion on "Hybridizing Alpines." Dr. Kruckeberg gave the background talk, telling what is meant by "a hybrid." Brian Mulligan discussed "Natural Hybrids," and Joseph Witt spoke on "The Synthesis of New Alpines."

The annual banquet of our Unit was held in October, at the Student Union Building on the University of Washington campus. Mrs. Edith Banghart, one of the founders of the Northwest Unit about twenty years ago, was a guest whom we were delighted to have present. The important part of the banquet

is always the showing of the slides taken by members during the previous year. The enthusiasm all photographers have in common has caused the placing of a limit of ten slides per person, which number is just right for a pleasant evening's entertainment. The plant materials shown were diverse, as were the locales, which included six western states, Japan and Mexico.

Our guest speaker for November was Mr. C. P. Lyons, Naturalist with the Canadian National Parks. He is the author of two recent books, "Trees, Shrubs and Flowers to Know in British Columbia," and "Trees, Shrubs and Flowers to Know in Washington." He first showed slides of a magnificent wilderness in western Canada which he hopes will soon be more accessible, so that its beauty may be enjoyed by the public. Among the floral displays that amazed us were large tangled mats of *Calypso bulbosa* and a mountain slope smothered with the rosy froth of *Rhododendron lapponicum*. Mr. Lyons showed his documentary film "Nature's Plan." It is a skillfully executed story of the dramatic struggle for life in the wild. The delicate balance in nature is demonstrated through intimate pictures of the daily happenings in the lives of plants and animals. Mr. Lyons' expert narration matched the film's beauty and gave us a truly impressive program.

MEETING IN VERMONT

GRACE F. BABB, *Portland, Maine*

IN MID-JUNE, 1956, the members of the New England ARGS Round Robin were invited to meet at Mr. James Mitchell's, Barre, Vermont, for an informal get-together, plant exchange, and short collecting trip. Members arrived at intervals during the morning and spent some time choosing and digging wanted plants from the nursery. (Mr. Mitchell had been forced to discontinue his nursery business for reasons of health, but offered the many choice plants still on hand at half price to gardeners who would dig their own.) Later the members exchanged many other wanted plants brought from home.

Those present were Dr. Helen Scorgie, Mr. and Mrs. Dwight Granger, Mr. and Mrs. Alfred Pease, Mr. Harold Rugg, Mrs. Grace Butcher, Mrs. Harold Stillwell, Mrs. Sidney Baylor, Mrs. Grace Babb, Mr. Richard Darling and daughter Linda, special guest Mr. Donald Allen, and the host, Mr. Mitchell.

After a picnic lunch on the lawn (this being one of the very few nice weekends of the summer), the nearby nursery, Skycleft, of Donald Allen was visited. Mr. Allen had many choice and unusual rock plants, many from Mr. Mitchell, others grown from seed.

Then Mr. Mitchell led the group to Williamstown Gulf where many ferns and wildflowers were collected. Most interesting were the rockbrakes *(Cryptogramma stelleri)*, the bladder fern *(Crysopteris bulbifera)*, *Hepatica acutiloba*, *Saxifraga virginiensis*, bishop's cap *(Mitella)*, waterleaf *(Hydrophyllum)* and *Aquilegia canadensis nana*. All of these and other plants and shrubs were growing in deep moist leafmold on the very steep hillside and on ledges, in shade. (I am curious to compare the columbine with my Maine variety which I believe is slightly different in color and shape of bloom, but about the same general height of one foot.) The waterleaf was new to several of us, interesting with divided leaves and round heads of lavender flowers followed by curious seed pods, but we were warned of its spreading tendencies which were evident as it grew commonly along the road.

When the meeting broke up, we had had such a good time that some of the members could not resist the temptation to visit other gardens, and to collect elsewhere, before returning to their everyday routines.

SOME UNCOMMON ROCK PLANTS

ROBERT M. SENIOR, *Cincinnati, Ohio*

IF IT WERE NOT FOR ITS LENGTH, the title of this article could be, more accurately, "uncommon plants that we have grown that seem to have fairly strong constitutions." In some parts of the country the word "uncommon" may seem to be a misnomer, since possibly these plants may be encountered in numerous rock gardens. At least in the section in which we live they are seldom seen.

Acantholimon echinus. We secured seeds of this plant many years ago, and it has become one of the most attractive plants in our garden. The only reason we have questioned its specific name is that Farrer, in his "English Rock Garden," mentions it as having white flowers, whereas our plant has rose colored ones. On the other hand, the Royal Horticultural Society's "Dictionary of Gardening" states that it has intense crimson purple flowers. Whether or not our plant is misnamed, it is one that is highly desirable. It forms tight spiny little rosettes, with greyish leaves less than an inch long. In the course of time, one rosette will start offsets, and these if cut off and inserted in sand will usually take root. Like so many other plants forming rosettes, the alternate freezing and thawing during the winter months may play havoc with them. Therefore we planted this acantholimon on a rather steep slope, and place a glass over it in winter. It has survived there for the past two years. Incidentally we also possess just one plant of the rose flowered *A. venustum,* which has linear leaves that are longer, and a less compact rosette. We have a small alpine house, and as yet have been unwilling to risk this one plant outdoors. We have tried in vain to start new plants from cuttings, for invariably these fail to root.

Geranium renardii is about a foot tall, and is an excellent plant for the rear of the rock garden. It has attractive leaves with prominent veins, and these differ in color from any geraniums that we have ever seen, being of a dark olive-green which I believe has sometimes been described as "French grey." The flowers are good-sized, white with prominent purple veins, and a purplish center. In time it forms a good clump, possibly over a foot in diameter. It seems to have an ironclad constitution, and does well in either full sun or half shade.

Hippocrepis comosa. One may wonder how this plant got its name: hippo means horse, and crepis shoe, and the name refers to the curved pod. This member of the Legume family is perfectly prostrate, and creeps along the ground, rooting along its journey, and in the course of time may take up too much room for a small rock garden; however it can always be cut back to any length desired. The axillary yellow flowers are in umbels, and rise slightly above the leaves.

Pterocephalus parnassi. This plant is closely related to scabiosa; in fact, in nursery catalogs it is sometimes called *Scabiosa pterocephala.* It has good sized light purplish flower heads, with somewhat greyish crenate leaves. In a recent English garden magazine there was a picture of this plant, taken at the gardens of the Royal Horticultural Society at Wisley. The plant was on a wall, and, I should judge, hung down fully three feet.

Zinnia (Crassina) grandiflora is an American plant, about six to eight inches high, belonging to the Composite family, which we saw in New Mexico and admired very much. We dug up a plant, and it remained in our garden for several years, placed in full sun in rather heavy soil. The flowers are bright yellow, and one of the characteristics is that when the flowers die the rays turn strawcolored and persist for a considerable length of time. I believe that Claude Barr, of Smithwick, South Dakota, still lists it in his catalog. Incidentally, Tidestrom, in his "Flora of New Mexico and Arizona" considers it a handsome

Acantholimon echinus.
R. M. Senior

plant. Britton and Brown, in their "Illustrated Flora of the United States and Canada," have a picture of it under the name of *Crassina grandiflora.*

The next plants to be mentioned are highly desirable, since they usually bloom in late September and October, at a time when there are a few flowers left in the rock garden.

Satureia montana. This plant with its pleasant minty odor is often called "winter savory." The one in our garden is a variety, *S. montana* var. *subspicata.* It is almost decumbent, and has spread considerably over the past two years, so that it now covers a space almost two feet in diameter. The flowers are not large but are very numerous. Several years ago we raised plants from seed, and found that the flowers of some were of a lavender-violet shade, while others were almost rose-purple. If you raise this plant, you may find that some succumb in winter, but others may be perfectly hardy. I feel reasonably confident that nearly all of them would survive over the winter in the cold frame.

The last to be mentioned is *Sedum cautolicum,* which at first sight might be mistaken for the delightful *S. sieboldii.* Both plants are natives of Japan. The main differences are as follows: *S. cautolicum* blooms about two weeks earlier than *S. sieboldii,* and the flowers are of a much deeper rose color. Whereas in the latter the leaves are sessile, and in groups of three, in *S. cautolicum* the leaves are opposite, and narrow at the base into a very short petiole. Both plants are deserving of a place in the rock garden.

THE SAPPHIRE ANEMONE

GEORGE H. M. LAWRENCE, *Bailey Hortorium, Ithaca, N. Y.*

TWO TUBER BEARING SPECIES of Anemone, sometimes of confused identity, are sapphire anemone (*Anemone blanda*) and the Apennine anemone (*A. apennina*). Nearly twenty years ago the late Peter J. van Melle grew and studied these kinds in the effort to understand better their characters of distinction. Both species are well suited to rock garden culture and, of the two, *A. blanda* is the more desirable. An alkaline or limestone soil is best suited to their needs.

The first of these to be known botanically is *Anemone apennina*, a species of deciduous rocky woodlands on the higher mountains of southern Europe. Its specific epithet 'apennina' was given it in 1753 by Linnaeus, who noted it to be native in the Apennines and in England. His crediting it as native in England reflected his faith in Parkinson and in Ray, British naturalists of the preceding century, who treated it in their books as native. Modern authors consider it as having been introduced to Britain sometime before 1600 and to have escaped from gardens and become naturalized. The first color plate of the species was published in 1798 (in Curtis' Flora Londinensis).

Anemone apennina flowers in April-May with its one to two much-divided and deeply lobed leaves and its flowering stems produced from a small irregular blackish tuberous rootstock. The flower stems are 1-8 inches tall, each bearing a single sky-blue flower about 2 inches across. Like all anemone flowers, it has no petals. It is the sepals that are colored and resemble petals. In this species they are 10-15 in number, are strap-shaped, and are somewhat hairy on the lower side. Below the flower, is a whorl of leaf-like structures called bracts. These have stalks that are about as long as the bract blade. Like the true leaves, that arise from the tuber, these bract blades are dissected into three segments, each of which is deeply toothed or lobed.

Anemone blanda is considered by most botanists to be the eastern European representative of the Apennine anemone. It was first recognized and named in 1854 by the famous pair of Austrian botanists, H. W. Schott and T. Kotschy. It occurs naturally, in a variety of forms, from Greece through Asia Minor to the Caucasus and into Kurdistan. It usually flowers a month earlier than the western species described above. The species was introduced to British gardens by 1874 and was first illustrated in 1883 (in Robinson's "English Flower Garden").

The blackish tubers of the Sapphire anemone usually produce a single true leaf (occasionally two), and one flower stalk two to eight inches high. The solitary flower is 1½-2 inches across, has 9-14 narrowly strap-shaped sepals, typically deep blue, and hairless on the back. The whorl of 3 bracts below the flower may be sessile or short stalked.

The two species, while similar, may be separated by the following combination of characters:

A. apennina	*A. blanda*
Lobes of bracts acute to abruptly mucronulate, rather deeply incised, the sinuses between lobes open and conspicuous	Lobes of bracts obtuse or blunt, not deeply incised, the sinuses very narrow and often closed towards lobe tips
Sepals hairy on outside, at least on lower third	Sepals not hairy on outside

The flower stalk or peduncle (portion between flower and whorl of bracts) as long as the stem below, or nearly so; the peduncle usually slender but remaining erect after seed-setting

The peduncle mostly one-third as long as stem, or less; peduncle not slender, but usually curved downwards after seed-setting

Some writers, including van Melle, have considered the two species separable by the length of the style in the tiny pistils at the center of each flower. A study of these in flowers of both cultivated and wild plants indicates the style and stigma length to vary from a sessile black dot to an orbicular stigma borne on a very short but distinct style.

In Britain, *Anemone apennina* is represented by several color forms, probably best treated and grown as clones. These include 'Alba', 'Caerulea', 'Pallida', 'Purpurea', 'Rosea', and 'Flore-pleno', clones whose characters are indicated by their names. In this country the typical form is offered by about 8 commercial sources. Only one is known to have offered a separate clone ('Purpurea') and that firm (Barnes Importers, East Aurora, N. Y.) is out of business.

Anemone blanda, on the other hand, is represented by a few botanical varieties and several named clones. Var. *scythinica* has the sepals blue on the outside and white inside and tubers are currently offered by the Van Tubergen bulb firm of Haarlem. An improved British selection of this is known as the Hagley Court form. Similar to this variety is the clone 'Cuprianae' said to differ in the intensity of blue color. Cl. 'Ingramii', of British origin, has deep violet flowers similar to the material available from many domestic sources as 'Atrocaerulea'. The clone 'Rosea' with soft pink flowers is readily available from domestic sources. A form on the British market as 'Splendens' appears not to be in this country. Both white and double forms are well known in Europe, but are not known to be currently offered in the United States. A white selection of Van Tubergen's is called 'Purity'.

ADVENTURES IN JAPAN – II

BIRDIE PADAVICH, *North Bend, Washington*

THE MOST INTERESTING parts of our trip through Japan were, to me, the northern part of Honshu, and Hokkaido, the island to the north. After we left Sendai, which is a couple of days' drive from Tokyo, the country became rough and mountainous and sparsely settled. The road was gravel in most places, and very dusty. It became difficult to find places to eat and sleep. The people were very friendly and helpful in guiding us through the towns and villages. They could not understand us, or where we wanted to go, but as there was only one main road up country they knew we wanted to be on it. Often a man would mount a bicycle and lead us out of town. The roads appeared to be well marked, but in Japanese, which was of no help to us.

Twice we were rescued by missionaries. The first time was in a large city, and as we had been travelling all day, we were tired and dirty. We drove around and around asking for hotels, but people just looked at us. We finally ended up at a large railroad station, where I had visions of myself, rolled up in my raincoat, on one of the benches, come morning. (I was to see myself that way a couple of times before the trip was over, but I did not know it at that time.) As the Japanese do most of their travelling by train, there were always large

crowds at a railroad station, day or night, and surely among them there would be someone who could understand that we wished to find a hotel. As we made our way toward the ticket window we saw a white woman talking to the ticket agent. She was a missionary and teacher, not American, who had her driver show us to an inn which was very nice and clean, and which had a lovely garden and pool—just a small garden tucked in between buildings, but perfect in design.

The next day as we travelled along we could see farm houses in the distance, with magnificent plantings of azaleas around them, and once along the roadside there was a hedge of white azaleas a quarter mile long. We also noticed a beautiful double lavender-pink azalea with petals so long that it looked more like *Magnolia stellata.* Another time, we saw a farm in the distance, with a road leading to it bordered with azaleas in many colors. One small-flowered double red was outstanding: I have never seen a red quite so brilliant in this country. We stopped the car at the roadside and walked in to take pictures. One side was quite woodsy, and there grew a jack-in-the-pulpit new to me, with shiny green, heavy-textured leaves and a deep purple striped jack with a purple beard, eighteen or twenty inches long. How I wished I could dig some, but we saw no others, although trilliums and anemones grew everywhere.

That evening as we searched through a village for a place to stay, a red haired missionary and his wife saw us, and led the way to an inn by the railroad station. This village was noted for its fine iron cooking pots and tea kettles — and by the way, we had all, by this time, turned into tea drinkers, green tea at that.

The inn served us an early breakfast of tea and toast the next morning, and we were ready to leave at 7 A.M. We hoped that by driving all day we should be at the seaport town of Aomori by nightfall, where we would load our car into a boxcar to be put on the ferry and taken across to the island of Hokkaido. That day was rough: we found no place to eat, thirty miles an hour was top speed, and our hair and clothes were coated with dust. There was no water, but at one small village we found some warm bottled beer to drink.

We arrived at Aomori, a small village on a large bay, at 6 P.M. The ferry agent told us we could load our car and leave at midnight if we wished. Frank and Francis drove the car into a box car and tied it down securely, then we took our smallest bags with our night things in them, and started out to find something to eat. We were in a typical fishing village with dirt streets and no sidewalks. Near the railroad station we found a small tea shop where we had our choice of shrimp tempra, or a Japanese dinner of raw fish and clams. We were hungry enough to eat anything, but settled for the tempra, which was very good. Then we returned to the ferry terminal, where the agent told us that we could sleep on the couches in the first class waiting room, and that he would wake us when it was time to go aboard. We wrapped ourselves in everything we had and stretched out and tried to sleep, but it was terribly cold, and there is no heat in Japan other than the tiny charcoal braziers used for cooking.

At eleven the agent came and told us to follow him. He led us down through the ferry terminal and warned us to hurry and get on board before the other passengers. We grabbed up our luggage, and on a dead run, with three thousand Japanese at our heels, we lit out across the dock for the ferry. We found seats, but soon there was not even standing room. Do you remember that last year a ferry on this run tipped over, drowning 2500 people? I expected this one to sink, loaded with a freight train and with all those people! Once we were out in the harbor the lights were turned low and everyone tried to sleep, but we were so crowded that we could not move, the fog horn blew steadily, and by morning we were a sorry sight.

It was still dark when we landed, around 6:30, and as we could not get the

car until 8, we walked up town — another fishing village — to see whether we coud find a tea shop open. Farm girls, bringing carts of produce in from the country, wore a harness, and had one or two dogs, white and large like Siberian huskies, hitched up along with them to help pull the carts. Not a thing was open in the town, so we went back and unloaded the car ourselves. The agent, who took us over to the ferry terminal for toast and coffee, told us that he doubted that we could drive to Sapporo over the mountain roads, as it was still early spring up there, and much snow still remained. We thought the trip worth trying, and started out, in spite of his advice, through a part of Japan which is very mountainous and sparsely settled. We found the roads not too bad, and wild flowers everywhere. Deep purple erythroniums and pale mauve anemones grew along the roadsides and over the hills, while double yellow daffodils were on the open slopes. There were fields of white skunk cabbage, and over the next ridge, a field of deep purple ones. Cherries and magnolias made the valleys pink and white. We followed a winding road up a deep canyon, with snow on the hilltops and spring down below. There we saw glaucium with its lavender pink flowers, trilliums red and white, anemones blue and white, a deep yellow daphne growing flat on the ground. There were flowers I had never seen before, dozens and dozens of different varieties at every turn of the road: vines and creepers, a dozen different violets and ferns, azaleas and other flowering shrubs, pieris and several forms of huckleberry. I believe that one could have filled a truck with plant material from this canyon, without having two plants alike.

While in Sapporo I visited the rock garden at the university. It was wonderful, a couple of acres all in ridges and valleys, while in lath houses were thousands of plants in pots and large pans, all marked in Japanese, but I could recognize a family here and there. The most interesting were bog gardens in large crockery pans two feet square, containing dwarf rhododendrons and creepers, willows and gentians. I spent most of one day just hanging over pots. All the plants in the orchid house had American labels. There were large plantings of small flowered rhododendrons, most of them new to me; some were natives, I am sure. Along the lagoon were large magnolias in full bloom, lovely pink and deep maroon, probably *M. soulangeana* and *M. lennei*. The grounds were extensive and well-kept, like a public park.

One bright sunny morning we started over the mountains to Utashiani, along a road following a very swift river up a canyon that was pink with flowering cherry trees. The new growth on the maples, just coming out, was a deep maroon; there seemed to be quite a number of different maples there. This must be a wonderful drive in the fall, when the leaves turn. Again the roadsides and slopes were purple with erythroniums and *Glaucidium palmatum*.

We made our first stop at a hot spring resort where the buildings seem glued to the steep rocky slopes. This little settlement was noted for its fine wood carving, and we found there lovely hand carved bears in different sizes, as well as a fat warty toad. Our husbands were always rushing us, and we were soon on the road again: no more villages, just a one-way road switchbacking up a mountainside, with no guard rails on the sides. Glaucidium was here pale lavender with an occasional pure white, a number of members of the orchid family were in bud, and dwarf evergreen creepers made mats under the maples that lined the roadsides. Snow in the shady canyons made one realize that winter was just leaving this land. No work had been done on this road in years, and the vegetation grew less, and near the summit of the pass the roadsides were covered with snow. We hoped that we could go through, but near the top the road was blocked by a large snow slide, so we turned back, and were able to collect a few choice things on our way down.

Leaving Chitose the next morning, we caught the 7 A.M. plane for Tokyo, where we had five days before our plane left for the Hawaiian Islands. We purchased a map of the city, on which our hotel manager pointed out interesting parks and shrines for us to visit. We soon found out that five days were far too few for all the wonderful sights around Tokyo. One morning we rode the subway out to Jimbocho Street, the street of bookstores, new and used. I came away loaded down, much to the disgust of my husband, who kept saying, "You can't take that load on the plane with you. You'll have to throw away some of your clothes." I will admit I did bulge in places.

On our last day in Tokyo, a young man who had a flower shop in our hotel asked us if we would like to visit a famous alpine garden. Of course we were delighted, even more so when we found the garden to be that of Mr. Ozawa. He has the most complete alpine garden that I have had the pleasure to visit. I don't suppose I'll ever see such rare treasures again. He grows most of his alpines in pots and large crockery pans; I should say he has thousands of pots placed on long tables just the right height to work on. He does much hybridizing, and had in bloom two pans of lovely little bog orchids from Formosa, a pink which was the original wild form, and a white which was his cross. One part of his garden was devoted to flowering shrubs and ferns. He has such a wonderful garden that it would take days to see everything, but our time was limited, and after Mrs. Ozawa had served us tea in their lovely home, and we had taken a great many pictures, we regretfully left their wonderful garden, and returned to the hotel for our luggage. The taxi driver took us sightseeing on our way back, much to our discomfort. When we asked him to hurry, he grinned and went a few more miles out of our way. We were an hour late reaching the airport that night, but the plane sat waiting for us, and we reluctantly said goodbye to that wonderful land.

GARDENS AND GARDENERS

R. GINNS, *Desborough, Northants, England*

I HAVE JUST READ in the newspaper that a certain well known novelist who dabbles in garden making is disposing of his present home because, he says, the garden is as perfect as he can make it. The idea is, apparently, to start afresh and make another. This illustrates one of the main points of difference between two distinct types of gardener. The first type is preoccupied with the garden as a whole, often as a mere adjunct to the house, whilst the plants themselves are a secondary consideration. Provided there is an expanse of blue here, yellow there, with a splash of scarlet somewhere else, it doesn't matter what plants provide the colour. Once this type of garden is established one sees the same scene year after year. It certainly varies with the seasons, but after a year or two one knows exactly what to expect at each time of the year and thus there are no surprises.

The second type may be called "plantsmen" — or women, because many of the ladies are even keener at this kind of gardening than the men. With them the plants are everything whilst the garden itself is merely the frame in which they are exhibited. Some go even further than this, growing their pets in pots which are kept in frames whilst the garden itself, as often as not, is totally neglected. The gardens of this second type seldom exhibit big stretches of any one kind of plant but they always have something new to exhibit and so every year interest is maintained.

Most alpine gardeners belong to this second type, for the rock garden is an ideal place in which treasured plants can be isolated and so given their full value. The loss of a rare plant in such cases may cause some heart-burning at the time, but I, for one, soon console myself with the thought that the empty space can be used to plant something else new and exciting.

Perhaps the two types of gardener can be summed up as follows: the first asks what particular plant is most suitable for a certain place, whilst the second wonders which is the best situation for a particular plant. I must confess that I belong to the second group, and I have recently been thinking back to those events which guided me into making the particular form of garden which is a never-ending source of interest and pleasure.

First and foremost was a series of three books written by that great gardener, recently lost to us, Mr. E. A. Bowles. These books described his garden in each of the four seasons and were entitled "My Garden in Spring," "My Garden in Summer," and "My Garden in Autumn and Winter." Until then I had thought almost entirely in terms of wallflowers, polyanthus, arabis, aubrieta, phlox, and such like. But now I was introduced to a whole new world of plant life, including many lovely rarities and not a few freaks. Mr. Bowles proved to be generous with his advice, but my first attempt to see the garden itself was somewhat of a failure. I was in London on business and tried to reach him by bus on a Saturday afternoon. Football crowds delayed things and I reached Enfield with just about half an hour to spare before it was time to start back. So all I had was a fleeting glimpse of the garden without a chance to study the hundreds of treasures it contained.

My next visit was during the London blitzes when I was in London on army duty. But I found the garden an oasis of peace in the midst of the surrounding destruction and at last had an opportunity to savour the wonderful collection of plants growing there. E. A. Bowles has been called the Crocus King and it was during that visit that he supplied me with the nucleus of my own collection of crocus species, over 120 in number, and also infected me with his own enthusiasm for the genus. Since then I have visited him on a number of occasions, and each time I have found a wide range of new material to study. From time to time, also, I received parcels of seeds and bulbs from him which he thought would interest me. Certainly I must place Mr. Bowles as the greatest influence that shaped my gardening career.

But not far behind him comes Lady Beatrix Stanley. My first meeting with her was typical of her unconventional ways. In those days I cycled a lot and about ten miles from home would pass a low hedge on the other side of which was a lovely garden — a blend of wood, rock and water gardens. Every time I reached it I would dismount and crane my neck over the hedge to see what new flowers had appeared. One day when I was doing this a lady bobbed up from behind the hedge where she had been weeding and said, "If you are so interested you'd better come in and look around in comfort." I had at that time been contributing short notes to a gardening paper and when she learnt my name she treated me as an old friend. Before we started round the garden she provided herself with a basket and fork as she said we were sure to see things which I would like to grow. Plants brought back that day still grace my garden.

This visit was only the first of many, and my knowledge of woodland plants and of bulbs suitable for the rock garden increased rapidly. The war put an end to this pleasure as to so many other things as I was too busy for visiting.

Another lady prominent in the world of alpine plants was Iris, Lady Lawrence, wife of Sir William Lawrence who was one of the founders of the Alpine

Garden Society. It was a red letter day for me when these three great gardeners paid a visit to my small garden, and found enough of interest in it to occupy them for the whole of an afternoon. They even found plants new to them and I was very proud to be able to pass on to them something in return for the many plants I had had from them. Later, during a motor tour in the southern counties I was able to visit Lady Lawrence at her home, "Riverdale," near Dorking. This contained many lovely plants collected together by Sir William during his lifetime and carefully maintained since his death. One of the welcome gifts taken away then was a charming little purple and yellow viola that had originated there and was called 'Riverdale Rogue,' a very apt name. I have never found any of these dwarf violas, as distinct from violets, very long lived, but I still have this variety in my garden after the lapse of eighteen years, as it seeds freely and comes true from seeds.

Another gentleman who did much to mould my gardening tastes was Dr. Giuseppi, first treasurer and then president of the Alpine Garden Society. The Easter after the war with Germany ended, the Society decided to hold a week-end meeting at Felixstowe, where he lived. As I had had no holiday since the war started, I decided to go, and was delighted to meet there a number of people whose names were familiar to me through their writings in the AGS Bulletin and elsewhere. Lectures and film shows by well known gardeners and excursions to interesting gardens passed the time, but my chief memory of that short holiday is of the kindness of Dr. Giuseppi. As soon as we had all assembled he met us and invited us to use his garden as if it were our own. This was no mere figure of speech for we were able to wander around at any hour of the day and examine at our leisure the hundreds of rare plants that were to be found there, mainly in a big range of alpine houses. No corner of the world where there are mountains had its alpines unrepresented there.

Among other rarities I still remember *Raoulia eximea* (the queer vegetable sheep from New Zealand), some rosulate violas from the Argentine, *Craterostigma plantaginea* and some of the giant lobelias from East Africa, and an espeletia from Venezuela. The garden itself was not of great interest, but the houses and frames kept me fascinated for many hours, and later on my own garden was enriched by many of his duplicates.

On Dr. Giuseppi's death not long afterwards this unique collection was dispersed by means of an auction. I am glad to think that some of the plants later found their way into my own collection to remind me of a great alpine gardener.

These are only a few of the people who helped to mould my own ideas of what a garden should be, but it would take far too much space to mention every one of them. I am still learning, but, in view of the number of people who visit me, I hope that I am helping others, in a small way, as I have been helped.

CORRECTIONS

The index which was issued with the October number covers Volumes 13 and 14 of the BULLETIN, not Volumes 11 and 12; in the list of Authors, read Lawrence, G.H.M., not Lawrence, G.M.M.

If readers have noted other errors, the editor would appreciate being informed of these. Both the typing and proof-reading of the index took place at the beginning of the academic year, when pressure of other duties allowed little time and energy for the proper performance of these arduous tasks, and the proof-reading, at least, was done all too hastily. We apologize to our members for a job poorly done.

PRIMULA VIALI

CRW

Dr. H. S. Wacher

AMONG THE LESS COMMON PRIMULAS, in America at least, but one which can occasionally be flowered in eastern gardens, is *P. viali (littoniana)*. It is not an easy plant, but it is by no means extremely difficult. Seed usually germinates generously if sown in pots in very early spring, without pre-freezing. The seedlings come along well enough for the first season, in spite of summer heat, but often fail to survive either the first or second winter, even in the unheated alpine house. Occasionally they will come through well, as did a sowing I made in 1952. The next spring the seedlings, which had up to this time been left in the seed-pot, were transplanted into flats in the lath house, where they came on vigorously, and raised hopes that they would flower the following year. However it was not until they were three years old, in 1955, that the plants flowered—and died. I had assumed that the heat of that summer, together with an inadequate supply of water, was responsible for their loss, but according to Corsar, this species is probably monocarpic.

I was not heartbroken to see them go, for apparently I had obtained an unusually poor color form. At the top of a scape of a foot to eighteen inches was a spike of tiny bells two or three inches long, of the palest, most washed-out lavender imaginable—they were curiosities and nothing more. I have grown to flowering in other years smaller forms, with violet flowers topped with red buds, and those were delightful. I shall try again, and hope that this time I receive a better color form.

LILIES IN THE ROCK GARDEN?

STEPHEN F. HAMBLIN, *Lexington, Massachsetts*

WHILE I ADMIRE the many natural species of lilies and the many new forms created recently by breeders, almost all seem too tall and robust for the scale of a rock garden. But some species are low enough in stature for use among rock plants. Long ago I grew coral lily *(L. pumilum or tenuifolium)*, but after a year or two of good bloom, the mother bulb dies of old age. New plants can easily be produced from seed, but as the lily is nearly biennial, I have been satisfied to have seen it.

When first filled with zeal for native rock plants, I tried our wood lily *(L. philadelphicum)*. A pail of bulbs was dug in October, from plants marked with a rag when in bloom, in colors ranging from maroon-black to pale yellow. Special preparation went into the new location: sods of wood turf were buried and leafmold was freely added to the soil. The next summer there was considerable bloom, in a good color range, but the second summer there were few flowers, and the third year, no plants and no flowers. Apparently our wood lily is also short-lived and walks by its wild lone. The western form (var. *andinum*) I have not grown, Our friend, F. L. Skinner, made hybrids of the wood lily with *L. dauricum*. How permanent are they?

Also of height often but a foot are the *L. elegans-umbellatum* group, which are *L. dauricum* hybrids whose ancestors came from Siberia. The new hybrids, as the 'Golden Chalice Hybrids', show amazing colors. But the usual *L. umbellatum* sorts are very susceptible to botrytis, and large plantings that I once had were wholly gone after several years of good bloom. The new forms are stated to be "resistant to disease."

My one rock garden lily has been *L. bulbiferum*, of the same habit as wood lily and the umbellatum group, a foot tall, with two or three erect orange cups in June. My two bulbs have thrived five years in hot sterile soil, with no sign of disease. Seeds are rarely produced, but small green bulbils appear at each leaf axil and in a few years these grow to blooming size. This year a hybrid was created with *L. dauricum*, and at last I have two fat seed-pods. The seedlings should produce bulbils on the stem (or bulblets just below ground, as in the *L. umbellatum* group), so that propagation of *L. bulbiferum* hybrids should be rapid and true to color. Perhaps our lily breeders could use bulbil lily as the beginning of a race of dwarf sorts of easy and certain culture.

BOOK REVIEWS

Two Books on Bellflowers

Campanulas. By H. Clifford Crook. 256 pages, 99 illustrations. London: Country Life Ltd., and New York: Charles Scribner's Sons, 1951. 35 shillings.

The Garden of Bellflowers. By L. H. Bailey with the assistance of G. H. M. Lawrence. 155 pages, 1 color and 50 black and white illustrations. New York: The Macmillan Co., 1953. $5.00.

It is remarkable that these two books should appear almost simultaneously, after an interval of more than 120 years since the publication of De Candolle's *Monographie des Campanulacees*, during which time the only publication on Campanula of any consequence seems to have been a paper by Col. Beddome in the R. H. S. Journal for 1907. Yet neither was, apparently, inspired by the other, for Mr. Crook's work developed from a series of notes which appeared in the BULLETIN OF THE ALPINE GARDEN SOCIETY during the 1930's, while at least the preliminary work on Dr. Bailey's must have been done at approximately the same time, for about 1946 Miss Ethel Zoe Bailey mentioned

to the reviewer that the manuscript had been completed and was awaiting publication.

It is equally remarkable, and even more regrettable, that recognition in these pages of such important books should have been so long delayed: the first was merely mentioned in our BULLETIN at the time of publication, while the second was completely ignored. It may well be that both books will soon be out of print, for the Macmillan Company has announced that only 1000 copies of Dr. Bailey's book are still available, and that there is no intention of reprinting it; the status of Mr. Crook's book is not known.

Campanula is one of the most important genera for the American rock gardener, for while we have few native species, the exotics are far more adaptable to our trying conditions than are most of the other great genera of rock plants, and there must be very few gardens in which there are not grown a number of species. But nurseries and seedsmen are addicted to sending out wrongly-named material: we even know of cases where *C. glomerata* has masqueraded as a gentian, and the terrible *C. rapunculoides* as a member of still another family, while all too often an alluringly named packet of seed will produce nothing more than *C. rapunculoides* or *C. rotundifolia,* and *C. lanata,* from a number of august sources, has invariably proved to be merely *C. allariaefolia.* Under these circumstances, the need for the rock gardener to have a reliable guide is at least as great as that for one in any other genus; only in Saxifraga does the confusion of names seem comparable, and saxifrages are not for any but cool-climate gardeners.

Mr. Crook has attempted to describe every known species, whether or not it has ever been in cultivation. His descriptions and comments are designed for the reader without botanical vocabulary, yet he frequently uses technical terms which may be difficult for the lay reader to interpret, and the language is not always sufficiently precise to permit certain identification of a plant in question. However, his style is enjoyable, and cultural notes are usually appended to descriptions. A long list of synonyms completes the book. The photographs, all of living material, are variable in quality: some are sufficiently sharp and detailed to permit approximate identification by comparison with garden plants; others are muddy and indefinite, offering very little more than a suggestion of the form and habit of the species illustrated.

Dr. Bailey's book is his last publication: Dr. Lawrence made minor editorial changes and saw the book through the press, but insists that otherwise it is entirely from Dr. Bailey's pen. No attempt is made to cover the entire genus. Only 137 species, all of which were in cultivation at the time the manuscript was prepared, are treated, and most or all of these were actually grown at the Bailey Hortorium; among them are some extremely rare species, not a few of which are no longer obtainable, and other than a few post-war introductions, the reviewer has not noted any species now in cultivation which has been omitted. In addition, the better known members of eleven other genera of Campanulaceae are discussed; of these Edraianthus is of special importance to the gardener, for there is great confusion among the clusterhead species.

In the introductory remarks, Dr. Bailey wrote, "The reader may find the language too technical. That is inevitable, and necessary to understanding." Yet strangely, this technical language, thanks to a most judicious choice of words, is less difficult to follow than that of Mr. Crook, where only an occasional botanical term is used, but usually one less readily comprehended than the equivalent phrase selected by Dr. Bailey. The descriptions are fairly brief, and to the point. There is no attempt at a detailed synonymy, but, far more useful to the gardener, a list of false names under which a species has been sent out completes the descrip-

tion. Cultural notes are few, other than remarks concerning the general needs of each genus. Keys are given for the identification of all species described, for each of the genera Campanula, Adenophora, Cyananthus, Wahlenbergia, Edraianthus, and Codonopsis. They read well, and while the reviewer has not yet had opportunity to test them in his garden, he can see no serious difficulty in their use.

The colored frontispiece and the fifty black and write drawings are all the work of Professor Elizabeth Burckmyer of Cornell University. While some of them seem to have lost, in reproduction, a little of the remarkable vitality of the originals, they are still works of art, and enable one to recognize at a glance the outstanding characteristics of the species they portray. Had all the species described been illustrated, the gardener could almost have dispensed with the several keys. Their inclusion adds greatly to the value and interest of the book.

A book on bellflowers is an essential part of a rock gardener's library, and the reviewer would be hard put to make a choice between these two, if only one were to be acquired, so admirably do they complement each other. Where the one may lack precise descriptions, it includes species not mentioned in the other; one has a list of synonyms, the other a series of keys. Even the illustrations of the same species should be compared, for one shows the living plant, the other details of structure which no photograph ever presents adequately. We are indeed fortunate to have two excellent and dissimilar books dealing with this popular genus.

British Alpines

Mountain Flowers. By John Raven and Max Walters. 240 pages, 16 color and 28 black and white photographs, 20 distribution maps. New York: The Macmillan Company, 1956. $5.00

The authors of this beautifully illustrated book are strange bedfellows: Dr. Walters is a professional botanist, curator of the University Herbarium, Cambridge, while Mr. Raven is University Lecturer in Classics at the same university. Each has written, and initialled, certain sections of the book; yet in reading it, one often feels that their roles should be reversed, for the style of the botanist is in a more casual and popular vein than is that of the classicist.

The book deals with the flora of the higher elevations in the British Isles, and for lack of a workable definition of the term "mountain plant," has endeavored to mention, at least, all species of vascular plants known to occur on British mountains at elevations of more than 2,000 feet. For the rock gardener this choice is not an entirely happy one, for such a standard item of rock garden literature as *Primula farinosa* does not climb sufficiently high to merit inclusion in the list of species.

In the first part of the book, there is first of all an account of early exploration and collection of the British mountain flora, with many quotations from contemporary sources; this material makes such entertaining reading that one wishes for more of the same. The three chapters which follow, on the physical features and vegetation of the British mountains, and the nature and origin of the mountain flora, contain so much detailed information pertinent to almost all mountain ranges, and not readily available elsewhere, that they merit careful study by anyone who wishes really to understand the peculiarities of behavior exhibited by mountain plants. The development of characteristic mountain formations, the reason for particular types of plant communities, with particular stress on peat bogs and their denizens, the effects of human activities on the original flora, all are examined in minute detail.

The second part of the book deals with specific regions, all of which the authors have studied in detail in situ, and the remarks of the first part are applied to the mountains which are examined. The authors believe that the areas

they have selected are fairly representative of British mountains as a whole, but point out that there are many mountains in Scotland whose flora is still virtually unexplored, and which offer possibilities of new species (new to the British Isles, if not to science) as well as of extensions of range. The accounts of these regions are arranged, so far as is possible, in order of increasing alkalinity of the soil, so that the floristically poorest areas are considered first, the richest last. Examined more or less in detail are Snowdonia, the English Lake District, the Cairngorms and Lochnagar, the volcanic hills of western Scotland (which do not rise to the altitudinal limit imposed, but which display the floristic characters of higher peaks), the limestone regions of northern England and north-western Scotland (including, all too briefly, Farrer's beloved Ingleborough), the mica-schist peaks of the central highlands (among them Ben Lawers, most famous of Scottish peaks), and concluding with a look at Ireland—truly a cross-section of the high country of the British Isles. In each instance, mention is made of the physical and ecological aspects, together with lists, and usually much more detailed information, of the plants occurring there.

The photographs are of superlative quality, and often beautify a rather inconsequential plant almost beyond recognition. One has only to look at the exquisite geometric pattern of *Sibbaldia procumbens,* or that of *Cerastium cerastioides,* to realize that a master hand has pictured beauty where the casual eye would see none.

For in the plants lies the weakness of the book, so far as the rock gardener is concerned. He is unlikely to see beauty in sedges or grasses, nor is he likely to crave them or the hawkweeds and lady's mantles, no matter how much their rarity excites the botanist, for his own garden. And while there are many precious plants, in the rock gardener's eyes, among the British alpines (one need only cite *Diapensia lapponica* and *Loiseleuria procumbens* as instances), there are few endemics, and none of striking beauty. The book is not for one who seeks the thrill of reading of new and marvellous rhododendrons or scarlet gentians, but for the reader who wishes really to understand mountains and the plants that grow on them. The intelligent rock gardener can find no better, nor more detailed, discussion of the many problems of behavior that perplex him; after reading this book, he should be a more skillful and successful plantsman.

Two Useful Handbooks

Handbook on Soils. 80 pages. *Handbook on Lawns.* 93 pages. Both profusely illustrated. New York: Brooklyn Botanic Garden, 1956. $1.00 each.

From time to time PLANTS AND GARDENS, the quarterly magazine of the Brooklyn Botanic Garden, devotes an entire issue to a special subject, which is then issued, with identical contents, as a "Handbook," and made available to non-subscribers to the magazine at a reasonable price. The contributors to these handbooks are specialists in the field on which they write, so that the information contained in each handbook is authoritative and up-to-the-minute.

In the Handbook on Soils much attention is given to the proper application of fertilizers and to the testing of soil to make certain that the proper fertilizer is applied, and in the right quantity; warning is given of some of the perils of home soil testing, and a list of soil testing laboratories throughout this country and Canada is given, together with information on sending soil samples to each laboratory. Several articles deal with soil conditions and with the proper methods of working soil, with building up sandy soils, with gardening in arid regions, and with problem soils. In connection with the article on liming soils, it may be well to quote Dr. Fred Stoker, one of the great English gardeners of this century: "One of the greatest blessings to the shrub gardener is a lime-free, neutral, or almost neutral soil. That, in contradistinction to a limy medium, will

not limit his choice of plants, whatever else may . . . To desecrate such a soil is wicked. I refer to the deliberate addition of lime; the wash from limestone need not be considered." (BULLETIN OF THE ALPINE GARDEN SOCIETY, II, no. 8.) It is interesting to note that a middle course is recommended for organic gardening. An article on soil racketeers is enlightening, and amusing to those who have not been victimized. Especially valuable are the discussion on soil sterilization, and that on soil conditioners.

The Handbook on Lawns may be of less interest to the serious rock gardener, unless he misguidedly attempts to reproduce the rockwork rising out of emerald sward that is so popular a display at flower shows. The subjects dealt with include watering, fertilizing, control of crabgrass and other lawn weeds, injurious insects, diseases, the care of lawns in shade and on slopes, repairing poor lawns, and the selection and care of mowers. Persons who may be tempted by the alluring advertisements of zoysia in horticultural periodicals will do well to read the article on this subject before investing in zoysia plants.

Both handbooks are extremely well illustrated with "how to do it" photographs, which will be helpful to both novice and experienced gardener.

SALMAGUNDI

WHAT'S IN AN INDEX? One of the chief problems arising in the course of this tedious and ungrateful task is that of how detailed it should be, of whether the mere mention of a plant is sufficient reason for including it in the index, or whether inclusion should be limited to those plants discussed in more or less detail. After vain search through the inadequate index of a German text for a topic which we read in the book years ago, and after reviling French scientific books for having no index at all, we have gone to the opposite extreme and have recorded every plant name (barring, possibly, a few oversights) that has appeared in the BULLETIN during the past two years. Our reasoning is that the mere mention of a plant as growing in a certain locality in the wild, or in a particular garden, or associated with other species mentioned by name, may offer to some reader a clue to the needs of the plant, or to where it may perhaps be obtained; the statement that a gardener of repute has it in his garden may stimulate someone to grow a species that he would otherwise have overlooked. If articles limited to one genus are discounted, the frequency with which a genus or species is mentioned offers some clue to its popularity. From the completed index one can draw interesting conclusions: primulas are the most-discussed, and presumably the most popular of all rock plants, with campanulas a close second and gentians a poor third, while dianthus and saxifrage have drawn little comment. More disturbing is the infrequent mention of American natives: we have a vast number of beautiful plants, of which members abroad would like to know, yet we write almost exclusively of exotics. There are only four references to American species of Aquilegia, seven to Lewisia, three to Mertensia, two to Oenothera. Penstemon fared better, as did Trillium, but only because of special articles devoted to them. Many of our outstanding plants, in fact most of them, went unnoticed. While we by no means agree with John Wister that gardeners should concentrate on native material and (we gather) virtually ignore exotics, we should like to read, and to learn more, about our own rich flora, even though many species are far more difficult to procure at present than are those from the Himalayas.

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Until very shortly before the deadline, it seemed that there would not be enough material available to fill the pages of this number of the BULLETIN. We are most grateful to the good friends—and good members—who came to our rescue, and hope that they, and others, will send in sufficient material so that we

shall not again have to consider sending out an issue with less than the usual number of pages.

It is no consolation to learn that our esteemed colleagues overseas are confronted—to our surprise—with the same problem. Mr. Mountfort, editor of the BULLETIN OF THE ALPINE GARDEN SOCIETY, has intimated as much to us, while in the September 1956 number of the JOURNAL OF THE SCOTTISH ROCK GARDEN CLUB, its editor, Mr. Mowat, who has contributed the lead article of this number (more or less on an exchange basis between fellow-sufferers) wrote:

"Your editor wishes to conclude his remarks with thanks to all contributors to this issue—those whose sense of loyalty to the Club has inspired them to devote some of their time to the pleasure of fellow members. Out of a membership of three thousand their numbers are few. Why? Is it that everyone agrees unreservedly with all that is written in our *Journals*, and therefore has no desire to query or contradict? Is it diffidence? Or is it just plain apathy? How can an editor know?"

To which we can only add, "Them's my sentiments exactly."

* * * *

As the editor frequently receives queries which should be addressed to the secretary, and vice versa, it may save time and trouble to point out that the editor's sole responsibility (and we hope that Mr. Epstein will not disagree) is to care for the publication of the BULLETIN, the Seed List, and Index. Seeds of course should be sent to the director of the seed exchange, who compiles the list. All material for publication, advertising, and personal comments on the BULLETIN should be directed to the editor, and everything else dumped in the

lap of our diligent and overworked secretary. In particular, the editor does not have copies of the publications to replace any lost in the mails, nor does he attend to the mailing list or make changes in addresses. All such matters must be passed on by him to the secretary, with consequent delay.

* * * *

Until June 1, 1957, the editor will appreciate having communications to him addressed to Ithaca College, Ithaca, N. Y., rather than to his home address, Groton, N. Y.

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It is frequently difficult to resist discussing, in this column, some of the articles which appear in the earlier pages. So far we have carefully avoided doing this, less because we felt that such comments would be inappropriate than because, when material is submitted to the printer, it is not always possible to decide whether it will be used at once. Putting together the dummy, from the galley proofs (and to the uninitiated, the dummy is the magazine made up virtually as it will appear in finished form), is much like fitting together a jigsaw puzzle. A few articles, selected in advance either as features, or as particularly appropriate in a certain issue, form the nucleus; around these are fitted such other articles as will best fill the remaining space; on occasion, it has been necessary to carry over some material for two or three numbers, because its size did not permit it to fit in with the other material on hand. This should not be interpreted by the author as lack of interest in his article, or use of it merely as a filler, for such is not the case: we are trying to use the space in such a way that we shall give you all that we can possibly crowd into each issue.

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