

BULLETIN

of the

AMERICAN ROCK GARDEN SOCIETY

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GARDENS IN SCOTLAND

JOHN L. MOWAT, SCOTLAND

IT WOULD SEEM we must admit that, apart from the herbal gardens and orchards of the monasteries, abbeys, and royal residences of earlier times, the modern love of gardening came to Scotland somewhat later than to most of her European neighbours. Though mention is made in old records of "cottages with gardens" at Dirleton, East Lothian, it is not till the early part of the 18th Century that we hear of the construction of such well-known gardens as those of Dundas Castle, Dalkeith Palace, Hopetoun House, and the Earl of Lauderdale's garden at Hatton. In the mid 1700s came the garden of Blair Drummond, the first in Scotland to be laid out in 'modern style'.

Edinburgh Botanic Garden, generally admitted as having the largest rock garden and collection of rock plants in the world, was founded in 1670 by Andrew Balfour of Lindores, while in 1750 William Aiton of Hamilton was appointed by King George II to 'form and arrange a botanic garden at Kew'.

Scotland's first book on gardening—"The Scots Gardener"—was written and published by John Reid, gardener at Rosehaugh in Ross-shire, in the year 1683 and gives an interesting account of gardening as practised during the reign of King Charles II. It is not easy to know just why Scottish gardeners acquired such a high reputation for their horticultural abilities but the fact remains that they were in great demand throughout England and also in Europe, and later many other Scots went to the most remote parts of the known world whence they sent home new plants to satisfy the demands of gardening enthusiasts at home.

At the beginning of this century the introductions of many hardy plants and attractive flowering shrubs from West China regions inclined growers away from the expensive cultivation of tropical plants and orchids to the growing of these new novelties out-of-doors, and the conditions brought about by the '14-18' war finally sealed the fate of most hothouse collections.

But now such universally known plant-collectors as Reginald Farrer, George Forrest, Kingdon Ward, and many others, were providing the horticultural world with a host of new delights, and Farrer himself, when he wrote 'The English Rock Garden', could have had no idea how far the new form of gardening was to spread.



Frost on the
Saxifrages,
R. B. G.,
Edinburgh

Photo by
R. E. Cooper

Scotland, a very small part of the earth's surface, is blessed with a wide range of climatic and soil conditions and over wide areas has been proved particularly suited to the growing of some of the most "choosey" of recent rock plant introductions from various parts of the world, from Tasmania to Tibet, from the Andes to the Aleutians. In the south-west, and in parts of the north-west, are gardens where tree ferns, palms, and many half hardy exotic flowering shrubs may be seen growing luxuriously in the mild humid climate of those parts affected by the ameliorating influence of the Gulf Stream. In the east, even in the north-east, many of the more drought-loving plants and shrubs from New Zealand, Tasmania, and S. Africa grow well in the drier conditions near the coast. Some of the most difficult of the 'High Himalayan' rock plants have shown themselves not unwilling to accept Perthshire, Angus, Inverness, or Moray, as their adopted homes.



Photo by R. E. Cooper

In the rock garden, Royal Botanic Garden, Edinburgh

Two Perthshire gardens, where several previously recalcitrant introductions have finally settled down beside many of their attractive and more amenable fellows, are those of Mr. and Mrs. Renton, Branklyn, Perth, and at Keillour Castle, the home of Major and Mrs. Knox Finlay. The successes from these gardens must be known to all rock-garden enthusiasts, and the gardens themselves are a never-ending delight to all who know and visit them. Not so very far away, at Kirriemuir in Angus, made famous by the writings of J. M. Barrie, Major George Sherriff after having introduced so many delightful plants from his expeditions to the Himalayas has now settled down to grow these plants in Scotland.

Further to the north-east in Aberdeen and district are many more keen and successful growers and the University Botanic Garden of Aberdeen contains an extensive and most attractive rock garden with a wealth of well-grown plants. North-west of Aberdeen on the way to Inverness lies that wonderfully mild and fertile district of Morayshire with many fine gardens of which that of Mr. Norman Webster at Knockmie, Forres, with its comprehensive collections of Liliiums, Heaths, and Primroses, is one of the most interesting. North-west again, right across on the west coast, lies that amazing garden of Inverewe, laid out last century by the late Mr. Osgood Mackenzie and handed over by his daughter, Mrs. Sawyer, last year to the Gardens Committee of the National Trust for Scotland. Neither time nor space permit mention of the many other interesting gardens, with their collections of rock plants, passed on the way — Dalcherna, Killin; Cluny, Aberfeldy; Glendoick, Glencarse; or The Bungalow, Tannadice; but they all have their particular interests, collections of Primulas, Nomocharis, Meconopsis, dwarf Rhododendrons, and other ericaceous plants, and so on without apparent end.



The rock garden,
Branklyn

Photos by J. T. Renton

In the Clyde area and southwards through Renfrewshire and Ayrshire are many famous gardens and it is in this part of Scotland that the many wonderful species and varieties of *Rhododendrons*, large and small, are seen at their best. Many other shrubs also flourish luxuriously, along with *Primulas*, *Meconopsis* and dwarf *ericaceous* rock shrubs. Since *Culzean Castle* in Ayrshire became the property of the National Trust, and part of it was set aside as a Scottish home for General Eisenhower, much has been written about its garden and shrubs. But in truth it is closely rivalled by the many gardens and plant collections throughout Ayrshire, *Kirkcudbrightshire*, and *Wigtownshire*.

Lochinch Castle near *Stranraer*, with its *Rhododendrons*, *Azaleas*, and other shrubs, is passed on the way to that almost incredible garden a dozen miles further south at *Port Logan*. East again at *Dumfries* is the garden of *The Crichton Royal* with its extensive collection, and nearby many other fine gardens including that of *Sir John Buchanan Jardine*, *Castle Milk*, *Lockerbie*.

Another part of
the rock garden
at Branklyn



Through Peebles-shire, where Lt. Col. Balfour has gathered together such a wonderful collection of rare trees and shrubs in his garden of Dawyck at Stobo, to the Border Counties and on into Berwickshire are still more gardens, an interesting one being that of the Earl of Home — The Hirsell, Coldstream. Berwickshire further contains, along with Silverwells, at Coldingham, many other fine gardens, and East Lothian, just to the north, is one of Scotland's most fertile counties and throughout its length and breadth there seem to be numbers of rock garden enthusiasts with good gardens and extensive collections of fine plants.

Midlothian, as befits a county having Edinburgh within its boundaries, with its Royal Botanic Garden, is again thickly besprinkled with good gardens, many of them old and historical, others new but already making a name for their collections of interesting plants. May we end our story with a visit to the Royal Botanic Garden, Edinburgh, well and affectionately known as "The R.B.G.", and after a good look at the scree garden with its many gems, stroll through the Heath garden and on into the rock garden proper with its massed acres of rock plants from all parts of the temperate world. If the sun beats down too warm in the rock garden there is, just beyond, the woodland garden with its striking groups of *Meconopsis*, *Liliums*, and *Primulas* among the *Rhododendrons*, and on the fringe of the woodlands, towards the *Primula*-margined Pond, are the Peat Walls, always so fresh and cool.

Members who would like to read more about Scottish rock gardens, and who perhaps contemplate visiting some of them in person, also those who would like to participate in the Scottish Seed Exchange, will do well to turn to the inside back cover of this Bulletin, where will be found the address and other data of our esteemed affiliate, the Scottish Rock Garden Club.

GENTIANA VERNA

BETTY JANE HAYWARD, MAINE

IN LOOKING BACK through the years of growing and trying to grow alpine plants, *Gentiana verna* stands out as one species I have wanted especially to grow and to succeed with. In the seed order that yearly went across the sea, *G. verna* was always included. Once or twice a seedling may have appeared in the seedbed, only to die before getting more than a leaf or two.

Four years ago two packets were planted in separate rows in a cold frame in late winter. No seedlings came up in spring or during the summer. As autumn came the surface soil was covered with fine moss. But having learned by that time to be patient and look for chance success after the lapse of time, I kept the frame undisturbed until spring.

As the pleasant days of the second spring after sowing came on, each row became thick with little green leaves. It seemed that every seed must have germinated, all coming through and apparently not at all hindered by the moss. Later, when the true leaves were well developed, groups of several, together with the moss, were taken to another frame where they grew on until large enough to be transferred to the rock garden. The plants were never shaken apart as would be the case in handling most seedlings, but were kept in the same groups when finally put into the garden.

With so many fine plants it was possible to have several sizeable areas devoted to them. Each spring they draw attention when the glossy leaves are hidden by the lovely blossoms of matchless blue, each with a white eye. The most thriving group, perhaps, is situated on the top of a low wall, where the exposure is north-north-east. There is shade from noon until the end of the day. The soil is humus but very gritty, and fine stone chips are worked under the rosettes and cover the surface about the plants.

In growing *G. verna* from seed, much variation will be noticed in the leaves and also in the flowers of individual plants. A little plant in the middle of one mat is so much smaller that surely it must be *Gentiana bavarica* or *G. brachyphylla*; but to say it is gray-green or yellow-green I cannot, for to these eyes it is green-green like the rest. I am not able to identify it, but it is not true *G. verna*.

Seed from these plants sown in November of last year germinated satisfactorily in spring. This seems to indicate that early planting of fresh seed is important. Waiting till late winter means a much delayed germination. My experience bears out the opinion expressed by G. H. Berry in his book "Gentians In The Garden".

Unlike *Gentiana acaulis*, *G. verna* is sure to blossom if it is at all happy in its situation and soil, and each spring will see the mats of shining leaves covered with the lovely flowers of brilliant blue, beautiful to see and rewarding to have.

HARDY CACTI

DR. HELEN C. SCORGIE, MASSACHUSETTS

IN THE UPPER REACHES of my rock garden which the sun touches with its first rays and does not leave till it drops below the tall pines to the west, is a small desert, brightened by gay cactus flowers during the hot days when the glow of spring has faded from the garden. These plants are ideal for the rock garden, neat and compact, with no untidy habits of straying by seed or otherwise, lovely in bloom and decorative most of the year when out of bloom.

For the most part, the flowers are similar in shape, suggesting a daisy with their bright tepals and fluffy bunch of stamens. A few of these hardy cacti, however, have tubular flowers. Size of these varies considerably: the green-flowered *Echinocereus viridiflorus* has blossoms about an inch in diameter while those of *Opuntia macrorhiza* measure four inches or more. Colors are gay and varied—yellow, pink, red, purple, and green, though yellow is predominant. The green is not a true green but has a strong undertone of gold which gives it a decorative value lacking in most green flowers. Most pleasing to me is the blend in the flowers of *Opuntia macrorhiza*, mentioned above. This is a clear, pale gold, with a sharply demarcated soft wash of rose toward the center.

The spines, too, are decorative, differing as they do in form and color. The white ones are conspicuous and lovely and the brown ones are like burnished wood, with a richness satisfying to the eye. One form of the commonest of the Opuntias, *O. compressa*, has no spines at all. This is pleasanter for the adventurous hand, but gives the plant a less finished and ornamental look.

Species of the flat-padded *Opuntias* are most readily come by, so it is easy to find oneself with a disproportionately large number of these. To counterbalance this, in my tiny desert, I grow groups of the barrel cacti, but only single plants of the padded sorts. Not a large number of species is available from dealers, but I feel that a much larger number would be found hardy if it were possible to check on them.

The original soil of this cactus planting was a very stony gravel, slightly acid and without a trace of humus in it. This soil with its location at the top of a slope drains off water with great rapidity. In no place on the slope is under-drainage necessary as the stony soil reaches deep down.

Into this gravel, a large amount of old plaster rubble was incorporated. As the cacti are received, there are at most a few dried roots. Sometimes, they are merely unrooted pads. Although these dried roots may never revive, they are of help in anchoring the plants more firmly. New roots form readily and budded plants will bloom even before this can happen. When the cacti were securely imbedded, the entire area was covered with crushed oyster shell. To please the eye, white sand masked the shell. Each fall since then, another mulch of shell is given, followed in spring by white sand. Each new inhabitant also gets its individual mulch when it is planted. In the early years of the planting, a little lime was occasionally given, but with the accumulation of oyster shell, this now seems unnecessary.

All the cacti that I have tried have proved hardy except for one time reported below. Further experimentation, I feel sure, will increase their numbers.

Very little care is required aside from the choice of a suitably drained spot in full sun. Even in the severest drought, the cacti require no watering. The arid, alkaline conditions inhibit weeds. It is essential that the padded *Opuntias* go into the winter in a shrivelled condition. If watered, they stay plump and succulent, and are then more prone to succumb to severe cold.

With the varieties that I grow, which include all those available from commercial sources, only once have I found winter injury. This was during a snowless, very warm winter, with alternate rain and sudden cold. Spring showed the absence of many large-crowned plants that had been flourishing for years, such as the platycodons and malvastrum. Several of the barrel cacti were rotted; apparently the crowns had been saturated with rain which turned to ice in the sudden cold. The waxy coats of the *Opuntias* shed the water. Since then I have covered the barrel cacti with glass jars in December at a time when they were dry. If there is a snow cover at this time, then no protection is needed unless later the ground becomes bare and the weather warm and wet. There has been no injury since though we have had several similar winters. To keep the snow intact, a few pine boughs are thrown over the planting.

As my desert grew, two aesthetic problems became insistent. Necessarily, the area had to be edged with rocks as even gardening visitors stray from the paths if there is no visible restraint. To break this trying but necessary line, trailers were needed that looked and acted the part of desert plants. Finding small, silvery plants for this edging, which would take the extreme heat and the chalky soil, has not been easy. Two that have proved satisfactory are *Artemisia schmidtiana nana* and a *paranychia* bought as *P. argyrocoma*. I have always suspected that the latter may be one of the European species as it takes so kindly to the alkaline soil. At any rate, it is a most charming mat of silver, covered in spring with shining white bracts. The *artemisia* stays low and seldom blooms. Various sedums have been tried but even the dried, baked soil did not deter them. Except for *S. hispanicum*, they have always had to be weeded out.

The other problem came in early spring, and this at last has been successfully solved. As mentioned above, the cacti must have a "lean and hungry look" as winter approaches to endure the coming cold. In early spring, the pads are lying flat on the ground so that the spot was a dull vacancy when the rest of the garden was brilliant with small bulbs. One fall, a few *Iris reticulata* were tried experimentally, with a small amount of leaf mould around them as they seemed to ask a less austere diet than the cacti. Apparently, the summer baking seemed like home to them and each year they show increase. Now, all named sorts and the type are flourishing there and further experimentation with bulbous iris is being tried.

REGINALD FARRER (1880-1920)

WILL INGWERSEN, ENGLAND

IF ALPINE GARDENERS could be said to need a Patron Saint, Reginald Farrer might well be thought most fitting for such canonisation. Indeed, the British Alpine Garden Society has done little less than this; their premier award, the Farrer Memorial Medal, is reserved for the best plant at certain of their exhibitions, and the invaluable quarterly Bulletin of the Society abounds in references to this virile Yorkshireman who achieved so much during the brief forty years of his life and whose inimitable pen did more to popularise alpine plants than that of any other writer before or since.

To describe Farrer the man is outside the scope of this article; nor would it be within my power to do so, for I did not know him and my knowledge is only of Farrer the writer, and Farrer the lover of plants. He has been described as an egotistical genius, and this may well have been true. It would seem probable that his affections were lavished on plants rather than on his fellow men, with whom he was frequently at odds. From such scraps of information as I have been able to glean I think it would be true to say that Farrer, as a grower of plants, was no genius, but for vivid portrayal of them by the written word he stands supreme.

How I have longed for his gift of description at times, and how he himself would have revelled in the opportunities to lavish praise or rain condemnation upon the multitude of plants which have been brought into cultivation since his premature death in 1920. His monumental work, "The English Rock Garden" remains the standard reference book on alpine plants although it is sadly out of date. This wonderful book is a true revelation of Farrer's genius, for it could so easily have been a mere catalogue, and yet it is one of the most readable books imaginable and I have known it to be read from cover to cover by people whose knowledge of plants was nil and their interest small. The genius which can make light reading of a text book is rare indeed.

It is not only the books which Farrer left us, however, which will keep his memory green. There is a host of plants which we owe to the restless energy which eventually carried him to his death on the northern frontiers of Upper Burma. Many of these bear his name, a fact which always pleased him, for did he not write, in what is perhaps his most delightful book, "The Rainbow Bridge" "*The collector's dream is to have some illustrious plant to bear his name immortal through the gardens of future generations, long after he himself shall have become dust of their paths. Mere beauty will not do it; for the plant may fail*

and fade in cultivation, and his name be no more known, except to the learned, as attached to a dead dry sliver on the sheets of a herbarium. To become vividly immortal in the Valhalla of gardeners, one must own a species as vigorous as it is glorious, a thing capable of becoming, and remaining, a household word among enthusiasts"

In whatever garden Reginald Farrer now dwells it must bring him joy that his name falls daily from the tongue of every alpine gardener who worships before the celestial trumpets of *Gentiana Farreri*, or waits impatiently for the first delicately lovely blossoms to unfold upon his plant of *Isoetes Farreri*.

It is conceivable that the serious minded gardener can at times be infuriated by Farrer. I have occasionally been rather more than irritated by his high-handed dismissal of a plant in which I was sufficiently interested to seek an accurate description. I well remember, many years ago, wanting to know more about *Noaea spinosissima* and turning to The English Rock Garden, the only reference book near to my hand at that moment. It is a plant of no beauty, and I knew it, but my annoyance was extreme to read that "*Noaea spinosissima* expresses in the first syllable of its name what the wise gardener will say when offered it". At times too, Farrer was obviously carried away by his own power of description and engaged in paragraphs of panegyrics where a brief description would have served. However, the panegyrics provide fascinating reading matter and have done much to spread the cult of alpine gardening.

It is my privilege to sit at frequent intervals in one of the committee rooms of the Royal Horticultural Society in London, and here, framed and hanging on the walls, are many vividly portrayed paintings of plants seen by Farrer in Burma, Tibet and the Himalaya. These pictures remind us of yet another facet of Farrer's genius, for he was an artist of no little merit. I am incapable of criticising the technical merit of his paintings, but he certainly possessed the means of expressing his own personality with his brush just as he did with his pen. Here again, one can but sorrow that his hand was so soon stilled in death.

Amongst the plants for which Farrer was directly or indirectly responsible are many which, to the uninitiated, bear no connection with his name. *Saxifraga burseriana* Gloria, still one of the best of all the Kabschia group, was found by him growing on the Schlern Klamm. *Saxifraga* x Myra, a delectable hybrid owning *S.lilacina* as one parent, was discovered in his nursery at Ingleborough in Yorkshire during the first World War — and was only by chance rescued from oblivion. All in all, lovers of alpine plants owe as much to Reginald Farrer as to any man. It was undoubtedly he who set the cult firmly on its feet when he lived, and since his death countless beginners have read his books and have been inspired to set their feet on the rocky path which leads into the happy labyrinth of alpine gardening.

With trepidation and a proper humbleness of spirit I set out a year or two ago to make an attempt to bring the English Rock Garden up to date, but soon realised that this was a task that neither I, nor possibly any man living could properly do, for who could pick up that leaping pen and wield it as the Master did? I have not laid down my task, but am redirecting my energies towards producing a new book, as complete as possible, devoted to the alpine plants which Farrer so truly loved. It will, I fear, be no more than the catalogue which The English Rock Garden would have been if written by a lesser man, but if it does no more than bring between two covers the information which is now scattered far and wide throughout horticultural literature, my purpose will have been served.



Photos by Verne Morton

Trillium grandiflorum Fl. Pl.

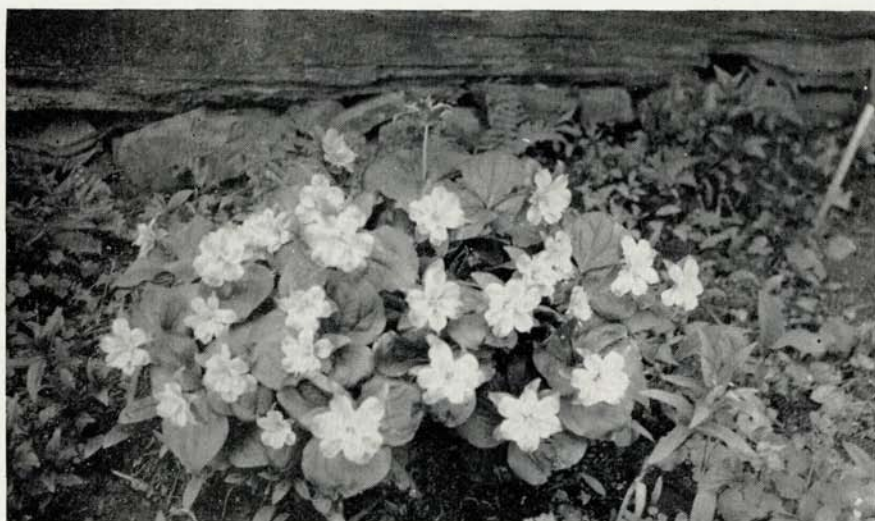
A DOUBLE TRILLIUM

CRW

IN A REGION WHERE *Trillium grandiflorum* grows profusely through many acres of woodland, and where the hedgerows are flecked with its bloom in May, I have long sought vainly for a double flower. Green-striped ones have occasionally been encountered, but never one with an extra petal.

Much more fortunate was Charles O. Rhodes, who in the woods near Groton, N. Y., more than thirty years ago discovered one full double, and if I recall correctly, some semi-double ones, but of the latter I can find no record. I had long known of Mr. Rhodes' find, but it was not until this past spring that I was privileged to see it and to be given a division of it.

Apparently, Mr. Rhodes took part of the original plant and told Verne Morton of his find. Another fragment was moved to the Morton home, where it



The double Trillium some years ago

has prospered for many years. Last May Mr. Neil Morton took me to see the plant in full bloom, and to guard against the possibility of its being lost, gave me a generous share of the clump, which divided easily and, I hope, is now establishing itself in several nooks suitable for Trilliums.

There were more than forty flowers this year, and Mr. Morton told me that in 1953 there were at least fifty. The individual bloom, unlike that of the only other double I have, is as large as that of a single. The three outermost rows I should call sepals, for they are sepaloid and green, but Dr. G. H. M. Lawrence advised me not to quibble, but to regard only the outer triplet as sepals, and the next two similar rows as petals. Within these are about six rows of normal petals, white on the edges, but with the center suffused with green. The effect is bizarre, even more so when with age the white deepens to rose. While the flower is regular in form, as the photographs show, the petals are held rather loosely and informally. The plant itself seems to have more than normal vigor.

I have another double Trillium, through the generosity of Will Curtis, which is smaller in its pure white flower, and more formal in the arrangement of its petals. Its constitution, like that of many double flowers, seems not to be of the best. Lacking Mr. Curtis' magic fingers, I have been unable to persuade it to increase.

I do not know the source of the Curtis plant, but some years ago, at least one double was found near Erin, N. Y. I was told that there was a waiting list of more than a hundred prospective purchasers, at \$10 per small division! It was almost certainly one of these which Dr. Burlingham exhibited at the New York Show of this Society in 1937.

Miss Wilfreda Mott, of Baldwinsville, N. Y., has a double which she found and which I believe was once listed commercially. I am waiting for a long-promised division of this plant, which I have never seen.

In *Horticulture* magazine, about 1934, Romaine B. Ware had a note on a double form of the western *T. ovatum*, accompanied by a photograph. If there are other doubles in cultivation, the Editor would appreciate a note to that effect, so that they may be put on record.

Lest Mr. Morton and I be deluged with frantic appeals, I must warn readers that there are no plants of his Trillium available for sale.

ROCK PLANTS I ADMIRE

BETTY JANE HAYWARD, MAINE

SAPONARIA PUMILIO has been in my garden for many, many years, and it has been divided endlessly. A fine effect will be made if a number are planted together so that they nearly touch. The stems curve up all around the edges of the plants, and out of the puffy, red-brown calyces the large flowers make a thick pattern of pink between the dark green mats of foliage. In the lovely light near sunset, the large pink blossoms take on a beauty unbelievable. *S. pumilio* is evergreen, and grows well in the ordinary gritty soil of the rock garden. A flat place with a surfacing of stone chips is advisable.

Erodium amanum is as everblooming as any plant I know about. It is never without flowers from spring until the garden is covered for the winter. Added to that valuable trait, it has an uncommon grace and beauty. The lovely leaves are like small ferns of gray velvet, the flower stems are red and branch to hold aloft the clusters of white blossoms with their tiny dot of red-brown deep in the throat.

The heronsbill seeds form on the plant throughout the summer in limited numbers, and if watched and gathered will furnish seedlings the same season. Often self-sown plants will be found at some distance from the parent. *E. amanum* looks best and appears happiest when planted close to the base of a sizeable rock, where its roots can delve into the coolness and moisture beneath. In such a situation it will live in health and beauty for many years. It is listed also as *E. absinthoides amanum*.

Ononis cenisia is the smallest and choicest in a small group of shrubby peafflowers, all with pink keeled blossoms. The small, six-inch branchlets lie flat, and spread out in a onesided effect on the stony, well drained spot that is demanded. The flowers are small clear pink and white sweetpeas, coming at intervals in midsummer. *O. rotundifolia* is an upright type, much larger, measuring ten inches or a foot. The leaves are round and scalloped, the flowers large

and fine pink. These worthwhile plants are not too easy to grow, resenting disturbance of the long taproot. Autumn seems the best time to move them, and a warm stony place is advised for both species.

Eritrichium strictum seems a plain sister at first sight, with thoughts of the impossible and unattainable *E. nanum* in mind. In reality, *E. strictum* is a fine and even beautiful plant in a quiet way. The refinement of its leaves and the forget-me-not flowers all so smooth and clean in appearance cannot be overlooked, and the whole plant is neater than any *Myosotis*. The seeds are not black and shiny as one would expect, but are tickseeds like those of the *Cynoglossums*. The plant is not difficult to grow, but the sparse seed should be saved, as the plants are not too long lived. I like *Eritrichium strictum* very much.

Edraianthus pumilio is a relative of *Campanula*, with deep lavender campanula flowers, but with foliage short and grassy fine. At one time I had a fine group of a number of plants together, and the lavender flowers were numerous enough nearly to obscure the foliage. At present there are but three cherished plants. The leaves die away at the approach of winter and the plant looks quite dead. If any seed forms it should be guarded jealously, and planted with care in the hope of getting a few to grow. *E. pumilio* is rare and hard to come by in America. It deserves the choicest spot.

Onosma albo-roseum has been in my garden twice. On its first visit it refused to develop beyond one or two rosettes that produced one flower stalk to bring forth a few bugles of white, turning pink as the name suggests. The grand specimen which has taken its place grew so large this past summer that I was compelled to take cuttings entirely around it in order to keep it in bounds and to prevent its flopping on its choice neighbors. Many of these cuttings rooted readily in the sand frame.

In June the flowers covered the plant, white at first, but with the rim turning pink with age, before the blooms fade. Being unusual in appearance, its name was asked by visitors. Its position is on a gentle slope rather low in the rock garden where it has the morning sun. Doubtless, its fine health and performance can be attributed to finding just the right place for it. On this late October day there are buds and blossoms still in evidence.

Campanula waldsteiniana, one of the choicer small campanulas, has stems that spring up from a sparse tuft of little leaves to a height of three inches. The shallow, open, starry flowers are borne at the top of the stems and in the axils of the leaves. Altogether, it is an attractive and choice species. *C. tommasini-ana* is much like it in habit, but a bit taller. The bells, which hang down, are narrow little trumpets, and somehow look a bit stingy and starved. However, it is unobtrusive, and not without charm.

PRIMULA KEWENSIS

ROBERT M. SENIOR, OHIO

IN THE LITERATURE concerning plant genetics, the development of the hybrid *Primula kewensis* is quoted again and again. Since this is a plant that flourishes readily in the Alpine House, and which may even live through the winter in a cold frame, it may be of interest to rock gardeners to relate its history.

Primula kewensis is a plant about eight inches high, usually with leaves that, like those of many other Primroses, are covered with whitish meal. The erect stems tend to branch, and hold a large number of rich upright yellow flowers. Occasionally a plant that is raised from seed seems to lack the mealy leaves, and

in our experience this type does not bloom so freely, so when it appears we generally discard it.

Primula kewensis resulted from a cross between *Primula floribunda* and *P. verticillata*. The former has no meal, and the leaves are hairy and crenate. *P. verticillata* has mealy leaves that are smooth and toothed. The hybrid resulting from this cross was intermediate in size, and was completely sterile.

In the course of time an interesting thing happened to this hybrid. Once it was observed that a stem of this plant was particularly sturdy, and this stem after flowering bore a profusion of fertile seeds. As a result, the seeds of this plant have been widely disseminated, and in fact, I know of no Primrose that bears seeds in such profusion. This spring, in our little Alpine House, fresh seeds from this plant, dropping on the sand, resulted in scores of tiny seedlings.

The geneticist explains this interesting evolution of *P. kewensis* by pointing out that the original hybrid had eighteen chromosomes in each cell, whereas the fertile stem above mentioned, through chance doubling, had thirty-six chromosomes, and so was a polyploid. Furthermore, in the original cross, the offspring had germ cells too unlike to be fertile, whereas the polyploid hybrid, through this doubling of the number of chromosomes, was able to develop fertile seeds.

It might be of interest at this point to digress for a moment, and to suggest to our readers that if they are raising any plants that are sterile, in some instances they might be able, through the application of colchicine, to produce a polyploid plant that would bear fertile seeds. Incidentally, there are companies that sell this chemical, and give directions for its use.

We are saving seeds of our plants, and this fall hope to supply a few packets to be included in the seed list of our Society. Outdoors, the plant is not reliably hardy, but anyone having an Alpine House should have no trouble in raising it; incidentally, it blooms early in the year, often in February. The seeds, which ripen within a month after the flowers appear, may be planted immediately.

NOTES FROM NORTHWEST MONTANA

OLGA W. JOHNSON, MONTANA

THE BROKEN ROOTS of Gumbo or Cowboy Lily (*Oenothera caespitosa*) brought from southern Montana last summer, and set in a road-edge border that has a rocky underlay, showed green growth in the fall, then in spring gave no signs of life. But as June came on, all at once I noticed—after having thrown out some roots for dead—that the rest were growing! Most of the plants bloomed over a long period; the big white perianth turns pink as it crumples. Now I am hoping that some of the hard cone-shaped fruits will ripen seeds, for I have grown them other years from seed.

Moral: Don't give up hope too soon when you have transferred native plants or shrubs. Repeatedly I have seen them appear to die upon planting, only to leaf out in fresh growth the following spring. This happened, I remember, with *Arctostaphylos uva-ursi* and *Mahonia repens*, as well as with herbaceous plants, and with taller shrubs.

In spite of their designation as "gumbo" Lilies, *Oenothera caespitosa* is also found in gravelly banks. Though the whole plant is only a few inches high, the rope-like roots may delve yards deep for water. Gumbo is usually alkaline, I believe, yet the Cowboy Lilies grow for me in our natural soil here, which tests slightly acid.

Moral: The proper pH may not be as important as all the talk would infer. Maybe it is just a haphazard opinion—certainly I have not conducted any scientific experiments on the subject—but I feel that the pH factor has been over-emphasized in advising plant culture. For example, *Dianthus* of all types, from *D. alpinus* and *D. neglectus* to the common taller kinds, thrive for me with no special attempt to alkalinize the soil; and the *Dianthus* species seem to be grown widely in western Oregon where the soil is supposed to run definitely acid. All the Saxifrages I have tried, also, have had no objection to our somewhat acid conditions.

Several plants of alpine *Kalmia* brought in from a peaty mountain bog last year have survived in ordinary garden soil here; of course they were transferred with some of the native sod clinging to their roots. I read several years ago of an experiment conducted with Rhododendrons and Blueberries, in which they were grown successfully in soil rather pronouncedly alkaline: the experimenter concluded that other and unknown elements usually present in acid or alkaline soils must be responsible for the success or failure of these notoriously "acid loving" shrubs. Our native *Vacciniums*—particularly the dwarf *V. caespitosum*—seem to tolerate a wide variety of locations at middle altitudes, though perhaps a certain amount of peaty soil is usually present. A few people here who have tried *V. membranaceum* in their gardens have had no luck. I have not yet experimented with any of them except *V. caespitosum*.

I mentioned in a previous article the nonchalance with which some of the cinquefoils wander from bog to crag in our mountains. This is true of the shrubby *P. fruticosum*, which at lower elevations also tolerates a wide range of pH. Another example of wide altitude range, comparable to that of *P. fruticosum*, is the creeper, *Saxifraga austro-montana* (*S. bronchialis*), native here on rock ledges from 2500 to 7000 ft., though not common at the lower elevations. (It must be remembered that for this region of the Rockies, the life-zones run lower in altitude than is average.) The isolated stations of *S. austro-montana* at lower altitudes are almost invariably rocky slopes facing east or northeast. I found this plant difficult in my garden, but now have a thriving clump growing among stones beneath my big cottonwood! The soil added among the stones was wood-type soil (acid here); the point in favor of this location, besides the drainage below, doubtless is the shade it gets on the northeast side of the trunk, with overhanging branches. Remembering the great patches on exposed subalpine to alpine peaks, this clump looks strange cuddling under a cottonwood in a garden.

Moral: Plants brought down to gardens from high places of short seasons and cold winds want more protection from the sun than in their native haunts.

Collected alpine survivors here after a year in beds of gravel plus ordinary garden soil plus compost include a number of *Potentillas* and *Erigerons* (among them *E. rydbergi*); two *Sedums*; a tiny Willow which bore a catkin at one inch tall; *Smelowskia americana*, a nice silvery-leaved, tufted, white-flowered Crucifer; *Trifolium nanum*, *Polemonium viscosum*, *Draba incerta* and *D. oligosperma*; an unknown *Phlox* which showed a tiny but intriguing flower or two; *Silene acaulis*, one of the few species showing good increase of clumps; and *Gentiana romanzowii*. *Mertensia tweedyi* is probably dormant. I was unable to make a trip to increase the collected supply of these favorable survivors, but hope to do so another year.

Most of these plants did not make much growth in spite of a cool season, nor do I feel that this hesitation was due to lack of sharp enough drainage. To judge from the dark-earthed somewhat acid sod in which they grew originally (a shallow sod upon the rocks) it may be that they need more soil (probably peaty) than gravel in their new home.

A NEW METHOD OF SEED GERMINATION

RUSSELL C. MOTT, CORNELL UNIVERSITY

DESSICATION AND PLANT DISEASES often destroy small seeds and seedlings during early growth. A simple method of avoiding these hazards has been developed and tested over several years by the Department of Floriculture of Cornell University, and has proved successful with a wide range of seeds, from cabbages to alpiners and Rhododendrons.

Glass-topped pint Mason jars were used, although any type of glass or plastic container with covers to prevent drying is suitable. A mixture of 75% peat moss and 25% washed concrete sand proved the most successful medium for all types of seeds. This mixture was firmly compacted in the jars to within one inch of the top, and the surface was then covered with a shallow layer ($\frac{1}{4}$ inch) of either finely sifted peat mixture or coarse quartz sand. After a number of trials, the sand layer was dispensed with, as it tended to encourage drying out of the seeds. To prevent washing, a sheet of filter paper cut to fit the neck of the jar was placed over the soil.

A 0.25% solution (two teaspoonfuls per gallon of water) of the fungicide Vancide 51 was poured over the mixture in the jar in sufficient amount to flood the soil mixture; the amount required for a pint jar is about $1\frac{1}{2}$ cups. The cover was then placed on the jar and the fungicide maintained in contact with the soil mixture for forty-eight hours. Then the surplus liquid, if any, was drained off by placing a four inch pot on top of the filter paper, and inverting pot and jar; after this the filter paper was removed. In some experiments the mixture was allowed to stand for two days after draining, before seeds were sown, but later results indicate that this precaution is unnecessary. Fine seeds were sown on the surface of the sand or soil mixture, while large seeds were covered with treated soil mixture to a depth approximately half the diameter of the seed.

In part of the trials, the seeds were dipped, to wet the seed coat thoroughly, in a full strength solution of Vancide 51 and then dried on blotting paper. This treatment is difficult in the case of fine seeds, and apparently unnecessary.

As soon as the seeds were sown the cover was placed on the jar so that germination occurred in a saturated atmosphere. No rubber jar ring was used, nor was the cover clamped on. The jars were then placed in a temperature of 65° to 75° F for germination, exposed to light, but shaded from direct sun. The covers of the jars were removed for a few minutes on the second or third day, and permanently as soon as the first leaves appeared.

This method of germination is made possible by the use of this fungicide, for otherwise fungous growth would destroy the seed and seedlings. When fungi caused trouble after the seedlings had been exposed to air for some time, a mist spray of the Vancide 51 solution stopped the damage without injury to the seedlings. A much stronger solution was used for this purpose, anywhere from 1%, to, in the case of some seedling lettuce, 100%. As soon as the young plants had two or three true leaves, they were pricked off into community pots or flats containing soil mixture suited to the normal requirements of the plant being handled, and grown on in the usual manner.

While this method of germination defies all the rules and traditions for the care of rock garden plants, results with alpine seeds were highly successful, although the extent of the trials was limited to seeds on hand. *Primula rosea* (seeds several months old) and *Anemone pulsatilla*, both extremely erratic, germinated profusely in ten days. Rhododendron seed was particularly successful,

as was that of many Gesneriaceae (African Violet family). Among the other seedlings grown successfully by this method are:

Aquilegia flabellata nana
Campanula alsinoides
C. lanata
Draba alpina glacialis
Edraianthus dalmaticus
Haberlea rhodopensis

Phyteuma hemisphericum
 Primula and polyanthus in
 considerable variety
Ramonda pyrenaica
Saxifraga longifolia hybrid
Semiaquilegia adoxoides

Fern spores and seeds of tree peony and many annuals and border perennials have responded well to this treatment.

(Editor's note: Because some West Coast growers have found that treatment of Polyanthus seed with certain fungicides has resulted in greatly retarded germination, it has seemed advisable to permit mention of the particular fungicide used in the Cornell experiments.)

THE BAILEY HORTORIUM

DR. GEORGE H. M. LAWRENCE, *Director*

THE BAILEY HORTORIUM is a well-established name in the minds of active American plantmen. Through its quarterly periodical of horticultural taxonomy, and appropriately named "Baileya", some aspects of its work are becoming known to a widening group. Nonetheless, the scope of the Hortorium's activities, its facilities, and its staff are not so well known.

It was founded and established by Liberty Hyde Bailey, and some of its collections were prepared by him over 70 years ago. In 1935 he and Mrs. Bailey gave to Cornell University his collections and a library of 4,000 volumes, plus the buildings and grounds where they were housed. It was Dean Bailey who, with characteristic originality, coined and gave it its name 'Hortorium,' derived from *hortus*, Latin for garden; a hortorium being a repository for things of the garden—plants, specimens, books, catalogues, etc. Dean Bailey was its first director, a gratuitous position he held from 1935 to November 1951, when his final retirement became inevitable.

Since its acceptance by Cornell University, the Hortorium has been a distinct division of the New York State College of Agriculture. Its maintenance and the salaries of its staff have been provided by the College. It has no support from foundations or other outside enterprises. Until 1953 the Hortorium was located in its original quarters, adjoining Dean Bailey's residence on Sage Place, midway between down-town Ithaca and the University. It has since been moved to more commodious quarters on the 4th floor of Cornell's Mann Library Building in the College of Agriculture, adjoining the Plant Science Building.

What are the facilities of the Hortorium?

It is a place of many kinds of collections. Foremost is its library, now holding in excess of 6,000 volumes, world-wide in scope, and a storehouse of botanical and horticultural monographs, floras (old and new) of all parts of the world, and nearly 300 different periodicals. A growing collection of maps is also an important feature of this library.

The collection of plants is one of the best of its kind. This is not a collection of a few thousand living plants, but an herbarium of about 265,000 pressed and dried specimens. The amateur horticulturist or nurseryman is occasionally deflated and disappointed when shown rooms filled with rows of

steel cases whose pigeon-holes are filled with folders of dried plants. It takes a practised eye to recognize that these specimens give far more information about the plant than do the best of descriptions or photographs. Another surprise voiced by many visitors is to learn that our herbarium contains 3-4 times as many native plants as it does cultivated ones. The reason for this is that one cannot understand, or often identify a cultivated plant without first knowing something about the wild plants from which it came directly or indirectly. This herbarium and library are the backbone, the working-tools, of research work at the Hortorium. When a required book, or collection of plants, are not to be had from our own assemblage, they are sought and borrowed from other botanical institutions here and abroad.

The catalogue collection is large and noteworthy. We have no count of the number of items but we do have commercial catalogues and lists from in excess of 2,900 domestic sources and 2,000 foreign sources. The bulk of the collection dates from 1888, but scattered items go back to the 1790's. It is much less complete for its early foreign holdings than for those of this country. This is not a sterile dust-catching collection (literally, the older ones are dusty) but one that is used. Every Latin-named plant in each list or catalogue is indexed as received. Since 1932 Miss Ethel Z. Bailey, the Hortorium's curator, has helped her father and later the rest of us, by faithfully indexing the catalogues as received. This card index, now occupying large filing cases and requiring a quarter-million cards, represents listings very roughly estimated in excess of 4 million. Our index lists over 300 dealers all carrying a particular plant as well as in excess of an estimated 2,000 species of which each is offered only by a single dealer. This index is consulted regularly in answering queries as to who offers what and when. Most important, it serves as the principal record by which is determined what kinds of plants are cultivated domestically and to be included in successive editions of *Hortus*. Persons contemplating use of this index must remember that it treats only Latin named species and varieties and is not an index to sources of fancy-named variants.

In addition to the above, we do maintain growing collections for study purposes. During 1954 we had representatives of over 800 genera in our gardens or under glass. These are not display gardens but a few plants of a kind grown to be added to our herbarium and for purposes of identification. Some of these living collections represent genera in process of being monographed. In other cases, they are of species not previously known to be in the trade. A third group are those plants offered under Latin names seemingly "manufactured" for promotion or having no botanical standing. When grown to flowering maturity, these unknowns are identified whenever possible, and add to our record of known cultivated plants.

What sort of work goes on at the Hortorium?

This is primarily a research institution. To be sure, its staff members do teach a course in Cornell's Department of Floriculture and Ornamental Horticulture, and facilities for a few graduate students are available. The research is very largely restricted to monographic studies of genera or families of cultivated plants. This is a large field and our staff is so small and inadequate to meet existing demands that many American plantmen never work with groups of plants covered by our researches.

Dr. Bailey set the pattern many years ago, when he published botanical treatments clearing up matters relating to identification and names of such groups as the cucurbits, brambles, grapes, Weigelas, cannas, and Ophiopogon. For the tropical gardener his contributions toward better understanding of the kinds of palms remain monumental.

Since then, Dr. Harold E. Moore has taken over and continued the palm studies and has made the Hortorium the center of studies relating to the cultivated gesneriads (the family containing *Ramonda* and *Haberlea*; as well as the most popular African-violet, *Episcia*, and *Gloxinia*). Dr. Moore has devoted considerable time to working out identities of the *Alliums*, other members of the *Amaryllis* family, and the *Geranium* family.

Dr. William J. Dress of our staff has made identification and naming of rock garden subjects one of his specialties and he has considerable affection and knowledge of the cultivated members of the *Aster* family. The little-known and often poorly determined aquarium plants, now receiving increasing attention, are also among his special interests as concerns identification work.

Perhaps more is heard about our efforts in connection with *Hortus*, especially with the new edition now in progress to be known as *Hortus III*, than with the more scientific researches. *Hortus* was first compiled and edited by Dr. Bailey in 1930. *Hortus Second*, by Dr. Bailey and his daughter Ethel, was published in 1941. The War, and getting out a revised *Manual of Cultivated Plants* in 1949, interfered with a new *Hortus* in 1954. Furthermore, as plantmen become better informed, and more commercial and professional horticulturists become increasingly specialized, there grows also the demand that each successive edition of *Hortus* be more comprehensive, be in line with latest research findings, and be on a plane deserving of acceptance as a standard reference. The responsibility assumed by recognition of these demands, and up-grading of horticultural standards, requires that utmost care and meticulousness be given to the preparation of every generic treatment in *Hortus*. Not only must one be cognizant of and consult current contributions from the world's botanical and horticultural centers, but one must check the plants themselves and very often go back a century or two to consult original descriptions and illustrations. This takes time. It make the resulting compilation—and the bulk of *Hortus* is a compilation—more reliable, but we are constantly watching to ensure that the returns do not become too costly for the time expended.

In addition to *Hortus* and Bailey's *Manual* we have two periodicals: 'Baileya', for the horticulturist and the more technical 'Gentes Herbarum' for the botanist.

Our staff is composed of four taxonomists, a curator, scientific illustrator, experimentalist, and one secretary. We handle routine identification of cultivated material sent in for naming so far as facilities permit, but research and study toward a better understanding of cultivated plants is our primary objective.

Visitors to the Hortorium are welcome and they may use our library and herbarium facilities while here.

SURVIVORS OF THE DROUGHT

EUNICE FISHER, WISCONSIN

DROUGHT YEARS, too many in number, have been far from kind to my rock garden. Through the spring and summer of 1954, more rains came and gave me some encouragement that perhaps normal weather would again provide fairly good growing conditions.

Taking inventory of plants that had persisted and survived in spite of long spells of no rainfall, I found a few at least that really had what it takes to come through such a time of drought.

Phlox subulata, though looking decidedly unhappy at times during midsummer, gave good color during spring, and though not getting moisture enough to grow rampantly after blooming, pleased me the more in not doing so.

Species *Crocus* seemed to suffer most after the second year of drought. Yet they persisted and some bloom appeared. A few species of tulips were not bothered by lack of moisture during the summer, but when drought the third year extended into late fall and winter, with no snow for cover during the cold months, they failed to appear the next spring. *Scillas* and *Muscari* gave no hint that they were displeased. Perhaps increase was not so prolific but they bloomed as usual.

Alyssum saxatile, *Artemisia schmidtiana nana*, *Achillea tomentosa*, and *Veronica teucrium trehani* carried on bravely, perhaps not as well as with moisture, but at least they kept their particular places in the rock garden well furnished with good foliage and gave some bloom.

Geranium renardi in several positions, full sun or part shade, suffered no casualties. No matter how hot or dry, it held its foliage in respectable condition waiting for better times to produce blooms, of which I am not too fond anyway.

Geranium sanguineum lancastriense had a struggle to survive but it was planted in an extremely dry scree bed in full sun all through the day. Of the several geraniums that I once had, these two are the only ones left.

Douglasia vitaliana finally succumbed. It had spread over a rock in full sun and for several years had put forth a solid mass of golden yellow blooms in spring. When drought came the rock was too hot and dry for it to survive. It had never liked the half shady scree bed.

Leucocrinum montanum persists in returning every year and giving good bloom. To cover the bare spot it leaves after blooming, *Androsace sarmentosa chumbyi* was planted, and surprisingly enough it still lives but gives little bloom. *Lychnis alpina* and *Saponaria caespitosa* faded away quietly but *Silene schafta* carries on and increases nicely. *Silene wherryi* was not so tough.

Sedums in several varieties went gaily about their business of clothing the rocks near them, even to the extent of having to be curbed rather drastically at times. The really good ones that I should like to grow in my garden find Wisconsin winters too cold, or pass on from some other condition not to their liking. Those that stay with me are not the ones I enjoy having many plants of.

Dianthus of a few sorts appear to be happy and have even seeded themselves in the scree soil. The names of the species are a problem with which I have long since quit struggling: grown mostly from seed, not many of them came true to the names which they carried. However the ones that please me most are the tight mats of grey-green foliage with three inch stems of deep pink flowers that are blessed with a delightful fragrance. Snuggled against a grey limestone they give interesting color and to me are as lovely as though I knew their specific names. *Dianthus alpinus* and *D. neglectus* failed me, but I feel that there were other reasons than drought for their leaving.

The fact that a portion of the rock garden had shade helped a great deal in keeping a number of *Campanulas*. However, *C.C. muralis*, *fenestrellata*, *garganica*, *rotundifolia* and *carpatica* flourished as well in full sun and with very lean gravelly soil for their roots to run in. *C.C. stansfieldii* and *planiflora* had at least part shade during the heat of the day. *C.C. turbinata* and *pseudoraineri* had almost full shade but thrived no better than others in full sun where it was extremely hot and dry. *C. tommasiniana* with full shade and gritty soil is thrifty and gives good bloom.

Veronica teucrium trehani thrived in both very dry soil and some that retained some moisture. Bloom stems were short and in dry spots were scarce.

V. pectinata minded not at all that rainfall was almost nothing. Its grey velvety foliage perhaps does not demand much moisture.

Potentilla tormentillo-formosa and *P. nana* live on giving some bloom but no increase. *Antennaria dioica rosea* has been helpful in providing cover and good mats of soft grey color in places that need something tough enough to take glaring sun.

The little Boxwood, *Buxus microphylla nana*, was given some shade but it has scree soil to run its roots into and seems happy there. *Cytisus decumbens*, also in a small scree, blooms abundantly every spring though it grows very slowly. *Daphne cneorum* could not take it, but *D. arbuscula* thrives in a not too hot location and in the season of 1953 bloomed three times, the last bloom coming in late September. So far in 1954 (late August) it has given two sets of flowers, and time will tell if it again throws out buds for fall blooming.

Juniperus procumbens nana, in part shade, and in full sun, continues to be happy. *Potentilla fruticosa beesiana* has bloomed fairly well but grows very little. The dwarf Spruce, *Picea glauca conica*, has apparently not minded the unusual dry seasons and makes normal growth which is never very great. *Azalea mollis* has made so little growth that I expect to find it missing any day. *Satureja pygmaea* suffered more from the dry winter than from drought in the growing season, and a good cutting back helped it renew itself.

Perhaps it would be better not to mention Saxifrages, for far too many of them are absent, especially the Kabschias, but also many of the encrusted ones. Although they had the benefit of shade, the scree soil they were planted in dried out too much for their comfort, and the winter of 1953-54 with no snow proved too hard on them. A few scattered rosettes remain of the more hardy ones, but there are many empty places.

Had it been possible to provide water with the hose I am sure many things could have been saved, or at least helped. But the drought was so long that there was danger of the well's going dry. So the rock garden was left to come through as best it could, and what water we dared use was given to *Primula* plantings. With signs of more moisture in the future I am grateful that at least some plants could take drought and that they have kept the garden from being too much of a failure.

SOME SOURCES OF PLANT MISNOMERS

PAUL ARNOLD, NEW YORK

(Reprinted from *Baileya*, June 1954)

THE INCREASING INTEREST of the American public in gardening for recreational rather than economic purposes has multiplied the number of misnamed plants in the trade. Unusual plants from the homes, gardens, and greenhouses of amateur horticulturists have been taken up for propagation by commercial nurseries along with their sometimes incorrect names.

Amateurs in America, often unable to obtain curious plants from domestic sources, have been importing seeds and plants, frequently obtaining them from other amateurs abroad. The botanical innocence on both sides of these transactions has added to the confusion of names as these plants, with their wrong labels, find their way into the trade. In other cases, the amateur growers themselves turn "professional" and market plants under misnomers or synonyms familiar to the grower but unknown in botanical literature.

Amateur plant societies have sprung up and many of them undertake the publication of journals. These amateur periodicals are mainly concerned with the personalities, the social activities, and the horticultural experiments of the members. In addition they give amateur descriptions of plants and sometimes publish names that are highly questionable and often inaccurate. The editors in some cases have not been exposed to the disciplines of a science nor are they well-enough acquainted themselves with the identification and nomenclature of plants to correct the mistakes of the amateur authors who contribute to the publications. The amateur editor, like any other amateur, is likely to accept as authority anybody, especially an assertive individual, who appears to know more on a particular subject than the amateur does. The plant society publications do not pay for contributions but depend on the good-will and generosity of the authors, and consequently the editors are likely to let the latter have their own way in questionable cases.

Authors and editors of amateur plant society publications seldom avail themselves of the advice and services of technically competent referees. The situation is not improved by the fact that currently available reference works deal only with the plants that were most frequently found in homes during the recent decades. There is a marked scarcity of reference material covering a large number of plants that were not in the trade twenty years ago. Very little authoritative information is readily available on a number of unusual plants that have been moving into homes from the jungles and conservatories in these days of picture windows, air-conditioning, home-humidifiers, and fluorescent lighting.

It is apparent that many readers, not only amateurs but nurserymen and dealers in plants and seeds, accept as unquestionably authentic anything that they see in print. When they have once accepted a name in that fashion, and later learn of another name for the same plant, they incline to preserve the first-known name as authentic because of its familiarity. Amateurs tend to disregard the newly encountered name even though it be authoritative, and dealers sometimes resist the need for corrections because they dislike changing their catalogues or admitting to the trade that an error has been published. In such manner, the incorrect names are perpetuated instead of being discarded in favor of valid names.

The sensational advertising copy of irresponsible nurserymen, predatory dealers, and mail-order distributors of garden materials further confounds the problem. Some of our misnomers of today can be traced to the sales-promotion activities of European nurserymen more than a century ago. Our modern hucksters, however, by the use of modern methods, have magnified these ancient tendencies to "gild the lily" with fancy names. Their efforts at confusion and error are aided by the mass-market media of the Sunday newspaper supplement, the third-class mail solicitation, the use of natural (and unnatural) color advertisements in periodicals of national circulation aimed at housewives, and even by the radio and television.

Some of the usual ways in which misnomers for cultivated plants occur are the following:

1. Perpetuation and multiplication of misnomers by the propagation and distribution of misnamed plants. Growers guilty of this practice are often innocently in error. When they stubbornly refuse to discard the misnomer for the correct name, cited on good authority, the innocence begins to evaporate.

2. The assigning of superfluous names to plants that already have a valid name, perhaps unknown to the distributor. Well-intentioned growers sometimes fall into this error, either through ignorance or because sloth prevents them from consulting plant-identification sources. These growers show the same responsibility as the culprit whose defense is, "I didn't know the gun was loaded."

3. The abbreviation, contracting, misspelling, or nicknaming of clones. Abbreviating and contracting plant names are practices followed by individuals who are careless and heedless of the fact that new owners of the plants do not know the correct names and cannot reconstruct them from the misspelled labels. When Latin endings are deliberately added to cultivar names to impress buyers, the bastardizing of plant names which results is willful rather than careless.

4. The naming, reproduction, and distribution of plants which are scarcely different from existing varieties or clones already in the trade. The Saintpaulia market is especially infested at the present time with misnomers of this type. The determined efforts of a competent plant nomenclature and description committee, working within each plant society of recognized stature, may be necessary to clear up the confusion that exists. Such national or even international activity, if properly publicized, would also tend to prevent the creation of new misnomers of this type.

5. The distribution of seed or seedlings, under the name of a seed-bearing parent, from open-pollinated plants or plants known to be variable from seed.

6. The use of vernacular names that have sales appeal as substitute for species names, generic names, or accepted cultivar names of long standing. This abuse has recently reached a pinnacle with the granting of trade mark protection by the U. S. Patent Office to coined names for species and cultivars that already possessed accepted botanical names of long standing.

To this list of "usual" sources for plant misnomers might be added another one—bad penmanship. This is certainly not a new source, but its full contribution to the current confusion may not have been appreciated. The introduction of variant names as the result of typographical errors is a familiar corollary. Troublesome as these misnomers are, they are usually simple substitutions of one letter for another, or transpositions of letters. The correct name in most cases is not difficult to ascertain.

Obviously, cases of misnamed plants could be avoided if the amateur and professional alike, in making out lists and plant labels, would follow the advice of the postal authorities: "Print, don't write!"

DOUBLE FLOWERS

CRW

THE QUESTION of the appropriateness, and desirability, of double flowers in the rock garden was raised by Stephen Hamblin in the last number of the Bulletin. Many people seem to be fascinated by the addition of a few petals to a normally single flower, and collect such oddities in the same manner as they might collect stamps or antiques. Perhaps, as many rock gardens exist merely to serve as a home for as extensive a collection of unusual plants as can be acquired, any double which is encountered is deserving of a place there.

I must confess that to a certain extent I fall into the category of those who collect doubles merely as curiosities, yet there are some types which I cannot tolerate. To me, the desirability depends entirely on its form, or more abstractly, on the geometric pattern in which the petals are arranged. Ragged, irregular outlines are in general ugly and unattractive, but neat rosettes and pompons are often of a certain charm, and a few of them perhaps scattered through the garden, or set by themselves in a bed of curiosities, lend interest and variety.

The alpine purist will be little troubled by the question of whether to admit doubles to his garden, for relatively few plants from high altitudes show a tendency to hinder reproduction by modification of the essential floral parts. Farrer mentions forms of *Dryas octopetala* with extra rows of petals, but I have never encountered them in the mountains, nor seen them listed in catalogs. There seems to be a considerable tendency for the Buttercup family to assume semi-double to double forms, often of considerable beauty. I once found a delightful semi-double *Ranunculus adoneus* growing beneath a snowbank on an alpine scree of the Wasatch, but it resisted my blandishments, and only a color slide records its existence. Many years ago, in a nursery in Northern New Jersey whose name I no longer remember, I came upon double *Silene acaulis* flowering freely, its grassy mats dotted with perfect little rosettes; but it was newly imported, its owner refused all the temptations I could devise, and I heard no more of it.

Among plants from lower altitudes, we can find many more double forms. While duplex (hose-in-hose) primroses and polyanthus are quite easy to grow, and now exist in a wide variety of forms and colors, I shall pass hurriedly over the tempting double primroses, which are entirely unable to adapt themselves to most parts of this country, and even where relatively happy, are fickle friends at best. For years I struggled with the double Juliana Primrose "Our Pat", with varying success, until the heat and drought of 1953 claimed its as victim. It had rather irregular semi-double purple flowers, and was pampered only in the hope that I might be able to use it in breeding experiments, for it frequently produced anthers.

The double *Alyssum saxatile* has such minute blooms that only by close examination will one realize that they are double, so that it may be fairly acceptable to gardeners not to determinedly anti-double. But in my experience the plant either sulks or grows with such overwhelming vigor that it demands far more room than it deserves. Double Arabis is, perhaps, not too bad, if one has room and liking for Arabis, but such semi-double Aubrietias as I have grown belong among the outcasts, for the extra petals are stuck here and there and completely spoil the outline of the flower. Double Helianthemums? Perhaps very well on a wall, but I find that both singles and doubles behave like the double Alyssum, either fading away after a short time, or taking far too much space.

Before the war, a German wholesaler used to offer seed of *Campanula rotundifolia* fl. pl., which so far as I know never appeared in American lists. The seedlings produced mostly semi-double flowers, mildly attractive, but the plants were not long-lived. Some western nurseries used to offer a couple of double Campanulas of dimensions suited to the rock garden, but I do not find them in current catalogs.

Two years ago, out of curiosity, I acquired a double red Hepatica, and am delighted with it. The rather small blossoms are perfect pompons of glowing wine red, visible for many yards. Other colors have been reported as growing in British gardens, but these are apparently rare and unobtainable.

Will Curtis once sent me a double form of *Potentilla canadensis* which I regard with the greatest suspicion, for I have plowed up great patches of the single one, on barren knolls of my farm. The double is, regrettably, no less vigorous, and requires frequent and violent restraint, but its flowers, minute duplicates of the rose known as Harrison's Yellow, endear the plant to me, and I let it fight with *Geranium pylzowianum* over a planting of autumn flowering crocus—which I fear are eventually going to be victims of the struggle.

An interesting double violet came to me from that ardent gardener, the late Edith Walters, without information regarding its origin; as volunteers of

the most unlikely plants were forever popping up in her garden, I rather suspect that it may have originated there. It is perhaps a descendent of *Viola odorata*, for even to my insensitive nose there is often a decided fragrance; but it spreads freely (I suspect even by cleistogamous seeds), resists drought and cold, and is about to be escorted to a less desirable spot than the one where it was originally planted. Undesirous of displaying its virtues, it bears its flowers face downward, flat on the ground, so that one must brush aside the leaves to find them. Strange flowers they are, very tightly doubled, white with a dull purplish flush on the outermost petals, and often with a tuft of green in the center. A taxonomy student who had been unable to recognise even the genus to which it belonged, burst out, "This is really carrying things too far!"

The double Lily of the Valley has likewise carried things too far (not that, to my way of thinking, any *Convallaria* is admissible to the rock garden), and has lost all the innocent charm of the single.

Double Trilliums, because of their great popularity, receive a tribute elsewhere; the so-called double form of *Erodium chamaedryoides roseum* usually produces single flowers here, nor have the occasional double ones any charm. I once noted a double *Myosotis* in an English catalog—and left it there: nor have I spent much time in trying to find "a fat pink daisy called Alice" (Farrer). The mere thought of the double *Iris gracilipes* (which would not stay with me, even if I thought I could tolerate it) leads to horrible dreams of a day when some misguided nurseryman will dazzle the world with double *Gentiana farreri* or *Penstemon rupicola*.

This, I believe, ends the list of doubles which I know, whose size and habit permits them to be considered as possible inhabitants of the rock garden. I do grow a double *Vinca*, with ten-pointed stars of periwinkle blue, but its place is definitely elsewhere. Whether you choose to become acquainted with the plants mentioned is a matter of personal taste, but I can assure you that you have little to lose by leaving them in other people's gardens.

THE WRITINGS OF REGINALD FARRER

CRW

THERE IS NO MIGHTIER NAME among rock gardeners than that of Reginald Farrer. Few persons now alive have known him personally, yet the choice of plants, the speech, and the catalogs beloved by alpine enthusiasts still reflect his influence. Not, one gathers, a particularly skillful gardener, certainly not an outstanding exhibitor at shows, nor a top-flight collector, by his writings he has dominated the rock gardening world for many years.

For a long time it has been my intention to write a summary of all of Farrer's books, and quite by accident I find that I have started this article on the anniversary of Farrer's death in the remote mountains of Upper Burma on October 17, 1920. Probably no more fitting tribute could be found for a man whom I have long admired and yet violently disagreed with many times.

Farrer is known chiefly through two of his books, *My Rock Garden* and *The English Rock Garden*. There seem to be very few complete collections of his works, even in England, and perhaps the two just named are the only ones in print at present. Yet there are others as interesting and valuable, and all are worth investigating. Some can be borrowed from libraries, and all are offered from time to time by English book dealers. The prices asked are usually somewhat lower than they were before the war, while the devaluation of the pound

makes it possible to procure a volume for about half the price, in dollars, that would have been paid a few years ago. Here are bargains well worth seeking.

Let us consider first the garden books. The earliest of these, *My Rock Garden*, published in 1907, has run through many printings, and is perhaps the best-loved of all his books. In the first chapter Farrer sets down his creed and ideals in the planning and building of a rock garden; in the second, "Our English Alpines," he has written pages that are rumored to have done much to awaken interest in the native plants of Great Britain. There follow wholly delightful and quite comprehensive discussions of *Ranunculus*, *Anemone*, *Saxifraga*, *Primula*, *Androsace*, *Campanula*, *Gentiana*, and smaller groups of plants of which he was especially fond, with, for good measure, an account of a day in the Alps and of the finding of *Eritrichium nanum*. This enjoyable book, although nomenclaturally out of date and confusing in this respect to the non-botanist who searches catalogs for plants which "the Master" praises, remains the freshest and probably the least marred by idiosyncrasy of all his writings.

Alpines and Bog Plants (1908) is a continuation of the first work, containing "all the treasured rarities and delights which pressure of space . . . forced me, with bitter lamentations, to exclude from its mutilated pages." Perhaps because the choicest treasures have already been eulogised, my interest has not been so keenly aroused, yet it seems to me that this volume lacks the spontaneity of its predecessor. Here, stress is laid on shrubs, lilies, iris, the bog and bog plants, with but a sprinkling of true Alpines, and these usually not outstanding ones.

In A Yorkshire Garden (1909) completes the trinity of books dealing with Farrer's own gardens. It seems to be the most difficult to obtain, and the most expensive, of all the Farrer publications. Its great feature is a very detailed description of Farrer's two scree, the little one over which he rhapsodises in his first volume, and "the great moraine" which has hitherto received only brief mention. These chapters have led to more backbreak, and more heartbreak, than anything else in the entire literature of rock gardening, for, the unwary must be warned, it is generally recognised that Farrer's recipes for moraines, or scree as they are now called, (including also the instructions in *The English Rock Garden*), lead to more grief than success; one must turn to more recent literature to learn how to construct a successful scree. To me, the cream of the book is the description, in an early chapter, of Farrer's hunt in Cornwall for marvellous forms of *Anemone memorosa*. After these delightful pages, the reader is taken on a tour of Farrer's Craven Nursery, the plantings around Ingleborough House, both rock gardens, the remarkable cliff garden above the artificial lake whose construction by some reckless ancestor, Farrer says, impoverished future generations, ending with a visit to the glen which was years later planted with Asiatic rhododendrons, and which is regarded by Cox as a bit of the Himalayas transplanted to English soil.

Without date, but according to Cox published in 1912, is a small book, *The Rock Garden*. Here, in brief form, and unmarred by "Farrerisms", one finds adequate data on the appearance and needs of most of the desirable alpines in cultivation at the time of publication. It is extremely valuable for quick reference, and is enhanced by eight colored plates; not long ago it was still in print and modestly priced.

These four books paved the way for the preparation of the monumental *The English Rock Garden*, in two large volumes, written in 1913 but not published until six years later. Here one finds Farrer at his best, and worst, for in no other of his books has his pen (or typewriter) written more smoothly and fluently, nor with more unbridled enthusiasm for plants that Farrer admired, whether or not they belong in the rock garden. A very long introduction sets forth the author's views on nomenclature, construction, and sundry other matters,

while in the main part of the book descriptions of plants are painted on a large canvas, often in too vivid colors, with (among other things) the avowed purpose of enabling a visitor to the Alps to recognise the plants he might meet there (doubtless he was expected to hire a porter to carry the heavy tomes for him), and for the gardener to name, without possible doubt, the residents of his garden. Here Farrer falls far short of his objective, so far that from his descriptions I have been led to believe, quite erroneously as it turned out, that certain of my garden plants were falsely named. Farrer has often been accused of "dressing up a dead plant to look like a live one", because many of his descriptions are admittedly concocted from such technical descriptions as Farrer could find, of plants not in cultivation. With this I have no quarrel, for many of the floras he consulted are far from readily available, and even if they were, few gardeners could decipher their Latin. But too many unworthy plants find a place in these pages, and deserving ones with which Farrer was unfamiliar are often passed by with scant mention, or omitted entirely. American plants are poorly represented, and most of them misleadingly; *Penstemon*, in particular, is distorted almost beyond recognition. Yet with all its faults it is a magnificent work which cannot fail to arouse the reader to new peaks of enthusiasm. Dr. Sampson Clay, in his *Present Day Rock Garden* (1937), carries on the account of desirable rock garden subjects, with mention, at least, of every suitable herbaceous plant known to science that was omitted by Farrer. Many of these are still unintroduced, but nowhere else can one obtain a glimpse of, for example, the incredible, fantastic treasures of the Andes that still await the adventurous collector. It must be confessed that Clay's quiet style is a relief, after Farrer's exuberance, and that his work bears up much better under frequent rereadings than does its predecessor.

(To be continued)

SALMAGUNDI

THIS COLUMN IS DESIGNED as a repository for notes on events and expeditions, articles of interest in other periodicals, and miscellaneous items which catch the Editor's fancy, and which he feels may be worth passing along. It was suggested by *Pedicularis*' "Alpine Commentary" in the *Bulletin* of the Alpine Garden Society, but does not aspire to the heights of brilliance often reached by that illustrious series.

Without doubt, the column should have a better name, and in keeping with current custom, suitable prizes should be awarded for prize-winning suggestions. As yet, however, the Editor is undecided whether it would be more appropriate to offer a surplus bantam rooster (of great assistance in weeding), or some plant such as *Potentilla canadensis* fl. pl., which will rapidly conceal the graves of more noble plants. All suggestions, to be eligible for the grand prize, must be accompanied by ten packets of seed of desirable alpinines (facsimiles not accepted).

* * * *

We regret that Guy G. Nearing, because of pressure of other duties, has found it necessary to resign as editor. During his years in office, he has raised the material published in the *Bulletin* to a level of interest and value which the new Editor may find difficult to attain. We had hoped that he would long continue his good work. We are indebted to him, too, for a vast amount of painstaking effort in attempting to smooth the path of the new Editor. We hope that he will continue to be actively interested in the *Bulletin*, and wish him great happiness among his beloved *Rhododendrons*.

The article on Plant Misnomers was reprinted with some misgivings, for certainly anyone who reads it can find something in it to arouse his wrath. Yet it is timely and pertinent, and too good to miss. Members who send seeds to a seed exchange should take it particularly to heart. We shall pass over some strange results of the ARGS exchange, but still are exasperated by seed received in two successive years from an exchange abroad, under the august name of *Androsace spinulifera*, which both times germinated beautifully, and in a few weeks was clearly not the magnificent Chinaman, but a dull biennial of the Andraspid group. Surely the donor could not have been that ignorant!

The Editor confesses that the article has caused him to undergo some soul-searching. He cannot, of course, guarantee that a plant mentioned under a particular name actually is that plant, unless given a full description or a specimen of the plant. But he does try to make sure that names used are more or less in accord with current taxonomic practice, even though he cannot keep up with last-minute-changes—at least not until that happy day when HORTUS III becomes available. But he has found a few names, in material submitted to him, which baffle him, and which he has changed to what he hopes is correct. Surely *Cytisus procumbens* should be *C. decumbens*, for no Broom, to his knowledge, is inclined to give any aid in the matter of vegetative reproduction; in fact most of them require great encouragement before they will condescend to take root. A few names, of which the author was in doubt, and which seemed to the Editor to be misapplied, have been deleted. But even so, our conscience is not at rest.

* * * *

A new booklet on shrubby Penstemons of the subgenus *Dasanthera* is announced by the American Penstemon Society. As this section contains most of the species of interest to rock gardeners, such as *PP. fruticosus*, *menziesii*, and *rupicola*, and as the nomenclature of the plants in gardens is sadly confused, the booklet should be of real value. It includes keys and descriptions of plants from both botanical and garden standpoints.

* * * *

A very interesting new seed list has just arrived, offering 160 species collected in the Columbia River Gorge by the Columbian Garden Club. Included are some very choice rock garden subjects. Proceeds of the seed sale will be devoted to placing permanent labels near plants on the cliff west of Multnomah Falls. Inquiries should be addressed to Miss Lucile M. O'Reilly, Route 1, Box 23, Troutdale, Oregon.

* * * *

Captain and Mrs. F. Kingdon-Ward should by now be well embarked on their current expedition to Saramati, an isolated 12,600 ft. peak on the Assam-Burma frontier. They planned to start collecting in the alpine region in October, and after six to eight weeks there, to descend to the temperate forest, where seeds ripen later. Costs of the expedition were estimated at three thousand pounds, and subscriptions were invited for shares of any amount, but not less than one hundred pounds (about \$280), in return for a proportionate share of all seed collected.

* * * *

In the October *Quarterly*, the American Primrose Society brings to a conclusion its ambitious Pictorial Dictionary of the Genus *Primula*, a most worth-while project. As a rule, there is little or no indication of whether a species is now, or ever has been, in cultivation. It is to be hoped that the *Quarterly* will soon publish a list of species at present in cultivation, with a list of sources of those commercially available.

The *Quarterly Bulletin* of the Alpine Garden Society for September offers, as always, a wealth of extremely interesting material. It is regrettable that more Americans have not made themselves acquainted with this, the finest of all rock gardening periodicals, for it would extend their horticultural horizons, lead to interest in new and unfamiliar plants, and solve many cultural problems, as well as furnishing much interesting reading material. "Alpine Commentary", by Pedicularis, a regular feature, always merits first attention. It is a medley of short notes on many subjects, ranging in this issue from Phlox and Penstemon to a recent visit to Farrer's garden. "News from Nepal", by Colonel D. G. Lowndes, begins an account of the author's recent botanical explorations of this hitherto inaccessible region. Many new or uncommon plants are described and photographed, a few at least of which are now in cultivation. "Anemones for the Rock Garden," by Dr. H. Roger-Smith, reminds one that Americans are still barely acquainted with this delightful genus: visitors who see *Anemone blanda* blooming in my rock garden invariably rhapsodise over "those lovely daisies". Accounts of an alpine house, a Brighton rock garden (by the former owner of one of England's most extensive alpine nurseries), the Pyrenees, ferns for the rock garden, are but a part of the varied contents of this number.

* * * *

The Scottish Rock Garden Club, in celebration of its twenty-first birthday, issued a special number of its *Journal*, as well as the usual late summer number. The 190 pages of these contain well over fifty short articles, and numerous illustrations, in color as well as black and white. From so much good material it is difficult to make a selection, but one may read of hardy heathers, the cultivation of Primulas, Erythronium, *Mertensia martima*, Celmisia, Douglasia, Potentilla, trips to the Cascades, Pyrenees, Tyrolean Alps, the Torridon Mountains, and many other subjects. From a distance, the Scottish organization seems far less formal than the Alpine Garden Society, with much attention given to county meetings and garden visits, in which, of course, American members have little chance to participate. Yet it offers a great deal to us, at a very small cost.

It must not be forgotten, of course, that both the Scottish Rock Garden Club and the Alpine Garden Society have seed exchanges in which members share. Among the seeds offered have been many which are never found in commercial lists, the fabulous *Corydalis cashmeriana*, priceless Primulas, some of the most recent introductions of Himalayan expeditions. No good gardener can afford *not* to belong to both organizations!

* * * *

The September number of *Baileya* includes three articles of great interest to gardeners who seek more precise botanical information about their plants than is available in garden books.

In "Keys to Cultivated Plants. 3. Autumn Crocus" Dr. G. H. M. Lawrence first recalls the distinction between Colchicum and true Crocus, discusses in only mildly technical language the botanical characters and habits of Crocus, illustrated by line drawings, and then gives a key to the twenty-three species of autumn-flowering Crocus which have been offered in the American trade during the past 15 years (Van Tubergen's 1954 catalog lists only thirteen). Included are comments on color and hardiness of value to the lay reader.

The Cultivated Shrubby Potentillas, by H. L. J. Rhodes, is of fully as much horticultural as botanical interest. One is tempted to quarrel with

the author for his proposal of "fingerbush" as a common name, and also to question, as Farrer did, whether there is a real distinction between *P. davurica* and *P. fruticosa*, because of the great variation among seedlings. I once raised three seedlings from a packet labelled "*P. fruticosa mandschurica*", or according to Rhodes, *P. davurica 'Mandschurica'*, which had been sent me by one of the most celebrated (and botanically accurate) English gardeners. One plant is typical, semi-prostrate, white-flowered; another perfectly prostrate, following the contours of a large rock, with large rather soft yellow flowers; the third, erect, yellow, seemed identical with typical American *P. fruticosa*. I incline to Rehder's viewpoint that all the shrubby forms are variants of a single species. Rhodes mentions a clone, "Snowflake", with semi-double white flowers; the plant received under this name from a leading American nursery was in no way distinguishable from *P. davurica veitchii*.

Dr. H. E. Moore offers the first of a series of six articles on a most unjustly neglected group, "The Cultivated Alliums". In spite of Gabrielson's derogatory comments, Alliums, like codonopsis, are odorous only when handled, and some are pleasingly fragrant. Most are summer to autumn flowering, offering brilliant color in almost every imaginable shade at a time when the rock garden is usually at its dullest. They are generally of the easiest cultivation, surviving even among coarse grasses; a few self-sow freely, but usually the better species are all too slow of increase.

Perhaps in a later issue of the *Bulletin* it will be possible to publish a list of those species with which the discerning rock gardener should be acquainted, but for the present, a careful perusal of Dr. Moore's series is recommended.

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