Primroses
Quarterly of the American Primrose Society
Volume 58 Number 1, Winter 2000

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COVER PHOTO: Jackanapes
Photo by Margaret Webster – Bristol, England

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Membership in the Society includes a subscription to the Primroses, Seed Exchange privileges, Slide Library privileges and the opportunity to join a Round Robin. Does for individual or household membership in the American Primrose Society, Domestic, and Canada are $20 per calendar year. $55 for three years or $225 for an individual life membership. Overseas rates are $25 per year, three years for $70. Submit payment to the treasurer. Membership renewals are due November 15 and are delinquent at the first of the year. Periodical postage paid at Mercer Island, WA.

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Manuscripts for publication in the quarterly are invited from members and other gardening experts, although there is no payment. Please include black and white photographs, slides or color prints if possible. Send art directly to the editor.

Advertising rates per issue: full page, $100; half page, $50; quarter page, $25; eighth page and minimum, $12.50. Artwork for ads is the responsibility of the advertiser, and camera-ready copy is appreciated. Submit advertising to the editor.

President's Message
Greetings from Alaska:
So far we've had a mild winter here as what little snow we've gotten has melted and the green leaves of primroses are showing. We're all anxiously awaiting spring and the flowers that will follow. I'm hoping to see some of my seedlings from last year flower, and of course waiting to see this year's seed sprout and grow.
I made a trip to Seattle in late February and got a pleasant taste of spring. I saw P. palinuri blooming in June Skidmore's garden and some early Julie's. Lots of Polyanthus in the stores were a cheery, if rather gaudy, reminder of spring. I'll be back to Seattle in April, to visit the Tacoma show and I plan to visit more gardens and nurseries to find plants and ideas to take back to Alaska with me.
Ruby Chong, of the B.C. group, and her Seed Exchange crew have done a great job getting our seed orders out promptly and some seeds are already sprouting. Please write or email me with reports of the results from planting those seeds. The next Seed Exchange should have seeds available from Western China. The Alaska Rock Garden Society Expedition to Yunnan Province is selling seed shares to help support its trip. More information is printed in this quarterly. I am one of the 10 lucky explorers who will be led by Dan Hinkley of Heronswood Nursery to areas most of us have only read or dreamed about. Hopefully the weather, and political conditions, will cooperate to allow us to bring back lots of wonderful seeds.
Included in this issue are brochures for the APS National Show and Alaska Garden Conference. I hope some of you come to visit us in Alaska this spring to learn more about the plants we grow and the conditions in which we garden. Bring plants to show if you can, and enthusiasm to share. We have speakers, workshops, and tours for many different interests. We won't promise you blue skies and sunshine, but if it happens you'll never forget it! We do have quite cooperative eagles though. Please come!
It is also time to vote for officers of the Society and a ballot is enclosed. As in many past years there is a minimum of candidates this year as it is very difficult to find members to serve and guide this Society. Of course in your own ways, you can help the Society by sharing
Upcoming Tacoma Chapter Show

By Candy Strickland – Puyallup, Washington

The Tacoma Chapter of the American Primrose Society along with the participation of the Mt. Tahoma Rock Garden Society will present their annual primrose show at the Western Washington Fairgrounds, in the Expo Hall, on April 14, 15, and 16, 2000. Any plants brought for display will be accepted after 6 p.m. on April 13 and up until 9:30 a.m. on April 14. Any plants brought after 9:30 a.m. will not be bench- ed but will be put on display. You do not have to be a member to participate. There will be a plant sale and members from both societies to answer your plant questions.

The Expo Hall will have a display of plants and flowers from the Hill and Dale Garden Club, The American Rhododendron Society, The Orchid Society, The Bonsai Society and information booths from many other societies. The hours are 10 a.m. to 10 p.m. on Friday and Saturday and 10 a.m. to 7 p.m. on Sunday. Parking is free.

This is a judged show, and our schedule includes categories for both primroses and rock garden plants.

Primula Portraits
P. duthieana

By Hubert Agback – Uppsala, Sweden

Edward Buyarski asked me for information on Primulas grown by me in Sweden.

I will respond by posting on our website, descriptions of particularly interesting plants under the common title: Plant portraits. Each will be accompanied by a photo deposited in the vaults.

Plant portrait No 1. P. duthieana Balf. et Smith. This is a species placed in section Petiolaris. Please contact me with notes of interest. The cool moist conditions we have in Southeast Alaska may allow us to grow these species that don’t like the heat and bright sun. Other members also want to learn more about this Section and conditions for growing them successfully.

Until our next issue, keep on gardening... and don’t let the slugs get ahead of you.

Ed Buyarski
President APS
Hi everyone!

What a great success the Primula Discussion Group has been. We started on Sept. 4, 1999, when I sent out e-mails to everyone I could find an address for in the APS Spring Quarterly membership listing, as well as some folks I had traded primula seeds and plants with in the US, Canada and Europe. From that beginning we now list approximately 55 members. Membership in the group is not limited to APS members, but we do encourage it, and I believe we have been responsible for converting some non-APS members to membership status.

There is one instance of a twinning relationship being established, or at least in the works, between one of our APS members and a NAPS member that I'm sure wouldn't have happened as quickly, without our group.

The amount of knowledge that has been exchanged has been tremendous. I know those who actively participate in the discussions, and even those lurking on the sidelines, are learning about primulas faster than ever before. Now, as we go into the time of year when starting seeds becomes foremost in people's minds, there should be a lot more learning going on. From a modest 49 messages logged in September to 176 messages logged in December is pretty darn good growth.

Some of you who haven't participated in the chats may be thinking to yourselves, "I haven't learned that much. A lot of the messages don't pertain directly to gardening or are over my head."

That is true, and that is the nature of most discussion groups I have been involved with. I really want to encourage you to post your questions to the group. Simply sending it as an email to primulas@egroups.com is all that is necessary. Logging onto the website to send messages to the group is not necessary.

To those of you who might feel your experience with primulas is inadequate to join the discussions, I can only say that you need to ask your questions. Yes, growing petiolarids, or using GA3 might be well beyond your ambitions at this time, but you would be surprised at how interested some of the very experienced primulas growers are in who is growing what plants in what climate. Some of the very experienced growers are reduced to novice status when they begin to try a new species. Again, ask questions, you will get answers.

Also, I want to encourage those who haven't tried to do so to join the chat sessions. That is where a lot of the learning is happening, and it happens quickly. A question is asked, it is answered, and we go on to another subject. Some solid friendships have been formed through the chat. In addition, difficult to find seeds have been found and traded or donated, and a lot of information on how to grow, where to find, and what grows where is exchanged.

Help us grow. Join the chat. Join APS or NAPS. Join the discussions, and ask questions. Last of all, invite a friend to join us. If you know anyone who grows primulas and has email access, tell them about our group.

Thank you to everyone who has made our discussion group a success.

Learning through APS
Board of Directors Candidate loves gardening

By Judith C. Sellers – Unadilla, NY

Having retired from full time teaching last September, I have time now to devote to my primary interest: gardening. I'm currently working towards certification as a Master Gardener through Cornell University, and am involved in several community and public school horticultural projects. My husband and I have built a home and extensive garden on what was previously an unloved woodland, and never tire of discovering ways to improve the land and landscape through research and practice.

I grew and appreciated the more common species of Primula for many years before, beguiled by these plants, I finally joined the APS. The Society is much more than I had expected! Because of the APS, I have read entertaining and useful information in the Quarterly, gained access to books otherwise unknown or unavailable to me, exchanged seeds for new and exciting species, used APS slides for a presentation on Primula for our garden club, discovered links to other societies and nurseries and, most importantly, found new friends and acquaintances who share my interests, answer my questions, and support my addiction to these plants.

Over the years, I have served on many committees, boards, and teams, but never with a group that seems to provide such a variety of important benefits for its members as does the APS. I would welcome the opportunity to help the Board of Directors further the goals of the Society.

Board of Directors Candidate Speaks

My name is Terry Mitchell and I live in a small town called Ossett in West Yorkshire, England, U.K. I have been involved with Primulas now for over 15 years and have built up a varied collection of Primulas in this time. I grow some in my open garden and others in greenhouses and coldframes. Florists Auriculas form the largest part by far of the Primulas I have, others include P. allionii, P. marginatas, P. sieboldii, and some of the Petiolard Primulas like aurata and edgeworthii.

I have a selection of the species Primulas as well as Gold Laced Polyanthus where I am currently involved in trying to create a new hybrid. That is a project I started some years ago and is still on going. I also hybridize other members of the Primula family.

I am a member of the National Auricula and Primula Society (Northern section) and also the Midland and West section U.K.) I am a serving member of the Committee of the Northern section and have been for several years now. I am also a member and serving Committee member of the Wakefield and North of England Tulip Society, U.K. I am also obviously involved with Primulas as well as with the Alpine Garden Society U.K., and last year took on the responsibility for staging the spring display each year on behalf of the National Auricula and Primula Society (Northern Section) at the North of England spring show at Harrogate due to the retirement after many years of sterling service in this post by Harry Lill. The job is made all the easier by the skill and dedication of the team we have formed that put this display together every year and our members who loan us their precious plants to use in the display along with our own.
Member for over 30 years
V.P. Candidate has deep interest in APS

By Candy Strickland — Puyallup, Washington

I have been a member of APS for over thirty years. I have been Secretary of the APS, Seed Exchange chairperson on two occasions, and was the quarterly mailer for several years also. I have been president of the Tacoma Chapter for several years, on different occasions. I am now co-president with Cy Happy. I have been Show chairperson for several local as well as National Shows.

I am also a member of the American Rhododendron Society, The North American Rock Garden Society, the Puget Sound Geranium Society, the Chrysanthemum Society and the Sunbonnet Garden Club. I have held office in all but the Sunbonnet Sue Club of which I am a very new member.

I have a deep interest in the continuation and well-being of the American Primrose Society and will serve to the best of my ability.

Gardening in Juneau for 15 years
Candidate will 'spread the word about primroses'

By Julia Haldorson

I have lived in Southeast Alaska for more than twenty-five years, but only began gardening here when my husband and I bought a home in Juneau about fifteen years ago. Our home is surrounded by forest with the ocean close by. On special days I can hear deep breaths from humpback whales cruising a deep channel known as "The Breadline" while I am working in the garden. Southeast Alaska lies within the Tongass National Forest, which is classified as a temperate rain forest. Gardening in such a forest poses numerous challenges mainly related to lack of sun, 90+ inches of annual precipitation, and boggy, slow-draining soil. Luckily, many primroses thrive in this wonderful ecosystem, and that is one of the reasons I became interested in them and joined the American Primrose Society several years ago. My challenge as a gardener is to merge the wil and the cultivated, and many primroses species help with the transition.

As much as I like being outside in the garden, a good share of my time is spent earning a living. I am a certified public accountant and am presently working as a grants accountant for the City and Borough of Juneau. It would be a privilege to be Treasurer for the American Primrose Society and do what I can to "spread the word" about primroses.

Letter to Editor...

I am a member of the APS who lives in North Wales. I was twinned with Dr. John Kerridge but since his untimely death in November 1998 I have been twinned with June Skidmore. While I was with John in Vancouver in April 1998 he gave me some G.L.P. "Oakley Strain" H.P. but without elaborating on it.

Dennis Oakley, who I know, has no knowledge of it nor has Maedythe Martin with whom I correspond.

Would you please publish a request in the next appropriate copy of your magazine asking whether any of your members have any knowledge of this G.L.P. strain?

Yours sincerely,
Tom McCreaf

Hey, California - let's talk primroses!

By Sylvia Sykora — Oakland, California

This letter is going to those APS members who live in California and who - like me - have no doubt spent more than a bit of time being frustrated in efforts to grow successfully these marvelous plants in our (mainly) inappropriate climate. We can grow P. malacoides with ease and set out plants of P. obconica that thrive with almost no care. But what about the rest of them?

For years I've bought Barnhaven seed, germinated it, planted out the seedlings when they got big enough, and then watched them disappear. For years I've ordered auriculas with tempting names and descriptions but can barely keep them going from one year to the next.

Among us there must be a wealth of information on what works - and what doesn't - when it comes to growing primroses in California. Would you be willing to share your experience? Do you have questions you'd like answered? Would a California Primrose Group interest you?

With our far flung membership, a formal chapter with meetings on a regular basis seems impractical. But perhaps we could find another forum for sharing our interests, our knowledge, and our love of primroses. A round-robin letter? An informal e-mail connection? Perhaps we could have our own chat on the Primula e-group.

Since I have a great deal of self-interest in finding a way to tap into all of your expertise, I'm happy to be the point person for your suggestions and ideas. If you'd find such a group of interest, please let me know, by mail: Sylvia Sykora, 6250 Melville Drive, Oakland, CA 94611, e-mail: slyskora@aol.com or phone (510-530-5090). I'll put all of the suggestions I receive into a follow-up letter and let each of you know what ideas have been put forth.

I look forward to hearing from each of you. Don't wait — it's almost primrose time! Thanks again.

The Seed Exchange thanks you

The A.P.S. Seed Exchange Committee thanks all of you who donated seeds and all the members who participated in the Seed Exchange this year. As of March 1/00, we received and processed 341 orders, (26 Seed Exchange & 75 Surplus Seed Exchange). 10,180 pkts of seeds were ordered generating $3,963.20. The orders were filled and mailed out within 10-12 days of receiving them. The Board of Directors' at their January 15/00 meeting approved increasing the available number of seed packets to 40 for non-donors and 50 for donors starting with the next Seed Exchange. A seed share has been ordered in the upcoming Alaska Rock Garden Society China 2000 Expedition to be led by Dan Hickley. Ed Buyarski will participate in the Expedition which takes place Sept. 15-Oct. 7, 2000. Some interesting seeds should come out of this expedition. Please keep our Seed Exchange in mind over the summer months and during seed collecting time. If you have primula seed to share, please consider participating as a donor. If you know of new seed sources or sources we're not including, let me know.

Til our next Exchange,
Ruby Chong
e-mail: rchong@axion.net
Phone: (604) 298-8384
Plant Societies

National Auricula and Primula Society
Invites all auricula and primula lovers to join in this old society. Membership includes yearbook.

Northern Section
D.G. Hadfield
146 Queens Road, Cheadle Hulme, Cheadle, Cheshire, England

Midland and West Section
Peter Ward
6 Lawson Close, Saltford, Bristol, England BS31 1BG

Southern Section
Lawrence E. Wigley
67 Warnham Court Road, Carshalton Beeches, Surrey, England SM5 3ND

The New Zealand Alpine Garden Society
invites you to join other overseas members enjoying the benefits of our Society. Two informative Bulletins each year and an extensive NZ native section in our seed list enhance the contact with New Zealand alpine plant lovers. Enquiries to the Membership Secretary or join by sending the equivalent of NZ$25 payable to NZAGS (Inc.). Visa/Mastercard facilities available.

New Zealand Alpine Garden Society,
PO Box 2984, Christchurch, New Zealand.

North American Rock Garden Society
Join Today!
Benefits of Membership Include: Beautiful, Colorful Quarterly Bulletin; Seed Exchange offering Thousands of Plant Species (including many primulas) at Low Prices; Spectacular National Meetings; Opportunity to Meet Gardeners
Send $25 (on North American Continent, $30 overseas) to:
Executive Secretary, PO Box 67, Millwood, NY 10546

How to Grow *Primula Kisoana* from Seed
Or: Getting hooked on GA-3

By Pam Eveleigh – Calgary, Alberta

I'll confess - I'm hooked on GA-3. It all started with *Primula kisoana* seed that I got in 1997 and 1998 from the APS exclusively because I despaired of all the times that I had no success with germinating *P. kisoana*.

In several rock gardening journals, I had read articles on gibberellins and how they had been used with success to stimulate seed germination. The articles didn't spur me on to try gibberellins. I had good germination, didn't I? Why would I bother using gibberellins?

In the fall of 1998, a friend gave me a

*Primula kisoana* - Photo by Pam Eveleigh

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KISOANA continued from page 11

package of GA-3 (the most readily available type of gibberellin). As they say - the rest is history!

In October of 1998, I treated some primula seed with GA-3 and put them under lights in the basement. The results are shown in the table on page 14.

Primula kisoana seed germinated 100% in just 5 days!

I was so pleased with the results of Batch #1 that I treated more seed (Batch #2) with excellent results. It was so exciting to see all these P. kisoana seedlings, that I brought in and treated the seeds that I had put outside (Batch #3). All the seedlings were healthy and grew so rapidly it was hard to believe they were primulas, something Jay Lunn had also noticed with his seedlings. By late summer the plants were throwing out blossoms and I noted they were all pink but some were pin and some were thrum. I'm hoping for viable seed. Jay mentioned in his article that he was surprised when his seedlings were a typical rose-pink. He was expecting an intermediate color between pink and white. My expectations are that the white will be recessive so the first generation of seedlings will all be pink and that the second generation will give some white flowered plants.

Jay Lunn ended his article with the question "Why grow Primula kisoana from seed when it's so easy to propagate vegetatively?" My answer is there weren't any plants of P. kisoana in Calgary (to my knowledge) so I had no choice but to try growing them from seed. As all my friends know, the REAL reason is I'm a seedaholic and it's infinitely more satisfying to have a plant in the garden that you grew from seed.

Subsequent experimentation has found that they all respond. However, not all primula seed needs to be treated with GA-3. Most primula seed germinates readily at room temperature or after exposure to cold.

Last summer I planted my Primula kisoana plants in different spots in the garden with the hope that some will survive this winter. The rest of the plants have ended up in friend's gardens. By late summer the plants were throwing out blossoms and I noted they were all pink but some were pin and some were thrum. I'm hoping for viable seed. Jay mentioned in his article that he was surprised when his seedlings were a typical rose-pink. He was expecting an intermediate color between pink and white. My expectations are that the white will be recessive so the first generation of seedlings will all be pink and that the second generation will give some white flowered plants.

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Treating Seeds with GA-3

There are many methods of treating seeds with GA-3. This method works well for me. Usually the chemical sup-

John Richards is NARGS Draw

By Elaine Malloy

John Richards, author of his sought after reference, Primula, gave his first talks at “Chasing the Blues,” the NARGS January 28-30 weekend in Syracuse, New York. He was the draw for primula enthusiasts from far and wide. Humorous, friendly and a jolly good storyteller, he was fun to be with.

Richards' first talk, entitled “Asiatic Primroses in the Wild and in Cultivation” included 122 beautiful slides. “Macedonia and Epiros Seed Expedition 1999” concluded a July plant finding expedition in the month of September. When John and his companions tried to return to a familiar Macedonian mountain peak site, "boy soldiers" prevented them from using the direct route. After finding their way the long way around, John had to collect seeds almost prone to the ground, as his shiny, shiny bald head would have mirrored their activities to the patrolling "boy soldiers" below!

APS members hustled to buy John Richards' book (one per customer) for Thea and members awaiting copies from the APS Bookstore.
I Garden in Tasmania

By Gay Klok – Tasmania

It is the beautiful island state of Australia. Our island is made up of mountains, lakes and rivers. It is said that there is no area in Tasmania where you can stand and not see either hills or water. One third of the land mass is classified as either World Heritage or National Heritage. Our temperate climate allows us to grow an enormous range of plants, from semitropical to cold climate flora. Everything grows all year round, including the weeds and if we experience six “bad” frosts in a Winter, we call it a very cold Winter.

In 1987, at the age of fifty (me) and sixty (my husband) Kees and I began our largest and most ambitious garden adventure. We bought an old apple orchard, the property consisting of 137 acres of orchards, pasture and natural rain forest bush and an old country home. Apple trees came right up to the verandah on three sides of the cottage. The slightly elevated position, 275 m above sea level, and the average 42 inches of rain a year, gave us a perfect cool temperate climate to create our dream, with the flowers we love. Now, thirteen years later, we have an eight acre ornamental garden, growing mainly acid loving plants. Specie Rhododendrons, Dicksonia antarctica (the native Tasmanian manfern), Magnolias and ornamental Japanese Maples give shelter to my favourite ground cover - the Himalayan Primula. Primulas are not known as an “every day” plant in Australia, the plants being very hard to find in our nurseries. In many suburban gardens, Polyanthus are used, quite often in straight rows on either side of the path that leads to the front door! I sat for a while in the country garden “Kibbenjelok” last weekend. The sky was blue and the birds, having reared their chicks, were not too busy to share their songs. I don’t have much time to just sit and soak up the perfumes of the garden and the joy of the early summer flowers but I took the time, it was such a great day. Looking around at the dazzling and beautiful long borders filled with the Asiatic Primulas, I wondered at the miracle of so much beauty coming from the tiny seeds we brought back from Scotland. Let me tell you the story.

My daughter and son-in-law, both medical doctors, had been working in England and Scotland for four years. Many times my daughter had written and suggested we come for a visit. I would answer her by writing that we would love to but would not be able to for several months as one or the other garden or both were having an Open Day and we could not leave them. You see, I am the greediest gardener in the world and have two gardens, one in the country and our Town House garden, both gardens open their garden gates to the public under the auspices of the Australian Open Garden Scheme, for one or two weekends a year.

We also welcome gardening societies on various days during the year.

TASMANIA continues on page 27
Himalayan wildflowers

By Elizabeth Cuadra - Returned Peace Corps Volunteer - Juneau, Alaska

Anyone for trekking in the Himalayas expressly to see wildflowers—or perhaps even for collecting seeds? The Himalayas are home for more than 40 species of wild primulas, for example. But the question is exactly when and where to go. Several wildflower guidebooks may be the starting point for the expedition planner, and also of interest to the armchair enthusiast:

Besides primulas, one finds a multitude of flowers, including the wild rhododendrons, which, in Nepal, are not bushes but trees. Nepal alone has more than 30 species of rhododendron, each with its own elevation range. Some, such as the national flower of Nepal, Rhododendron arboreum (which the Napalis call 'Lali gurans'), like the lower foothills, while some species are reported to range as high as 15,000 feet elevation.

The best wildflower guide I have found is Flowers of the Himalaya, by Oleg Polunin & Adam Stainton, Oxford India Paperbacks, Oxford University Press (1997), ISBN 0 19 564187 6. Get this version (the full-length version), not the slightly condensed version. The index lists about 40 species of primulas, and the book gives color illustrations for some, and gives a short paragraph for each species indicating where it can be found. If you cannot obtain it in the United States, it could be ordered from Pilgrim's Book Store in Kathmandu, e-mail: mailorder@pilgrimsbooks.com and website: www.pilgrimsbooks.com. For the potential expeditioner, it may be helpful to look at the illustrated record of several seed-gathering expeditions to the eastern Nepal Himalaya foothills: A Plantsman in Nepal, by Roy Lancaster, Antique Collectors' Club (1995), ISBN 1 85149 179 1. Even here in remote Juneau, Alaska, I have been able to borrow this book from a distant library via interlibrary loan.

Other, more introductory guides are (1) Himalayan flowers and trees, by Dorothy Mierow and Tirtha Bahadur Shrestha, Sahayogi Press, Tribhuvan University, Kathmandu, Nepal (1987); and (2) Flowers of the Western Himalayas, by Rupin Dang, Indus (Harper Collins, India) (1993). But the latter is not very durably bound, and you will not need it if you have Polunin and Stainton's book.

There may be several other websites of interest also. One, called to my attention by Ed Buyarski, is www.collectorsnursery.com, which contains the full-text journals of two expeditions into Yunnan Province, southwestern China, one for plant hunting and the second for seed gathering.

You may contact me at my e-mail address cuadra@gci.net.

Organic Chemistry 101:

Flower Color

By Judith C. Sellers

Why is there so little information available about Primula flower coloration?

This is a question which has plagued me for years, and with which I have plauged others, since discovering in my garden a polyanthus 'Jane H. Coates' that demonstrates the ability to change each flower's color from white, when it opens, through pink, to dark magenta before it wilts. It is fairly common for some primulas to naturally vary color, but not so drastically.

Of course, the presence or absence of any one of these substances is determined by the genetic inheritance of any plant, and their interactions are affected by each other and by a multitude of environmental factors, including soil and sap acidity, light, moisture, nutrient availability, sugar content, insect activity, and temperature.

I also sought information from an eighth grade science teacher (experienced in answering dumb questions), several scientific tomes, a helpful message from a participant in the Primula e-group, gardening books, and an old encyclopedia.

With such an extensive number of factors influencing the color of a flower, it is no wonder botanists and researchers have found more professionally rewarding topics to pursue!

Instead of continuing to search for existing answers to my questions, I will let others do some work for me. Having shared several of these plants with other Primula growers under the guise

CHEMISTRY continues on page 18
CHEMISTRY continued from page 17

of "trials," I can now wait for their reports about the performance of the plants in a variety of environments, and perhaps draw some conclusions about environmental versus genetic determinants.

If anyone knows what causes these color changes, please don't tell me now. I am willing to put aside intellectual curiosity and accept the fact that possibly, like so many Primulas, this plant has no motives other than to survive and make our world a little more interesting and beautiful.

Extremes of color variation in P. polyanthus 'Jane H. Coates'
Photo by Judith Sellers

PRIMULA

'Superior Sunset'

By Mary Kordes – Allouez, Michigan

I couldn't believe it was truly a primula. The flowers were like the largest, fullest African Violet I had ever seen, yet this was a double-flowered Primula vulgaris so hardy I could grow it in my garden. I saw it at Primula Worldwide, APS's international primula show held in Beaverton, Oregon in 1992.

In my excitement to begin growing

Double-flowered Primula vulgaris, ‘Superior Sunset’
– Grown and photographed by Mary Kordes

APS Slide Programs Available...

New Slide Librarian Mary Irwin has the following slide programs available at $10 per program by mail:
1. Standard APS 80-slide program
2. Wild and Tame Primula in Alaska
3. Auricula Primroses
4. English Show Auricula
5. Sakurasoh-Primula Sieboldii
6. Primroses in England, Ireland, and Scotland

Recipient must pay return postage, overseas postage costs. Each program must be insured for $250.

SUNSET Continues on page 31
Treasurer's Report

Candy read the Treasurer's Report from Fred. Income for the Quarter from Oct 1 - Dec 31, 1999 was $3501.74. Expenses were $5,686.52 and Assets are $9,347.69. Membership stands at 436 US, 52 Canada, and 91 Foreign. A copy of the report is attached. A discussion followed relating to the amount of money ($9600) currently allocated to ongoing expenses. The Board approved moving $3000 from this account to an interest bearing investment or account, perhaps our Smith Barney account. Ed will check with Fred about this. Cy wanted to know more about the Smith Barney account - what securities are involved, etc.

Library

Thea sent her report by mail to Cheri, but it hadn't been received by the meeting. It is one of the problems of the Internet.

Quarterly Librarian

Cheri has sold 2 Quarterly issues to foreign requesters per VISA since the last Board Meeting.

Slide Librarian

Mary Irwin has agreed to assume the job of slide librarian from Bridgie Graham Smith. John O'Brien spoke about the importance of keeping our slide shows safe and that whoever serves as slide librarian needs to respond quickly to requests. Duane is working on scanning some of the APS slides into his computer, and there has been some discussion of updating the Pictorial Dictionary of Primulas in Cultivation. This could be published with color photos or on CD. We could copy the CDs and sell them, or use the CDs as another program or training tool. Discussion followed about the location of those photos which have been used in displays at APS shows and conferences. It is hoped that these photos can be located and used for the upcoming National Show. John indicated they were taken by Jay Lunn. Possibly, April Boettger has them. Candy indicated that John Kerridge's photos, etc. have gone to the Vancouver Group. Ed also brought up the issue of what type of permissions are needed to use APS slides in a publication or CD. It was the feeling of the group that we could use pictures or slides had become our property which we could use as we see fit. Whenever the photographer was known, credit would be given. There are a lot of slides without the photographer's name.

Seed Exchange

A copy of Ruby's written report is attached. As of January 6, 2000 - 209 seed orders had been received and processed for a total of 5,139 packets generating $2,569.50. Lots of people are helping with the Seed Exchange. Ruby and her helpers have done a wonderful job!! At Ruby's suggestion the Board voted to increase the available number of seed packets to 40 packets for non-donors and 50 packets for donors starting with the next Seed Exchange. Ruby has ordered a seed share in the upcoming Alaska Rock Garden Society China 2000 Expedition to be led by Dan Hickley. Ed Buyarski will participate in the Expedition which takes place Sept. 15 - Oct. 7, 2000.

Expedition Sponsorship

John suggested that APS become a sponsor of the Expedition. If we make a substantial contribution, John felt we should be publicly credited for the contribution as an expedition sponsor. A long discussion followed. The Board voted to contribute $1,000 to the AkRGS China 2000 Expedition from the American Primrose Society with the guarantee that we would get at least six articles for the Quarterly, slides, and other educational materials from the Expedition. The Board directed seeds we received after the Board meeting indicated the $1,000 Sponsor Share provides 120 seed packets as well as a listing as sponsor in public relations material and post expedition book/documentary.

Round Robin

Candy is trying to find people who aren't using computers. Most people on Internet can get information and exchange ideas via our website or the Egroup. A note will go into the next Quarterly indicating that the Round Robin is a good option for exchanging growing ideas if you are not a computer user.

Quarterly

Ed will be putting together the next Quarterly. No one has volunteered to be editor, and we desperately need someone to serve as editor. Ed cannot do it for very long. Unless we can find someone who will undertake the editor's job, the Quarterly won't continue or will have to be totally restructured. John mentioned checking with the local colleges to find a journalism student to undertake the job. June will continue to mail the Quarterly. She has lots of envelopes. In a message to Ed, she mentioned that the $5.00 overseas charge for Quarterlies mailed overseas doesn't cover the postage cost. Prior to the Board Meeting Ed solicited input from members on the Quarterly in the E-group. Only one individual felt we didn't need color and glossy paper in the Quarterly. All other responses supported color pictures. The consensus of the Board was that we need a quality publication with color photos. The members present felt the Quarterly was essential for the survival of the Society.

APS Web Page
Some Primulas in New Zealand

By Robert Daniels – Juneau, Alaska

Spring is a delightful time to visit New Zealand. It seems to exude greenery, more so than other parts of the world. Everywhere the fields, forests and pastures are green and all the myriad shades thereof. The activities described here took place in October and the first half of November, 1999.

The country runs some 1,500 miles from north to south, spanning 34 degrees S. Latitude to 47 degrees. The north is subtropical and the south very temperate. There is rainfall throughout the year, but there is enough dry weather in the eastern sections of both main islands to support somewhat dry weather crops like grains. It appears that many types of primulas should grow there.

New Zealand is an easy country to visit. The people are most accommodating and friendly. Housing and transportation needs were usually met with “not a problem, Bob.” I investigated and observed gardens in all of the cities visited and saw a bit of the bush.

The garden visits and activities shall be described for each of the various cities or areas visited. Auckland, the largest city, has a large park, called a domain, that includes the main museum, sports fields and the Wintergardens. Near this latter area is a group of bedding plants. Pansies of purple hues were nicely offset by the shocking pink of Primula pulverulenta. Some 20 kilometers out of Auckland are the Auckland Council Botanic Gardens. They have excellent displays of New Zealand plants, but, unfortunately, I did not see any primroses. There is a ubiquitous use of the polyanthus primrose that one sees often for sale in supermarkets and nurseries in the United States. They can be seen often in all their varied colors, in private and public spaces; however they were rather “gone off,” particularly in the warmer, earlier North Island.

I’m sure I could have found more primroses in windy Wellington than I did. I made two trips to the lovely botanic garden there. The best access is via the scenic cable car that rises from the downtown area to the top of the gardens. Only one area had some very nice primula. I found a small, shaded stream near which there was a nice stand of P. pulverulenta and P. helodoxa growing and in bloom.

The next city I visited and spent almost a week was Christchurch. Situated half way down the east coast of the South Island, this city has a temperate clime, receiving, on average, 15 days of frost a year. I was situated close to the Botanical Gardens, which I visited frequently. A most imposing group of P. sieboldii was seen, and at least three varieties were in full bloom. There was a fairly extensive primula section and in view were bulleyana, japonica, polyneura, alpicola, florindae, and veris. There were some julianas, but they were almost through the bloom period. I timed my visit to Christchurch with the monthly meeting of the New Zealand Alpine Garden Society. Though our beloved primroses were not the main topic; there was a small show of plants, and two Dodecatheons were displayed. They were perfect, but not as exuberant as the ones found in the meadows in southeast Alaska. The meeting was quite interesting. There was a lecture about Trillium, an exotic species here but is grown abundantly with many varieties in the Christchurch area. I was privileged to visit four private gardens here. One garden was situated on the Avon River. The sieboldii and japonica were planted next to the river in this beautifully designed garden that included many New Zealand native flora.

Dunedin, farther down the coast of the South Island, has in its botanic garden the largest rock garden I have ever seen. It was beautifully arranged on a rather steep hill overlooking a stream. Maybe I was too late in the season for primroses, as I could not find any blooming in this large garden. But in the

Wellington Botanical Garden - P. helodoxa – photo by R. Daniels

Dunedin Botanical Garden - P. pulverulenta – photo by R. Daniels
Getting the gibberellin story straight

Professor Norman C. Deno examines in detail the use of gibberellins in seed germination by presenting a series of questions and answers. The following is based on studies on the germination of 4000 species in which variables were precisely and systematically controlled and rates of germination were measured and interpreted in terms of chemical rate theory.

Every species of plant has one or more mechanisms for blocking germination of its seeds until the seeds have been dispersed. These mechanisms also often serve to time the germination for the season of the year best suited for survival of the seedlings. One of these mechanisms which is found in a significant number of species is an absolute requirement for a specific chemical, a gibberellin, for germination. A brief review of this story is presented below as a series of questions and answers.

Q. Should I immediately rush out and purchase gibberellin?
   A. Not necessarily because, (a) The media that you are using may contain sufficient dead organic material and sufficient fungal action to produce the requisite gibberellin. (b) There are sixty-seven known gibberellins, and only one, gibberellic acid-3 (GA-3), is in commercial production. While GA-3 suitably supplies the gibberellin requirement for many species, there are clear examples of species that require one of the other gibberellins for germination. (c) While GA-3 has a profound effect on the germination of many species, in many of these other methods of initiating germination are equally or more effective and are more convenient. (d) The 95% pure crystalline GA-3 initiates fungal growth which can be fatal to the seeds of a few species. (e) Germination was inhibited in some species by GA-3. Thus treating seed with gibberellins is no 'cure all' for germination.

Q. Why have plants evolved with a requirement for gibberellins for germination?
   A. An example should make this clear. Pediocactus simpsoni grows in central Wyoming where the winds blow all day long. The burning sun beats down and scorches everything and rains are few and far between. Deer, antelope, and various rodents try to eat everything in sight. Temperatures soar over the hundred degree mark. The only place that the tiny Pediocactus seedling can survive is in a pocket of leaf mould deep in a crevice or several centimeters deep in coarse gravel. There it gets moisture and nutrient as well as constant shade from the sun. The Pediocactus has evolved a clever trick for detecting such conditions.

GIBBERELLIN continues on page 28

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Duane reported site statistics from Jan. 1, 2000. Earlier statistics were accidentally lost. Since Jan. 1, an average of 21 users/day have accessed our site. Total hits were 2204 split among the 8 pages on our site. The site has been accessed from Canada, Denmark, Estonia, Japan, Korea, Russia, Sweden, U.K., U.S. as well as some other countries which show up as Canada or U.S. because of their telecommunications routing. Sunday is the most popular day of the week. There have been as many as 250 hits in a single day.

e-Group: Primula Discussion Group

Duncan McAlpine’s web site was discussed again. The existence of his site is an ongoing problem. There is lots of misinformation on the site, and it keeps our new site from being accessed since it was in existence first.

Chapter Reports

Eastside Chapter: Thea will be hosting the next meeting around Valentine’s Day, but the program isn’t decided yet.

Tacoma Chapter: Fifteen attended the potluck in December. There was no particular program. A February program isn’t firm yet. In March, Roger and Jean Eichman will present a program of some slides taken in Alaska.

Juneau Group: New Zealand is scheduled for Jan. 22. The following week Baldassare Mineo, from Siskiyou Rare Plant Nursery, sponsored by the Juneau Group, Garden Club and Master Gardeners will present a program on growing alpine plants in Juneau rock gardens.

The Juneau Group is in the planning stages for the National Show in May. Information will be in the next Quarterly which will include a brochure on the entire garden conference with the schedule and activities.

Election and Ballot Issues

The election ballot will be coming out in the next Quarterly. June Skidmore suggested that it might be worth not having a ballot since we only get 30 votes, but the bylaws require the vote. The comments we receive with the ballots are helpful.

Ed suggested we change the term of officers to be two-year terms instead of one year terms via a bylaws change.

Advertising on the Web

Duane indicated that we have had about 5 requests to put free advertising on our web site. Duane felt that as a non-profit we would be in the same situation as with advertising in the Quarterly. We would need to determine percentage of space, etc. Duane thought, at this time with everything else he’s doing with the web site and eGroup, it would be impossible to do. Cheri felt we could justify the advertising as a non-profit based on the cost of establishing the web site.

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Duane and Cheri will look into it. Advertising could be done at the same rate as the Quarterly. We can use 3% of Quarterly space according to June based on postal regulation. Duane felt we should be including more exchange ads with other societies. At this point we can’t really tell if the web site is generating new members, but it is certainly attracting a lot of users. (Duane and John have prepared a handout, Six Easy Primroses to Grow, to give out at the National Show or any other chapter activities.)

Pins

Duane took the APS logo, put it on his computer and colored it in with a bright red background and gold outlines. He checked into pricing for a 7/8" lapel pin. It looks like it would cost about $300 to have it made up (prices range from $1.65 to $1.00 a piece). Candy will send Ed a copy of the APS pin that had been made previously. The new pin could be used as a membership perk, a handout, or could be sold. In order to proceed before the next Board meeting and have the pin available for the National Show, we will get the feeling of the Board after copies of the proposed pin are sent to some Board members for review.

Pat Wilson, Recording Secretary

NEXT BOARD MEETING

The next Board meeting will be held at the National Show in Juneau, May 6, 2000.

TASMANIA continued from page 15

Time passed and again there came another plea from the other side of the world. Kees and I did the right thing, got our priorities right and arranged a holiday for ourselves looking at the great gardens of England traveling north to Scotland. Finally we joined the family in Scotland where my daughter had organized several days of visits to the most wonderful Scottish gardens.

Our first day ended with Cluny House Garden after which we were going to a very exclusive (read high priced) country house, famous for its game cooking, to dine and sleep the night. Cluny House garden is not one of the large, formal, manicured estates we had been admiring and not absolutely loving, on our way to Scotland. It was late afternoon (my favourite time in a garden) and we were the only visitors. The garden was a huge bouquet of Primulas, Nomocharis, blue, pink and white Meconopsis, splendid trees and Rhododendrons. Masses of these wondrous beauties were on either side of narrow, wandering walkways. A charming beautiful garden, it just stopped me in my path, as I gazed with delight at all around me.

The other family members were chatting together, further up the path. Coming out of my reverie, I heard their voices drifting back to me and they were chirping merrily of the food they were going to eat at dinner that night “Hi! You heathens!”, I called out to them, “You are walking through the prettiest garden and all you can think of are your stomachs. I am going to go by myself” and I took a path in an opposite direction that wound its way through a field of Primulas.

When my eyes and senses had drunk to their full, my feet took me to a formal lawn near the house. There I saw an “honesty table” where many of these lovely plants were for sale. Gazing with regret at the wondrous treasures that could not be for me, (how could I get them back to Australia?) I became aware of someone standing beside me. Without looking and assuming it was my daughter, I said, “I wish I could take some to Tasmania. It is so frustrating.” “What about seeds?” a stranger’s voice asked me. It was the owner of the house and garden! I asked him if he held seeds of these exciting plants that were not available in Australia and he said quietly “Come with me.” As we walked towards the house, I heard my son-in-law cry with despair “Oh! No! We will never get our dinner now. He is taking her away to another part of the garden.” His voice became even more anguished, “Bring her back at once!!!!”

Mr. Mattingley and I just smiled at one another.

And that is how we grow the lovely Himalayan Primulas and Meconopsis. From those packets of minute seeds, flying with me all the way back to Tasmania, where our seasons were all wrong, I now have hundreds of plants. They are shedding themselves prolifically and reminding me every year, when they burst into exciting bloom, of that garden of joy in Scotland. And my son-in-law’s sense of humour!

I am not a specialist Primula grower but, like a piece of art, I know what I like and I certainly like the family of Primula very much. To fit into your landscaping, you cannot have a more beautiful, easy to grow ground cover. From one plant this year, I may have only a formal lawn near the house. There I saw an “honesty table” where many of these lovely plants were for sale. Gazing with regret at the wondrous treasures that could not be for me, (how could I get them back to Australia?) I became aware of someone standing beside me. Without looking and assuming it was my daughter, I said, “I wish I could take some to Tasmania. It is so frustrating.” “What about seeds?” a stranger’s voice asked me. It was the owner of the house and garden! I asked him if he held seeds of these exciting plants that were not available in Australia and he said quietly “Come with me.” As we walked towards the house, I heard my son-in-law cry with despair “Oh! No! We will never get our dinner now. He is taking her away to another part of the garden.” His voice became even more anguished, “Bring her back at once!!!!”

MT. TAHOMA NURSERY

WE OFFER A LARGE SELECTION OF NAMED CULTIVARS OF PRIMULA AURICULA, P. ALLIONII, & P. ALLIONII HYBRIDS AS WELL AS MANY SPECIES PRIMULAS, JULIANA HYBRIDS, & MUCH MORE!

RICK LUPP (253) 847-9827
MAIL ORDER IN U.S.A. ONLY
OPEN FOR VISITORS BY APPOINTMENT ONLY

Send $1.00 for Plant List
28111 - 112th Avenue E.
Graham, Washington 98338

HARRY LEIGHTON, Tyne & Wear, England. Board member with plaque of appreciation from APS for the many slide shows he has donated to slide libraries.
pockets of leaf mould. It requires for germination gibberellin produced by fungi acting on the leaf mould. This clever trick ensures that the seeds germinate in the one place where they can survive. Ultimately the seedlings grow large enough and have a sufficient store of moisture to allow them to emerge into the brilliant sun and survive.

Q. What types of species can be anticipated to have gibberellins as an absolute requirement for germination?
A. Generally they are small species in harsh environments. Of 230 species of cacti that I have studied about half have GA-3 as an absolute requirement for germination. This requirement is also found in the rosulate violas of the Andes which again are small plants growing on gravel slopes under conditions much like cacti. Ranunculus lyallii from the slopes of Mount Cook in New Zealand and Romneya coulteri from the harsh cold deserts of Nevada have this gibberellin requirement. One can see the common theme in all of these examples. Three species of Sambucus and most of the Thalictrum species (both U.S. and Asiatic) have this requirement so it is also found in woodland plants, particularly those from rocky woodlands. A few swamp plants have the GA-3 requirement, notably Caltha palustris, and with this species both seed from U.S. and Iceland were found to have the same pattern. With all of these one must either treat the seeds with GA-3 or at least sow the seeds in a medium that has extensive fungal growth, hoping that an appropriate gibberellin is being produced. There will be no germination with any other treatment.

Q. What percentage of the species studied appear to have the gibberellin requirement for germination?
A. About 200 or 5% of the 4000 species studies to date.

GIBBERELLIN continues on page 31

KISOANA continued from page 12

plier will include instructions as well as warnings pertaining to its use. Like all chemicals, GA-3 should be handled with caution.

I used washed, Styrofoam egg cartons, lid removed and cut into 2 six-packs as my containers. I label each eggcup with a pen, using a different letter for each one. Seeds of one type are put into one eggcup. A label is made with the name of the seed and the eggcup letter on it. Following part of Deno’s method (see references), one cubic millimeter of crystalline 95% GA-3 is put into each eggcup. The amount is that which can be balanced on the end of a rounded toothpick that is pointed at both ends. Six drops of water are then added to each cup and the six-pack is carefully slipped into a sealable plastic bag to prevent evaporation.

This method will give a solution of approximately 1000 ppm concentration. If the seeds float, I have been dipping a toothpick into a weak solution of 1/2-cup water mixed with a drop of dishwashing soap, then dipping it into the GA-3 solution to break the surface tension. I haven’t seen any adverse effect from doing this yet. Seeds are soaked until they swell. This is likely to be 1 day or less for primulas. The seeds are fished out of each eggcup with a flat-ended toothpick and sowed as normal with the premade label to identify it. Leaving the seed to soak for several days or until the seeds germinate in solution, tends to produce elongated and weak seedlings.

Comparing seed germination of treated and untreated seed is useful. Keep records of any results that you have and please share them by writing about them in the APS Bulletin.

<table>
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<th>Batch</th>
<th>Seed Name and Source</th>
<th>Number of Seeds Sown</th>
<th>Seed Treatment</th>
<th>Germination Date</th>
<th>Transplanted Date</th>
<th>Seedlings Transplanted</th>
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<td>#1</td>
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<td>11 seeds</td>
<td>Oct. 15 GA-3</td>
<td>Oct. 20</td>
<td>Nov. 5</td>
<td>11 seedlings</td>
</tr>
<tr>
<td>#2</td>
<td>Primula kisoana APS #82 1998</td>
<td>24 seeds</td>
<td>Oct. 20 GA-3</td>
<td>Oct. 25</td>
<td>Nov. 11</td>
<td>7 seedlings</td>
</tr>
<tr>
<td>#3</td>
<td>Primula kisoana APS #40 1997</td>
<td>11 seeds</td>
<td>Oct. 15 outside</td>
<td>Nov. 7 GA-3</td>
<td>Nov. 12</td>
<td>11 seedlings</td>
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<td>#4</td>
<td>Primula obliqua CC* #2343 1998</td>
<td>24 seeds</td>
<td>Oct. 15 GA-3</td>
<td>Oct. 22</td>
<td>Nov. 5</td>
<td>8 seedlings</td>
</tr>
</tbody>
</table>

References
1. Norman C. Deno, Seed Germination 2nd ed. (1993); published by the author at 139 Lenor Drive, State College, PA 16801 USA


Sources of GA-3
Gardens North
5984 Third Line Road North, RR #3, North Gower, Ontario K0A 2T0 Canada

J.L. Hudson, Seedsman
Star Route 2, Box 337-A
La Honda, California 94020 USA
SEED EXPEDITION

The Alaska Rock Garden Society Expedition to China and Tibet is now offering seed shares. Ten experienced Alaskan team members, led by renowned collector Dan Hinkley of Herbwood Nursery will collect on your behalf, seeds of many hardy plant species. The following list of genera will give a general indication of the plants that may be part of the allocation. A wide variety is anticipated, allowing for many preferences, including alpine or rockery, herbaceous perennials, climbers, shrubs or trees, many of the most popular genera are well represented.

PLANTS

Primula, Meconopsis, Arisaema, Androsace, Gentiana, Corydalis, Saxifraga, Geranium, Cyananthus, Clematis, Fritillaria, Rheum, Roscoea, Codonopsis, Iris and:

Abies, acer, aconitum, allium, anaphalis, anemone, arenaria, aster, berberis, campanula, cassiope, delphinium, dencetra, disporum, draba, erigeron, euphorbia, incarvillia, leontopodium, lilium, nomocharis, polygonum, rhododendron, rosa, saussurea, silene, sorbus, thalictrum, viburnum, etc.

SHARES

Standard share - 25 packets $100.00
Full share - 40 packets $200.00
Corporate share - 90 packets $500.00
With larger quantities per packet where possible.
Sponsor share - 120 packets $1,000.00

Listed as sponsor in public relations material and post expedition book/documentation.

Send your order now, seed preferences, and check made out to the:

Alaska Rock Garden Society
C/o Teena Garay
P.O. Box 2653
Homer, Alaska 99603

For further information check out the ARGS website.

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rhododendron groves there were plenty of P. pulverulenta, seemingly the favorite in this country, growing as bedding plants and more. They were a bit on the wild side. Plants were sold at the information center for about 50 cents US.

I may have come to New Zealand a bit late to see the best of the primrose season. I suspect spring gets underway a bit earlier on these islands than I had anticipated. Upon reviewing the seed catalogue of the New Zealand Alpine Garden Society there is a great variety of primula seed offered, leading me to believe that I missed seeing the majority of the growers of our favorites. New Zealand is a most commodious place to revel in them.

SUNSET continued from page 19

‘Alba Plena’, ‘April Rose’, ‘Lilian Harvey’, and ‘Sunshine Susie’. They are planted, along with ‘Quaker’s Bonnet’, on a berm in the partial shade of a clump of our native white birch trees, and form a beautiful tapestry of color among the rocks.

I was eager to try growing my own double-flowered primulas from seed. Having purchased seed from Rosetta Jones, famed APS member and hybridizer of double Primula vulgaris, I patiently awaited my first flowers. However, when the seedlings bloomed I had nothing but single blossoms. I was devastated and felt a total failure.

Fortunately, I came across an article in the APS journal, Primroses, stating that double flowers primulas don’t always have double flowers the first year. It can take two or three years for the blossoms to truly double.

I hovered over my plants and was elated to find the first extra petals at the center of a blossom. Yes, the doubling was beginning in the second year. True, some plants remained singles, that is the name of the game. Not all will double, even though the seed came from a double-blossomed parent, but I did have three plants that were doubles.

During a visit to the nursery of the late Dr. David Reath in Vulcan, Michigan several years ago to purchase hostas, we also saw his collection of beautiful double Primula vulgaris in full bloom. What a sight! Great swaths of each color in the shade of his tall pines, literally taking my breath away. He was a hybridizer who knew good plants!

Dr. Reath also had rows of seedlings in his nursery bed and consented to sell me one of these treasured babies. I was delighted, even more so, when this plant bloomed the following spring. The blossoms opened a soft yellow, but, as they matured, their color changed to a beautiful salmon. The plant shows all color phases as the new light yellow buds open and other blossoms mature to different stages of salmon.

Absorbing the wonderful blend of color on this plant, I decided the blossoms remind me of the gorgeous sunsets we see over Lake Superior. I’ve chosen Primula ‘Superior Sunset’ as the perfect name for this double-flowered Primula vulgaris. It has brought joy to all who see it, and has more than earned a special place in our gardens.

GIBBERELLIN cont. from page 28

However, one can never be presumptuous in science and the effects of pre-treatments have not been a focus of study in my work. It has been found with Echinocereus that the seeds can be held moist for three years in various temperature regimes followed by treatment with GA-3. The seeds then germinate with the same short induction period and precisely the same rate curve as fresh seed. This is a remarkable demonstration of the specificity and mathematical preciseness of these effects.

Q. What temperatures should be used for the germination of seeds requiring gibberellins for germination and how rapidly will the germination take place?

A. In general, germination takes place within a few weeks at 21°C (70°F), after treating the seeds with GA-3. A most important variation is the several species of rosulate violas that were studied. These have GA-3 as an absolute requirement for germination, but germination takes place at 4°C (40°F) and not 21°C (70°F). Incidentally, seeds of...
GIBBERELLIN cont. from page 31

these rosulate violas that had been dry stored at 21°C (70°F) for two years germinated with the same exact rate curve and in the same percentage (60-90%) as fresh seeds. It is characteristic of species that require gibberellins for germination to have very slow death rates in dry storage. Cacti are typical examples.

Q. When were gibberellins first recognized as absolute requirements for the germination of certain species?
A. There have been many attempts to initiate germination by treating seeds with various chemicals. There were a few claims that gibberellins 'promote' germination, but the experiments were always anecdotal, so much so that they were not mentioned in the classic book on gibberellins published in 1991. All of this was changed by a paper by Nikolaeva and co-workers in Russia and a paper by Stewart and Presley in the United States. These two papers made it clear that gibberellins were likely to be absolute requirements for germination of certain species. On reading these two papers, I immediately incorporated GA-3 treatment as one of the standard treatments in my exhaustive studies on seed germination.

Q. What is the history of the discovery of gibberellins?
A. In Oriental countries there is a serious disease of rice in which the cells elongate, the stem elongates and topples over, and the yield of rice is much reduced. The names for this disease can be loosely translated as crazy rice, fool's rice, etc. In 1926 a Japanese chemist named the chemical gibberellin after the fungus which produced it. In 1936 a Japanese chemist crystallized this chemical. The following decades saw much activity directed towards discovering other gibberellins and testing various chemicals for this ability to cause cell elongation. In 1991 a definitive book entitled Gibberellins was published. By this time sixty-seven gibberellins had been isolated and identified.

Q. Where can I get more information on the species requiring GA-3?
A. The theory of the gibberellin effects is covered in the second edition of my book Seed Germination Theory and Practice (self-published and distributed, available post-paid anywhere in the world for $20). Although this book contains detailed data on 2500 species, the GA-3 treatments were applied late in the study so that relatively few GA-3 results are in this book. Since then GA-3 treatment has become one of the standard treatments.

Q. What are the other mechanisms for blocking germination?
A. Based on data on 4000 species, 95% of all species use a chemical system to block germination and 5% use a physical system. The latter is almost invariably an impervious or semi-pervious seed coat. The chemical systems are destroyed by dry storage, light, or various temperature regimes including oscillating temperatures. These patterns are highly specific and reproducible for each species. The traditional practices of dry storing the seeds before planting and of planting seeds outdoors often serve to provide the precise treatments needed to destroy the chemical blocking systems. This obscures the presence of the blocking systems and the highly specific nature of the germination requirements. Nevertheless, there is no substitute for knowing the exact pattern and optimum treatments. A bumper sticker seen in a remote outpost of Wyoming said it all, 'If you think education is costly, try ignorance.'

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Beginner starts Primulas

By Duane Bell - Juneau, Alaska

I would definitely like to see more input on this subject. When I first started with primula seeds I received some from a commercial source in the early fall and stored them in my garage. I didn’t know I should be keeping the seeds refrigerated.

The flats went onto shelves that each have two two-tube fluorescent fixtures mounted overhead. All of the shelves above the bottom level receive bottom heat from the lights below. If there was an indication the seeds needed a cool environment, they went on the very bottom shelves.

I had tremendous germination with P. cortusiodes, P. auricula, P. frondosa, P. angustifolia, and P. denticulata although some of the seeds took forever to start. After 6 weeks or more, some went through a couple of dry cycles because I was losing interest. I don’t know if it helped or hurt.

A tray of P. halleri seeds never did show any germination that spring. Fortunately I had read somewhere to give some varieties lots of time. That tray went out to a shady location where it sat all summer. During one of our fall freeze/thaw cycles I found that tray and noticed some strange lumps forming on the surface. I brought the tray indoors, placed it under lights and let it thaw. Within two weeks I had P. halleri. Lots of P. halleri. I figure 10 to 11 months for germination.

When I received my first batch of APS seeds, some germinated almost immediately, and others took months.

Some of the things I think I have learned from my beginner experiences are: 1) The older the seed the longer it might take to germinate 2) Be patient. Give LOTS of time for the seeds to germinate as even within the same batch germination can be very uneven 3) Keep seeds chilled, but not frozen in the refrigerator. Refrigerator freezers tend to dehydrate seeds. 4) Don’t be afraid to try a particular plant because someone, or a book, says it is difficult. You might have the perfect microclimate for it. 5) Read everything you can get your hands on and ask questions to clarify what you read. 6) Primulas are a tremendously diverse family of plants with some requiring alkaline soil and some requiring acid soil. Some want shade and some want sun. Some want perfect drainage and some will tolerate mucky conditions. You will only learn these requirements through reading and asking questions. 7) No matter how experienced a grower is, they revert to close to beginner status when they plant a new variety.

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*P. denticulata* in a Juneau garden in early May
Photo by Ed Buyarski