Recommendations for a New Membership Program

Based on discussions held by David J. Vesall and several Minnesota members of the APS

March 19, 1989

Attracting new members to the American Primrose Society represents a large, but we hope not a difficult task. We have each had our own reasons in the past for seeking out the company of other primula growers. Recalling exactly what it was that caused our own attraction to the APS would be a useful addition to the ideas presented here. Focusing on the fledgling primrose aficionado, we realize he expects more things from the Society than he intends to return. Thus, we must be prepared to provide as many benefits to the new member as possible. By personalizing the way we respond to the potential APS member he will feel welcome to the larger group and in the future return the favor by participation and contribution on a much greater level.

VISIBILITY OF THE SOCIETY

To attract new members, the American Primrose Society needs to be visible to as large a group of interested people as possible. Probably the easiest and most efficient way of accomplishing this would be an informational brochure or flyer. This material would describe the benefits of membership in the APS including: the Bulletin, "Primroses", the Seed Exchange, Slide Library, Judging Schools, Annual Events and Meetings, and information on how to pay dues and how the APS is organized. The brochure would need to be general, but useful, and visually appealing. It may be the first and only contact with the potential new member.

Included in the brochure would be the name and address of a person that the potential member could contact for more information regarding the decision to join. This would be best served by one person at the national level, but could be directed to a regional contact person if such a system of volunteers was in place. Personally I remember receiving a letter and a couple of packages of seed from the Penstemon Society when I joined, and it was a nice touch.

Whether contained in the informational brochure or by a return mailing for payment of APS dues, we all felt it would be helpful to ask how that person had heard about the APS and to list other plant societies that they belong to. This would be good information for planning new member strategies in the future and for feedback on the placement of the brochures.

The actual layout, cost, production, and distribution of the brochure would need to be addressed by the APS Board. The creation of the brochure would best be handled by a committee designated by the board and the finished product to be approved by them. If any members are involved in commercial art, advertising, or the like, perhaps they could be helpful on this matter. Because of these considerations, we have not made specific recommendations at this time.
Distribution of the finished membership brochure would only be limited by one's imagination. The obvious locations include local arboreta, botanic gardens, universities and community colleges, especially those with horticulture programs, flower shows (both Jeanie and I were impressed with the Seattle Flower Show when we visited in Feb.), state and county fair horticultural exhibits, extension services, and the plant society meetings. Even where local APS chapters do not exist, any APS member should have access to the brochure for distribution as they see fit. This would be far easier than designating a single group to be in charge of finding nationwide locations for distribution. A record could be kept at the national level of where the brochures were sent. The budget for the brochure would need to insure that adequate quantities of a quality flyer would be available.

VISIBILITY OF THE PRODUCT . . . PRIMROSES

Our discussions in Minnesota focused on the lack of exposure to the genus Primula that gardeners of all levels have. I don't know if we are unique in this problem, but the response of many people here is, "You can't grow these plants in Minnesota gardens", or "I love those plants, but where can I get them?" Is this a problem for any other section of the country? Aside from the specialty nurseries, of which there are very few, the larger nurseries and landscape centers carry a disappointingly mundane choice of primroses. I am not familiar with how plants get accepted into the nursery trade, but if the APS has any power in this matter, it would be worth investigating. How can we expect interest in the plants if people can't even acquire a basic selection of the best plants?

Each of us is a potent ambassador for the genus Primula and through special effort we can see to it that we share the beauty and growability of the plants with many people. I think the efforts being made here by Minnesota members would help other areas of the country where new APS members might be waiting.

Karen Schellinger, who raises beautiful primroses on her wooded property north of the Twin Cities, has plans for a primula, wildflower, and fern display in a public garden made available through a friend in the city parks department. In connection with our Minnesota ARCS Rock Garden Chapter, we will be planting a new area at the Landscape Arboretum including many primulas. Both of these displays offer an opportunity to educate the public and show off the genus. In conjunction with the displays, the brochure could be available at the same locations.

Regarding the education of gardeners and other interested plants people, Karen has also made a good effort in teaching classes at our local arboretum and horticultural society. This is difficult when we feel somewhat isolated from the APS actions on the coasts. Continued support and access to a variety of services or materials from APS would help.

THE NEW MEMBER AND HOW TO KEEP HIM

Keeping the new APS member is equally as important as attracting him. Assuming we have received payment of dues, is there anything else that the APS could offer as services or benefits that would greatly appeal to the new member? This is a very important time to attract their attention and make them feel welcome. Especially in areas where primrose growers are not numerous, e.g., our own Twin Cities, the newly joined member may feel he is operating alone. Granted, formation of a local chapter would be something we would want to consider, but in some areas the members will be so widespread that meetings are difficult.

By establishing local APS chapters, the society will be more visible. Is there anything that could be done to encourage and support the formation of new chapters? I think this is an area that will need some further thought.

KNOWLEDGE

Our discussion group felt that the single most important benefit of joining the APS was for gaining knowledge about growing primroses. This will come in many forms, but foremost is the quarterly bulletin. Because it is a specialty plant society, we felt the articles must concentrate on the subject, primroses. As an editor myself, I know that what is printed is sometimes totally dependent on what is submitted, but an effort should be made to include as many new articles about primroses as possible. Particularly important are basic articles on primrose culture for the beginner. The British Alpine Garden Society has been producing a twice yearly publication called "Alpine Gardening" with articles geared toward the beginner. This is an excellent publication, I recommend that you take a look at it. Could reprints or new material be put together on a periodic basis in the form of a separate publication for the beginner and available through subscription?

In addition to the bulletin, we thought some sort of packet could be mailed to newly joined members giving them an idea of services and information on how to be involved. Along these lines I think we might include the following: Names and addresses of other members in their area (this is needed in areas like MN where there are small numbers), a selection of brochures to get the member started - such as raising primroses from seed, a list of primroses for the beginner, showing primroses, primroses in the garden . . . cultural information (this idea came from a similar mailing we received when we joined the Heather Society), maybe even a couple of packets of easy seed.

Another way of gaining knowledge is through attending meetings, shows, sales, garden and nursery tours. As I mentioned earlier, not all members have access to an APS chapter. How can we include them in the exciting activities that may be taking place in other groups? All of us were very enthused about the possibility of videotaping speakers, shows and judging techniques, garden tours, etc. and offering these through a library service with perhaps a rental charge and insured mailing. We thought this would make a good basis for a group of members to get together and "have a meeting" to see a video. This might even by the inspiration for the formation of a chapter. We have been doing this at our MN ARCS meetings; one member is a video buff and donates his time to the production of the tapes.

A through-the-mail library service for books and reprints would be a good idea if there was a central collection of materials that could be distributed, but potential losses of the resources would have to be addressed.

As members have the chance to travel, it would be helpful to have a directory of open gardens, ideally, describing what the visitor could expect to see. Not only private gardens and greenhouses, but some of the wonderful public gardens that travelers shouldn't miss. I think the APS members on the coasts would know lots of great places to visit and the
beginner might appreciate a list or even a contact person for help in planning a tour.

PLANTS AND SEEDS

Access to plants and seeds was another major reason that our group felt they would join a plant society. The beginner needs to know where he can acquire the primroses he is interested in. The APS Seed Exchange is an excellent chance to entice the new member and we had no complaints or suggestions on it. We did toss around a crazy idea about acquiring plants. What about a "beg, borrow, steal, or trade" plant exchange? Granted, many of us are heavily into seed raising, but we all have been known to want a hybrid, or a piece of a difficult species when our patience with seeds gives out. Would growers with desirable plants ever consider parting with cuttings or a little division? APS plant sales must be very interesting in the areas where more primroses are grown, to offer mail order. If the APS could encourage nurseries, especially in areas where more primroses are known to want a hybrid, or a piece of a difficult species when our patience with seeds gives out, would we all have been known to want a hybrid, or a piece of a difficult species when our patience with seeds gives out. Would growers with desirable plants ever consider parting with cuttings or a little division? APS plant sales must be very interesting in the areas where there are large numbers of members. Is there any way we could develop some sort of plant exchange?

As I said before, there is a very small selection of primroses available in our area. I think it would be appreciated if the APS could encourage nurseries, especially in areas where more primroses are grown, to offer mail order. I know there would be buyers for good plants made available to members further from the action on the coasts. Oh well, it's just an idea from someone who knows what anyone, beginner or not, will do for a primrose!

OTHER POINTS OF DISCUSSION

We realize there is a difference in the areas of interest among primula growers. This is very dependent on where they live and what they have previously been exposed to about primroses. For example, here in Minnesota, and maybe even throughout the Midwest, hybridizing and exhibiting will not be possible for most people. Greenhouses are expensive to own and operate in this climate, few people could participate in this. However, showing garden-raised species and hybrids already does occur at our shows in conjunction with the MN Rock Garden Chapter. These are very informal and not highly competitive, mainly fun and educational. We feel at a loss to recommend an approach to attracting new members in the areas of exhibition and hybridizing.

The 1992 International Primula Conference could be extremely important in making APS visible to potential members. The publicity about the event shouldn't forget those who are not members. If there would be a chance of opening the displays for a brief time to the public, maybe we could interest them in joining. Again, we are not familiar enough with the plans or limitations to make suggestions about this event.

IMPLEMENTATION

At this point we have left this outline for attracting new members in the form of a collection of ideas. Larry, your idea of setting up a "five year plan" for implementing the program sounds reasonable. We all feel that this is an important enough task that the APS Board must give specific directions on how to accomplish any portion of it. If it is decided that a brochure should be produced, it seems like the logical first place to start. I think, as you have said, it could be a goal for 1989. It should be handled by some person(s) very familiar with the APS and able to work back and forth with the Board until it is approved. This holds true for any part of a membership plan that needs to reflect the attitudes of the APS itself rather than just a chapter or set of members.

It would be important to solicit volunteer help from the APS members based on their talents or interests. I know from other plant societies I am involved in, that personal politics play a role in who does what. The APS Board should discuss how to pull together people that could work on accomplishing any portion of a membership plan.

Our little APS conclave here in Minnesota would be glad to help accomplish portions of the plan within our capabilities. One area we are particularly interested in is garden hardiness of primroses. We thought that we could collectively write an article or even a brochure about primulas for a tough climate.

In conclusion, I hope that the ideas we have presented are of value and stimulate some additional discussions. We realize it is a lot easier to make recommendations than to actually volunteer to see them through. The APS is a group of great people, I know it shouldn't be hard to set a plan in motion.
The month of May was prime time for "Show and Tell", and the "Plant Exchange". Many spring primulas were still in bloom and the summer primulas were budding out. Members were requested to help fill up the exchange table with new and exciting offerings, as well as relate how their hybridizing efforts are being rewarded.

News Updates

The election of officers and board members was held at this meeting in May. The following members were nominated: Sharon Meredith, President; Larry Bailey, Vice President; Sam Hamilton, Treasurer; Joe Dupre, Secretary; Lisa Eims, Jerry Flintoff, and Pat Bender, Board of Directors. The Seattle Chapter has outgrown its present meeting location and is now looking for a place to meet this coming year. Members are requested to present their suggestions for possible locations (churches, club houses, libraries, etc.) and keep their eyes and ears open throughout the summer months for that ideal, but cheap location.

EASTSIDE PRIMULA SOCIETY

Meeting


May is our Plant Sale, any Garden Plant or seedlings are welcome. Some dues are still outstanding. A plant was the Door Prize.

Time to Fertilize your Primulas!

Meeting

June 5, 1989, 7:30 P.M. Hostess: Sally Cadranel. June Activities Study Session: Seed Care, storage.

Primula of the Month: Primula Julie.

Program: A Report from Berry Garden in Portland Oregon.

If we all bring a list of P. Julies that we grow, we could talk on how and where we grow them in our study session.

1989 Show

Eastside Primula Society

Best Acaulis: Rosetta Jones
Best Dbl. Acaulis: Rosetta Jones
Best Polyanthus: Mary Baxter
Best Acaulis-Poly: Brian Skidmore
Best Julie Hybrid: Mary Baxter
Best Garden Auricula: Brian Skidmore
Best Europ. Species: Florence Tibbatts
Best Asian Species: Darlene Heller
Best Not Hardy Spec.: Thea Oakley
Best Seeding: Rosetta Jones
Best Show Auricula: Helen Moehnke
Best Al Smith Trophy: Thea Oakley
Best Alpine Auricula: Brian Skidmore
Best Alpine Seeding: Brian Skidmore
Best Laced Poly: Mary Baxter
Best Oddtite: Darlene Heller
Best Growers Exhibit: Florence Tibbatts
Best Alpine Planting: Thea Oakley
Best Companion Plant: June Skidmore
Sweepstakes: Rosetta Jones
Runner Up: Brian Skidmore
Best of Show: Brian Skidmore

OREGON PRIMROSE SOCIETY

The Oregon Primrose Society, held their 30th Primrose Show on April 15th & 16th, 1989, at the Milwaukie Community Club, Milwaukie, Oregon.

Our show was small, but we had a good variety of Primulas. Many blue ribbons and trophies were awarded.

This was our 28th Show in the same location, so we have many Primrose lovers who come year after year and we look forward to seeing them.

I want to thank all who worked so hard to have a nice show and all who came a distance to enter and judge.

Despite a severely cold February, Northwest primula growers showed they still had quality plants to exhibit at the 1989 shows.

Members of the Vernales section were particularly susceptible to the winter's late freezing temperatures. As a result, several awards in the Vernales Divisions were not presented. However, the Best Plant in the Show and the Best Polyanthus were won by the same plant, a rich red cowichan shown by Helen Moehnke. The deep red of the petals was complimented by a dark eye and deep green foliage. Helen also took home the award for the Best Acaulis with a 6 inch plant covered in white blossoms with green eyes. The plant was purchased last year at a local department store, proving that prize winners can be found everywhere!

The judges had a difficult job choosing the Best Garden Auricula from among fifty or more beautiful entries. The ultimate winner was a large, well-grown plant with three huge umbels of lavender and white flowers exhibited by Chehalis Rare Plant Nursery (Herb Dickson). Herb also earned the Best Alpine Auricula Trophy with 'Major' and the Best Double Auricula with a fully double plant.
of pale green-white flowers fading to pink. Just to prove he grows more than auriculas, Herb's *Primula sapphirina* won the Best Rarities Trophy. This tiny, seldom-seen plant from the Himalayas carries one to four slightly pendant, violet-purple flowers on a 2-inch stem above a rosette of coarsely toothed leaves. Seed of *P. sapphirina* is occasionally offered by the APS Seed Exchange.

Margaret Mason won the Best Show Auricula with a perfectly grown plant of 'Mary Zach.' This bright yellow *Self Show Auricula* was named for a long-standing Oregon member of APS. Margaret's *P. x pubescens alba* was awarded the Best Species Hybrid Trophy.

Coincidently, the Best Species and Best Seedling were won by the same species, but different plants. Both *P. ellisiae* were shown by Jay and Ann Lunn. This American native is one of the easiest members of the Parryi Section to grow.

Etha Tate showed the winning Hose-in-Hose, a bright yellow *Polyanthus* with sepals identical to the petals. Her collection of six *P. kisoana* in a container won the Best Grower's Exhibit and her arrangement featuring *primulas* was the best in the Decorative Section. The Best Companion Plant was a superb *Levisia tweedyi* exhibited by Orval Agee.

Mrs. William (Etha) Tate
Show Chairman

---

**Washington State Show 1989 Awards List**

<table>
<thead>
<tr>
<th>Div</th>
<th>Best in Division</th>
<th>Winner</th>
<th>Plant</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Acaulis</td>
<td>Thea Oakley</td>
<td>Reddish-purple</td>
</tr>
<tr>
<td>II</td>
<td>Polyanthrus</td>
<td>Brian Skidmore</td>
<td>Cowichan</td>
</tr>
<tr>
<td>III</td>
<td>Acaulis/poly</td>
<td>Brian Skidmore</td>
<td>Yellow</td>
</tr>
<tr>
<td>IV</td>
<td>Juliana Hybrid</td>
<td>Paul Darstein</td>
<td>&quot;Springtime&quot;</td>
</tr>
<tr>
<td>1-IV</td>
<td>Double vernales</td>
<td>Cy Happy</td>
<td>Yellow</td>
</tr>
<tr>
<td>VI</td>
<td>Garden Auricula</td>
<td>Herb Dickson</td>
<td>Purple/edged white</td>
</tr>
<tr>
<td>VI</td>
<td>Dbl. Auricula Seedling</td>
<td>Brian Skidmore</td>
<td>Purple</td>
</tr>
</tbody>
</table>

**C C Chambers Award**

Brightest Garden Auricula: Herb Dickson: Purple

---

**James Watson Award**

<table>
<thead>
<tr>
<th>VII</th>
<th>Species</th>
<th>Winners</th>
<th>Plants</th>
</tr>
</thead>
<tbody>
<tr>
<td>VII</td>
<td>European Species</td>
<td>Brian Skidmore</td>
<td>X pubescens 'Kingscote'</td>
</tr>
<tr>
<td>VII</td>
<td>Asian Species</td>
<td>Mt. Tahoma Nursery</td>
<td>Modesta alba</td>
</tr>
<tr>
<td>VII</td>
<td>Non-Hardy Species</td>
<td>Thea Oakley</td>
<td>Malacoides</td>
</tr>
<tr>
<td>I-VI</td>
<td>Best Seedling</td>
<td>John Kerridge</td>
<td>Cowichan</td>
</tr>
<tr>
<td>VII</td>
<td>Best Seedling</td>
<td>June Skidmore</td>
<td>Farinosa</td>
</tr>
<tr>
<td>VII</td>
<td>Show Auricula</td>
<td>Herb Dickson</td>
<td>Green edged</td>
</tr>
<tr>
<td>VIII</td>
<td>Auricula Seedling</td>
<td>Brian Skidmore</td>
<td>Alpine</td>
</tr>
</tbody>
</table>

---

**G. Dowling Award**

| VIII | Alpine         | John Kerridge  | Red                |
| VIII | Show Auricula Seedling | Rosetta Jones | Red               |
| VIII | Laced Polyanthus | John Kerridge  | Gold laced        |
| IX   | Rarities       | Brian Skidmore| Scotica           |
| IX   | Oddities       | Herb Dickson  | Auricula          |
| XI   | Junior         | Mary Ellen Mulder | White denticulata |
| XII  | Novice         | Ida Magnus Tray: June Skidmore |
| XIII | Growers Exhibit| Primaulceae   | Thea Oakley       |
| XIV  | Primulaeae     | Thea Oakley    | Forsythia & primulas |
| XV   | Decorative-Cut Material | Thea Oakley | Trillium rivale |
| XVI  | Decorative-Miniature garden | Thea Oakley |                |
| XVII | Companion Plant| Thea Oakley    |                  |

---

**Sweepstakes**

Marion Hannah Award

---

**The National Primrose Show**

"Down Primrose Lane", Tacoma Mall
April 1, 10-6; April 2, 11-6, 1989

In spite of two heavy Spring snows and a growing season that was unkind to plants, the Tacoma Chapter of the American Primrose Society presented a very creditable show at the Tacoma Mall on April 2-1, 1989. Eighteen growers from the lower Puget Sound area exhibited over 200 plants. At least 1,000-1,500 interested spectators viewed the show.

Tacoma Chapter has been staging its yearly shows at the Tacoma Mall for several years. The tables are set up in the large T-shaped main entry, which is an ideal setting because of the high ceiling, excellent lighting and white support columns. This central placement is in the core area of the Mall and attracts shoppers and visitors along the main corridor from every area of the Mall. The show tables, skirted in pale green fabric, were placed along this main corridor. Adjacent to the show tables were the plant sale tables where brisk selling occurred both days of the show. 884 plants were sold.

An education table was manned by Ruth Houston, our veteran expert. She had available sample plants, all kinds of literature and hand-outs on the raising of primroses, plus a library.
of some of the best texts on primula.

Across from the plant sales and education tables were two tables manned by Pierce County Master Gardeners.

Three floor displays along the main corridor, on either side of the show and sale tables, attracted a lot of attention. Mt. Tahoma Nursery displayed assorted sizes and shapes of troughs on different levels, each planted with miniature bushes, ground cover and lewisias. Beyond this display the Pacific Rhododendron Society's exhibit showed a woodland scene – several varieties of rhodies in bloom, flanked by blooming primroses, margiolds, and geraniums bedded in moss and virgin fir branches. Driftwood and terra cotta animals – squirrels, rabbits and raccoons were placed among the flowers.

The winning floor display was a country garden, the work of the Rocky Ridge Nursery. A lovely Lucy Lou rhodie, other miniature rhodies, and a dwarf maple were surrounded by assorted and varied primroses and white and pink pieris, set in moss, and mirrored in a shell-shaped pool.

Herb Dickson of the Chehalis Rare Plant Nursery, won the Ryan Trophy, the Chapter's sweeps sample for the most awards and blue ribbons. Herb won the hybridizing award for his absolutely spectacular tangerine-colored, nine-stemmed, extremely fragrant Cowichan cross. This was chosen the best plant in the show. His national awards included the Haddock and Hill trophies for the best Alpine auricula - 9-pipped, gold-laced poly about 8 inches tall. Her deep red cowichan won the local Floyd Keller trophy. The best aculis-poly was Thea's lavender miniature, an x-Wanda hybrid, and the best companion plant was her pale pink Trilium rivale. Thea also received local awards for the best decorative - a tall arrangement of daffys, pussywillows, tulips and primroses in a black container; and the best miniature garden of varied plantings including Sedum album, primroses, miniature rhodies.

The Raye Berry Trophy was awarded to Rosetta Jones for her native English yellow primrose - Primula vulgaris, grown from seed from the Scottish Rock Garden Exchange. The Ernest Winter Trophy, a Chapter trophy, went to Rosetta's creamy yellow aculaeus, and the best non-hardy Primula award went to her lavender Primula malacoides.

Rick Lupp, of Mt. Tahoma Nursery, was awarded the Ivanel Agee Trophy for the Best Julie Hybrid - his was Millicent, a multi-colored pastel plant. Rick also won the award for the best primulaceae, a Douglaesi nivalis, one of the choicest of native Alpines.

Darlene Heller won the Washington Hardware trophy, (Chapter) for the best polyanthus, a deep purple cowichan, while Dale Heller's rosea received an award for the best Asian species. Darlene and Dale won the Chapter's Wee Willie Award as the most willing workers.

The Dorothy Stienskie bronze trophy for outstanding service to APS was awarded to Helen and Ross Willingham.

At the banquet held at the Bon Marche's Cascade Room Saturday night, Rosetta Jones received the National Peter Klein award for her extensive work in hybridizing over the years. The program consisted of an interesting slide show, by Steve Doonan and Phil Pearson of Grand Ridge Nursery, Issaquah.

Submitted by Louise & Flip Fenili

Letters to the Editor

Dear Larry:

Thanks for the notice of the pending Board Meeting at the Berry Garden . . . . a beautiful spot all year. I won't be able to attend, an still having eye problems that prevent driving very much.

You had asked for "feed-back" from the Robins: so far one very good idea that has been reported before; They would like for a "SHOW" Reporter for the Shows in the Quarterly . . . Many never get to attend a Show in person . . . a Reporter byline would be their visit. Also several that do get to the Shows don't always get to view all the Winners. Another suggestion was a JUDGES VIEW of the Shows. So many do make mention of the Shows either attended or not . . . Wishing for more in depth reporting on the National Show at least.

They all praise the improvement of the Seed Exchange.

A 24-inch oval silver tray of classic design was donated this year by Mrs. Milstead from Detroit. This is to be awarded annually to the National Show Chairman. Candy Strickland is the first recipient.

The Dorothy Stienskie bronze trophy for outstanding service to APS was awarded to Helen and Ross Willingham.

So far that is my gleaning from the newer Robin members.

Sincerely,

Elizabeth Van Sickle
Sequim, Washington

Dear Richard:

I am a Jack-in-the-Green (very green) type as far as experience with primulas goes. I do find instructional articles on very, very general cultural requirements for primulas (if not for their growers) and even how to grow plants from seeds! But nobody wants to tell me which primulas are suitable for my areas and which to avoid as impossible except atop snowy alpine screes. I hear from one person that P. rosea grandiflora is difficult to attempt (failing a source of day-old seed) but in a back issue of the APS Quarterly someone in the Pacific N.W. complains that the roseas have
As my rhododendrons mature, their understoreys become a bit bare and I look for things as ground covers to knit the mulch-like medium together. Primulas do the job. But how to discover which primulas are evergreen. My few denticulatas and spreading kisoana, though do-gooders like the many sieboldii, "disappear" in winter. My many japonicas, started from seeds planted in pure milled sphagnum in jelly jars exactly as I treat rhododendron seeds, thrive in my garden in these melich piles even though there is no bog-marsh or running water anywhere near. Nobody told me these would be deceduous. I thought they had all died until I discovered thick, green, swollen things like the rhizomes of violets just at ground surface.

Wintering Julianas and the calderianas and even the polyanthas are here winter-evergreen and as fresh looking as supermarket spinach. Can someone suggest useful evergreen primulas for a Philadelphia area garden? If all else fails I may try some hybridizing of my own, but my record-keeping might just leave something to be desired! Pesterity beware!

Edward S. Rothman
Glenside, PA 19038

Dear Sir,

I have only just received my copy of 'Primroses', due to international postage delays, and although I realize that it is somewhat late, I felt that, I had to voice my reply to the article 'where have all the flowers gone'.

I totally agree with Larry Bailey's views on the collection of plants from the wild, however, I must take issue with his thoughts on the collection of seed. He states that a 'person feels lucky if he can get it to germinate, and extremely lucky if he can get it to flower'. Upon what evidence is this statement based? The data below show my own results, obtained since September 1986, when I began keeping proper records of my sowings. (I have been growing alpines since 1981)

Results from habitat collected seed, since Sept. 1986.
Number of seed sowings 302
Number of sowings made in the last three months (which can not really be expected to have germinated) 164
Number of sowings which can be expected to have germinated 138
Number of sowings which have germinated 96 (69%)
Of those which have germinated, number still in existence as plants 50% plants in the alpine house or garden 70 (50%)
Number flowering and setting seed 16
Number being vegetatively propagated 9 (18%)
Results obtained from commercial seed 16
Number of sowings 106
Number still in existence as plants 47 (44%)
Number flowering and setting seed 9 (8%)
Number veg. propagated 0

I do not consider myself to be particularly lucky, nor am I a particularly skilled or experienced grower. Yet with the results that I have obtained so far I consider the sowing of habitat collected seed to be a definitely worthwhile project. Of the seed that I have sown so far, already I have obtained better germination than I have with commercial seed, and I have no reason to suppose that the remaining sowings will not germinate, in the next year or so.

As to being lucky to get the plants to flower, again my results show otherwise. Many of my sowings are of bulbous or other slow growing plants and I do not expect them to flower for several years, however there are encouraging results with many others. (Particularly the Primula species, of which P. integripetala, carniolica, veris, vulgaris, and auricula, are all flowering and setting seed.)

I am already propagating large numbers of plants which are passed on to friends and other growers, and this I consider to be most important, since it is by this activity that the native form of many species will be preserved. After all how many of us (and I am just as guilty) seek the aberrant forms such as the alba, roseum or flora plena. Interesting though these plants are they are not the native form and if we are to be true conservationists, it is the native forms which we should preserve.

I would question if seed collecting in the wild actually does as much damage as claimed. After all what are the chances of two people collecting seed from the same population of plants in the same year? Especially in the more remote areas of the world. Most plants are not monocarpic, and will, provided their habitat is not destroyed, flower and produce seed over a period of several years. Plants that are monocarpic produce vast quantities of seed to compensate.

For a population of plants to remain stable each plant need only produce one offspring in its lifetime. With the number of seeds that are produced this is not difficult for the plant to do, even allowing for the activity of a seed collector every now and then. However, if the habitat of the plant is damaged or affected, then the seed produced from that plant will have nowhere to germinate, and the population will decline.
It is the activities of so called progress that damage habitats, even in the remotest areas, programs of deforestation, drainage and building, are destroying vast populations of plants. The activities of the seed collector are, I consider having little effect, and the majority will cause little habitat damage. If habitat destruction continues at its present alarming rate, then the activities of the seed collector offer the only hope, as it is those habitat collected seeds which are maintained in cultivation, which will carry the necessary genes, for their successful reintroduction to the wild. Should there be any wild left in which to reintroduce plants.

Larry calls for the establishment of research centers where experts would assess the adaptability of plants before their release to the 'growing' public. Where does he think that the funding for such centers will come from? The botanical gardens of the world are under funded, and cannot cope with the plants that they already grow. The governments of the world pay lip service to conservation (usually around the time of an election), but in practice do very little. We must face up to the fact that WE are the experts, and it is the activities of the small growers like you and I, together with seed collected from wild stocks, that offer the plants of this world any longterm future.

Jackie Murray
21 Aberdeen Close
Stamford, Lincolnshire
PE9 2TN, Great Britain

Dear Fellow Primrosers,

The weather has been bad in Auckland at various times during the last year. In early March we were hit by cyclone Bola, which caused both direct wind damage and root problems through water logging. The recent Christmas/New Year period has been exceptionally wet and even as I write this at the end of January, the ground is saturated and quite unworkable. One positive feature of such weather is that it has forced me inside and I have been able to delve quite deeply into both Aztec and Spanish history in an attempt to re-evaluate the probable stages in the development of the modern dahlia.

I am grateful to my sons Timothy and Christopher who have contributed to the maintenance of my plants in the hope that I can be made to sit at a desk and write. I am also grateful to various other people who have taken an interest in my breeding programmes. They have helped by growing plants and in giving me an independent assessment of various selections. I am loath to mention individual names because everyone who receives a copy of this open letter will have made a contribution in one way or another. However, Jack Hobbs of the Auckland regional Botanic Garden; Eddie Welsh of Massey University; Franz Onland of Yates, Pukekohe; Richard Main of DSIR, Auckland; and Clif Rushton and Rosemary Fisher of Auckland have all assisted in a practical way.

Polyanthus

Recently when preparing a talk on polyanthus, I was surprised to find that I had been growing these plants for 14-15 years. My involvement seemed much shorter and only now do I feel I have defined specific goals. Over this time I have been fortunate to receive much help from British "florists" Hubert Calvert, Bernard Smith, Les Kaye, Lawrence Wigley and others. Locally it was a pleasure to find that Jack Hobbs of the Botanic Garden had an interest. This has enabled us to discuss the finer points of plant material in front of us. During the last season, Jack grew an extensive trial of commercially available strains.

The goals I have defined are quite divergent. The specialist florist types are essentially pot subjects, the flowers of which are best enjoyed at close quarters by those people who appreciate the intricate. I feel the efforts of specialists in Britain to produce and maintain plants which approach the ideal standards laid down last century for the gold laced types is especially important. At the same time I believe it is equally important for breeders in each age to explore new directions.

For a long time I have been attracted to the "so-called" silver laced forms, but like some of the gold laced purists, I have found them aesthetically displeasing. Some time ago I realised that the problem was the clash between the yellow eye and the silver lacing. Currently I am attempting to breed a silver laced polyanthus with either a matching silver eye or no eye at all. In the latter the ground colour would play a greater role. In addition I am aiming for a blue ground rather than a scarlet or maroon. It will not be easy, but often the most important component of a breeding programme is a clearly defined goal.

Since growing the eyeless Cowichan types, I have found the bulk of commercial strains, most of which have a prominent yellow star in the centre of each bloom, to be garish. At the same time it must be admitted that some of the Cowichans tend to be somewhat sombre.

In Auckland polyanthus are widely used as a bedding plant and flower from autumn to early summer. During this long flowering period they can be badly affected by periods of rain, especially in the colder months. Jack Hobbs and myself have set out to produce an eyeless strain in a range of brighter colours, which will perform throughout an Auckland winter. Good progress is being made.

Dr. K.R.W. Hammett
Auckland, New Zealand

NATIONAL AURICULA AND PRIMULA SOCIETY – Northern Section
Invites all Auricula and Primula Lovers to join this Old Society
Membership includes year Book
D. G. Hadfield
146 Queens Road, Cheadle Hulme, Cheadle, Cheshire, England

NATIONAL AURICULA AND PRIMULA SOCIETY – West and Midland Section
Invites all Auricula and Primula Lovers to join this Old Society
Membership includes year Book
Hou. Sec., Mr. B. Goalby
99 Somerfield Rd., Bloxwich, Walsall, West Midlands, U.K.
Minutes, Board of Directors Meeting
April 2, 1989

Present: Larry Bailey, Flip Fenili, Ann Lunn, Jay Lunn, Etha Tate, Cy Happy, Thea Oakley, Al Rapp.

The meeting was called to order by Larry Bailey with eight members present. The treasurer’s report was presented at the Saturday Board meeting and was not repeated. A copy of the current balance sheet is enclosed.

Board meeting time and place: The summer meeting will be held in Chehalis July 8th before the annual picnic. The fall meeting, scheduled for October 14th, will be located in the Portland area possibly at the Berry Botanic Garden. The January meeting, if needed, will take place in Chehalis. In the future, major Board meetings will be held in the spring and fall. Others will be called to handle emergency business.

National Shows: The goal is to make the APS Board more actively involved in future National shows. Thus local chapters can receive help if it is needed. It is important to get the system in place and working before the 1992 Conference. That year, the National Show will be in Oregon and it was suggested that the resources of the Northwest Chapters be combined in organizing the effort.

Valley Hi will be asked if they wish to host the 1990 National Show.

Al Rapp suggested chapters should follow through with publicity during and after the shows. Pictures of winners and plants should be submitted to local newspapers.

International Primula Conference: Plans by the Steering Committee are proceeding. A “no-go” date was set for six months prior to the conference. A budget and list of Steering Committee members will be sent to APS Board members at a later date.

The suggestion, “Preservation and Conservation of Native Primulas,” will be presented to the Steering Committee as an issue which should be included on the Conference agenda, but not necessarily as an overall theme.

Due to administrative and staff changes at the Berry Botanic Garden in Portland, it was felt the APS and Steering Committee need to be informed of the progress of the Primula Reference Collection and arrangements for the Conference. If possible, the October APS Board meeting will be held at the Berry Garden.

Spring Quarterly: A policy outlining the direction the Quarterly should be taking will be presented for Board approval at a future meeting. Joe Dupre has agreed to work on this Policy Committee. Comments from Board members included: 1) More personal, people-oriented articles. 2) Include comments received on mail-in ballots and responses to most common remarks. 3) Print deadlines for submitting articles. 4) Board needs to become more active in assisting editor with article ideas and sources. 5) Print show results.

The number of gratuitous memberships is growing and, in the interest of economics, must be reduced. It was agreed that Gene Reichle should send a single copy to advertisers and that their names should be removed from the membership list. The following motion, made by A. Lunn, was approved:

The recipient of a one-year gratuitous membership must meet one of the following criteria: a. Be a reciprocal publication sent to the current editor. b. Be a contributor of a significant article to the Quarterly.

c. Be a seed donor from any country which prohibits exportation of currency.

d. Be the Library of Congress.

Seed Exchange: Peter Atkinson has agreed to be the Seed Exchange Director and will be assisted by Joe Dupre and the Seattle Chapter. Other chapters may also be asked to help.

Peter will develop a written policy for the Seed Exchange to be approved by the Board at a later date. Among the points discussed, the following received general agreement: 1) Donors should be given priority when filling orders. 2) Limited seed should be distributed to as many members as possible. 3) The Seed Director has the authority to make appropriate substitutions when necessary. 4) Credit slips, not refunds, should be issued on orders not possible to fill. 5) The Board, as well as the Seed Exchange Committee, needs to identify growers and request they donate seed.

Judging: Al Rapp is working on judging rules to be submitted to the Board for approval at the July meeting. Al suggested that it is not necessary for senior judges to attend a symposium in order to remain on the active list. Symposiums with instructors should be available for junior judges. It is, however, important for judges to meet every couple of years to review rules and current issues in judging.

Two questions arose concerning specific rules. Should the Bambrof Trophy be awarded to self show auriculas as well as the currently used category of edged show auriculas? Should the phrase, “no more than three of the same color” be stricken from the general show rule, “no more than three plants of the same color, to a class, unless the schedule states otherwise?”

A report on the criteria for awarding National trophies should be available at the July meeting.

Membership: David Vesall and several Minnesota APS members have developed a preliminary plan for increasing membership. Excerpts from David’s report are enclosed.

Historian: The Berry Botanic Garden in Portland, Oregon has agreed to house the APS archives. Historical documents will have adequate security and will be available for use by interested persons on the Garden premises only. A historian is actively being sought among APS members.

Slide Library: In response to a request from the Men’s Garden Club, the Board approved a motion, made by C. Happy, to allow them to buy a set of slides. APS should retain the original materials. A policy determining the copying of APS slides will be reviewed at a future Board meeting.

Board position: A motion by F. Fenili to approve the appointment of Rosetta Jones to the Board of Directors position vacated by the current Vice-President was approved.

Committees: Steven Krumm, Portland, OR, will chair a committee for the Conservation and Preservation of Primulas.

The meeting was adjourned.

Respectfully submitted,
Ann Lunn, Secretary

Comments on the Society

The recent ballot for officers and board members contained a section for comments from the membership. We thank all of you who took the time to express your feeling about the American Primrose Society. Both compliments and complaints were appreciated.
Larry Bailey.

For those who wanted more information on the nominees:

Larry Bailey (President) is a member of the Washington State and Seattle Chapters. An architect by profession, he has a special love and ability to grow show auriculas. That hobby led to the establishment of a mail-order business, "Bailey's," that specializes in named show auriculas and Juliana hybrids.

Vasco (Flip) Fenili (Vice-President) retired as a Brigadier General after 30 years in the Army. His staff specialty was Intelligence. He joined the APS in 1978 and has served on the Board of Directors prior to his election as vice-president. He has also been president of the Tacoma Chapter. Like Larry, Flip enjoys growing auriculas and Juliana hybrids as well as candelabras.

Jay Lunn (Treasurer) joined APS in 1978 and is a member of the Oregon Primrose Society where he has been vice-president and "perennial" plant sale chairman. Along with rhododendrons, Jay grows many Primula species. His special interests are the American species and he has made several plant hunting trips to capture the western primulas on film. Jay retired in 1986 as a Contract Specialist with the USDA, Forest Service.

Ann Lunn (Secretary) currently teaches biology at Portland Community College. She is a member of the Oregon Primrose Society and has served as its secretary as well as secretary of the APS. She grows numerous species and a collection of named Juliana hybrids.

Although not a charter member, Etha Tate (Director) has been a member of APS for 45 years and has served as its secretary and director. She is a member of the Oregon Primrose Society and has held most of the office positions in that chapter. Her abilities as a show chairman are legendary. Etha's special interest are auriculas and Juliana hybrids, but she also grows Primula kisoana to perfection. Her floral arrangements are blue ribbon winners at the primrose shows.

Ruth Korn (Director) is a relative newcomer to APS, having joined in 1983. After retiring from Pacific Power and Light Company, she became actively involved with the Berry Botanic Garden in Portland. She was a director of that organization and served as its secretary as well as a member of the committee overseeing the Primula collection. Ruth confessed to having a general interest in Primulas – she will "try them all." Primula kisoana grows like a weed in her garden.

The 1989 Seed Exchange list received many gracious compliments on the quality of the offerings. Two members wished to see more species from which to choose. Many commercial seed companies offer a wide variety of hybrids, but few species, particularly the rarer ones. For those, the Seed Exchange must rely heavily upon member donors. If you grow species, please collect the seed and send them to Peter Atkinson (address on the back cover) for the Seed Exchange. Hand-pollination is, of course, greatly appreciated. Members of the APS will benefit from your generosity.

Several members are interested in seeing articles and pictures of the primrose shows in the Quarterly. See page 87ff of this issue.

The majority of comments dealt with the slate of officers. Some thanked the nominees for their willingness to assume the offices. Two members questioned the fact that all of the officers live on the West Coast. Others wanted more information on those running in order to make an informed decision.

The APS Board wants to get more Primula growers from across the country involved in Society affairs. Currently, two Board members, Kris Fenderson from New Hampshire and Dr. David Vesall from Minnesota are participating in Board activities despite their distance from the meeting site. Some past directors and officers from the East Coast have felt it was too difficult to be involved in decision making without being able to attend Board meetings. Since the American Primrose Society is truly a national organization, participation on the Board of Directors, national committees or special projects by members throughout the country is a much desired objective. If you wish to become more involved, please write to President

American Primrose Society
Section Denticulata

Primula atrodentata, P. erosa, P. laxiuscula, P. erythrocarpa, P. pseudodenticulate, P. denticulata

by June Skidmore

Primula of the Month – January 1989

The most popular and easily grown type species of this section is the Primula denticulata. With dense, ball shaped clusters of flowers on stout stems, often up to 1 ft., it is known as the 'Drumstick Primula'. The distribution of the section extends eastwards from Afghanistan, throughout the entire range of the Himalayas, to Yunnan in China, growing between 6,000 ft. to 12,000 ft. Primula denticulata has been in cultivation for over 100 years and is widely grown and even used as a bedding plant. With the first breath of warm weather in March, the denticulatas thrust up small crisp leaves from the fat pink buds resting on the surface of the ground. Although they start blooming as soon as they are out of the ground, the stems continue to grow, often up to 1 ft. The leaves also lengthen, gradually forming an upright head of crinkled, toothed, rather downy foliage. The flowers come in various shades of lilac, lavender, violet, ruby and white, with pale lilac being the most common colour.

Culture – Denticulatas enjoy growing in a moist well-drained soil with protection from the hot afternoon sun. They benefit from an annual dressing of cow manure or bonemeal and a good mulch in the summertime is recommended. The leaves gradually wither after flowering, leaving a winter resting bud. In the fall it is advisable to pull off any rotten leaves in order to avoid rot spreading to the heart of the plant. This also improves the appearance of the plant.

Propagation – Denticulatas can be left to grow and increase into fine clumps, but they benefit from division after two or three years. The end of June is a recommended time. The plants grow easily from seed and in order to get good colour forms, it is best to hand-pollinate immediately upon opening of the buds or to isolate the two parent plants from any of their kind. Denticulatas are also good candidates for propagation by root cuttings during the months of December and January.

Trivia – Sir George Watt, who was the originator of the Section Denticulata, wrote that in Bashahr the flowers of P. denticulata are regularly eaten in salad, and the powder of the roots is held to be of value in killing leeches.

References

American Primrose Society
Page 101
Notes and News

by G.K. Fenderson
South Acworth, NH

(This article, to be repeated annually, is designed to bring us up to date on changes in nomenclature, descriptions of new species, or other matters of botanical or scientific interest relating to the genus Primula that have been reported in the scientific literature in the past year.)

In the past year several descriptions of new species of Primula as well as some nomenclatural notes have come to my attention.

New Taxa

Primula baokongensis Chen & C.M. Hu sp. nov. Flora Tsinglingensis 1(4): 394. 1983. This is described from Hubie (W China) where it was collected at Baokang Xian; Ma-qiao at an altitude of 1600m. The holotype, Wang Shi-yun 361, collected on May 24, 1975 at the Herbarium of Institute of Botany at Kuangtung (HK). It has also been collected in Gansu: Wudu Xian, Ma-liu-pan, Yatali at 1500 meters elevation by Zhang Zhi-yang (No. 1777) on May 8-9, 1959. The plant is closely allied to P. cinerascens Franchet and P. violaris W.W. Smith & Fletcher (Section Cortusoides, subsection Cortusoides). According to the authors it differs from those species by smaller flowers, its slightly acute, oblong lanceolate calyx with margins pectinate-ciliate and equal in length to the length of the tube of the corolla. The flowers are purple; the corolla is annulate and monomorphic. The scape is 4-18cm in height.

Primula levicalyx C.M. Hu & Z.R. Xu, sp. nov. Acta Phytotax. Sin. 26 (4): 309. 1988 is described as similar to P. kweichouensis W.W. Smith (Section Obconicoliaster); it differs from that species by having glabrous pedicels and calyxes and leaves pubescent on both surfaces. The species has rose flowers and a scape 2.5-5.5cm tall. P. levicalyx was described from a specimen (L1618, holotype SCBI) collected at Guizhou (China); Lipo, at elevations of 900m, in cliffs of limestone cliffs on the April 5, 1984 by Z.R. Xu et al. It is preserved at the South China Institute of Botany, Guangzhou.


Primula rubifolia C.M. Hu, sp. nov. Acta Phytotax. Sin. 26(4): 307. 1988 is a plant closely allied to P. saratofila (Fletcher, Section Obconicoliaster). It differs from that plant by its more densely villous petioles and scapes and larger flowers. This species, which has a scape at flowering time 5-17cm tall and rose to pale lilac flowers, was described from Yunnan (China): Jingdon, at elevations of 1600-2850m, in mixed forest, on rock surface. The collections listed are: "M.K. Li 883, 1011, 1128, 1958, 2877, 3484 (holotype SCBI)" (Holotype at South China Institute of Botany, Guangzhou.)

Primula subansirica G.D. Pal sp. nov. J. Bombay Nat. Hist. Soc. 82(3): 679. 1985 (1986) is a new species allied to P. erythrae Fletcher (Section Tikimensis) but differs from that species by the presence of 4/10-celled pubescent hairs throughout, scape 13-20cm long, bracts broadly lanceolate to oblong lanceolate, 4.5 x 2.5-3.0mm, 2-flowered umbel, calyx 3.5-4.0mm long, shortly united, corolla 7.5-8.0mm, campanulate, purple." The holotype is G.D. Pal 78219 collected at Bengi, Subansiri District, Arunchal Pradesh, India, at an altitude of 200m on April 24, 1980; it is at CAL.

Nomenclatural Changes:

Primula advena ar. euprepes W.W. Smith Chen et C.M. Hu, comb. nov. In: C. Y. Wu, ed. Flora Xizangica 3: 347. 1986, Kunming, Science Press. This is a new combination made for P. maximowiczii var. euprepes W.W. Smith. Unfortunately the combination may not be validly published as it does not list the place of publication of the bionym. Both P. advena and P. maximowiczii are plants from China which belong to subsection Maximowiczii of section Crystallophomis.

Two groups of Primulas of Subgenus Aleuritia were raised to sectional rank by Y.J. Nasir, Willdenowia 15: 475. 1986 on the basis of seed coat morphology:

Section Inayatii: P. nutsana Geoglei, P. pamirica Fed.; P. involucrata Wallich; and P. inayatii Duthie.

Only the Pakistanian species comprising the new taxa are listed; the investigation does not assess some closely allied taxa described in the Flora SSSR. Section Armerina may be redundant for Section W.W. Smith (based on P. involucrata Wallich) established by Lindley in 1846.

Primula mistassina f. intercedens (Fern) J. Cayoutte comb. nov. Naturaliste Canad. 111: 443-445. 1984. (This variant) from Quebec . . . is reduced to the rank of form.

Other


I also noted in a recent Flora North American Newsletter (2(5): 37. 1988 that Dr. Sylvia Kelso was the recipient of a John Ayers Travel Award for her project “Systematic studies in Primula L. (Primulaceae).” Congratulations!

A monumental project that will be of great significance to those interested in the genus Primula is a joint Chinese-American project currently underway at the Missouri Botanic Garden. It is the translation of the immense Flora Reipublicae Popularis Sinicae (Flora of China) 80 volumes, 120 books! The Chinese language original is scheduled for completion in the mid 1990’s. The English language version is expected to occupy twelve to fifteen volumes and take twelve years to complete. In the process a database of Chinese plants will be incorporated into the Missouri Botanic Garden’s extensive TROPICOS database. With such a large proportion of the genus Primula consisting of endemic Chinese species the project will greatly contribute to our knowledge.
Plants have minimum daily requirements, too.

When men started sailing across uncharted oceans, they didn't run off the edge as they fully expected to do; they were much more likely to starve before making a landfall. Worse, the food they brought along consisted solely of salt pork, sea biscuit, beans and other easily preserved items. Fruits and vegetables were out of the question, since they couldn't be stored properly. So a seaman's diet in Columbus' day was woefully inadequate and crews were decimated by strange diseases like scurvy. Caused by a lack of vitamin C in the diet, scurvy produced bleeding gums, general weakness and finally death. No one knew how to prevent or treat it.

Not until the late eighteenth century was it found that scurvy could be avoided simply by feeding men citrus fruits, which are rich in what we now know to be vitamin C. We can eat whatever we want, but unless we take in some vitamin C along with everything else, we'll get scurvy.

Our plants are in the same boat, so to speak. They sit in their pots and baskets and beds, living on sunlight and what they can draw from a limited supply of soil. They stay healthy as long as they can obtain what they need from that soil. But a given volume of soil holds only so much nutrition, and sooner or later you must feed your plants with a fertilizer to ensure a complete diet. Without it, the plants grow poorly and eventually die. It can be a long time before you find out what's ailing your plants - yellowing leaves, after all, can be brought on by just about anything. But, once you've eliminated other possible causes of trouble, such as poor light, dry air, insects, soil pests, overwatering, simple old age or sun scald, it's time to look at your soil.

Elements: Major and Minor

Plants absorb at least sixty different chemical elements from soil, but of these only thirteen are known to be truly essential to the healthy life of a plant. When you include water, and the carbon and oxygen plants take from the air, the list grows to sixteen so-called essential elements. Plants use varying amounts of each, in some cases absorbing only trace quantities nearly too small to measure. But if even one of the most insignificant of them is missing from the soil, plants are in big trouble. Leaves shrivel or become discolored, buds drop or fail to develop, growth is stunted or brittle and fruit is misshapen. In many cases, just as with scurvy, a timely dose of the missing element restores the ailing plant to health.

Six elements are needed by plants in relatively large amounts and they are called the major elements: nitrogen, phosphorus, potassium, sulfur, magnesium and calcium. After these come the minor elements: iron, manganese, boron, chlorine, zinc, copper and molybdenum (mo-LIB-de-num).

The minor elements also are called "trace" elements, or micronutrients, because they are present in soils in very small amounts. Take molybdenum: to grown normally, a plant needs only about a tenth of one part per million parts of soil. Sounds ridiculous, but without it, a tomato plant's older leaves curl under, turn yellowish, pale-veined and puffy.

Signs of Trouble

Potting soil, with good drainage and containing lots of organic matter, sustains plants unaired for about three months. But unless the plants are fed regularly, they must ration whatever they can pull from the soil and funnel a dwindling supply of nutrients to newer growth. Even as they are doing this, shedding older leaves so that growing tips still can function, the lack of some nutrients begins to short-circuit important life processes. Photosynthesis is slowed, no new chlorophyll can be made, sugars can't be burned and cells can't divide normally. A shortage of one nutrient makes it more difficult for a plant to use others and the plant starts to show signs of its plight.

These signs sometimes are confusing, but we've sketched out a handy chart of the most common nutrient-deficiency symptoms. Of course, once you see leaves turn color, some damage already has occurred. Assuming, though, that you've tried to bring your plant around by other means, all you have to do is pinch off the discolored growth and add fertilizer to the soil. Usually a complete house plant fertilizer, one containing nitrogen, phosphorus and potassium, plus trace elements, is all that's needed.

Nitrogen is used by plants in greater amounts than any other soil nutrient. It comes to their roots as nitrate or ammonium compounds produced by soil microorganisms that feed on organic matter that happens...
Nitrogen is present in hundreds of important compounds in plants, especially proteins, hormones and amino acids, which regulate many vital chemical reactions. It's used more for growth of leaves and stems. Frequently, nitrogen is the first element to disappear from unreplenished soil. Plants growing in a nitrogen-depleted medium turn pale green, then yellow, starting with the bottom leaves and from the leaf tips along the main veins toward the stems. The older leaves die first and overall growth is poor.

Phosphorus plays a vital role in division and growth of individual plant cells. It's a part of every cell's chromosomes, the microscopic strands of protein material that carry the genetic code for the plant and determine exactly how it will grow. Phosphorus also is needed to form starch and cellulose for food storage and cell-wall building, and also for normal flower and fruit production. It comes from the soil in the form of phosphates dissolved in soil water. At first, a phosphorus-starved plant looks deceptively healthy, almost too healthy. Growth is normal but undersized and leaves become a deep, dark green. Frequently this changes to purple, which comes from an excess of sugars that the plant hasn't been able to use properly. After this, leaves turn yellow and die.

Potassium is a strange element. It's found in all parts of a plant, but isn't actually a part of any vital plant constituents, such as proteins, fats, carbohydrates or chlorophyll. Apparently it stays in cell sap and just moves around to wherever it's needed. We really don't know too much about how it works, although potassium seems to be most important in the formation of leaves and growing tips. It also plays a role in protein formation, photosynthesis at low light levels and internal water regulation. It is thought to enhance a plant's disease resistance and cold hardiness.

A shortage of potassium shows up in older leaves first as mottling, spots, distorted growth, or a yellow chlorosis that appears on leaf margins. Dead spots then may appear in leaves. The root system develops poorly and stems are weak.

Sulfur exists in soil as sulfates produced by soil microorganisms, and in industrial areas plants acquire it by absorbing sulfur dioxide from polluted air. It is used to build proteins and somehow is involved in chlorophyll production. In some plants, sulfur is found in the form of mustard oils, which is what gives radishes their pungent taste. Sulfur deficiency resembles nitrogen deficiency, although it's much rarer because it isn't as easily depleted from soil. In sulfur deficiency, an entire plant gradually turns pale green. Since sulfur cannot be moved to other parts of a plant, as nitrogen can, the effects show up most strongly in younger growth instead of older, bottom growth, and stems are weakened.

Magnesium is a critical part of every chlorophyll molecule and is involved in many other reactions. It moves freely within a plant. For this reason, a plant lacking magnesium shows chlorosis in bottom foliage first as the scarce element is shunted to newer growth. A spreading, yellow discoloration works its way up the plant. Leaf tips and margins sometimes are cupped upward and leaf veins stay green.

The abundance of magnesium in a plant is closely linked to that of calcium, which exists in the plant in a balance with potassium and boron, a trace element. Too much or too little of any of these elements causes a toxic excess of calcium. A major constituent of plant cell walls, calcium literally helps glue plants together and prevents leaching of certain other elements through cell walls. It also is important in development of growing tips and root systems.

Calcium deficiency shows up at the
top of a plant first. Terminal buds dis- 
tort and die and young leaves turn 
yellow to brown. Lack of calcium 
causes the familiar “blossom-end rot” 
of tomatoes, where the fruit becomes 
soft and rotten on the bottom while 
still attached to the plant.

Minor Elements

The minor (or trace) elements serve 
plants mainly as catalysts. They prom-
ate important chemical reactions in a 
plant, but aren’t themselves con-
sumed in the process. That’s the main 
reason why iron, manganese, boron, 
chlorine, zinc, copper and molyb-
denum are needed only in very small 
amounts.

Iron is important in the formation 
of chlorophyll, although it isn’t a part 
of the actual compound. Iron-defi-
ciency chlorosis, where leaves be-
come yellow (retaining their green 
veins) from the top of the plant down-
ward, is probably the most common 
trace-element deficiency. Manganese 
is closely bound to iron in plants, and 
an excess of one frequently leads to 
a shortage of the other, even though 
the deficient element may be abun-
dant in the soil. The visual symptoms 
are similar, but leaves of manganese-
deficient plants develop tan or grey 
spots after they’ve yellowed. Kalanchoes 
are especially susceptible to this nutrient problem.

Acid Soil, Basic Soil

All of these elements are mixed to-
gether with dozens of others in an 
credibly complicated hodge-podge 
in the soil. They interact within the 
plant or keep it functioning normally 
and they interact in the soil, too. 
Some of the elements are more abun-
dant in the soil than others. Some are 
absorbed more easily by plants than 
others.

These conditions do not necessar-
ily follow one another. For example, 
a soil may have plenty of iron, but 
plants growing in it still may turn 
bright yellow from iron-deficiency 
chlorosis. It’s just that the available 
iron is tied up in a form that the plants 
can’t absorb. The usual reason for this 
is that the soil is too “sweet,” or al-
kaline. If the soil is made less so, 
you’ve got to feed

Acidity and alkalinity exert a great 
influence on the availability of essen-
tial nutrients to plants. An arbitrary 
way of measuring this condition is the 
pH scale. The term pH represents the 
relative concentration of hydrogen 
ions in the soil. The hydrogen ions 
come from water and other chemical 
compounds. The pH scale runs from 
2.0, which is very strongly acidic, 
through 7.0, the neutral point, up to 
14.0, which is very strong alkaline. 
Thus, pH runs (neutral) to lye (a very 
strong base).

To put it as simply as we can, a soil 
is acid (pH less than 7.0) if too many 
hydrogen ions cling to soil particles 
and don’t allow other useful nutrient 
ions to fit. This happens if a soil is 
leached out by water. Ions of sulfur, 
magnesium, calcium and molyb-
denum are washed out of the soil and 
replaced by hydrogen ions. Or, they 
change to forms that cannot dissolve 
fast enough to benefit a plant, or they 
combine with other nutrients, such as phosphorus, to make it unusable.

All this is essentially reversed if the 
soil becomes too alkaline (pH above 
7.0). In this case, nutrient ions take 
up most of the spaces on soil parti-
cles, crowding out hydrogen. This 
causes nutrient ions such as iron, 
manganese, zinc, copper and boron 
to become insoluble or wash out of 
the soil. Either way, a plant winds up 
with an incomplete diet and eventu-
ally starves. It’s the same with people 
if they go to one dietary extreme or 
another, they suffer from the effects 
of a macrobiotic diet or they suffer 
from too many sweets and junk 
foods.

The essential elements in soil are 
most readily available to plants if the 
soil pH tests at 6.0 to 5.9 on the scale. 
The potting mixes you use already are 
in this range, or a bit lower, because 
they contain acidic components such 
as peat moss, bark chips or topsoil.

The organic matter in these mixes also 
acts as a useful buffer that moderates 
any shift in pH one way or the other.

Soilless mixes are a different story. 
With these, you control every ingredi-
ent—something to anchor the roots 
(perlite, sand) and something to feed 
them (vermiculite, peat, water, fer-
tilizers). There is little organic matter 
to buffer the pH so you have to watch 
your plants a bit more carefully when 
growing them in soilless mixes.

Whether you use a soil-based or 
soilless mix, it’s always a good idea 
to check the pH every couple of 
months with special color-coded pH 
test paper or an electronic pH meter, 
both available at any good garden 
center. If the soil becomes more acid 
than it should be, try limiting it by 
working some crushed eggshells or 
dolomitic limestone into the soil. At 
every watering, some calcium and 
magnesium leaches into the soil, 
slowly bringing the soil’s pH upward.

Fertilizers

Most commercial mixes, soilless or 
otherwise, contain fertilizers and 
limestone to provide sufficient nutri-
tion plus keep the mix at a healthy 
 pH level. Commercially grown potted 
plants are fed automatically with 
every watering in a greenhouse. In 
fact, these probably are so well fed 
that you should water such plants well 
as soon as you get them home. Flush 
their soil two or three times and dis-
card the excess water, then don’t feed 
them for two or three weeks. If you 
feed them right away, chances are 
you’ll overload the soil with too many 

Fertilizers

All the extra goodies in those com-
mercial soils last from one to three 
months before your plants start hint-
ing they’d like some more. So, like 
the sea captain who forced his men 
to drink their daily ration of lime juice 
to prevent scurvy, you’ve got to feed

your plants regularly.

We mentioned a "complete" fertilizer a while back. There are all sorts of powders, liquids and pellets for feeding house plants. Each of these products carries a standard "N-P-K" number on its label that indicates the relative percentage of nitrogen (N) phosphorus (P) and potassium (K) it contains. These three major elements always are stated in this order. For instance, 5-10-5 fertilizer contains 5% nitrogen, 10% phosphorus and 5% potassium. It is a "complete" fertilizer if it contains all three elements. An "incomplete" fertilizer, such as one that induces flowering, would have an N-P-K number like 0-6-5, which means it has phosphorus and potassium, but no nitrogen (which isn't used in flowering but only for leaves). The rest of the essential elements may or may not be listed on the package, but usually are present in sufficient quantity to support healthy plant growth.

A good rule of thumb for feeding potted plants is to add a fertilizer solution every two weeks during the plants' active growth season, usually from early spring to early fall. Feed them once a month during the fall and winter, when the days are shorter, there isn't as much available light and the plants don't feed as heavily. Dormant plants shouldn't be fed at all because they are using very little food from the soil and can't absorb additional supplies. They can be fed again when they start sending up new growth.

Another good idea is to dilute the fertilizer to half the amount recommended on the package, unless it's a product specifically formulated for potted plants grown indoors. Indoor plants don't grow as vigorously as outdoor ones, so less fertilizer is needed. In general, the dosing for house plants should be less than for outdoor plants. The rest of the essential elements may or may not be listed on the package, but they usually are present in sufficient quantity to support healthy plant growth.

Fortunately, nutrient deficiencies are among the least of a plant's worries. The soils we use provide enough of everything a plant needs to grow normally, up to a point. It's up to us to make sure the soil keeps on doing its job after the original food supply has been exhausted.

When a plant can't get enough essential elements from its soil, the leaves are the first to show symptoms of distress. Chlorosis, a yellow discoloration caused by the breakdown of chlorophyll, is a frequent warning signal.

---

**Getting Closeup**

by Bruce G. Gould

Vincentown, NJ

After years of taking photographs, looking at photographs and teaching about photography, I have found that the hardest job is to capture a small subject on film. When working close-up, many of the questions about composition run head-on into mechanical and physical limitations. This can be a time of great frustration and few rewards for the photographer who has not taken the time to learn the rules that control the photographic process. But for the photographer who invests the time and energy, close-up photography can be rewarding and full of surprises for both the photographer and the viewer.

Let's look at the mechanical equipment needed to produce a "close-up" photograph. The first equipment need (and the most confusing) is THE LENS. There are a number of ways to go with this class of equipment. The many additional lenses, add-ons and modifications available let a photographer pick and choose equipment that matches his or her pocketbook.

So that we can better judge a piece of equipment let's look at what seems to be the magical number when photographers compare lens, a reproduction ratio of 1:1. When you combine several lenses place the strongest closest to the camera. The best place about close-up lenses is that they may be used with the lens you already own.

**EXTENSION TUBES**

Two different pieces of add-on equipment that do the same job are extension rings and bellows. These, too, use our existing lens and modify the way it records an image. The principle behind these devices is the image will be magnified as the lens is moved away from the film plane. It will be magnified in direct proportion to the extension distance. For those who wish to do the mathematics the formula is: camera extension =
For example, if it were a 50mm lens and you wanted a 2x magnification the extension would be as follows \( E = (2 \times 50) + 50 \) or \( E = 150 \text{mm} \). You would need to separate the lens from the camera by 150mm. The cheapest way to do this is to buy a set of extension tubes. These are hollow spacer rings that are placed between the lens and the camera body. They come in sets of three different thicknesses which can be used singly or in a series. Most of the better sets have couplers so that the automatic functions of the lens and meter are maintained. While this is one of the most direct methods, it does have some shortcomings. The amount of extension is limited by the thickness of the individual ring or rings, and the lens must be removed each time a different magnification is used.

**BELLOWS**

The bellows is a set of tracks or rails upon which two metal receiving boards can travel. One board holds the lens the other the camera body. The space between these two boards is enclosed in an accordion pleated cloth or leather tube. Both boards can move back and forth along the rails independent of each other.

This arrangement has many advantages over hard, fixed length rings. By moving the lens or camera back and forth the image can be enlarged and focused. No more taking off one ring to add another – just rack the lens in and out. Since the magnification is limited only by the distance the lens can be moved from the camera, both extension tubes and bellows can produce a ratio of 1:1 or even more depending on the lens and the length of the bellows or ring that is used.

Unfortunately, the design of the bellows causes more then its share of problems. The first and foremost problem is that when the lens is placed on one end and the camera on the other, the lens and the meter no longer operate automatically. Some bellows manufacturers have tried to overcome this problem, but not well and very expensively. Two other problems that show up are weight and durability of the cloth or leather. Because of the weight of the fittings and the loss of the automatic metering function of the lens it is almost impossible to hand hold a bellows combination, so it mandates a tripod. Then, too, the bellows material is somewhat fragile and is prone to rips and punctures in the field. After I have said all these negative facts about bellows, I will also state that if I were working inside in a studio setting I probably would use very little else for closeup photography.

**MACRO LENSES**

Macro lenses are a breed unto themselves. Here is a lens that can operate as a normal lens in most situations and then with a turn of the focusing ring to approach the 1:1 figure. The macro lens has magnifying lenses built into it and extra focusing space to allow the front element to move away from the film plane. It is one very compact piece of equipment.

A good macro lens will soon become the mainstay of any flower photographer. It is perfect for work in the field. Without changing lenses we can photograph the valley and mountains where the plant is located, the stream and the forest in which the plant grows, the plant itself, the flower of the plant or the insect on the petal of the plant. What a saving in equipment, cost and weight!

"But how good is it?" I hear you ask. My choice, a Nikon 55mm macro
lens, is the sharpest most precise lens I own. This particular lens goes to half size (1:2) but with it come a matched extension tube which allows a magnification of 1:1. I have carried and used this lens almost everywhere I've traveled and will not leave home without it.

ZOOM LENS WITH CLOSE FOCUS SETTING

Have lens manufacturers finally built the all-around lens? It would seem so when we look at the zoom lens with close focusing. With computerized help optical engineers have designed and built lots of lenses into one compact piece of equipment.

While most of the zoom lenses with this close focusing setting are not true macro lenses they do an adequate job of letting us get close up to many subjects. The usual image magnification is about ⅛ size. This is more than enough to allow filling the frame with all but the tiniest of blossoms. Also, most of the lenses let us dial the magnification needed on the zoom ring. As the lens is zoomed to its shortest length, there is usually a button or click stop that must be activated. Once the ring is moved into this area the lens will focus close-up.

This close focusing feature is now appearing on many if not most new zoom lenses. My own personal favorite is a zoom of 28mm to 85mm plus close focusing. In this one piece I have a short telephoto, a good wide angle and a close-up lens that will give me an image ¼ life size. Best of all, this lens is only slightly larger than a normal lens and just about the same weight. When I need a camera for a quick trip or I must travel light this is the lens that gets put in the pack. I also have a lens that is 100mm to 300mm with close focusing mode. This has at times been a big help when working in the field for two reasons. First, because it is a telephoto lens, I can get ¼ life size from about three feet away. Second, this is a lens I use a lot in zoos for big animals but can also be used for flowers in a pinch. Then I do not have to carry extra lenses. I certainly would not use this as my normal close up lens since it weighs over 2½ pounds and is nowhere near as sharp as my 3½ ounce 55mm macro lens.

EQUIPMENT, EQUIPMENT, EQUIPMENT is this all photographers ever talk about? Sometimes I think so. As I sit here looking at my own equipment I realize that I thought each piece was going to be the answer when I bought it. They all have their strong points and all have some faults. The perfect lens is still out there waiting to be invented and, more importantly, built affordable. I must sound like a broken record about what equipment to buy but I'll say it one more time. These are the options that are available. You must judge your own needs and what you can afford. I don't have all the answers. If I did I would not have a camera case that weighs 22 pounds!

I now have to make some of these choices. I am packing for a trip to the back country of Kenya. I am traveling in small planes means only 30 pounds of luggage. Which lens to take, which to leave home? I could try to live on eight pounds of clothes for two weeks but the planes and vans are confined and there are other people. Maybe I will look at what's in that camera case, again. Like I said, I don't have all the answers. Sometimes I need the real world to define the questions.

2. The Zoom lens with close focusing can really save the day in tight places. Here in Lankester Garden, San Jose Costa Rica, by working with a 28-80mm zoom lens with a close focusing mode I was able to fill the frame with a cascade of small orchids (photo 3) then turn and use the wide-angle length to photograph a full tree and bromeliads (photo 4) without the need of backing up.

A Synoptic Guide to the Genus Primula

by

G. K. Fenderson

This book is intended to serve as a basic reference to the genus Primula. Approximately 1375 species, synonyms, and hybrids are included, each with complete reference to author, initial publication, and current status; for nonhybrid taxa, details of typification are also given. Distribution, habitat, altitude, section, cultural code, stature, and color are indicated for all currently accepted species. The several dozen species described since 1949 are included within this conspectus.

Chapters are devoted to the taxonomic history of the genus, its origins, and distribution. Other chapters treat cultivation of particular species or groups, growing primulas from seed, and pests and diseases.

ISBN 0-935868-24-0. v. + 213 pp. 7" x 10" hardbound with dustjacket; 56 line drawings, 1 black and white photograph. Available from International Specialized Book Services, Inc. 5602 NE Hassalo St., Portland, OR 97213 ($40.00). Available outside the USA from Wheldon & Wesley, Codicote, Hitchin Herts, SG4 8TE England.
To establish healthier, bigger and better plants, use RA-PID-GRO® Plant Food with FORTI-5™ micro-nutrients.

STANDARDIZATION OF COLOR NAMES

Timber Press strongly urges the standardization of color names used in horticulture. Many color charts, numbers, and names have been developed over the years. Fred Galle, formerly the Director of Horticulture at Callaway Gardens, has done a considerable amount of work toward synthesizing the names and numbers developed in these various schemes. Essentially he has correlated the Inter-Society Color Council/National Bureau of Standards names and numbers with the colors and numbers provided in the Royal Horticultural Society Colour Chart. He has used the ISCC-NBS names, as they are based on a logical system of naming – the formula for which can be easily learned.

We strongly urge our authors to use standard color names for precisely the same reason that we all use the Linnean binomial name or registered cultivar name. Standardized color names derived from a compromise with the RHS Colour Chart communicate color more precisely than any made-up names – no matter how carefully viewed and articulated.

The Royal Horticultural Society Colour Chart, to be reprinted in 1986, is the best presently available for horticulture. Another color chart is available from the National Bureau of Standards, Standard Reference Materials (SRM's):

SRM 2106: Centroid Color Charts – consists of 251 color chips on 18 constant-hue centroid color charts
SRM 2107: Color Kit – combines SRM 2106 with Special Publication 440 (Color: Universal Language and Dictionary of Names)


ILLUSTRATIONS

The term “illustration” is used for the essentially non-verbal elements of a book, such as line drawings, photographs, charts, graphs, and maps. (Tables, set in type rather than reproduced from artwork, are not considered illustrations.) Generally speaking, Timber Press recommends the use of black and white line drawings whenever possible. Not only are they more economical to reproduce, but we feel that they also convey much more information to the reader than the best of photographs.

If black and white photos are used, please submit the print rather than the negative. Submit the best possible positive as the processes involved in reproducing it has a halftone – reshooting, screening, printing – can only erode its quality. We cannot improve any photograph, much less a
poor one.

Of course color photographs are necessary to illustrate color, and help "sell" a book. Again, every step of the reproduction process tends to erode the quality of the original photograph, so we must begin with the sharpest, highest quality photo possible. Because of the nature of the photo reproduction process, a transparency which projects well may not necessarily reproduce well. Submit the best transparency you can find, and we will determine whether it will fare well in the color separation process. We prefer to work with color transparencies, although color prints may be used if necessary. If at all ambiguous, please be sure to indicate in the margin of the transparency, which direction is up (e.g., a photo of a blossom, or foliage, without any ground or sky for orientation).

Please refer to "Characteristics of the Final Manuscript" for instructions regarding captions for illustrations. All illustrations should be numbered (on the slide, back of the photo, etc.), with the numbers corresponding to a typewritten list of the captions, and notations in the margins of the MS. as to where the illustrations fit. When the figures are referred to in the text, the word "figure" is spelled out, unless the reference is a simple parenthetical one. For example: Figure 1 shows... See Figure 3, etc.; or, (Fig. 4). When a caption or legend follows, "figure" is usually abbreviated: for example, Fig. 9 Growth rates are correlated with CO2 levels. "Plate" is usually spelled out, but may be abbreviated (Pl).

Avoid references to other pages in the text if at all possible; such as, For more information on propagation, see p. 213. These references must be researched and the page numbers inserted after the MS. has reached the "paste-up" stage; this step can be very time consuming. You might say instead, for example: For more information on propagation, see the section on reproduction in Chapter 8.

INDEXING

As you are preparing your MS., note each term you plan to index (if you are going to have an index) on a separate 3 x 5 card. Put them in alphabetical order. Use the letter-by-letter method of alphabetization, counting only as far as the first comma or other mark of punctuation (disregarding hyphens), and then starting over again. For example:

Port, William
Portable generators
Port-au-Prince
Port Orford

When the manuscript has been typeset and pasted-up (with page numbers), you will receive a photocopy of the paste-ups for a final check and to complete the index. Once the index has been typeset, proofread and pasted-up, the book will be ready to go to the printer.

PROOFREADING

When you receive the galleys back from the typesetter, please proofread them carefully for any typographical errors: misspellings, punctuation errors, wrong font (e.g. roman type which should be italic, as for a species name), sections out of sequence, missing sections, etc. Again, please resist strongly the urge to rewrite at this point: correct typos only.

The proofreader's marks shown here are the ones we use; however, almost any system will work as long as it is clear to the typesetter. Besides marking where the error occurs, also make a notation in the right margin. Without that accompanying mark in the margin, your correction may be missed. Use red pen or pencil so that corrections will be easy to spot.

...
REFERENCES AND BIBLIOGRAPHIES

You undoubtedly have used a number of sources in preparing your MS. It is imperative that you identify these sources, especially if quoting them directly. We recommend author-date (name and year) references in the text with full citations in a reference list or bibliography at the end of the publication. The basic reference in the text consists of the last name of an author and the year of publication of the work, with no punctuation between them (University of Chicago 1982).

When the author-date system of text reference is used, the reader is best served by references arranged in one alphabetical list. Place the dates of the publication immediately after the authors’ names, rather than at the end of the listing as in other styles of bibliographies.

This style of bibliography uses a “down” style of capitalization; i.e., only the first letter of the main title, the subtitle, and any proper nouns are capitalized in the titles of books and articles, but journal titles (names) are capitalized in the titles of books and articles. Book titles and names of periodicals may be found in one alphabetical list. Place the dates of the publication immediately after the authors’ names, rather than at the end of the listing as in other styles of bibliographies.

Two or more works by the same author(s) and published in the same year are distinguished by letters after the date.

For successive works by the same author a 3-em dash is used in place of the author’s name after the first appearance. The dash should not be used, however, when a coauthor is added (i.e., repeat the name).

BIBLIOGRAPHY


American Primrose Society

Officers
President: Larry Bailey, 1570 9th Ave. N., Edmonds, WA 98020
Vice President: Vasco Fenilli, 7102 Citrine Lane S.W., Tacoma, WA 98498
Recording Secretary: Ann Lunn, Route 5, Box 93, Hillsboro, OR 97124
Treasurer: Jay Lunn, Route 5, Box 93, Hillsboro, OR 97124
Past President: Irene Buckles, 13732 - 45th Ave. S., Seattle, WA 98168

Directors
Rosetta Jones, Kent, WA
Etha Tate, Milwaukie, OR
Presidents of affiliated societies and chapters
Cyrus Happy III, Tacoma, WA
David Vesall, White Bear, MN

Membership
Dues of $10 a year are payable NOV. 15. Membership includes four issues annually of the Quarterly, cultural chart and seed exchange privileges. Sustaining member $50; Life membership, $200; garden club affiliates societies, $10 a year; library and horticultural societies, $10 a year; second member in family, $1 a year. Overseas members, $10 a year; please send by international money order. Send dues to the treasurer.

Publications
Back issues of Primroses are available. Order from the secretary. Manuscripts for publication in the quarterly are solicited from members and other gardening experts, although there is no payment. Please send articles and photographs to the editor at 1236 Wendover Ave., Rosemont, PA 19010. Advertising rates per issue: full page $60; half page $30; quarter page $15; eighth page and minimum $10. Submit advertising to the editor.

Seed Exchange
Peter Atkinson, 16035 SE 167th Place, Renton, WA 98055
Joe Dupre, 2015 N. Avenue, Anacortes, WA 98221

Show Judges
Al Rapp, 4918 79th Avenue W., Tacoma, WA 98467

Slide Library
Jerry Flintoff, 154 N.E. 194th, Seattle, WA 98155

Editor’s Committee
Richard Critz, Editor, 1236 Wendover Avenue, Rosemont, PA 19010
Joe Dupre, 2015 N. Avenue, Anacortes, WA 98221
Steven Krumm, 11505 S.W. Summerville Avenue, Portland, OR 97219
Dee Peck, 8813 Patton Road, Philadelphia, PA 19118
New and improved strain of garden auriculas, the result of 30 years of selecting and breeding for better color and vigor.

BLUE GARDEN
YELLOW GARDEN
MIXED GARDEN
DICKSON'S PETITE HYBRIDS
(a mixture of small-species hybrids)
MIXED EXHIBITION ALPINES

The above $1.00 per packet of 50 seeds
Hand-pollinated show auriculas
Red self, yellow self, green-edged
$2.00 per packet of 25 seeds

CHEHALIS
RARE PLANT NURSERY
2568 JACKSON HIGHWAY
CHEHALIS, WA 98532

Minimum order $5.00.