

Quarterly of the American
Primrose
Society

VOLUME XXIV

WINTER 1966

NUMBER 1



Pacific strain of Polyanthus — grown and photographed by Vetterle & Reinelt

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 AMERICAN PRIMROSE, PRIMULA AND AURICULA SOCIETY

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Notes from Rhone Street

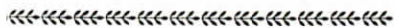
The judging committee is thinking of awarding 25 points for foliage in show and alpine auriculas; and of discontinuing the practice of any point score for pin and thrum in garden plants. The committee will meet in February to study the point scoring of doubles, and to determine what changes, if any, need to be made in the point scores as printed in this issue. Written suggestions should be sent to Dorothy Dickson before February. Those who have convictions about how primroses should be judged should remember that it is the squeaking wheel that gets the grease.

The East Side Garden Club of Kirkland will host the National Show



April 22 - 24. Washington State Primrose Society show dates are May 7 - 8; Oregon, April 16 - 17. Othershow dates are not yet in.

The Canadian Primula and Alpine Society has changed its name to *Alpine Garden Club of British Columbia*. Meetings are held every 4th Thursday, in the Douglas Park Fieldhouse, 20th Ave. and Willow Street, Vancouver. Visitors are welcome. Mrs. D. Munday is president.



TREASURER'S NOTES

This is a busy time of year, and I want to thank all the members who have sent in their dues. The response is wonderful, and saves many hours I can use in the greenhouse and lath houses. Dues are delinquent after January 15. We have a supply of previous issues of the Quarterly for sale, 10 for \$3.50 or 50¢ apiece.

* * *

One of the best ways I know of to get new members is to donate a few

plants to a good gardener. Then follow this up with information on growing, dividing, and add a few more seedlings! Next comes an invitation to a regional meeting, where the fledgling primula enthusiast has an opportunity to add to his circle of friendships and information.

If every member of A. P. S. would acquire one new member this coming year, our membership contacts would be enlarged and enriched.

— Ruth Smith
Membership Chairman

PRIMROSE ACRES

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Winter Warning

by MRS. ORVAL AGEE

A. P. S. President

Winter weather conditions in the northwest have not been of the best for Primulas. In December of 1964 the temperature here in our area dropped from 26° in the afternoon to zero by dusk, with no snow covering. It was down to 14° before I noticed the drop, so seedling polyanthus in plastic pots had been exposed to very low temperatures before covering began. The plants had been potted for easy handling during the Spring Primrose Show. The pots were surrounded with cement building blocks about twice the height of the plants. I put a covering of shredded newsprint over the plants and laid boards across the top to hold the paper down. Trying to cover plants with an icy East wind howling down the Columbia river was quite difficult as the shredded paper blew on past the Primroses. Fir boughs would have been more convenient to handle in this case, but were not available. Shredded paper was also put on the Polyanthus out in open beds.

Where the paper was held down the plants were saved, so apparently Polyanthus can stand a short period of severe cold if they have protection from temperature fluctuation and wind.

The Juliana "Springtime" had been through several periods of freezing weather, as I have had them for quite some time, so neglected to cover them — thinking they could take the cold, as we consider them quite hardy. We had a nice border of these growing with early species rhododendron "Mucronulatum" and "Hippophaeoides." The Julianas blended beautifully with these rhododendrons, and were intended for color photography. That was a sad looking border in February, some clumps of Spring-

time completely gone, others with just a few live shoots. Juliana "Wanda" was also quite damaged by this freeze. I did not think that possible, as it has been used in rockeries and edges for years. The double white acaulis, with more wind protection by the woods, came through with very little covering and one would not expect that to be as hardy as Wanda.

We never worry about temperatures in the twenties at night, when the weather warms up above freezing during the day. Growers in similar climates should plan on some winter covering for the Primulas for these unexpected freezes without snow protection.

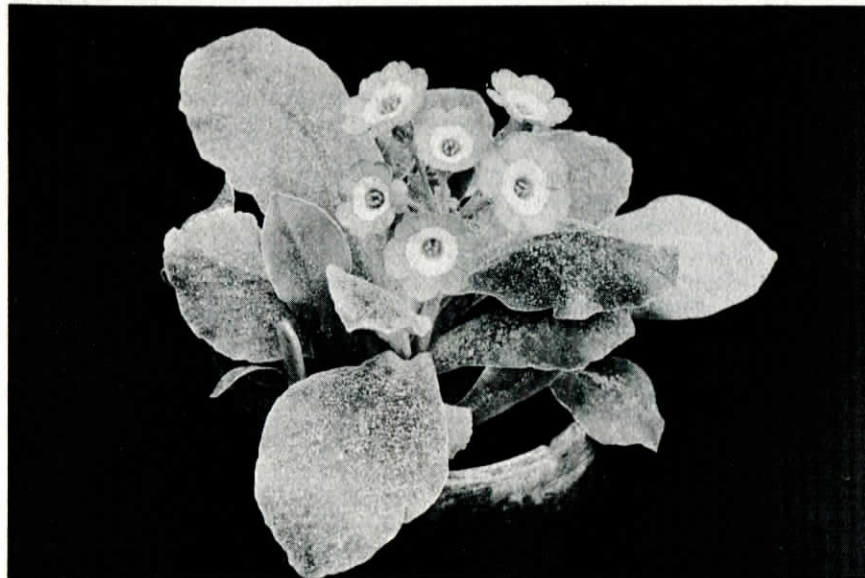


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 Mrs. Lucien B. Alexander, Editor

Letter From South Burnaby

by GRACE CONBOY
Vice President and Regional Editor



Show Auricula — grown and photographed by Cyrus Happy

I feel that, following the Annual Meeting and Banquet at Portland last Spring — and the realization that you had elected me your Vice President — I must admit my feelings of humility and trepidation. I do realize that I have been a member of A. P. S. since somewhere about 1945 — quite some time — and that one must have gleaned some worthwhile experience and knowledge in the study and growing of one of the most completely charming families of plants, in that length of time, but I wish to clearly point out that I in no way assume the responsibility of a so-called *expert*. It seems to me illogical to claim to be an expert in any line of horticulture that involves plants — for the more one learns about them, the more one finds there is to learn — or what really little one knows.

I only hope that as your new Vice

President I will be able to get to enough of the meetings to be of any help I might be, in that I am located somewhat distantly from the main centres of your activities.

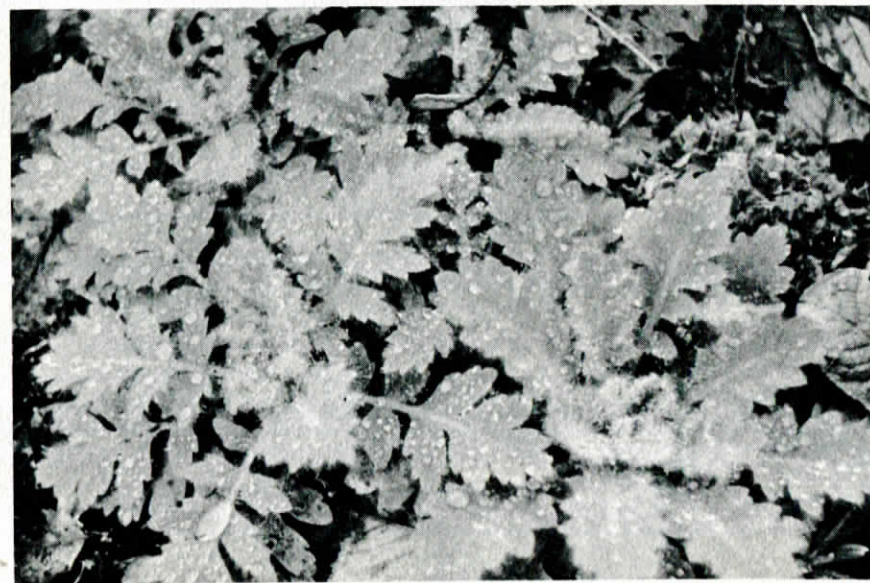
Our own Primula and Alpine Society are growing some Primulas, some members quite a few — but we are unfortunate up here in not having the assistance of the many nurseries you have in both Washington and Oregon, who have active representatives within your groups and have such a wonderful variety of plants available to members who are not too interested in raising plants from seed. Most of the plants I have have been grown from seed — I really enjoy the experience of achieving blooming plants from a packet of seed. Especially thrilling is it when one is raising one of the new hybrid forms or a species one has never seen bloom

before. These are one of the joyful bonuses of a keen grower.

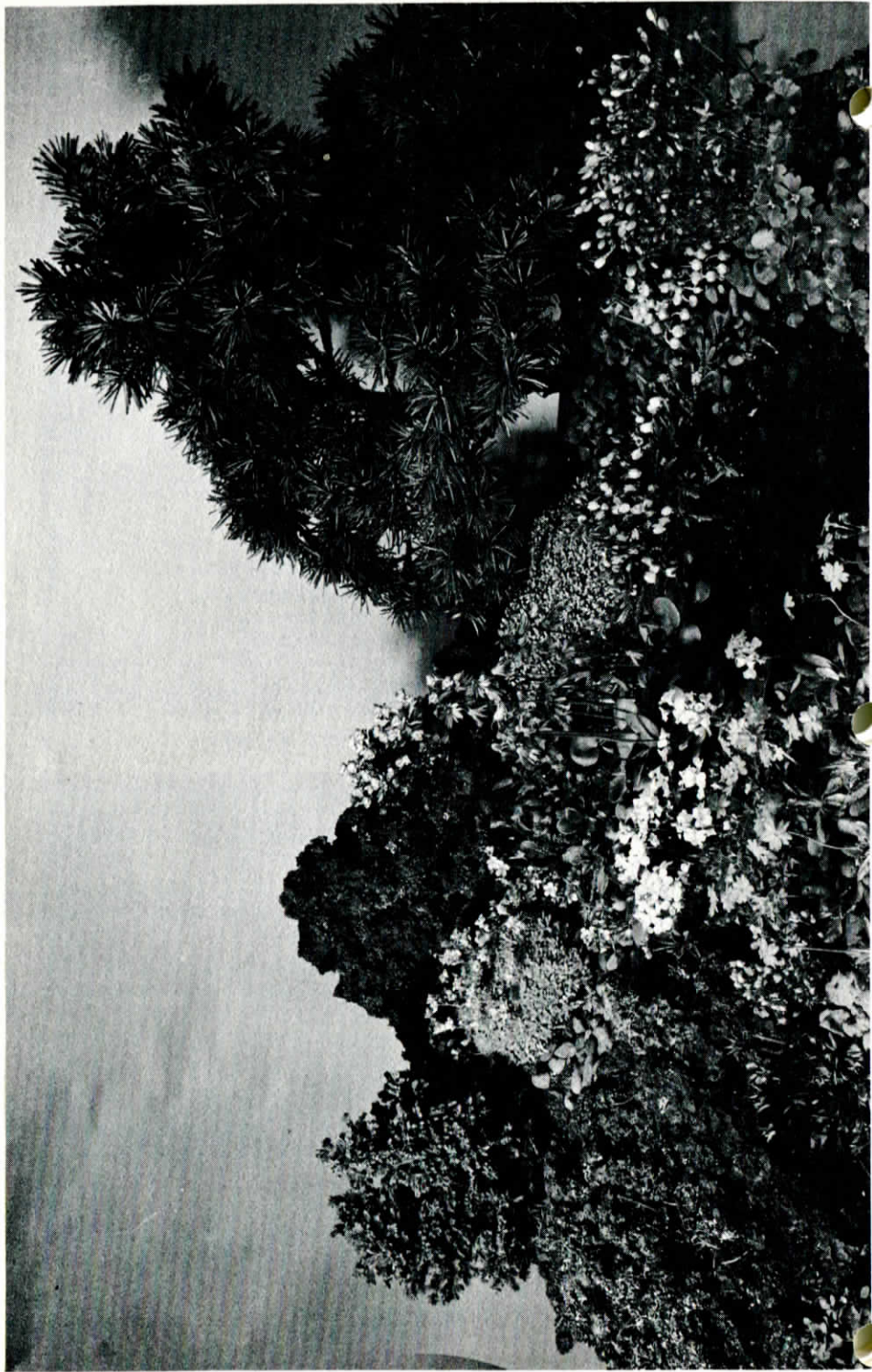
As yet I have never had the time to do any hybridising. Perhaps there will be time for this one of these days. Meantime I am trying to build up quality in the stock I have — in both the Vernales section and Auricula and of course the species are always charmers one would not be without. This year the boss has, after some 20 years of hopeful nudging, constructed 3 beautiful cold frames for me, good large ones. Lacking sand but having any amount of sawdust available, I am using it to sink my pots in the frames. To date I have stowed away a fine collection of some 20 pots of various Auricula, Alpine, Show and European species forms. They are so fat with buds and the Marginata and Show ones are developing such pristine farina — they are a joy to watch. I have also potted up plants of *P. Viali* and *Nutans* with lush foliage so very susceptible to winter crown rot. A few plants of Doubles are also bedded in just on general principles.

Companions in the frames are a choice collection of the lovely little

frosted Saxifrages. These come from Mr. Greigs Royston Nursery, all choice named varieties, which were carefully divided up and have all gone ahead beautifully. They will be planted eventually in a new Tufa rock garden — when they have increased sufficiently. I have found the small bun type of Saxes do not thrive but are usually lost when planted in a sunny exposure — they must have cooler conditions. In nature they get their roots in very deep if exposed or have an underground water supply available. Other adjacent plants are a little family of the Primulaceae, the choice little Soldanellas. I have lost these every time so far, left to their own in the garden. The moist winters and springs we have are too ideal for the ravages of slugs, who devour Soldanellas like dessert. Winter wet also tends to rot off any buds that the slugs might miss. So there they are safe this time, with their tiny glossy leaves furling comfortably. Half of one frame is harboring a fine batch of Lewisia. These are mostly Cotyledon Hybrids, with a plant of *L. Leana* and two plants of a cross of it



Winter-retained foliage of *Meconopsis Nepalensis* with raindrops on the furry leaves. — from a photo by Grace Conboy



and the cotyledons. Also have a nice pot of the lovely *L. Rediviva*, our interior native, which rarely will stand the devastation of our wetcoast winters. All of these were outdoors last winter—with most drastic effects. They are not tender but snow lay on them and there were a lot of losses from crown rot. I salvaged and repotted them all—rerooting in sharp sand any that had stem rot, that had to be removed. The books say *Lewisia*s do not root easily from cuttings, but I found that a good percentage of mine made good root systems, and have been potted up, with any dead foliage removed. They all look crisp and healthy and should give a real show next spring. I did not have a suitable home ready for them or they would have been set out sooner. They do best in a north exposure, planted in very sharp scree, in a rock crevice or vertical spot where drainage is positive. They would probably do well even in a peat wall—which I want to try at a future date. These lovelies were mainly collected in the

Siskiyou two years ago and are treasures of a wonderful trip.

While perusing on the garden, I should tell a little of my pet new Ericaceous rock garden that has just been newly completed. We received a large quantity of surplus fill from a shopping centre area that was being reconstructed. It contained a fair quantity of lawn sod—which I collected up starting from a level area—piling this up to a height of some four feet in parts. This was two years ago, and this year, following a careful going over to remove all weed—it seemed mellow and ready to go to work on. Throughout my garden I had acquired over the years quite a number of the small rock types of *Rhodos* and their kindred ericaceous plants. So this new garden was to be their home. It is quite sheltered, to the back of our sunken area. General contour was worked out and necessary rocks placed mainly to retain the soil—but nicely simulating outcroppings, and forming good sized shelf planting pockets. Strategically planted are several large spreading shrubs of *R. Williamsianum*, which produces large rosy bells in season. A fine tufty shrublet, one of the smallest *Rhodos*, *R. Radicans*, is nestled in a shaded corner, somewhat 'neath a tall *Peiris Variegata*. This pocket also has some of the small *Primula Juliana* Hybrids, *Asplenium* fern and even some *Cypripedium* ladyslippers. Throughout the pockets are other choice *Rhodos*—*R. Hanseanum* Nanum (yellow), *R. Impeditum*, deep purple, *R. Repans* hybrid, *R. Creeping Jenny*, deep red, *R. Ciliatum*, mauve, and so on. Small plants of the floriferous evergreen azaleas also are here and quite a number of the lovely little *Andromeda Grandiflora Compacta*. *Primula*. *Primula Rotundiflora*, my only plant, with very heavy meal under the leaves, also has a cool corner. As only one *P. aurantiaca* survived I have also found a spot for it to nestle. Many different *Erythroniums* are planted throughout. Also



P. viali —grown and photographed by Prof. W. C. Blasdale

there are many of the dwarfier forms of lily species that like this type of soil.

Perhaps I did neglect to mention that a good quantity of peat was mixed into each pocket, as was a filthy mixture of mushroom manure. Have had some beautiful autumn bloom on over half a dozen large plants of the Hybrid *Gentiana McCaulyi*, with its deep blue funnel flowers. Some of the dwarf creeping heathers have also been placed, and the dainty *Buxifolium*, foliage so like a heather. Planted throughout are many of the spring bulbs, species tulip, crocus, iris, narcissi, anemone, *eranthis*, snowdrops, etc. My! How I look forward to next spring when this new rock garden must fulfill its promises enclosed in the fat buds now showing. One last note—have also

planted, as well as many more of mostly *Juliana* Hybrids, lush clumps of that princely flower of the Alps, *Gentiana Acaulis*. This fall I had my first almost four inch bloom on one in the top of my terrace beds—the first in many years of trying to find a place to make it bloom—so now I am so hopefully awaiting results from the many groups I have in the new rock garden. If it does do well and rewards with bloom, visualize the pictures it will be in companionship with the soft cream *Julianas* of Mr. Dicksons "Buttercup."

What a wonderful life we gardeners live, who especially do their own landscaping, first formulating minds-eye pictures and then seeing them develop into something tangible and beautiful.



AMERICAN PRIMROSE SOCIETY

Primrose Judging Score Sheet

GARDEN POLYANTHUS

Flower -- 50	
Color -- clear, rich	15
Substance	15
Size of blossom	10
Clear eye	5
Fully opened blossoms	2 ½
Thrum eye	2 ½

Plant -- 50	
Umbel -- full, symmetrical . . .	10
Stalk -- sturdy, round, tall . . .	20
Foliage - healthy, symmetrical <u>20</u>	
	100

ACAULIS PRIMROSE

Flower -- 50	
Color -- clear, rich	15
Good texture	15
Fully opened blossoms	10
Size of blossoms	5
Clear eye	2 ½
Thrum eye	2 ½

Plant -- 50	
Floriferousness	15
Florets not hidden	10
Foliage - healthy, symmetrical <u>25</u>	
	100

JULIANA HYBRIDS

Flower -- 50	
Color -- clear, rich	15
Rare color -- new or unusual . . .	5
Eye -- clear, small or none . . .	5
Substance -- substantial	10
Form -- symmetrical	10
Thrum eye	2 ½
Texture -- luminous & silky . . .	2 ½

Plant -- 50	
Floriferousness	20
Foliage -- miniature, with root-stalk similar to <i>P. Juliae</i> . . .	20
Cultural excellence	<u>10</u>
	100

GOLD & SILVER LACED

Antlers -- dense, curved inward	10
Color -- rich uniform shade of red or black	25
Flower -- even lacing with center circular and same hue as lacing	30
Stem and footstalk	10
Size and substance	<u>25</u>
	100

(Pin eye disqualifies)

GARDEN & DOUBLE AURICULA

Flower -- 50	
Clear color	15
Substance, substantial	15
Blossoms fully opened	2 ½
(can be flat or ruffled)	
Size of blossoms	10
Clear center	5
Thrum eye	2 ½
Plant -- 50	
Umbel -- full, symmetrical . . .	10
Stalk -- sturdy, straight, tall . .	20
Foliage - healthy, symmetrical <u>20</u>	
	100

EXHIBITION ALPINE AURICULA

Tube--circular, rich yellow . . .	10
Antlers--dense, curved in . . .	10
Center -- round, clear	20
Color--rich, shaded to edge . . .	20
Pip--round, flat, unnotched . . .	20
Stem and footstalks	10
Size, substance, condition . . .	<u>10</u>
	100

(Pin eye disqualifies)

SPECIES AND OTHER TYPES NOT COVERED BY EXISTING POINT SCORES

Free from disease & damage . . .	20
Full bloom, good color	30
General condition	<u>50</u>
	100

BORDER ALPINE

Same as for garden and double auriculas except **color** must be luminous and shaded from a dark to a lighter color toward the outer edge of petal.

EDGED SHOW AURICULA

Tube -- circular, rich yellow . . .	10
Antlers -- dense, curved in . . .	10
Paste--white, smooth, dense . . .	25
Body color--center circular . . .	15
Stem and footstalks	10
Pip -- round, flat, unnotched . . .	<u>20</u>
Size, substance, condition	<u>100</u>

(Pin eye disqualifies)

SELF SHOW AURICULA


Same as for Edged Show Auriculas except for **ground color** instead of body color.

The Society sorrowfully reports the passing of Mr. Dale Worthington, at 75 years of age. Mr. Worthington had been an active member since 1953 and a past president of the society.

Failing health forced his retirement, early in the summer, from the two things he most loved: active work with young people, and gardening.

He was a teacher for Multnomah College for fifty years, and in addition, Dean of Students for the past thirty years. The College graduating class of 1965 was dedicated in his honor.

Auriculas were his first love, but he grew a wide variety of primulas uncommonly well.



Cultural Directions For Primula

by TACOMA PRIMROSE SOCIETY

Polyanthus, Acaulis, Jack-in-Green, Juliana, Hose-in-Hose, and Silver Lace:

Plant in shady or semi-shady places, in well worked soil, enriched with well rotted cow manure, or a commercial fertilizer containing superphosphate and nitrogen containing compound, and humus such as leaf mold or peat. These plants are adaptable for planting under shrubs, such as rhododendrons. They can be grown successfully in open places if plenty of water is used in dry periods. When setting plants in the spring, trim off broken or damaged leaves. Do not set crown below the surface of the soil, and be sure to spread roots out carefully. Remove only damaged roots at spring planting time. When setting plants in the fall, root growth may be pruned more severely.

Candelabra, Asiatic and Denticulata Types:

Plant in very moist, boggy and semi-shady places. If the moist areas do not already exist, these conditions may be made by using a large quantity of peat moss in the soil and watering liberally during the summer season. These plants grow fairly tall (2 to 3 feet in height), except the Den-

ticulata; therefore the plants should be planted toward the back of your planting area.

Garden Auriculas, Alpine Auriculas, and Species Primula:

The Auricula type primroses like open, drier conditions than most Primula. Good drainage should be provided. Due to the large number of Primula species, some require dry conditions, others rocky soil — it is wise to inquire where you purchase your plants, the nature of each type of species. Good books on these different type species are available in our library. (Ed. note — and by direct request or library loan from Central Library, Portland, Ore.)

Pests:

Slugs, Root Weevil and Red Spider are most common. Use bait for slugs. Work Aldrin and Soil Dusto into soil to control weevils. Spray for Red Spider. Keep plants well watered as Red Spiders thrive in dry conditions.

Members of the Tacoma Primrose Society welcome any questions you may have regarding Primroses, and will be happy to obtain the answer for you.

Primula Plants

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Abschasia Additions

by H. LINCOLN FOSTER — Falls Village, Conn.

The publication in the Summer Quarterly of my article on *Primula abschasia* has led to considerable correspondence, distribution of plants, and many further thoughts about the species.

After I had written the original description of *P. abschasia* and the account of my experiences with it, the slow business of international correspondence brought me subsequent information which I wish I had had to include in the original account. Finally from Linz-Donau in Austria I received word that they had indeed furnished the seed to the American Primrose Society Seed Exchange in 1956, but that this was seed which they had merely passed on from a collection they got from the Leningrad (Russia) Botanical Garden. The botanist in Austria said they did not grow *P. abschasia* and were of the opinion it was identical with *P. sibthorpii* which they did grow, and of which they were sending me some seed.

This seed I sowed in spring of 1965 and have a fine stand of husky looking plants in the fall of 1965. Some, like many other of the Vernales group, are putting on a few fall flowers. On quick and casual observation, both of the foliage and the flower color, I would say that they were not identical with *P. abschasia*. Still tentative examination indicates considerable difference not only in the noted foliage and color, but that the flower scape of *P. sibthorpii* is hairy whereas that of *P. abschasia* is naked. Also the calyx lobes of *P. sibthorpii* are shallower and more nearly like typical *P. acaulis* (vulgaris) than the long-pointed and spotted calyx lobes of *P. abschasia*.

Hybrids between the pollen of *P. abschasia* and a white form of *P. acaulis* made in 1964 have a few blossoms in the fall of 1965 and are very similar to the species *P. abschasia*, lacking a little of the brilliance of color in the blossom, but with similar calyx form and speckling of the glabrous scape. And happily those that have flowered are pin-eyed so that seed-set should be simple.

One further observation on *P. abschasia*, as I have grown it: as you may remember I originally had only two plants and developed my stock entirely from one of those plants, and this was the one that produced abundant fall flowers as well as very early spring flowers. I am interested to observe that two-year-old plants of this clone which have not been divided do not show any tendency to fall bloom, whereas those that I did divide this year are giving the described spate of fall flowers. This might be due to difference in growing site, but I venture to suggest that young divisions or seedlings are more inclined to fall flowering.

Following the receipt of correspondence from Austria, I got a charming letter from Mrs. Zinida Artushenko of the Leningrad Botanical Garden, in which she said that the description I gave her of the plant I grew as *P. abschasia* agreed with the plant she had described in her article in the Bulletin of the Alpine Garden Society and seemed to correspond with the plant she had collected as a dried specimen for the Botanical Garden from Abschasia in the Russian Caucasus Mountains. She also said in her letter that this species was not growing in the Leningrad Botanical Garden. But within the last week

(November 1965) I received "out of the blue" from Mrs. Artiushenko two roots of *P. abschastica* and some seeds of that species plus seeds of five other "species" closely related.

In response to correspondence and conversations growing out of the Primrose Society Quarterly, I have distributed plants of this species in many directions. Unfortunately, because I am not set up as a nursery, I did have to turn down a few requests. However, I have supplied Mrs. Baylor of Skyhook with a small stock of plants and she will list it for sale in



P. abschastica in November, 1963, flowering in open ground.
—photo by H. Lincoln Foster

the spring. I do think it is a species worthy of introduction for its own sake and as a possible parent for hybridizing.

I shall keep you informed of developments along various lines that may grow out of the introduction of *P. abschastica*. One confusing and still very tentative observation is that the two divisions of clone number 2, which I finally decided to split up this summer and which are sending up fall flowers, have curious frilled green petticoats beneath the corolla. This will call for further study in the normal spring blooming season.

Some Diminutive Primulas

by ALICE HILLS BAYLOR — Johnson, Vt.
A. P. S. Corresponding Secretary

Writing in retrospect in January it seems wise to explore some of the needs of the diminutive members of the primula family that bloom early in the wall or shaded rock garden.

The native habitat of *P. modesta* is in the Japanese Islands of Hokkaido and Shikoku and it is found most often in sub-alpine moraines. It is two to three inches in height when its scape is fully grown and is topped by a cluster of pink flowers with a yellow eye. When in very early spring the rosettes appear one might think several balls of surgical cotton had been placed on the gravel as their leaves are so heavily covered beneath with farina. Some state the farina is yellow but this is not the case in my garden, perhaps due to soil condition or to a slightly different form. As the foliage unfolds into a three inch rosette the farina is not so conspicuous. *P. modesta* is growing where the sun finds it two or three hours in the morning and again in the afternoon. The soil is heavily mulched with gravel which, during the six years it has occupied the same site, has worked down to create a semblance of a natural moraine. In this spot the water seeps underneath.

The tiny plants may be divided in three or four years when side shoots have developed. The entire plant has the appearance of a miniature *P. denticulata* for the blossoms are held close together in a tight cluster. It is long-lived here as the colony I now have was germinated in 1957. The requirements are plenty of moisture with very sharp drainage.

P. glaucescens Subsp. *calycina* is in the same section of the garden but in an area that is heavily limed with crushed egg shells, washed crushed sea shells and Indiana limestone. It is one of the most charming of the

miniature primulas. The rosettes of dark green pointed foliage are neat and compact, three to four inches across. The sideshoots form a mat if not removed and are stunning on the limestone mulch. The two to three inch scape holds a head of lilac flowers so large for the size of the plant that they form a mass of color when in bloom. This is also a long-lived species as those I now have were germinated in 1952. It is not difficult to know when more lime is needed as the leaves turn from a dark green to pale green and the flowers are scarce. The bed has been remade only three times in the eleven years when the side shoots were removed and all reset.

When the bed was last remade there were a dozen or more divisions left over. These were planted in a low wall of Indiana limestone. The following spring they bloomed in profusion. I am indebted to Dr. Carl Worth for telling me that *P. glaucescens* needs lots of lime in the soil, when I told him I had had them for two years without having them flower. I had used old plaster when I first prepared the soil which proved to be lacking in lime content. I am also indebted to another friend who brought me Indiana limestone.

P. marginata is another most attractive miniature from the Maritime Alps. It prefers to be grown in a wall or in a deep crevice in the shady rock garden as in its natural habitat it hangs from the crevices of cliffs. The root is long and fleshy with the rosettes forming on a heavy trunk that spreads out on the face of the low wall on which I have it growing. The foliage is deeply dentate with farina to form a white band on the toothed edge. This characteristic gives it its name which refers to the white leaf margin.



Primula marginata var. "Linda Pope" on the cliff at sunrise.

—photo from *Alpine Garden Soc. of Great Britain*, V. 11, #2

The flowers that appear in early spring are a soft blue with a powdered eye. There is said to be a white form but I have not seen it.

The wall on which I have them growing is the retaining wall for the bed of *P. rosea* "Petite Pink." The two bloom at the same time and do not fail to draw attention. *P. marginata* is not easily germinated from seed. Propagation from side shoots is most satisfactory. I had tried to germinate it for several years without success when I saw it growing in a garden in Maine. The very fine gardener who had created that garden had passed away while on a tour visiting gardens. My garden had been among those visited. Her daughter willingly gave me my start of *P. marginata* for she was not able to care for her mother's plants. When the blue flowers appear on the handsome white margined plant I have warm memories of the visit to my garden by the one who grew the plant so many years ago. How wise to

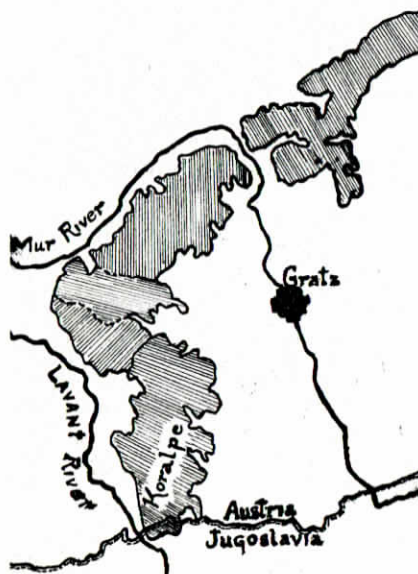
share. It is the sharing that binds gardeners together.

The flowers that hand upon my wall

*May be admired but few know
The warmth of friendship shared
that day*

Comes from above to me below.

One of the most interesting miniature primroses in my garden is *P. Kleinii*, the result of work by the late Peter Klein who crossed *P. rosea* and *P. Clarkii* to produce it. It grows just two inches high here and is most fluorescent. It has the dark green foliage of *P. rosea*, in miniature, and the flowers are a good clear pink and large for the size of the plant. *P. Kleinii* is extremely hardy and multiplies rapidly. In the five years I have had it I have not lost a plant. It does well as an edging for an auricula planting as it enjoys the same lime-content soil and sharp drainage. It is also a delightful companion plant for *P. glaucescens*.



The Noric Alps, a division of the eastern Alps of southern Austria, mainly along the Styria-Carinthia line; extending east from Hohn Tauer at Katschberg Pass to the Mur valley near Graz; bounded on the north by the upper Mur River and on the south by the Drau River valley, consist of several ranges, of which the Gurktal Alps (in the west) are highest, rising to over 8,000 feet in the Eisenhut. Sometimes known as the Styrian-Carinthian Alps.

Reprinted through the courtesy of the author, and by permission of the French Society of Amateur Alpine Gardeners (Societe de Amateur de Jardin Alpin, Paris). Translations by G. Rouanet, R. Luscher, and S. Tichner.

Primula Commutata*

by DR. W. KREICHBAUM

By the Latin expression *Locus classicus* (classical location or "L. C.") botanists designate the locality where a plant has been discovered for the first time — which is to say, its place of birth. One finds in the Austrian province of Styria such stations which are not only classical but also unique for certain species. It is of great value to cultivate these plants in rock gardens so as to prevent their complete disappearance, as they are menaced in their station of origin — and their extermination can be mainly attributed to those maniacal botanists who, in their zeal to transform them into mummies, stop collecting only when there are no more!

It is necessary, on this subject, to point out the exceptional station at Bergwacht, in Styria, and to stress with gratitude the measures taken to guard its flora. There we find the domain of *Pulsatilla stiriaca*, *Sempervivum pittonii*, and in particular, of *Doronicum cataractarum*, discovered by Widder† barely ten years ago in the Koralpe (a small range of the Noric Alps on the Styria-Carinthia border in Austria, extending 20 miles north from the Yugoslav line, east of the Lavant River) and which, although then fairly widespread in its distribution, has already disappeared from some of the places where originally found.

Primula commutata, also found in Styria, is quite unique in the matter of self preservation. In its original site it is practically inaccessible and, thanks to the initiative of the proprietor of the grounds, as an added safeguard, such a rigorous surveillance is maintained that any person found disturbing the plants is handed over to the court of justice.

About 37 miles west of Gratz, the capital of Styria, at the side of a wooded and spreading gorge and

rising on the winding mountain range, stands one of the most imposing of the old chateaux of Styria, that of Count Herberstein, dating from the 13th century.

The northern face of the abrupt cliff at this site shelters a botanical jewel — *Primula commutata*, in its original station — which, in its lonely solitude seems a survival from the ice age, bathed as it is by the cold air rising from the icy mountain stream at the foot of the cliff. This plant had not been found elsewhere before.

The amateur rock gardener may not concede the opinion of botanists, according to which it is difficult to distinguish between *Primula villosa*



Herberstein castle, 37 miles to the west of Gratz in Styria, the natural habitat of *Primula Commutata*, indicated by the white cross in the picture.

* *Primula villosa* subsp. *commutata* (Schott) Widler

† Prof. Widder, formerly Director of the Botanical Gardens at Gratz, in which the author was Garden Inspector for ten years and was with Prof. Widder at the "Locus classicus" of the above mentioned *Doronicum*.

and *Primula commutata*, yet it seems agreed that there is some confusion between these species and he who cultivates *Primula villosa* knows well the difficulty encountered in attempting to bring it to flower, as well also with *Primula viscosa*, whereas *Primula commutata* readily acclimatizes itself provided one gives it mid-shade and a humid atmosphere. Again, if one compares *Primula commutata* with *Primula villosa* and *Primula rubra* (— *P. hirsuta*), species with which it may be confused, one must note its advantageous magnificence, haughty carriage and elegance, its profuse flowering — often twice a year. Also, its multiplication by seed plotting presents no difficulty.

One easily imagines the tenacity of this plant to survive — a plant which, if its rarity had not made it prey of the herbarian, would long since have attained a wide distribution through many a true alpine "garden," where one would surely know that "the primrose is the jewel of every rock," these flowers, descending, it seems from marvelous legends.



On the north face of the rock grows *Primula Commutata*, in dripping pillows of 'Leaf Moss' and *Polypodium vulgare*.



Primula commutata

Crossword Puzzle

by RALPH BALCOM

"I am quite a crossword puzzle addict, and one rainy day I got to wondering how difficult it would be to create one of them. So I got busy just for the fun of it, and this is the result. It features primula and botanical names as much as I could work it in . . . it could be published as a CONTEST and the prizes could be double auricula plants and seed which I would contribute and ship to the winners."

Your editor thought it would be fun too, so here it is!

Rules for Contest Entry

1. Open to all members of A. P. S.
2. Solutions must be mailed to Ralph Balcom not later than midnight, March 1st, 1966.
3. Names of all members who submit a correct solution will be published in the next Quarterly.
4. Each of the names will be thrown into a hat and a drawing will be made, supervised by the A. P. S. president, Mrs. Orval Agee, during the membership meeting at the National Show in Kirkland.
5. First Prize: Five prize-winning double auricula plants from Ralph Balcom's collection.
6. 2nd, 3rd, 4th, 5th and 6th prizes: Each a packet of new crop double auricula seed.

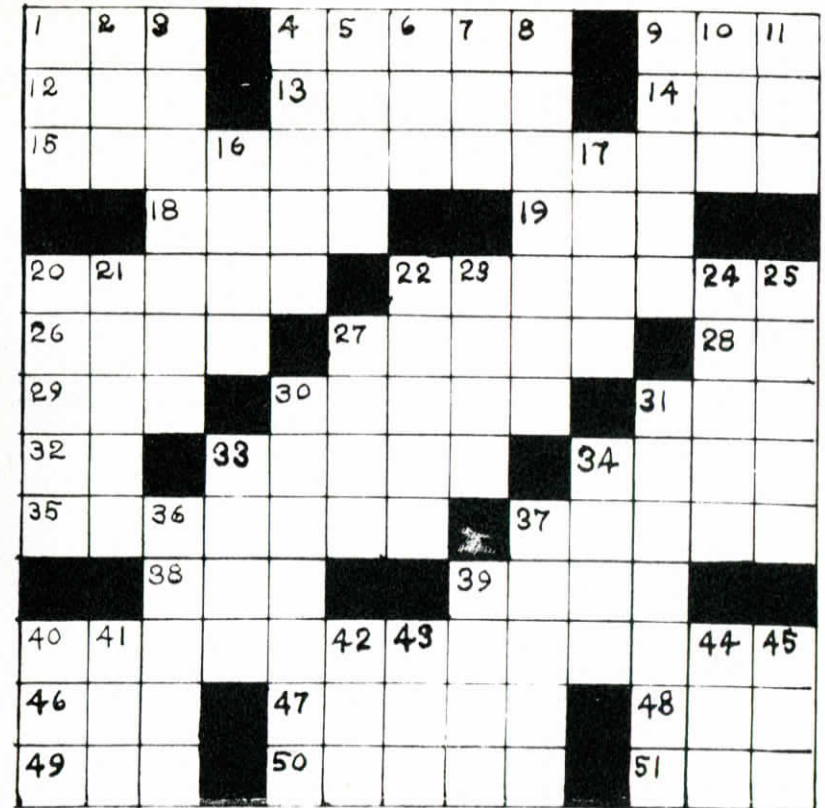
HORIZONTAL

1. Auricula blossom (colloq.)
4. Maple genera
9. Period of time
12. Greek goddess of mischief

13. Beverage of honey & mulberries
14. Heard at a bullfight
15. Candelabra Primula species
18. Plants of the sea
19. African antelope
20. Sheeplike
22. Tomato X potato (Pl.)
26. Liquid measure
27. Turnips (colloq.)
28. College degree (abbr.)
29. Loose end
30. Twisted metal thread
31. African antelope
32. Spanish article
33. _____ Laurie
34. Liver secretion
35. Fishing accessories
37. Region in ancient Greece
38. International Trade Union (abbr.)
39. Iris
40. Nivlid Primula species (Pl.)
46. Friend in Paris
47. _____ pony (2 words)
48. _____ Magnus (loyal APS member)
49. American poet
50. Plant pore
51. Soak

VERTICAL

1. Moccasin
2. Japanese statesman
3. Nagging
4. Move slowly
5. A stroke
6. Mistake
7. Sped
8. Pins (Primrose parlance)
9. Cruller
10. A side petal



11. Affirmative
16. England county
17. Writings
20. Chosen
21. Primula species (Littoniana)
22. French city
23. Eye
24. Ancient Greek coins
25. Ancient Arabian kingdom
27. Fungus disease of wheat
30. Spirits
31. Primula species (Amethystina Sec., Pl.)
33. Opposed
34. Husband of Ruth
36. Fairy
37. Alum. Company of America
38. Negative
40. Chart
41. I love (Latin)
42. Wish

43. Court
44. Artificial language
45. Plant juice

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CLOCHES

Generations of English gardeners have protected early seedlings from biting winds and late frosts with *cloches*; but for one reason or another, they have not become a useful bit of gardening equipment in America. That they have not caught on in the north is especially amazing because late spring frosts and early fall freezes often reduce the growing period to less than 100 days.

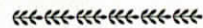
In recent years an adaptation of the principle has appeared in the plant protectors in the British Isles, Europe and here and there in America. In simplest terms, it is a series of metal wickets, the ends of which are set in the ground over a newly planted row of seeds. Set two feet apart along the row, they support a sheet of 4 or 5 gauge polyethylene wide enough to cover the top and sides of the wickets and an additional 4 or 5 inches on either side. The excess is covered with soil to prevent the wind from blowing the polyethylene away. The plastic should also be brought down at either end of the row to be held in place with soil. If ventilation is necessary the end plastic is lifted to allow air circulation from one end of the row to the other.

A metal coat hanger can be converted into a wicket by cutting off the hook and straightening the sides. We have used such a modified cloche-like protection in Vermont with gratifying results.

In England and Scotland a cloche frame is now available almost identical to the old fashioned kind that held glass on all sides. The present frame, however, comes with four sheets of 10 gauge plastic which are slipped onto the frame and are not blown away. The metal legs are pushed down deep enough into the soil to hold the frame steady. Seeds of half hardy annuals can be brought into bloom much sooner when germi-

nation is hurried by a polyethylene cover.

— Reprinted from
The Horticultural Newsletter
Vol. 12, No. 13, Feb. 1, 1965



CONTROLLING SEEDLING DAMP-OFF

There are a number of precautions a gardener can take against the damping-off of seedlings. Before planting the seeds, make sure that containers are thoroughly clean by washing them in a solution of permanganate of potash. Sterilizing the soil and coating the seeds with a fungicide will also reduce the danger of damp-off. If sphagnum moss is available it can be used in place of sterilizing the soil. A top layer of shredded sphagnum moss, from one quarter to three quarters inch thick, is a good seeding medium.

Other measures are sowing the seeds thinly to allow a good air circulation at the soil surface, placing the seeded containers in a cool place where the air circulates freely, and, when seedlings appear, gradually allowing only small amounts of morning sun. Avoid frequent, light top sprinklings but keep the soil moist by placing the containers in water, which method insures adequate moisture at the roots without excess surface moisture. Mr. Lorenzen of Amity reports very good germination and early growth with humidity controlled misting. The seeding medium does not get so damp as to encourage fungus, and the seed husk is kept pliable.

A solution of permanganate of potash (enough to color the water a light purple, not more than one scant teaspoon to 2 1/2 gallons of water) is a preventive as well as a mild fertilizer. Having a good fungicide on hand often saves a crop of seedlings, especially in protracted sultry periods, which is the type of weather conducive to damping-off.

Light For Plant Growth

Reprinted selections from two G. E. Bulletins, L. S. 168 and T. P. 127. Used with the permission of Mr. R. L. Paugh, Specialist in Plant Growth Lighting.

PHOTOSYNTHESIS

Light plays so prominent a part in plant growth that the scientific name for the process is called *photosynthesis*, from the Greek word *photos*, meaning light. To a plant, natural or artificial light is its principal source of energy. Other important factors necessary for plant growth include the soil, fertilizer, moisture, temperature, air and humidity, and the characteristics of the plant itself.

PHOTOPERIOD

Like animals and people, plants have to grow to a certain stage of development before they mature and can reproduce. A prominent factor in the timing of plant maturity is the length of days and nights in the spot on the earth in which it is planted. The number of hours of uninterrupted darkness in a 24-hour cycle is the important factor in determining the blossoming time. It also triggers tuber and bulb formation and other growth characteristics such as the color and formation of the leaves and the branching of the stems. This light-rhythm characteristic is called photoperiodism.

Some plants like long days and short nights; these are called long-day plants. Others flower under short days and long nights; these are short-day plants. Still others seem to be independent of the relative light-and-dark periods in each 24 hours; these are called indeterminate.

Plant physiologists have known for some time that artificial light could be used to promote or retard flowering. This technique has reached a high state of general acceptance by com-

mmercial growers. A sufficient number of fundamental principles are so well understood that for flowering plants especially, commercial growers now use artificial light profitably. To control the blossoming time of plants (photoperiodism), one-half to 50 foot-candles is all that is necessary. The field is still relatively unexplored. Therefore, it offers to the hobbyist and experimenter exciting possibilities for new discoveries.

ARTIFICIAL LIGHT

The sunlamp is often thought of as a source for growing plants. It is, however, primarily designed for the production of therapeutic ultraviolet rays; it is a "sun-tanning" bulb. It supplies so much more ultraviolet energy at usual distances than the sun, that its effect on plants is nearly always detrimental. Similarly, the germicidal tube causes growing plants to wither in a relatively short time. The principal application of the germicidal tube is to kill air-borne bacteria in the upper air of a room. One of its many other uses is to inhibit fungus growth on dormant plants in storage. The future application of this form of energy to the killing of weeds and air-borne bacteria are research possibilities.

Cool white fluorescent lamps supplemented with 10% added light from incandescent is still considered best for growing plants under artificial conditions. This combination of light from incandescent and fluorescent lamps, as many studies by the Department of Agriculture and several universities have proved, provides the best balance of radiant energy needed for good plant growth.

HOW MUCH LIGHT IS NEEDED?

The lighting levels needed for plant growth indoors vary with the plants. Technical data is available on many species. The range of daylight out-of-doors may go as high as 10,000 footcandles; in a greenhouse it is much less on the average. Indoors in a home in winter, the natural light may vary from 10 to 1000 footcandles. Plants of many varieties have been grown to maturity in artificially-lighted growth chambers throughout the United States at from 300 to 2,500 footcandles.

(Editor's Note: Will members using artificial lighting please inform the editor as to what light intensities are proving to be most satisfactory for primula? Light intensity may be measured at plant level with a photographic light meter. The reading must be converted into footcandle units according to the manufacturer's instructions.

The new G. E. 213 light meter may be used for making measurements directly in terms of footcandles. Ex-

cellent results have been obtained with many plants with 16-18 hours of light per day.

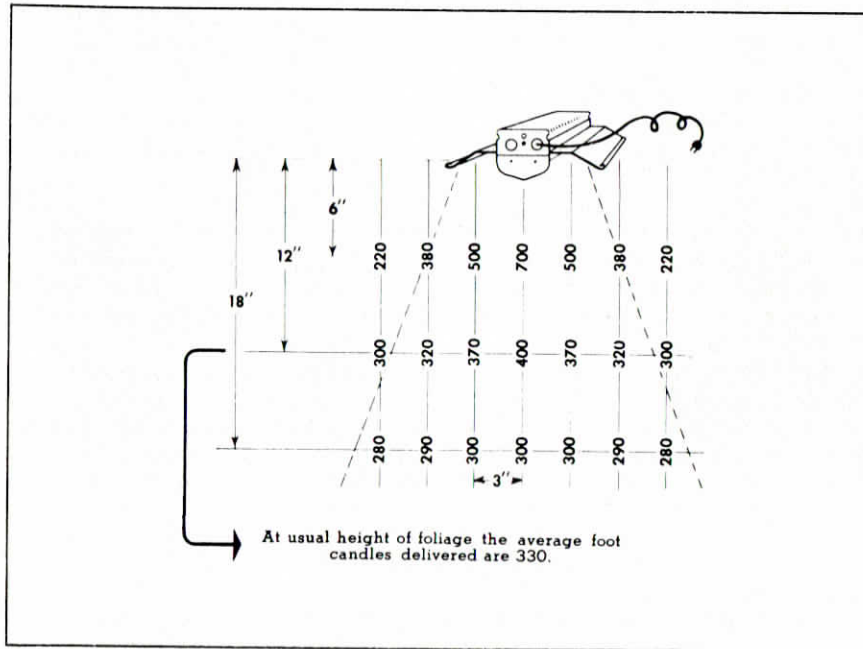
In lighting an area from a short distance with a single fixture, it is necessary to keep in mind two kinds of lighting effects:

With a filament (small) source, the light drops off approximately as the square of the distance. This means that if you move a plant up halfway toward the lamp, you increase the intensity four times.

With a single large source like a fluorescent fixture, the light changes approximately as the distance changes. Moving a plant say from four feet to two feet away, you approximately double the intensity.

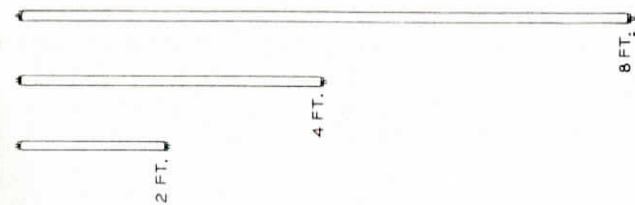
In a small room with a large number of lamps, using either incandescent or fluorescent, the lighting at different levels does not change appreciably.

Approximate footcandle values on plants 6 to 18 inches from two-lamp (40 watt) fluorescent fixtures are shown below.



LAMPS

FLUORESCENT



FILAMENT



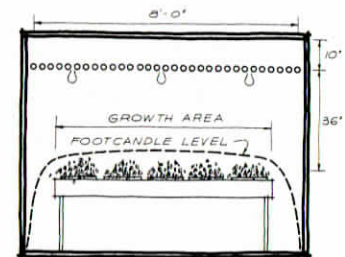
PAR and R type bulbs should be equipped with porcelain sockets for safety reasons. Sockets, wiring, and other parts should follow the Code recommendations for this class of service.

Fluorescent lamps should also be used with reflecting equipment, except when used in large growth chambers.

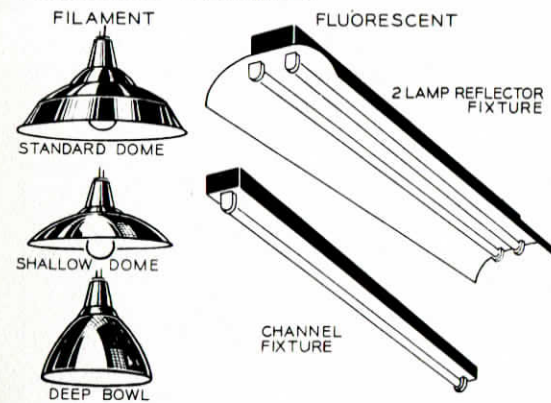
The equipment pictured may generally be purchased from electrical-supply stores, floral supply, hardware stores, and mail-order houses.

CROSSWISE

With lamps mounted crosswise over bench, foot-candle level drops off at ends, where light is absorbed by walls.

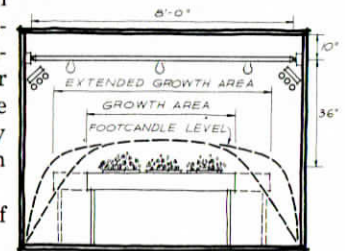


REFLECTING EQUIPMENT



LENGTHWISE

With lamps mounted lengthwise over bench, light falls off at ends. Extra rows of lamps near the walls pay handsome returns in the form of more uniform lighting and increased growing area.



Of the three incandescent types shown, the standard dome reflector is the most popular. In some applications, reflectors with wider distribution, such as the shallow dome reflector, are recommended. The deep-bowl reflector is preferred for display purposes or other applications where the light is to be concentrated on a small area. They are also useful in protecting reflector bulbs from condensation or mechanical hazards.

These reflectors are made in a wide variety of sizes for lamps from 60 watts to 500 watts.

PROPAGATION CASES

Home gardeners who do not have access to a greenhouse can start plants from seed or cuttings at home. Propagating equipment using fluorescent lamps as the light source can be bought in a variety of sizes and types or made inexpensively and requires little attention or skill in use. The design and dimensions may vary according to the space available, providing the lighting is sufficient.

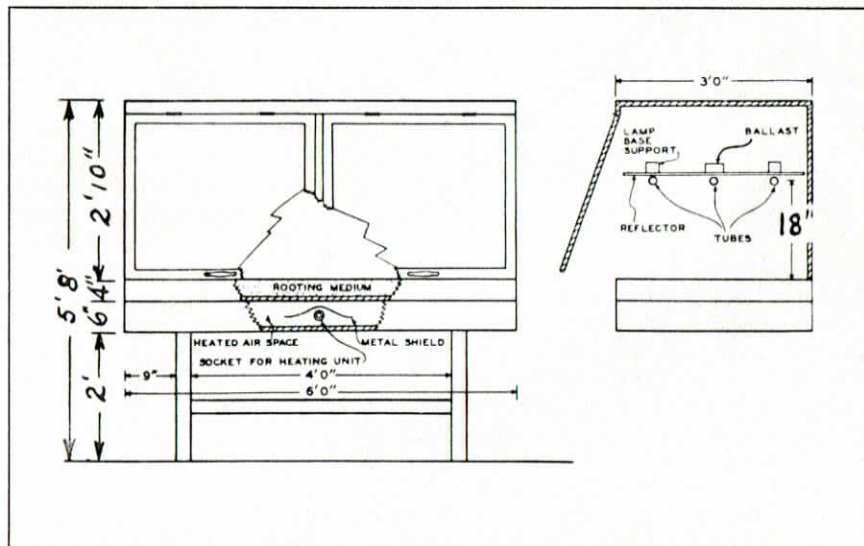
In some areas, controlling temperature and humidity is simpler if the case is enclosed. If a lower humidity is desired for seedlings in a closed cabinet, the doors may be opened. In some basements the temperature is so even that a case or cabinet is unnecessary and the fixture or fixtures may simply be suspended over an open bench or table.

To start seedlings, a two-lamp or three-lamp 40 watt fixture is recommended, mounted about one foot above the trays or flats. (*Ed. Note: Mrs. J. G. MacDougal [V. 23, #1, p. 24-26] used fluorescent tubes three*

inches above the leaves.) Smaller lighting fixtures can be used for rooting cuttings. The interior of an enclosed cabinet should be white, to keep the light in circulation.

When the room is normally cool as in a garage or store room and additional heat is required, a pair of 25 watt or 40 watt filament lamps is desirable. Use a soil-heating cable set buried 4 inches in the bed as another method. (See G. E. Folder 16-732, "Installation Instructions for G-E Heating Cable.") All wiring should be according to local electrical codes.

Best results are usually obtained with four inches of vermiculite (non-treated) or similar material for the rooting medium. Temperature is usually maintained at 60 - 68 degrees Fahrenheit for successful growth of cabbage, kale, head lettuce, pansy, wallflower, stocks, tomato, pepper, cucumber, marigold, petunia, and other warm-season plants. However, it is suggested that the general directions of the supplier of the seeds be used as a guide.



1941 A.P.S. Silver Anniversary 1966

SEED EXCHANGE 1966

Please note rules governing distribution. Requests must be on form provided and sent before MARCH 1, 1966. Names used are those furnished by the donor. The symbol (*) denotes seed was collected from plants in the wild. The "Country of Origin" section at the end of the list represents some of the best strains available from growers in the countries listed. Those which have been found most satisfactory on the basis of member-reports to date have been included this year. In primulas, most packets will contain at least a minimum of twenty seeds. *P. auricula* exhibition forms will contain six seeds per packet. The name of the grower or source of any item in this section is available on request. The contributors have been generous and their continued interest makes this listing possible.

CONTRIBUTORS TO THE EXCHANGE

- A Johnson, Mrs. N. M. *Galeton, Penna.*
- B Balcom, Ralph *Seattle, Wash.*
- C Refrigerated Seeds (†)
- D Arends, Georg *Germany*
- E Jelinits, Dr. Istvan *Hungary*
- F Langfelder, Richard *Chappaqua, N. Y.*
- G Peterson, Mrs. R. S. *Seattle, Wash.*
- H Goerner, Robert *Corte Madero, Calif.*
- I Root, Mrs. E. W. *Clinton, N. Y.*
- J Dress, Dr. W. J. *Bailey Hortorium*
- K Gopelruds, The *Livonia, Ill.*
- L Hayward, Mrs. Harry *Scarborough, Me.*
- M Brinkerhoff, Mrs. H. *Georgetown, Conn.*
- N Heacock, Mary Ann *Denver, Colo.*
- O Foster, H. L. *Falls Village, Conn.*
- P Alexander, Mrs. L. B. *Portland, Ore.*
- Q Wright, Mrs. W. T. *East Boothbay, Me.*
- R Schwarz, Mrs. A. J. *Seattle, Wash.*
- S Marshall, Mrs. E. A. *Portland, Ore.*
- T Ruffier-Lanche, R. *France*
- U Putnam, Robert C. *Kirkland, Wash.*
- V Hasko, Mrs. E. *Central Islip, N. Y.*
- W Luscher, Robert *Canada*
- X Commercial Sources
- Y Baylor, Mrs. A. H. *Johnson, Vt.*
- Z Baldwin, E. C. *Syracuse, N. Y.*
- AA Tait, Mrs. L. G. *Bothell, Wash.*
- BB Lorenzen, Richard J. *Amity, Ore.*
- CC Wells, James S. *Fair Haven, N. J.*
- DD Crewdson, Mrs. Cicely *England*
- EE Kartack, R. E. *Baraboo, Wisc.*
- FF Agee, Mrs. Orval *Milwaukie, Ore.*
- GG Corwin, Mrs. C. M. *Sequim, Wash.*

(†) — Seeds from 1965, refrigerated from March 1 to Dec. 31, 1965.
Double quantity per packet.

For addresses of contributors, please see SPRING YEARBOOK.

If a sufficient number of late arriving seeds is received, a supplemental list will be issued, a copy of which may be had if requested on your order.

1966 A. P. S. SEED EXCHANGE LIST

- | | | | |
|---------------------------------|--|------------------------------------|------------------------------------|
| 1 Aconitum albo-violaceum — E | 48 Arisaema triphyllum — M, Z* | 93 Chionodoxa luciliae — CC | 144 " pulchellum — N |
| 2 " moldavicum — E | 49 Armeria maritima alpina — T* | 94 Chrysanthemum burnatii — T* | 145 Draba longirostra — F |
| 3 Actaea pachypoda alba — Z* | 50 " x Bloodstone — CC | 95 " uliginosum — V | 146 Dryas drummondii — F |
| 4 " " rubrocarpa — Z* | 51 Arum maculatum — J | 96 " weyrichii — F | 147 " tenella — R |
| 5 " rubra — Z* | 52 Asclepias tuberosa — O, Z* | 97 Cimicifuga cordifolia — E | 148 Dryopteris marginalis — A |
| 6 " neglecta — Z* | 53 Asphodeline taurica — J | 98 " racemosa — M | 149 Eccremocarpus scaber — H |
| 7 Adenophora canescens — W | 54 Aster alpinus — L | 99 Cladrastis lutea — Z* | 150 Echinacea purpurea — Z |
| 8 Adonis vernalis — X | 55 " frikartii — F | 100 Clematis alpina — T* | 151 Echinops ritro — T* |
| 9 Aethionema schistosum — F | 56 Astilbe chinensis — E | 101 " macropetala — L | 152 Edraianthus serpyllifolius — F |
| 10 " warleyense — CC | 57 Begonia (Tuberous) — V | 102 Clintonia borealis — Z* | 153 Epigaea repens — O |
| 11 Alisma plantago-aquatica — M | 58 Brassica repanda — T* | 103 Codonopsis clematidea — E | 154 Eranthis hyemalis — X |
| 12 Allium karataviense — G | 59 Brodiaea sp. — H | 104 Colchicum autumnale — Q | 155 Erica tetralix mollis — F |
| 13 " moly — G | 60 Bruckenthalia spiculifolia — F | 105 Coptis trifolia — Z* | 156 Erigeron eucephaloides — T |
| 14 " ostrowskianum — G | 61 Brunnera macrophylla — X | 106 Cortusa matthiolii — T* | 157 " simplex — T |
| 15 " subhirsutum — Y | 62 Calceolaria biflora — L | 107 Corydalis cheilanthifolia — S | 158 " sp. lav. - pink — Q |
| 16 " tuberosum — Z | 63 Callirhoe — Q | 108 Cotoneaster apiculata — Z | 159 " " pink (Rocky Mtns.) — F* |
| 17 Alyssum saxatile — Z | 64 Camassia leichtlinii — S | 109 " horizontalis — Y | |
| 18 " " arduinii — T | 65 Campanula americana — F | 110 Cremanthodium plantagineum — T | |
| 19 " species — Q | 66 " barbata — F | 111 Cyclamen coum — CC | 160 Erinus alpinus — T* |
| 20 Amorpha canescens — Z | 67 " carpatica — L | 112 " europaeum — C, W | 161 " " albus — O |
| 21 Anacyclus depressus — F | 68 " elatines garganica — X | 113 " " rose — C | 162 Erythronium grandiflorum — S |
| 22 Anagallis arvensis — CC | 69 " glomerata — Q, T | 114 " neapolitanum mixed — C | 163 " oregonum (& mixed) — S |
| 23 Anemone baldensis — O | 70 " " superba — X | 115 Daphne mezereum — W, Z | 164 Galega officinalis — Z |
| 24 " magellanica — K | 71 " latifolia — Q | 116 " " alba — J | 165 Gaultheria hispidula — Z* |
| 25 " narcissiflora — W | 72 " pyramidalis blue — X | 117 Delphinium mixed colors — AA | 166 Gentiana andrewsii — L |
| 26 " pulsatilla — L | 73 " white — X | 118 " chinensis blue — CC | 167 " asclepiadea — R |
| 27 " alba — O | 74 " pyramidalis — J | 119 Dianthus allwoodii — G | 168 " crinita — O, Q |
| 28 " " rubra — F, G, Q | 75 " sibirica — F | 120 " " alpinus — CC | 169 " linearis — Y |
| 29 Anthemis carpathica — F | 76 " turbinata — Q | 121 " alpinus — K, U | 170 " phlogifolia — F |
| 30 Anthericum liliago — Z | 77 Carnation chaubaud mixed-CC | 122 " arvernensis — Y | 171 " septemfida — L, Q |
| 31 Antirrhinum asarina — M | 78 " " dbl. — C | 123 " barbatus — X, Z | 172 " " lagodechiana — W |
| 32 Aquilegia caerulea — Z | 79 " pot type — X | 124 " " Indian Carpet — X | 173 " wutaensis — W |
| 33 " " blue — Z | 80 Cassia mariilandica — Z* | 125 " boydii — CC | 174 Geranium endressii — Z |
| 34 " " pink — Z | 81 Catananche caerulea — Q | 126 " cognobilis — CC | 175 " macrorrhizum — Z |
| 35 " " pink & white dbl. — V | 82 Caulophyllum thalictoides — O, Z* | 127 " cruentus — W | 176 " renardii — Q |
| 36 " " white — Z | | 128 " deltoides albus — CC | 177 " sanguineum (dw.) — Z |
| 37 " canadensis — CC | | 129 " " Brilliant — CC | 178 " " lancastriensis — Z |
| 38 " flabellata — CC | | 130 " haematocalyx — F | 179 Geum montanum — F |
| 39 " glandulosa — E | | 131 " x Laced Pinks — Q | 180 " sp. — Q |
| 40 " longissima — H | | 132 " neglectus — L, S, U | 181 Gladiolus tristis — T |
| 41 " shockleyi — T | | 133 " noeanus — CC | 182 " " hybrids — T |
| 42 " tall blue & white — CC | | 134 " plumarius — CC | 183 Globularia cordifolia — G |
| 43 " triples various shades — U | | 135 " " Ballade (dbl.) — X | 184 " trichosantha — G |
| 44 " x mc kana — H, Q | | 136 " x Tiny Rubies — CC | 185 Goodyera pubescens — M |
| 45 Arabis lyallii — F | | 137 " x Waithman's Beauty — CC | 186 Gypsophila repens — L |
| 46 " muralis — F | | | 187 Hamamelis virginiana — Z* |
| 47 Aralia racemosa — Z* | | | 188 Haplopappus coronopifolius — G |
| | 83 Centaurea jacea — Z* | | |
| | 84 " sp. — Q | | 189 Helianthemum nummularium — Z |
| | 85 Cerastium alpinum lanatum — S | | |
| | 86 Chaenactis douglasii — T | | 190 Helleborus niger — W |
| | 87 Chaenomeles (dbl.) Cameo — Z | | 191 Hemerocallis hybr. mixture — V |
| | 88 Cheiranthus cheiri orange — CC | | 192 " " gold, & lemon — V |
| | 89 " senoneri — CC | | 193 " " reds, & wine — V |
| | 90 Chelone alba — Q | | 194 " " rose, & pink — V |
| | 91 not received | | |
| | 92 Chimaphila umbellata var. cisatlantica — Z* | | |
| | | 138 " waldsteinei — F | |
| | | 139 Dicentra spectabilis — W | |
| | | 140 Dierama pulcherrima Donard — H | |
| | | 141 Digitalis ambigua — F | |
| | | 142 Diphyllaea cymosa — O | |
| | | 143 Dodecatheon dentatum — S | |

195	Hieracium lanatum — Q	241	" martagon album — L, O	293	Parnassia glauca — Z*	343	" cortusoides — C
196	Hosta coerulea — T	242	" " hybr. — Z	294	Penstemon barrettiae — G	344	" darialica — Y
197	Hypericum yacumense — F	243	" x Red Band hybr. — V	295	" cardwellii — S, U	345	" denticulata — K
198	Hyssopus officinalis roseus — Z	244	" regale hybr. — W	296	Penstemon hirsutus — F	346	" " alba — X
199	Iberis sempervirens Snowflake — X	245	" shelburn strain — V	297	" " pygmaeus — F	347	" " red — O
200	" umbellata mixture — X	246	" speciosus Garnet Fire — V	298	" menziesii thompsonii — U	348	" edelbergii — W
201	" " tetra — X	247	" tigrinum (bulbils) — A	299	" rupicola — G, P	349	" elatior — E*, F
202	Impatiens sultanii (dw. form) — Z	248	Limonium sieberi — F	300	" Six Hills hybr. — F	350	" " ssp. pallasii — E
203	Incarvillea grandiflora — U	249	Linaria alpina — U	301	Phlox divaricata — O	351	" " " ruprechtii — E*
204	Iris cristata — M	250	" supina — L	302	not received	352	" farinosa — C, O, Q
205	" dw. mxd. (Named Forms) — N	251	Lindera benzoin — Z	303	Phyteuma charmelii — G	353	" fauriae alba — O
206	" " sulina x — N	252	Linum flavum — F	304	" orbiculare — F	354	" florindae — R, AA, Q
207	" flavissima — F	253	" perenne — F, X	305	" spicatum — F	355	" " hybr. — R
208	" germanica rose — Z	254	Lisianthus nigrescens — Z	306	Phytolacca americana — Z*	356	" " rubra — X
209	" hookeri — Z*	255	Lobelia cardinalis — EE	307	Platycodon grandiflorum — T	357	" " x P. sikkimensis — P
210	" iberica — F	256	" siphilitica — Q, Z	308	" " autumnale — Z	358	" frondosa — O, AA
211	" innominata hybr. — S	257	Lonicera dioica — Z*	309	" " mariesii — W	359	" grandis — T
212	" missouriensis blue — N	258	Lychnis chalconica salmonea — Z	310	" " pink form — Z	360	" halleri — O
213	" " white — N	259	" flos cuculi — Z	311	Platy-opuntia phaeantha — C	361	" japonica — O, Q
214	" pseudacorus — Z*	260	" haageana — Q	312	" rafinesquei — C	362	" " crimson — B, BB
215	" sibirica — Q	261	Maianthemum canadense — Z*	313	Polemonium — Q	363	" " Fujii (H. P.) — P
216	" " Blue Emperor — Z	262	Malva alcea — Z*	314	Polystichum acrostichoides — A	364	" " Glowing Embers — K
217	" sintenensii — Z	263	" moschata — Z*	315	Poncirus trifoliata — F	365	" " Miller's Crimson — K, L
218	" tall bearded Rainbow Gold x Wayward Wind — N	264	" verticillata — Z	316	Potentilla fissa — Q	366	" " Pink Lady — Y
219	" " " First Curtain x Happy Birthday — N	265	Meconopsis betonicifolia — Y	317	" fragiformis — K, L, Q	367	" longiscapa — T
220	" tenax Monument Peak hybrid, lg. flwr. pastels — S	266	" x blue and mauve — DD	318	" nepalensis willmottiae — L	368	" luteola — T
221	" unguicularis blue — G	267	" cambrica — O	319	" pyrenaica — F	369	" marginata — U
222	" " yellow — CC	268	" regia — DD	320	Primula acaulis — C	370	" mistassinica — W, Z*
223	" xiphoides deep blue — G	269	" SSW pink and cream — DD	321	" " giantis — C	371	" modesta — Y
224	" " white thru purple — N	270	Medeola virginiana — Z*	322	" " Mother's Day — X	372	" obtusifolia — T
225	Isatis tinctoria — Z	271	Mertensia subcordata — T	323	" aurantiaca — W	373	" parryi — T
226	Knautia arvensis — Z*	272	Mimosa pudica — CC	324	" auricula — C*	374	" pedemontana — O, T*
227	" drymeia — Z*	273	Mimulus tilingii — A	325	" " garden form — B, M, Q, Y, AA	375	" polyanthus — O, C
228	Lavatera arborea — T*	274	Mitella caulescens — Z	326	" " Alpine Form — AA	376	" " (B & L) — C
229	Leontopodium alpinum — Q	275	" diphylla — O	327	" " sgl. & dbl. mxd. colors — BB	377	" " from B&L strain — CC
230	Lewisia howellii hybr. — X	276	Muscari blue — CC	328	" " " brt. yellow — B	378	" " blue — C
231	Liatris punctata — Q	277	Myrrhis odorata — Z	329	" " Regal Isle — C	379	" " Cowichan — Z
232	Lilium canadensis yellow — Z*	278	Myosotis alpestris — E	330	" " ssp. bauhini — T*	380	" " Harrison's blue — C
233	" centifolium — Z	279	Nemesia strumosa compacta mxd — X	331	" bullata — B	381	" " colossea — C
234	" cordatum — V	280	" " " blue — X	332	" bullesiana — X	382	" " fancy shades — C
235	" x emerald strain — V	281	" " " red — X	333	" bulleyana — R, Y	383	" " gartford — C
236	" x green mountain hybr. — V	282	Nemophila insignis — G	334	" candelabra Inshriach Hybr. — DD	384	" " " x pacific — C
237	" x Honeydew — V	283	Neobesseyia missouriensis — C	335	" " Oriental Sunrise — R	385	" " gold laced — C
238	" x Imperial Crimson — V	284	Paeonia veitchii — J	336	" " Pagoda — R	386	" " pink & rose — C
239	" x Imperial Silver — V	285	Papaver alpinum — O, W	337	" " Pagoda Hybrids (H. P.) pastels & reds — P	387	" " Teicher's giant — C
240	" x Jamboree — V	286	" atlanticum — F	338	" " Sunrise & Sunset — I	388	" polyneura — R, X, AA
		287	" nudicaule yellow — Q	339	" " calycina — X	389	" pulverulenta Bartley — AA
		288	" orientale — J	340	" " cashmeriana — C	390	" " pink, & red (H. P.) — P
		289	" " pink and salmon — V	341	" chionantha — T	391	" pubescens — X
		290	" rhoeas shirley — X	342	" " mixed — T	392	" rosea — W
		291	" rupifragum — F			393	" " grandiflora — C
		292	" somniferum fl. pl. — X			394	" saxatilis — K, O, Y
						395	" sieboldii — K, O, W

Seed Exchange Results

A trial was made of several of the acaulis and polyanthus forms contained in the 1964 list and a very brief report follows on those which flowered this spring (1965). Seed sown in December 1963, greenhouse, transplanted in flats 3 months, transplanted to open ground 6 months; 10 to 30 seeds of each variety planted, germination over 50%.

- 450 good color, flower size, and petal texture; ruffling.
- 474 excellent colors in mixture.
- 475 fine, clear color; desirable.
- 476 fine, mid-blue.
- 477 desirable pink tones.
- 479 flower and plant well above average.
- 480 one only flowered: good color and foliage texture.
- 483 strong grower; good mixture.
- 484 smaller, compact counterpart of 483.
- 485 no foreign shading or colors.
- 486 strong grower, large flowers. Pedicels possibly too long.
- 487 good color mixture.
- 489 medium size; good color and variety.
- 490 flowers 1- $\frac{3}{8}$ " plus, bright blue; 4" flower stem; present foliage 4-8" long. Plants have not yet attained their final proportions. Another year will prove their habits.
- 491 & 492 N. R. (color poor or not fixed. No Repeat—will be deleted).
- 494 N. R.
- 496 When inquiry was first made regarding this strain, the originator rather disparagingly stated that this "—mixture is practically no more desired since the Pacific Strain is on the market." However, the two plants which flowered here were well above average.
- 498 excellent color: orange to apricot. Older form but worthy of wide use.

- 499 did not flower.
- 503 good colors—"warm pastels," flowers to 2".
- 505 small flowers, average to good.
- 506 excellent color; strong plant; height 6-8".
- 508 of the twelve plants which flowered, color and variety were excellent. Colors seem somewhat softer than original strain.
- 510 arresting color selection: uniform rosy-crimson with no foreign tones or colors.
- 511 to 513 N. R.
- 514 to 518 clear, full colors, 1-1 $\frac{1}{2}$ " flowers. The yellows and reds are particularly good; the blue is a good range from mid- to deep-blue. The white alone of the "Church Windows" appeared in this first trial to be more tender than others of the same series.
- 532 plants presently show more acaulis than juliae form.
- 534 good deep "brown-red-maroon" shade; as flowers age, center becomes smaller and darkens. Average flower stem 6". It would appear that the lower growing plants have a smaller and darker eye than the tall plants.
- 536 only one flowered; fine color and sturdy plant.

plus six from the 1963 list —

- 447 full, dark color, little or no variation. The best acaulis in present trials — or to date.
- 448 & 452 N. R.
- 462 first blooms 1"; very promising Alpine forms. Colors clear, clean and sharp; excellent.
- 464 W first blooms $\frac{5}{8}$ to 1- $\frac{1}{8}$ "; stems 4-7"; the widest range of colors yet grown: cold brown to snow white, blue, pastels, and one double form which could be placed near to pearl grey, with an opalescent, rose effect; petals laid flat.

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