The photograph on the front cover shows Ethel and Wallace Balla on one of their trips to the West Coast.

Ethel Jarrett Balla
(1921-1989)

Many of us are saddened, and all of us diminished, by the death of Ethel Balla — a lovely person, a great lady and an enthusiast about life who was with the APS all too briefly. The following account appeared in her local paper on January 16, 1989.

"Ethel Jarrett Balla, an award-winning gardener and member of the Civil Air Patrol during World War II, died Monday at the Greenwich-Laurelton Nursing Home after a long illness. She was 68.

She was born in New York, City and grew up in Stamford, where she attended local schools. She and her husband, Wallace J. Balla, moved to Greenwich in 1954. Prior to her marriage, she worked as an executive secretary at Lithium Corp. of American in New York City.

She was an accomplished pilot, having learned to fly in 1936 at the Stamford Seaplane Base. During World War II Mrs. Balla served as a lieutenant in the Civil Air Patrol of the U.S. Army Air Corps, on anti-submarine duty. For her wartime service, she received the National Commander’s Commendation Medal and Wartime Service Medal as an active belligerent.

Mrs. Balla owned a number of planes, and one of her planes, an Aeronca Chief, was the first plan to be based at Westchester Airport when it opened after the war. She was a member of the Aircraft Owners and Pilots Association.

In addition to flying, Mrs. Balla’s other main interest was gardening, in particular primroses and lilies. She was a member of the Greenwich Woman’s Club Gardeners, the American Primrose Society, the New England Lily Society and the American Rock Garden Society. Over the years, she won many awards for the best in show in a number of flower shows, her husband said.

In addition to her husband, she is survived by a daughter, Joan E. Balla of Greenwich; a son, Bruce W. Balla of Kent, Washington.

In a poignant letter to friends in the Society Wallace, Ethel’s wonderful and faithful husband, tells of happier days before her final illness, ending with these words ...

"a wonderful and warm-hearted woman. We had her viewing locally, and she has requested being in her WWII Civil Air Patrol Lieutenants uniform, and was very proud of the two National Commanders Commendation and Wartime Service Medals, so we had those on her tunic, too. As she requested, we mixed her ashes in with the soil of her beloved flower garden ...

We shall miss her."
On The Trail of Primula Domensis

The exciting newly discovered Primula from Utah

Larry A. Bailey
Edmonds, Washington

Sawtooth Canyon, on the evening of the 6th of June, 1988 was not the most pleasant place to get a good night's rest. Two of us were trying to get comfortable, lying in the back of my little Nissan pickup; with sleeping bags, oversized air mattresses, camping gear poking in ribs, and the wind blowing incessantly. All day and into the night, while driving through the plains and deserts of Idaho, Nevada and into the western part of Utah, we had fought and wrestled with the tremendous winds and dust storms created by a gigantic weather turbulence along the Pacific Coast. Now, lying in pitch darkness, with the canopy shuddering and rocking, we could hear the winds screaming through the pinyon pines and howling off the cliffs of the canyon. What a contrast to my first visit to Sawtooth Canyon two years previously; where after the usual wind shifts at dusk caused by the rapid temperature changes between the mountain and desert areas, the night became unearthly still and one could hear nocturnal animals foraging for food, hundreds of feet from camp.

Finding it useless to attempt sleep in a nearby vehicle, Lee Bower and his wife, Chris Bogard, were up before dawn, rattling pots and pans, getting the camp stove fired up and trying to get that first cup of coffee brewed. By the time I worked myself of the back of the pickup through the menagerie of gear, Lee and Chris were bundled up, hunched over with their backs against the wind, stomping their feet for circulation and making a futile efforts to prepare a warm breakfast. The temperature had plunged during the night and the wind drove the chill through to the bone.

Waiting for the sun to warm the canyon, we stood in awe and watched the first rays of light explode in rich browns, rusts and golds on the canyon walls. With a sharp edge, the light slowly worked down the towering cliffs, and crept onto the canyon floor, signaling departure time from our base camp.

The first time I was in Sawtooth Canyon, I was with Joe Conner and it was later in the season (June 17th), not only in calendar days but in temperatures. At that time we started up the dry wash of the canyon before the sun had a chance to begin its daily baking action, when temperatures soared to the limits of the thermometer. By mid-day, the only animals not taking siesta or refuge in shade were humans and flies. After hours of hiking and climbing the steep canyon inclines we did find a few Primula plants, but the blooms were spent and the leaves rapidly drying for the summer dormancy; little reward for the aching and bruised muscles, altitude dizziness, parched mouths, and rattlesnake encounters.

Eons ago, the House Range (at the southern edge of the Great Salt Lake Basin) was formed by a massive uplifting of sedimentary rock out of the ancient and mammoth Lake Bonneville during the Mesozoic era and into the Miocene period. Thousands of feet thick, the Cambrian and Ordovician limestone rock now rises out of the desert forming towering cliffs to over
9,000 feet in elevation and creating the unique environment of the House Range.

Looking towards the west, up the gradual incline of the canyon floor, one is struck by the vast contrast between the towering north-facing limestone cliffs protruding above the dark gray-green junipers and pines on the left, and the rounded, washed and inhospitable bleak hills to the right. A wide range of flora is encountered, beginning at the mouth of the canyon where it spills out to the east into the vast wastelands and barren desert of the Sevier Basin with its ghostly, hazy, turquoise lake, through the canyon with its steady rise in elevation, ending in the clear, crisp and dry sage-scented air of Pinyon-Juniper forests.

This morning, with the wind still howling off the ridges of the canyon, we made a slow ascent up the deeply gouged wash in the floor of the canyon, the ever-present sage dominating the landscape; unconsciously identifying escape routes in case of a sudden cloudburst. Stopping to photograph, we saw first the cacti: Claret Cup Cactus (Echinocereus triglochidiatus) brilliant yellow Figgle Pricklypear (Opuntia fragilis), etc. and incandescent white Prickly Poppy (Argemone blancana). Midway into the canyon, at higher elevations, we were able to spot scarlet Desert Paintbrush (Castilleja chromosa). White Loco (Oxytropis sericea) red Skyrockets (Ipomopsis aggregata), Eriogonums, yellow composites, creamy white Birdcage Evening Primrose (Oenothera deltoides), a very floriferous Gray-ball Sage (Salvia dorrii), as well as a wide variety of penstemons including P. babatus, humilis, and linatorides. Each time a photograph was to be taken, the wind had to be carefully considered. Hours were quickly consumed trying to block the gusts and waiting for the stalks and delicate flowers to stop their rhythmic swaying and rapid vibrations.

Towards the western head of the canyon, full of apprehensions, we started up a steep incline towards the base of the limestone cliffs. Two weeks before, Jay Lunn had briefly visited the area of Sawtooth Canyon Notch Peak and reported before our departure that although he was able to find some Primula domensis, there were few plants and very sparse flowers. The plants he did find were already showing signs of going into summer dormancy, even with cooler temperatures and still remaining signs of snow. Jay had taken the ridge route towards Notch Peak, where the plants were in unprotected areas and exposed to direct sunlight. My only hope in finding some good specimens revolved around the concept that the area our group was heading for was on the north-facing cliffs, out of direct sun contact for most of the day (if it received any light at all). So much cooler temperatures could be expected; a location that allowed the winter snow to drift in, and which retained its moisture for extended periods.

Deciding before we started up the steep trail that we were not going to make this hike an endurance marathon, we slowly climbed out of sage into the Pinyon-Juniper zone, stopping often to inspect and photograph the rapidly changing flora, allowing our bent-earned, shy and timid dog, Sport (alias Rambo - The Hunter), to flush out an occasional rabbit, and to catch our breath. Deep blue Nuttall's Larkspur (Delphinium nuttallianum), eye catching pink Bent Milkvet (Astragalus inflexus), and the variations of white, pink, and blue Tufted Phlox (Phlox caespitosa), were just a few of the flowers demanding our attention. By now the sun's presence was rapidly warming our surroundings and our legs were letting us know they were not used to such strenuous exercise. We were happy we had left our heavy winter coats back at the base camp.

While Danny Lajoie and I were stopped under the shadow of a pine to regain stamina, my heart started to jump beats as I noticed a small plant of familiar characteristics in the shade of a rock outcropping. I was quite surprised and delighted to find Primula domensis at this lower elevation, down the incline from the base of the limestone cliffs, and among the grasses and phloxes in fairly exposed locations. Further examination of the area revealed more small colonies in and around the rock outcroppings. Those in direct sun were already passed their blooming cycle of course, and going into the summer dormancy, but a few in the shade were still in bloom. It wouldn't be many days before they too disappeared into the earth, pulling back from the heat and concealing their thick root stalks. At last I had the opportunity to see Primula domensis flowering.

It wasn't long before Lee and Chris, having hiked to the base of the cliffs, were calling back to us that we shouldn't waste any more time photographing the plants we had found, as larger and more floriferous colonies lay ahead.

Quickly reaching the cool shade of the limestone cliffs, I was completely overwhelmed at the sight of blue-magenta flowers hanging off rock walls, small families nestled in dark crevices, resting on rocky ledges amongst alpine pines creeping and clawing at their rock foundations, and flowing and afluttering down the small scree at the base of the towering vertical cliffs. Unidentified dwarf ferns, hanging clumps of Heuchera and phloxes mixed with bright yellow miniature Cruciferae added drama to the magical setting.

It quickly became apparent the plants in shady locations were far more viable and much more prone to flower than those receiving direct sun light. What really surprised me was the wide range of colors (from dark vermillion to light blue), the different sizes of pips (up to 2-1/2 cm across), the variation in the shape of the petals (pointed, to rounded, to ruffled), the amount of shading on the petals from a very distinct dark center and light edges to no shading at all, and the configuration of the yellow eyes (star to circular). True to the genus Primula, the colonies had both thrum and pin-eyed pips, and farina could be seen on the stems, calyx and seed pods. The average number of pips on a stalk was two, but some of the plants had up to six. The leaves were just as varied as the flower; some were narrow, some rounded; some serrated, some smooth; some long, some short. The only consistent factor was the color of the leaves (about the same green hue as Primula auricula).

The wide variations of the flowers and leaves of Primula domensis is not typical of species found in their native habitat and causes one to speculate as to the determinant. Could it be that two Primula species are naturally hybridizing in this location; or that the species is still in an active, evolving stage? So little is known about Primula domensis, having been only recently discovered in 1983 (1) and named in 1985 (2) (3). The total range of the plant has not been fully documented, nor have the environmental conditions and micro-habits been carefully examined. From my own observations, I now know that this primula can tolerate more varied growing conditions than I would have first suspected: cool shaly rock crevices, hot direct sun, grassy slopes, etc. All of these facts
indicate that *Primula domensis* might be suitable for cultivation and hybridization. Fantastic shading and shapes of pedals, wide variations of hues, and multiple pips to a truss are just some of the traits that could be developed through cross breeding.

The wind subsided slightly, with the high pitched screams mellowing to deep howls and groans, but still the occasional strong gust played havoc with the photography efforts. Throughout the attempts at taking pictures of these fantastic plants, especially in the dark shade of rock pinnacles, I was also wishing I had packed in reflecting shields to light the even darker crevices and recesses; the clear full spectrum of the desert sun was always only a few feet away. By the time we had completed our examination and photographing of *Primula domensis* the intense sun had climbed high into the dusty blue sky.

As our small party, each allowing themselves a personal choice of direction and pace, descended towards the canyon floor, I found myself with a deep, perplexing thought on these wonderful Primula of the House Range: how to introduce this rare species into cultivation without destroying the last remaining colonies of a very special plant that has been able to survive eons of time, high above the desert in a rich forest, hidden in their secret canyon surrounded by a vast wasteland, deeply contented in their own miniature Shangri-la, without being thoughtlessly destroyed by man! To this bothersome question, I failed to find an answer.

**References**


Authors Note: Before venturing into any desert region, all necessary survival equipment and procedures should be very carefully planned. The House Range is located approximately 50 miles from the closest settlement where water can be obtained (Delta, Utah). If a vehicle should break down, Sawtooth Canyon would be at least a 20 mile hike through parched deserts to infrequently traveled Highway 6.
Following the Marsyandi in search of Primulas

Brian and June Skidmore
Mercer Island, Washington

In mid afternoon on a July day in 1988 we were standing on a dusty street in Dumre, a small village in central Nepal. The temperature was 94°F and we had just purchased black, Chinese made, umbrellas to help keep off the sun. These umbrellas were to be indispensable in the four weeks which followed.

The journey to Dumre had started in early 1987 when a notice of a trek planned for the summer of 1988 appeared in the Alpine Garden Society Journal. The trek, to be led by Dr. Chris Grey-Wilson, was to follow the course of the Marsyandi river to the north of the Annapurna Range. The objective was to reach the headwaters of the river where a wide range of alpine plants are to be found. With an interest in alpines in general, and primulas in particular, we sent in our applications and were fortunate to be included in the 18 names drawn out of a hat in July 87.

In the months which followed we equipped ourselves for the adventure and, by following a program of hikes in the foothills of the Cascade mountains mixed with a number of urban walks up and down Seattle’s hills, reached a reasonable level of fitness.

We flew to England and met the other in the party early one morning at Heathrow airport. After a long journey, which included a night spent in the New Delhi airport transit lounge, we arrived in Kathmandu. We went straight to bed in the hotel to catch up on lost sleep. The following day, after a bus journey of about 6 hours on a bumpy, winding road, we eventually arrived in Dumre.

The trekking party, consisting of 21 ACS members, ranging in age from 18 to 65 years, 7 sherpas, cook, kitchen boys and some 50 porters, was to follow a route similar to the one taken in 1983 by Ronald McBeath of the Royal Botanic Garden, Edinburgh. As he reported in the account of his expedition, within a few hundred feet there was a wide, swiftly-running river to ford. This first day was to set the stage for the following 2 or 3 days. Long hikes in oppressive, 90 degree or so temperatures, through a fertile valley, with seemingly endless rice paddies. The occasional villages were places to pause for drinks and to photograph the local children. As we lay in our small tent that first night, with perspiration running off us, it was necessary to remind ourselves of the reasons for making this journey. The next morning tea was brought to our tent at 5:30, a small bowl of water for washing appeared at 5:45, breakfast was at 6 and we were on the road at 7 am. This was to be the routine for the next 26 days.

By the end of the third day we had adjusted to the heat, the exercise, the absence of sanitation and the food. After a long soak in the river by the camp, we retired to our tent that eve-
ning in a good state of mind. Unfortunately, a few hours later at 3 am the camp was evacuated because of a rapidly rising river due to the monsoon rains upstream. That river and three others swollen by the rains had to be forded on that day, sometimes by clinging to a rope held by the sherpas, across the fast-running waters.

This first stage of the journey was through a sub-tropical area where any flat area was cultivated with rice or corn. On the surrounding cliffs where, cultivation being impossible, exotic gingers, ferns, and epiphytic orchids grew in profusion. The handsome fran-gipani, or temple tree stood out with its large, fragrant, white flowers. The trail wound up and down through lush growth with fragrant, artemesias. (There were also leeches clinging to the wet leaves and stems of plants on either side of the path which we tried to avoid, not always with success.)

For the next 4 or 5 days we passed through a gorge cut by the river Mar-syandi. Although there were many steep climbs and descents, the altitude gain was comparatively small. There were numerous waterfalls cascading down the cliffs, spectacular scenery, multi-colored butterflies and an abundance of plant life including, nestled on a rock ledge, a gesneriad gem with pale purple tubular flowers that was identified as *Coralifodiscus lanuginosus*. A few specimens of *Lilium nepalense* were growing on the mossy banks, their spreading, upturned, yellow petals displaying reddish anthers.

Because there were few places suitable for camping in the gorge, the nights were spent in village "hotels": two-story stone structures, with dingy, dirty rooms without power, water, or any sanitation. However, after the strenuous days there was little difficulty in sleeping in these conditions, although acrid smoke from wood fires burning on the first floor, sometimes filled the sleeping rooms.

By the end of the ninth day we had reached Pisang, at an altitude of about 9,000 ft. The temperature was pleasant for hiking, and the weather was drier as we were moving into the rain shadow of the Annapurna range. It was the middle of the monsoon season, but most of the rain fell overnight (although there were some wet mornings and evenings). The villages were Tibetan style and the trail wound through pine woods similar to those found on the slopes of the Cascades in Eastern Washington State. Growing near our lunch stop was *Daphne bholua*, the inner bark of which is commonly used to make paper. Everywhere, *Anemone rivularis*, with its white petals backed with blue, grew in profusion.

The climb out of Pisang was very steep. On some stony slopes we had our first sighting of a relative of the Daphne family, *Stellera chamaejasme*. This attractive plant had leafy stems, rising from thick rhizomes, with clusters of sweetly scented white/pinkish tubular flowers. After a few hours, in a meadow area at the 10,000 ft level were the first primulas of the trip. The yellow flowers of *Pedicularis longillora var tubifloris* first caught our attention but, growing in abundance close by, in marshy conditions, was *Primula tibetica*. The flower stems were 1-3 inches long, the flowers had bright yellow eyes and petals in various shades of pink. One white form was also found. Many photographs were taken and, happy to have seen this attractive member of the Farinosae section, we moved on in good spirits. The going was slow because of the altitude and our feet were dragging by the time the camp at Sabche came into sight. The tents were in pleasant surroundings by a small lake, regarded by the local people as holy.

A strenuous side trip up the nearby Sabche Khola took us to the 12,500 ft level across the valley from Annapurna 111. The summit, as usual, was in the clouds but the rumblings of avalanches could be heard, and we could see in the distance falling snow and ice. The principal attraction on the way was *Rhodendron lowndesii*, growing on rock ledges, forming a covering only a few inches high. With its pale yellow flowers spotted with red inside it was a most attractive plant. Androsaces and saxifrage species, mostly past their prime, covered the rocks while, growing nearby, were tiny gentians, *Rhododendron lepidotum*, *Anaphalis triplinervis*, *Potentilla erio-carpa* with its brilliant yellow flowers, and a few woolly globular heads of *Saussurea graminifolia*. The following morning at breakfast the clouds cleared and there were splendid views of Annapurna 11 and 111 before the clouds rolled in again.

Our next campsite near the village of Manang was only a short hike away and we had a fairly relaxing day visiting two nearby monasteries, washing clothes and stocking up with chocolate bars found in the village store. The climb from Manang was gradual through scrub consisting mainly of shrubby potentillas, berberis, spireas, *Rosa macrophylla* and *R. sericea*. Looking back one could see the winding river stretching for miles down the valley with the Gangapurna glacier, with a glacial lake at its foot, across from us.

The weather was cloudy and cool during the two days it took to reach the highest campsite at Thorong Phedi (approximately 14,500 ft). On the way we walked across screes containing many of the plants which made the trip worthwhile. Those included *Meconopsis bella* and the more dramatic *Meconopsis horridula* with its turquoise blue, tissue-like, flowers and bright yellow stamens; an outstanding plant. Trailing over walls and shrubs was *Clematis vernayi* with unusual bell-shaped flowers, flared at the end, in shades of rusty yellow to greenish yellow. A cultivar of this plant is apparently available by name of C "Orange Peel". A splendid display of *Primula sikkimensis* stretched down a hillside by a small stream. The 24-inch high

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*Mcconopsis horridula & Sausseria tridactyla*
plants with pale yellow flowers dwarfed the P involucrata and P tibetica which were also in the area. Several species of cremanthodium, with sunflower-like flowers, flourished in the stony ground.

At one stage the silence was broken by the sound of distant bells and eventually a mule train carrying salt from Tibet came into sight. The lead horses had bright red head plumes and the overall effect was very colorful.

The final few miles to camp were along a steep hillside where there had been a number of landslides. We had to walk carefully in these areas, and at the end of a long hard day we were very happy to see the tents of our camp below us.

We camped three nights at Thorong Phedi. There were no noticeable ill-effects from the altitude and the first day was spent scrambling up the hillside to the high cliffs above the camp. There we found small colonies of Primula sharmae in bloom together with cushions of saxifrages and Arenaria glanduligera, a tufted plant with pink flowers, growing on ledges at the foot of the cliff walls. The flowers of P sharmae were mauve-purple or bluish purple, approximately 0.5" across on short flowering stems about 2" high. A few much smaller plants of the Farinosae section were also found in bloom and were identified tentatively as P. concina. In one location only, under a rock, there was one group of primula whose bloom was over, with heavy farina on both surfaces of the 2" long leaves. (P. sharmae and P. concina were farinose on the underside of the leaves only). Unfortunately, there was no seed in the few capsules we found.

The next day the group set off on the steep climb toward the Thorong Pass. The first hour or so we were in the mist, or low cloud, with the sun breaking through at times. At about 15,000 ft we found scattered groups of P. wigramina on the hillside interspersed with P. involucrata. P. wigramina, from the section Soldanelloides, is very similar to P. reidii, except that its leaves are not stalked. We knelt to sniff the fragrance from the nodding bell-like creamy-white flowers. Once again the primulas were growing in shallow indentations which had probably carried the run-off from the melting snow in the spring. As we climbed further we saw many different species of alpine plants, including Androsace lehmanni, Meconopsis horridula, Corydalis latilora, Trigonotis rotundifolia, Rhodiola himalalensis and Eriophyton wallchii, a downy nettle-like plant. Of particular interest was Saussurea triactyla with its dome-shaped head covered with densely matted woolly hairs, looking like a white ball of cotton. We noticed again that, except for a comparatively few meadow-like areas, these plants were scattered, not in dense collections.

The terrain gradually changed to a bleak scree, desolate bare hillside, the mountain tops as usual covered by bleak scree, desolate bare hillsides, the mountain tops as usual covered by cloud formations. It was surprising to find plants such as Andosace zambalensis surviving in these inhospitable conditions, their long roots obviously searching deeply for moisture. Lunch was awaiting us at the 16,500 ft level where the cooks had warmed soup on the stove which had been carried from the camp, 2,000 ft below. Sitting on rocks, eating our lunch under an umbrella, as steady rain had set in, we certainly felt a very long way from home. Some hardy souls were determined to climb the remaining 1,000 ft or so to the pass, but the majority of the party wound their way slowly back to camp passing many patches of the brightly colored Pediculal siphonantha. We took another set of photographs when we reached the P. wigramina again and slept very well that night.

The next morning, as camp was being packed up, we were now on the way home, although there were still 10 days of trekking ahead of us. Later that day we photographed P. buryana, another white primula from the section Soldanelloides which we had missed on the way up.

By the 18th day we were back at the campsite near Manang, doing our washing, having once again stocked up in the village with small bars of Cadbury's chocolate and tinned fruit cocktail which had relieved the monotony of our diet a week earlier.

We were blessed the next morning with fine views of the Annapurna range as we ate our breakfast. Our aim that day was to visit a Tibetan monastery in the hills beyond the river. We walked through buckwheat fields, then climbed up a very steep trail to the monastery at the foot of a glacier. The blue cones of Abies spectabilis were a wonderful sight on the way. By the edge of the glacier we noticed primula leaves without flowers or stalks. One member of the party climbed higher up the glacier and found a primula of the Capitatae section, probably P. glomerata, with seed heads.

The following days were anticlimatic as we were, for the most part, retracing our steps of three weeks earlier. By now we were ready for a good meal and a good bed although we still had a week or so of trekking ahead of us. More dusty hotel rooms with occasional life-saving bottles of soft drinks or beer at village stores. Back into the oppressive heat for two or three days, noticing how tall the rice we had seen being planted on the outward trip had grown. At long last, Dumre. Unable to sleep that night, because of the noise of singing and shouting in the field below, we crawled out of bed and, with some others in the group, joined the sherpas and porters dancing, singing (and drinking chhang) in an end-of- trek party.

Ironically, as the bus pulled away next morning, the clouds rolled away and we had the most magnificent mountain views we had seen in Nepal. The bus stopped to enable us to take those pictures which would prove we had really been in the Himalayas.

Looking back at our month in Nepal, many images come rushing back. The contrast between the beauty of the...
county and the poverty of its people; smiling children exchanging the namaste greeting ("I salute the spirit with you") with us; the sherpas, cooks and porters who looked after us so well; and tall handsome Tibetan women preparing a rice lunch for monks in the monastery at Manang and afterwards washing the dishes in the water running down the dirty street.

Our group had survived a difficult trek of between 250 and 300 miles. It had achieved its objective of seeing and photographing hundreds of alpine plants in bloom, including almost all of the primulas we could have expected to see. However, there are also troubling memories. The widespread shrub and tree cutting for firewood and construction with little sign of a re-forestation program. The building of more "hotels" in the villages in anticipation of a doubling in the number of trekkers in the next few years. The widespread grazing at all altitudes with, in many areas only scattered examples of the plants we had come to see.

It seems to us that, at least, along the Marsyandi, much of the plant life we saw could disappear within a generation or two. The call for conservation made by Larry Bailey in the Winter 1989 issue of Primroses seems very timely.


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How To Write A Book - Part II
Guidelines for Writers of Non-fiction

by Sherre Calouri and Richard Abel
Portland, Oregon

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Above all, please be consistent: not MS. We have found that the following

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marvellous; labeled, not labelled.

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check first and again, please be con-

sistent. Here are some tricky words

which we often run across:

(no hyphen)
funnelform
rootstock
semidouble
semidwarf
wildflower
(hyphen)
broad-leaved
co-edition
old-fashioned
self-sow
witches'-broom
(two words)
grow on
harden off
copy editor

Note the use of the hyphen with adjec-
tives, when followed by a noun:

he is well known
a well-known man
a pole 5 ft. tall
a five-foot pole

bulbs flower in the spring
spring-flowering bulbs

of a medium size
medium-sized tree

shaped like a kidney
kidney-shaped leaves

fertilizer releases slowly
a slow-release fertilizer

But, check the dictionary. Some

adjectives are written without the

hyphen:

deciduous

fernlike
glasslike

halfway

needlike
reedlike

ribbonlike
rodlke

rootlike

straightforward

swordlike
tenfold

worldwide

Note the use of the hyphen with

color names:

bluish green leaves:

Color term in which elements are

formed by the addition of an

em dash, or parenthetical dash, is the

most commonly used; for more on em

dashes, see Chicago Manual of Style,

section 5.92.

Apostrophes

The possessive case of singular

nouns is formed by the addition of an

apostrophe and an s, and the posses-

sive of plural nouns (except for a few

irregular plurals) by the addition of an

apostrophe only: e.g., the horse's

mouth, the puppies' tails, the children's

desks, (one notable exception) for

appearance' (conscience', righteous-

ness', etc.) sake.

The general rule covers proper

names as well as common, including

most names of any length ending in

sibilants: e.g., Burns's poems, Marx's

theories, the Joneses' reputation, etc.

The possessive case of the projoun

it is its: The book fell on its front. It's

is a contraction meaning it is.

The plurals of figures are formed by

the addition of s alone (no apostrophe):

Many new cultivars were developed

in the 1970s.
Commas
The comma should be included before the “and” and in a series of three or more items: dahlias, marigolds, and petunias.

Do not use a comma with the parenthetical (em) dash. The dash in itself indicates a sufficient pause: The Berry Botanic Garden — originally a private residential garden — was the site of the first planting.

Do not use a comma before the opening of parentheses: The temperature may be altered (Fig. 15).

Commas are usually used after “that” (i.e.) or “e.g.” Other ericaceous species usually do well in the same site, e.g., Rhododendron.

Double Punctuation
There is no need for double punctuation at the end of a sentence, either after an abbreviation or after a punctuation mark within quotation marks: Commas are usually used after “e.g.”

Another example: Doland H. Voss reports, “Color is an important aspect of the description, identification, and enjoyment of azaleas.”

Only when the punctuation mark is within parenthesis is a final punctuation mark required: Many botanical names have also become common names (e.g., begonia, dahlia, iris, etc.).

Capitalize geographic terms when they only indicate direction: northern, southern, central, eastern, southwestern Africa, etc.; the south of France, central Asia, northern Atlantic, southern California, etc.

Capitalize the names of the seasons only when they are personified: The Crockus blooms heralded the arrival of Spring. In most circumstances, the seasons of the year are lower case; Sow seed in the spring.

Brand names should be capitalized: Malathion, Terrachlor, Roundup, Twist-ums, etc. The names of institutions are capitalized: the American Horticultural Society, etc.

Parahraphs
Indent the first line of a new paragraph five spaces. There is no need for extra space between paragraphs, as the indentation will indicate the beginning of a new paragraph. Many short paragraphs make for a disjointed appearance on the printed page; over-long paragraphs tend to look tedious and may wear the reader out.

Quotation Marks
Use single quotes for a quotation within a quotation: Anderson notes, “It seems that taxonomists are ‘splitters’ or ‘lumpers’ more for psychological than scientific reasons.”

Sometimes an author may want to single out a word of phrase, not quoting it from a specific document but referring it to a general background that will be recognized by the reader: Their popularity stems from the realization that they are relatively easy to grow combined with the mystique that surrounds “man-eating plants.”

When a specific word is being defined in the text, the word under discussion is often set in italics, and the definition enclosed in single quotation marks, with no intervening punctuation: Horticultural terms used include cultivar, clone, group, and grex ‘flock’ or ‘swarm.’ Cultivar names are also set in single quotation marks (see the section on Botanical/Horticultural Language).

Periods and commas should be placed within double quotation marks, outside single quotation marks. For example, The typesetter sets the type as it will look in final form; this called “galleys.” But with single quotations marks: My favorite rhododendrons are ‘Sunset Pink’, ‘Ginger’, and ‘Kathleen’.

Quotations over 40 words long should be single-spaced, indented, and separated from the main text by a space above and below:

But the plant, of which I now enclose you an exact figure, with a specimen of its leaves and blossoms, shews, that nature may have some view towards nourishment, in forming the upper joint of the leaf like a machine to catch food.

Be sure to indicate by the indentation, or lack of it, of the first word of the material following the quotation whether it is a new paragraph or a continuation of the paragraph containing the quote.

Abbreviations
If many abbreviations are used, provide a list of them at the end of the preliminary pages, or explain unusual abbreviations on their first occurrence, e.g., cvs. (cultivars).

Always use abbreviations with measurements: 1 in. (2.5 cm), 40 in. (1 m).

Note that English units of measure for length, area, and volume are followed by periods: in., ft., yd., rd. (rod), mi., sq. mi., cu., ft., etc. However, the International System of units (S.I. or often called “metric” system) does not have periods following the abbreviations; mm cm m km 1 kg g, etc. Whenever possible, give both American and metric equivalents, as Timber Press books are distributed in many English-speaking countries, not just the U.S.A.

General abbreviations such as etc., e.g., and i.e. are preferably confined to parenthetical references. A comma is usually used after such expressions as that is, namely, i.e., and e.g.: Fertilizers high in phosphorus (e.g., 20-20-20) are often used. Distinguish between e.g. (from the Latin exempli gratia ‘for example’) and i.e. (from the Latin id est ‘that is’).

When country names are abbreviated, periods are used with the upper-case (capitalized) initials: U.S.A., U.K., etc. However, when institutional names are abbreviated, periods are not used: RSF (Rhododendron Species Foundation), etc.

Figures Or Words?
Timber Press follows the newspaper style, in which only the numbers from one through nine are spelled out. For example: Natural hybrids are identified by one or both of two names, the formula name and/or the collective epithet. Numbers 10 and up use figures: one through nine are spelled out. For example: The 7 families and 15 genera of carnivorous plants are listed.

Avoid starting a sentence with figures; rewrite the sentence, or spell out the number. For example: 75% humidity is best for the plants’ growth, (awk-
rather than the earlier Wade-Giles System. Names of provinces and autonomous regions are listed below:

Wade-Giles: Pinyin or other spelling:
Szechuan: Sichuan Taiwan: Taiwan Tibet A.R.: Xizang (Zizhiqu) Tsinghai: Qinghai (Chinghai) Yunnan: Yunnan

Botanical/Horticultural Usage

As in other areas, consistency is our aim in botanical/horticultural usage. With the help of Dr. Gilbert Daniels, former president of the American Horticultural Society, we have compiled this set of guidelines for our authors and editors. Botanical names are given to those plants found in nature. They are classified into categories from the most general to the most specific.

The broader classifications are capitalized and set in roman type (roman, "upright," as opposed to italic, "slanted"): division, class, subclass, order, family, and subfamily. Except for families, these terms rarely occur in our books.

For example, the genus Rhododendron belongs to the
Division: Magnoliophyta (Spermatophyta)
Class: Magnoliopsida (Dicotyledoneae)
Order: Ericales
Family: Ericaceae or health family
When a Latin family name is used, it is redundant to use that name in combination with the word "family." Wrong: the Ericaceae family. Right: the Ericaceae or health family.

The narrower classifications are set in italics (indicated by underlining if the typewriter has no italic type): tribe, subtribe, genus, subgenus, species, subspecies, section, subsection, series, subseries, variety and form.

For example:
Genus: Rhododendron Subgenus: Tsutsutsu Section: Tsutsutsu Subseries: Obstusum Species: R. yedoense Variety: R. yedoense var. poukhanense

The genus name and specific epithet form a binomial (two-word) term called the species name. The genus name is always capitalized. In Timber Press publications the specific epithet is not capitalized (i.e., it is lower case). For example: Rhododendron schlippenbachii.

When mentioning plants in the same genus, several times in succession, it is permissible to abbreviate the genus after the initial reference is spelled out.

For example: Rhododendron lepidotum is a twiggy shrub, reaching 4 or 5 ft. (1.2-1.5 m), but R. lepidostylum is a compact shrub.

The names of hybrid plants are identified by the multiplication sign X, the Botanical name is set in italics; the multiplication sign in roman type. For example: Rhododendron reticulatum X R. komiyamae. If a collective epithet for the hybrid has been published, it may also be used.

Articles (a, an, the) are not used with botanical names. To say "The Rhododendron impeditum is a dwarf, cushionlike shrub" would be like saying "The Richard Abel is a book publisher."

Finally, we come to horticultural names, which refer to those plants in cultivation. To distinguish them from botanical names, they are set in roman type. The most commonly used horticultural term in our books is "cultivar;" others are "clone," "group," and "grex." A Rhododendron cultivar is R. calendulaeum 'Colossus'.

Cultivar names are always capitalized, and are always set in roman type. In Timber Press publications they appear in single quotes after the species name (Rosea multiflora 'Nana'). The initial letter of each word in the cultivar name is capitalized (for example, Chamaephyris lawsoniana 'Silver Queen'), except when linguistic usage demands otherwise (e.g., potato 'Duke of York'). If punctuation is needed after a cultivar name, the punctuation should come after the single quote, not before.

Many times a technical, botanical name has also been the common, vernacular name, such as begonia, chrysanthemum, dahlia, gladiolus, iris, magnolia, petunia, etc. In this case the roman typestyle and the lack of capitalization help distinguish between the name when used in the technical sense...
and when used in the vernacular sense. Any time an "s" is added to the genus name, e.g., rhododendrons, dahlias, you know that it is used in the vernacular sense.

However, in Timber Press publications common names for particular species are capitalized: e.g., California Scrub Oak, Royal Azalea, Cork Azalea, Blackeyed Susan, etc. Hortus Third is a good source for common names.

Abbreviations:
- cl. ................. clone
- cv., cvs. ......... cultivar, cultivars
- f. ................. forma or form
- g. ........ group, grex (Latin 'swarm' or 'flock')
- sp. ............... species (singular)
- spp. ............... species (plural)
- ssp. ............... subspecies (singular)
- sspp. .............. subspecies (plural)
- var., vars. ......... variety, varieties (varietas, variatates)
- X ................... sign for a hybrid
- + .................. sign for a graft hybrid

Singular and Plural:
- genus, genera
datum, data
- medium, media
- species, species
taxon, taxa

(To Be Continued)
The Genus Primula

Josef Halda
Horach, Czechoslovakia

P. cusickiana A. Gray, comes from the Wallowa Mts in NE Oregon, where it grows in alpine meadows and stony fields, often on very exposed places. In spring from the deeply buried resting bud rises a rosette not larger than 10cm across. The leaves have a blade elongately spatulate, with finely serrate margin, 1 to 3cm long, with petiole 1.5 to 3cm long. The stem is 2 to 7cm high, with a head of 1 to 5 flowers. The corolla blooms in various shades of violet, rarely white. In the mountains it blooms in May and June, but in gardens at the end of March. The scent of the flowers reminds one of Viola odorata. Cusickiana is the only completely deciduous species in this section. Its vegetative period lasts only 3 to 5 weeks. Then the leaf rosettes die out leaving behind only seed pods on 8 to 15cm high stems. New plants are easy from seed. Cultivation of the plant is the same as with the dry-loving species of Dodecatheon. When the leaves start turning yellow, withhold water.

P. ellisiae A.Nelson, has its home in dry mountains in Colorado and New Mexico. It grows in stony fields, on ridges, and on shortgrassed meadows. From the thick underground rootstock, which is surrounded densely by thick roots, rises a firm, rigid leaf rosette of dark green, leathery leaves with a velvet-like surface. The blade is 3 to 10cm long and 1 to 3cm wide, elliptic, sometimes oblanceolate, crenulate on the margin, narrowed to the petiole with basal sheath. The velvety surface of the leaves is caused by minute, capitate glands, with which the leaf blade is covered on both surfaces. The stem is thick, covered with the same capitate glands, some farinose. Only rarely it is more than 15 cm high. Flowers are in one-sided umbels, 2 to 8 in number. The corolla is most often in various shades of violet, but sometimes rose to carmine, always with a yellow eye. The limb is 15 to 20mm in diameter. It blooms in May and June. Of all the species in the section ellisiae resembles a smaller P. parryi. It is easy from seed, the seedlings bloom in 2 to 3 years.

P. maguirei L.O. Williams, from Utah is not grown in our country, but it is said to be closely related to P. cusickiana. It grows in northeastern Utah and in Nevada, at a relatively low 1200 to 1800 meters on rocky slopes with a northern exposure, under damp overhanging rocks, or moist crevices in cliffs. The leaf is thin textured, broadly spatulate with wide rounded tip, margins entire and slightly wavy. 1 to 3 flowers grow on a 4 to 10cm stem. The flower is reddish purple.

P. parryi A.Gray, grows in the Rocky Mountains National Park. It inhabits rocky slopes, loosely covered with grass, up to 4500m. It can be found in nearly all exposures from dry moun-
tain ridges to wet brookside, below mighty conifers on the upper limit of the forest. Therefore it is very variable.

In culture parryi is a very plastic alpine, as is the European P. auricula. Under suitable conditions it forms large clumps, up to a half meter in diameter, with numerous inflorescences on 50cm high stalks. Since it can grow well on exposed and poorer places, some plants will be quite different from that described above — as it forms there only poor rosettes and fewer, smaller flowers on short stalks. The leaves are oblanceolate to oblong ovate, blunt, entire or very finely crenulate on margins in various shades of green. The cololla is mostly of various shades of carmine, with a yellow eye deep in the throat. In the garden parryi produces a lot of seed, which germinate readily. The seed should be sown in a mixture of leafmold and fine grit. When the seedlings show the first true leaflets, they may be transplanted into the rock garden or into pots. This primrose has numerous, thick, string-shaped roots, which when damaged, cause the plant to stop its growth for a long time. Under suitable conditions the seedlings bloom after 2 or 3 years. In less good conditions they take 5 or more years. A well-established plant is very resistant and in time will become a mighty tuft. It is not good to divide the plants, as the bases of plants when damaged, rot away very easily, even if given the best of care — the loss of plants is too heavy. The soil used for a mature plant must not be too light. We use a mixture of turfous heavy soil, leafmold and grit, in equal parts. Our plants are placed on a brookside with cold water, so that they have moisture all year around. And they do well — as well as P. deorum in the same neighborhood. P. parryi is a gross feeder and needs regular fertilizing during its active growth period.

P. rusbyi Greene, comes from the mountains of New Mexico and Arizona. Most often it is found on short-grassed mountain meadows and stony fields. The size of plants and ability to flower is dependant on locality and exposure. Rusbyi forms small tufted rosettes of upright leaves, which are elongately lanceolate, widest in the upper part, leathery, often glossy, and never farinose. On rather thick stem, 5 to 20 cm high are 1 to 5 flowers. The corolla comes in various shades of purple with a darker eye. The limb is 12 to 20mm in diameter. In the garden it sets seed only rarely, but under good conditions the plant increases well and can be divided. In recent years seed collected in the wild has sometimes been obtained. These seedlings grow well and bloom in 2 to 3 years. I consider P. rusbyi one of the most desirable American Primroses for a rock garden, not difficult and quite dwarf, a lovely plant.

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Lenses More and More
by Bruce C. Gould
Vincentown, New Jersey

As we said in the last article, the lens is by far the most important piece of gear that you will lug around. Unfortunately “lug” is an appropriate word. Modern technology has given us many light, strong materials. Too bad glass isn’t one of them. New plastics may some day replace glass in fine photographic lenses, as they have in eye glasses and inexpensive cameras. For the moment, however, we still find that glass produces the very best lenses. In many cases, the lens may outweigh the camera several times over. Since you can’t use what you won’t carry, let’s try to determine which lenses may be useful to you.

If we can return to our last article for a moment, we spoke about the different classes of lenses: normal, telephoto and wide-angle. The 50mm lens is considered a normal lens for a 35mm camera. A lens shorter than that is a wide-angle; one longer is a telephoto.

As we double the length of the lens we also double the size of the image that will appear on the film. A flower that is only one half the height of the viewfinder will be frame-filling if we remain at the same distance but replace our lens with one of the 100mm. In many cases it might be easier to just move closer to the subject. This isn’t always an option though. Even working with plants we can’t always get as close as we would like. For some reason the best blooms at the arboretum are always well off the trail, and the people in charge get really upset when photographers start walking through the plantings and placing camera and tripod in the middle of the display. Although I am making light of the situation, the truth is that photographers have earned a very poor reputation for just such actions. Many arborets now ban tripods and give photographers a hard time about carrying camera bags. As in everything, there are always a few whose ignorance (and brass) will spoil it for everyone else.

Both telephoto and wide-angle lenses are useful tools for flower photographers and should be included in our bag of tricks. The wide-angle lens will allow one to capture more of the scene without backing up, a real lifesaver for trees and landscapes.

A question that always comes up is, how long a telephoto or how wide a wide-angle? To answer the question I could just rattle off the lenses I’ve used and let it go at that, but since my likes are mine alone a quick lesson on how a lens “sees” will give you a starting point to make your own selection.

As lenses become longer the width of the image that is admitted becomes smaller in direct proportion to the length of the lens. Figure one (Angle of View) shows a lens with lines coming out of the front defining the side limits of what that lens can record. The angle that is created as the lines intersect at the center of the lens is known as the angle of view. As the lens increases in length, the angle is reduced. A 7mm lens, a true fisheye lens, will have an angle of view of almost 180 degrees, while a lens of a 500mm will cover only 5 degrees.

One problem that must be noted is that in lenses shorter than 35mm a certain amount of distortion may be found at the outside edges. As lenses becomes shorter this distortion becomes greater till we see that “fisheye” effect. The whole image looks as if it were placed in a salad bowl.

Limitations on the telephoto lens are only those of price and weight. Lenses in excess of 300mm are heavy and, for most people, very hard to hand-hold. Since telephoto lenses magnify the image they also magnify any action that will affect the image. Camera movement is probably the main cause of blurry photographs taken with a telephoto lens. Unless you are actively involved in weightlifting or possibly a stevedore, fast telephoto lenses are not hand-holdable. In a pinch we can hand hold these lenses for some photographs by increasing the speed of the shutter. That way, less of the camera shake will be transmitted to the film. The rule of thumb says that the shutter speed should be greater than the length of the lens to assure an unblurred image, so to hand hold a 500mm lens we must use a shutter speed of at least 1/500 of a second. In most cases you will need a tripod if you wish the sharpest image.

The focal length of a lens is the distance from the front element to the plane of the film. When we speak of a 55mm lens this refers not only to the physical length of the lens but includes the distance inside the camera from the end of the lens to the face of film.

The single-focus lens is the type most of us think of when we talk of lenses. We will begin there. This lens is limited to whatever focal length it is manufactured to; 300mm, 50mm, 24mm and so forth. It can only produce an image appropriate for a lens of that magnification.

The zoom lens can have many different focal lengths. In the body of the lens is a series of elements that move back and forth to change the optical length of the lens. The zoom lens usually covers a range of focal lengths such as 80 to 150mm, 35 to 75mm,
or 100 to 300mm. With the zoom lens we can choose any focal length between those limitations and photographs our subject.

Every lens we use falls into one of the other class. It is either a single-focus lens or a zoom lens. The question then arises, why buy one over the other? There are some parts of the answer that are easy to see. Others take a little more research. What we must look at is the series of movable elements in the zoom lens. These elements weigh a lot, so the zoom lens is heavy. To allow the zoom to work properly the physical length of the lens must be the same as a single-focus lens of the maximum optical length; a 100 to 300mm zoom lens must be as long as a 300mm single focus lens. It is also bulky. The more glass elements in a lens the more expensive it will be. So here we have a lens that weighs more, is bulkier and is more expensive than a single-focus lens. So why buy it? Because it will replace, on the average, three single-lens. So why buy it? Because it will be more expensive than a single-focus lens that weighs more, is bulkier and expensive it will be. So here we have a lens that weighs more, is bulkier and is more expensive than a single-focus lens. So why buy it? Because it will replace, on the average, three single-lens.

Focus is a word we speak of often in relationship to lenses, but to understand it completely we must start with a knowledge of the term "depth of field." There are some interesting facts about the depth of field that we can use to our advantage. The depth of field can be measured not so much in feet or meters but in a formula: for every foot in front of the plane of focus that appears in acceptable focus there are two feet behind the plane. When we refer to the depth of field we are speaking of this formula. The formula remains the same for all lenses under all conditions.

We can control the depth of field by changing the aperture of the lens. By reducing the size of the aperture we can increase the depth of field. Conversely, we can decrease the depth of field, but always in regard to the formula: one unit in front, two behind. The units just get bigger or smaller. Now that we know about apertures, f/stops and depth of field we have in our possession the most important piece of information a budding (no pun intended) flower photographer will need. Repeat after me one hundred times, "The smaller the aperture, the larger the f/stop; the greater the depth of field, the larger the aperture; the smaller the f/stop, the less the depth of field."

This formula holds true in all situations no matter which lens is used. What will change drastically are the units of space in the formula. As we get closer to our subject the units become smaller. With a normal lens our depth of field may be several thousand feet, for example a 55mm lens with a f/stop of f/32 will be in focus from 5 feet to infinity. With the same lens and a larger aperture (f/2.8), the depth of field can change to 20 feet to infinity. There is a gauge on some lenses that gives you this information. After the lens is focused, look at the top of the lens. On its outward barrel will be the distance in feet and meters; across from those numbers will be a geometrical symbol (a diamond, circle, or triangle) to mark the distance of the object in focus. Now, if the lens is so equipped, on either side of the symbol will be engraved lines marked with f/stops. Starting from the center mark and going out they will denote the largest to the smallest f/stop. We can follow these marks across to the foot/meter scale and read the distances as noted. The area between the two marks will be the depth of field. Now before you grab a calculator and start trying, to make the formula match the lens readout, it must be understood that the formula works out from the point of focus, and the reading on the camera is the distance from the camera to the near and far limits. Also, the marking on the camera is "ballpark" and not an accurate measurement. Even as an approximation though, this gauge is a lot of help when working in the field. For example, when composing a landscape whose depth of field includes not only the mountains on the horizon but the flowers in the foreground, the gauge is a helpful guide. In stead of focusing on the mountains, which for all intents and purposes are infinity, place the infinity mark (the 8 lying on its side) beside the f/stop that is being used. You will gain many extra feet in focus in the foreground. The reasoning behind this is that if we focus at infinity we will be in focus twice as far behind our subject as in front of it. Since we can't focus beyond infinity anyway, we are losing 2/3 of our depth of field. Using this method will also show the change in depth of field as altered by the f/stop. Even if the lens does not have this scale, armed with this knowledge we see that if we focus closer than our subject it will still remain sharp while we gain space in the foreground. This will also help when there is an ugly background we would like to get rid of. Make sure the main subject is at the rearmost part of the depth of field and all the area in focus is to the front.

So, many decisions are needed: What is the main subject? What do I want in focus? How will all of this effect my composition? In our next installment we will look at how the actual exposure can effect some of these decisions and what the trade-offs are. Automatic cameras and lenses can make many of the decisions for us, but we can make all of these gadgets work for us only when we understand the process.
The Secret Life of the Primrose

At £ 250 (that’s $25) a gram, primrose seed is worth more than its weight in gold. Stephen Lacey reports on the path to better blooms.

Reprinted from Telegraph Weekend Magazine

As the long grey winter comes to an end, the Primrose Festival at Marks Tey in Essex offers an early preview of spring and a chance to revitalize your optic nerves in a sea of colour. A quarter of a million primroses will be on show, their colours ranging from magenta to tangerine, rose pink to ultramarine, chrome yellow to pillarbox red. Purists may prefer the delicacy of the traditional primrose, but the modern varieties are a credit to the breeder's skill, and their combined scent is delicious.

The sixth annual Primrose Festival will be staged by Bypass Nurseries on February 25 and 26. The festival is a successor of the Primrose Feasts that were held annually in nearby Colchester during the late 18th and early 19th centuries. The area was renowned for its weaving skills and the weavers, who grew 'primroses' (what we now call auriculas) for their dyes, were expert gardeners. The Primrose Feast was an occasion for showing off their expertise as growers.

Today's Primrose Festival is no longer about amateur competition; it is the occasion when Bypass Nurseries opens its doors to the public and offers an insight into one of the most intriguing and secretive branches of the horticultural trade: contract seed production.

Bypass Nurseries is the biggest, and one of the last, of Britain's seed-growing companies. In the 1950s there were over 350 companies and Essex, with its light soil and low rainfall, was the industry's natural centre. But since then, the industry has gone abroad to places such as California where sunshine is assured and where casual labour is cheap. Bypass has survived by specialising in the quality end of the market and offering a degree of professionalism that few of its competitors can match.

It is fitting that the director of Bypass, Charles Fenwick, is a retired major in the Grenadier Guards, for he presides over an operation in which precision, security and secrecy are paramount. The seed envelopes in the upstairs storeroom contain the results of years of research and each can be worth tens of thousands of pounds: no one at the nursery knows their exact composition.

There are only a few plant breeders that specialise in new ornamental plants and these are scattered throughout Europe, Japan and the USA. With an eye trained on their competitors they are forever headhunting rivals' staff and testing each other's products - the breeders experiment, nurture and cross-pollinate in the seclusion of their laboratories and controlled greenhouses, trying to develop a master race of plants that possess exceptional vigour, colour and freedom of flowering. When breeders decide that they have made a breakthrough, they contact a company such as Bypass Nurseries and entrust it with the task of bulking up their stock.

In May Bypass receives, by secure post, sealed packets containing the breeder's stock seed, together with a note outlining the amount and specification of the seed to be harvested. The packets reveal no information about the parentage of the contents. All Bypass knows is that they are primroses, polyanthus, salvias, cyclamen or cinerarias.

Sometimes, when the stock seed has been open-pollinated by insects, there will be just one packet and Bypass's job of growing and harvesting the plants is relatively straightforward. More often the breeder will send Bypass two packets of seed. Each produces quite different plants and what is wanted is a quantity of seed resulting from a hybridization between the two. Breeders prefer such progeny, called F1 hybrids, because competitors cannot reproduce them without discovering the generic identity of the two parents. To breed F1 hybrids you have to cross-pollinate the parents every time, by hand, in a bee-free glasshouse, using one packet of plants as males and the other as females.

Primroses and polyanthus are Bypass's specialities. The breeder's stock seed is sown into specially blended, peat-based compost. After germination, seedlings are pricked out into plug boxes (plastic trays with an individual compartment for each). In September they are transferred to pots and moved into cold frames outside to harden off. They are brought back under glass in the first week of December.

Peak flowering is during January and February and for two days the public can come and feast its eyes. Rival breeders can come too, of course, but few secrets are spilled since only the parent plants are present and nothing is named. As plants come into bloom, the sexes are divided. Primroses are bisexual but individual plants are predominantly of one sex or the other. The males are lined up on a shelf above the trays of females and, every ten days, teams of skilled workers transfer pollen from the thrums to the pins with the aid of fine paintbrushes; there is no romance in the life of a captive primrose.

The females set seed in late April and as the heads ripen, they are removed with scissors. They are dried on muslin-lined trays in a room kept at a constant temperature and humidity, and then rubbed through a sieve. The seed is separated from the chaff by tossing the mix on a metal plate and allowing the lighter particles to drift off the edge. This is a tricky technique to master and fascinating to watch. Any remaining debris is flicked away with a pheasant feather.

The entire operation takes a year. It is a labour-intensive business and, as Major Fenwick explains, high-risk: 'We get paid only if germination is good and we can supply the amount of seed requested. If anything goes wrong it means a total loss to us. If we produce too much seed the operation will not have been cost-effective because the breeders will take only a small percentage of additional seed, and that at a reduced price. So it's just gambling, really.'

The problem is that plants are unpredictable and until the seedheads ripen it can be impossible to assess the amount of seed they will produce. Bypass hopes to collect a gram of seed from each plant; if it takes more than three plants to provide a gram, they have lost money on the contract. On one notorious occasion it took 200 plants. Primrose seed is small and light and a gram represents between 900 and 2,000 seeds; for comparison there are 67,000 begonia seeds to a gram, or one broad bean. But if all goes well, the rewards can be great, for with a retail price of about $2,500 a gram, primrose seed is more valuable than gold.

Bypass dispatches the seed as soon as it is cleaned and packaged. It keeps...
none back for itself and so may never know what wonderful new varieties it has bred. It is relatively easy to guess a hybrid's size and appearance, but less easy to predict its colour, though the breeder's country of origin can provide a clue. The French like subtle shades, the British pure, gentle ones, and the Germans prefer strong, no-nonsense colours.

There are demonstrations of the various stages of seed production during the Primrose Festival and surplus plants are on sale. All proceeds go to charity; this year to The Children's Society, Muscular Dystrophy Group of Great Britain, The Royal Society for the Protection of Birds and Gardening for the Disabled. Admission is $10 for adults and $5 for OAPs and children; not much for a glimpse of what gardening's back-room boffins keep under their hats.

The primrose Festival is open from 10:30 a.m. to 4:00 p.m. on February 25 and 26 at Bypass Nurseries, Dobbies Lane, London Rd, Marks Tey, Essex, tel: 0206-210400.

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, a 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.

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News of the Societies

The following are excerpts from the Newsletters of various chapters received by your Editor in time for inclusion here:

Washington State Chapter

MEETING:

The March meeting will be held in the Good Neighbor Center at 305 S. 43rd. Street in Renton, Washington at 7:45 p.m. on March 10, 1989.

PROGRAM:

We have all learned not to use the word "dirt" when we speak of the soils we use on our plants. Tonight we will learn another very important part of our growing practices. Diane Blake will show slides and will discuss the very important facts concerning Compost. It is a very important subject in this day and age of recycling. Come and join in.

GOODIES:

Gladys Krohn will provide the refreshments for the evening.

This has nothing to do with eating, but if you should have any excess plants or items for the exchange table, Please bring them.

THINGS OF NOTE:

Al Rapp is the new Chairman of Judges.

Tacoma Chapter

MEETING:

Tuesday, March 7, 1989 at 7:30 p.m. Lakewood Library, Gravelly Lake Dr. at Wildaire Road S.W. Main Floor, the Meeting Room.

PROGRAM:

Marina Becker from Wright's Park Conservatory will bring us a slide and narration of "A Year in Review." This will show us how to

SHOW-BIZ:

Rosetta Jones will show us how to
make that garden plant look like a show plant. I hope she brings something to show, because sad to say, I don’t have even a garden plant to look like a garden.

REFRESHMENTS:
Will be provided tonight by Louise Fenili and Frieda Dingle.

THINGS OF NOTE:
Al Rapp, Judges Chairman has asked me to remind all you Judges, Jr. Judges and would-be Judges that he needs to hear from you, so that he can bring the roster up to date. On March 19, 1989 he is having a Judging Review for all the Judges that will be judging the shows this year. He also invites any interested parties. Contact him. Tele #564-9557.

E. White Smith gave us a very interesting travelogue into Australia, and in April he will bring us back, via New Zealand. We will also have some show reports and plants to make for things we want to do this year, as a society.

Show plans are proceeding satisfactorily. Katherine Brown will be in charge of Sales.

If you have trophies to return — Bring to the meeting.

The Seattle Chapter
MEETING NOTICE:
On Thursday, the 16th of March 1989, 7:30 p.m., the Seattle Chapter will hold its monthly meeting in the upstairs conference room of Larry’s Markets - 10008 Aurora Ave. North, in Seattle.

A special program on “Primrose Hybridizing” will be presented by Rosetta Jones. Rosetta, a resident of Kent, Washington has achieved world fame in her unique strains of double primroses. Award winning cultivars from Rosetta’s seeds can now be found being reproduced by tissue culture in England and other countries. With an intimate knowledge of primrose genetics, this presentation by Rosetta is a must for those who wish to learn a little more on the mysteries of hybridizing and how to go about producing your own unique strains of primula.

Pat Bender, who is always willing to share her extensive knowledge and seemingly never ending humor, will be presenting the “Primula of the Month.” Pat has left the topic open, but the last conversations with her indicated she just might be learning towards the English Cowslip (Primula veris). “Show and Tell,” and the “Plant Exchange” will be scheduled as usual. The weatherbeaten plants are starting to grow and flower again, so there should be a lot to talk and share.

NEWS UPDATES:
Members are again reminded that the Seattle Chapter will be having a Plant Sale this MONTH on Saturday, the 18th of March at Larry’s Market. We will be in desperate need of plants, especially the unusual and rarer species. Cliff Lewis has graciously offered his home as a staging area to take the plants before they are forwarded to Larry’s market Saturday morning. Plants should be delivered to the Lewis’s home prior to Saturday, preferable mid-week. This will enable the Seattle Chapter to price the plants, give them proper labels and do some last minute cleaning.

A bit of information by way of the National Auricula & Primula Society, Midland Section, England: “an article on “Sawdust” in an old Lilly group Yearbook...a 2 inch covering of dry sawdust enables such gems as Primula vialli to discard their annoying monocarpic habits and behave perennially.”

Eastside Primula Society
MEETING:
March 2, 1989

TIME
7:30 p.m.

REFRESHMENTS:
Beth Tait, Sammy Solseth

PROGRAM:
Beth Tait a new Primula every Month: Show Auricula.

OUR REGULAR ACTIVITIES:
Soil Mix-Hybridizing. Slides of Show Primulas by Orval Agee.
Door Prize Drawing, please bring a Plant.

Time to fertilize your Primulas!

The New England Primrose Society
New England Primrose Society met recently to view the Primrose Garden of Arlene Perkins of East Montpelier. Flower lovers from five states were represented including Alice Baylor, 90, from Stowe. A former director and Eastern corresponding secretary for the National Society, Baylor had a nursery in the Johnson area and still gardens. She was one of the first to have her choice of the many primulas that club members brought to the sale and chose a white Primula "Modesta."

Minutes of the Board Meeting
The Winter meeting of the APS Board of Directors was called to order at 11:35 a.m. on Jan. 14, 1989 at the Berry Botanical Garden in Portland, Oregon.

Treasurer’s Report: The APS is in the black and this question of raising due was deferred until next year.

In connection with the 1992 Primula Conference, plans for the Expedition into southeastern China or Tibet are well under way. Dr. Ron McBeath from Edinburg Scotland will lead a group of six British and American scientists and is in charge of all arrangements. In its discussions the Board suggested that the subject of “Protection and Conservation of Native Primula” be made the theme of the Conference, and this suggestion was forwarded to the Steering Committee for consideration.

Mr. Flip Fenili was appointed interim vice president to fill the position left vacant by the resignation of Mrs. Claire Mueller. Dr. David Vesall of White
Bear, Minn. was appointed to the APS Board of Directors to fill the position vacated by Sally Cadranell.

Pres. Larry Bailey was authorized by the Board to appoint a committee to review the policies and content of future issues of the Quarterly in an effort to have Board Members more actively involved in the preparation of our APS Journal.

Steve Krumm, representing the Berry Botanical Garden, was appointed to establish a policy, program and schedule for APS efforts in native primula preservation and protection.

Respectfully submitted,
Candy Strickland

Letters

Dear Richard:

I'm rising to take the bait which you and Larry Bailey offered in the lead article of the last issue of "Primroses." First of all, let me say that it is a provocative and valuable contribution which addresses some very legitimate concerns. We should all be striving to maintain naturally occurring species at the local, regional, and world-wide level. However, I found some of the statements in the article to be exaggerations and the prohibitionist approach to the problem to have questionable merit.

The danger to most plants from educated collectors is far less than from commercial exploitation of forests, other natural resources, urban and recreational development, overgrazing, and, in general, the demands of a rapidly expanding population. This is not the appropriate forum for tackling the problems of population growth, but conservation efforts must be regarded within the framework of the larger issue. Larry's article alludes to this problem, but is total prohibition of collecting a realistic answer? Indeed, there are obvious examples of when collecting is necessary to save a local population from extinction. There should be a distinction made between the collection of native plants and the collection of seed from natural populations. Commercial collecting of native plants probably should be penalized or at least, very carefully regulated. I agree that this can lead to regional extinctions of ornamental or medicinal plants. Ginseng is an example which comes to mind as well as native orchids. However, the judicious collection of seed from native plants is another question. When and where seed is locally abundant, there should be no ill effect on the population if a portion of the seed is gathered. I had the opportunity a few years ago to go on a trek in Kashmir. Primula rosea, Adonis chryscyanthus, Aquilegia nivalis, were among a few of the plants which grew and seeded in profusion. I did collect these and others; they did germinate and they are still growing successfully in my garden. My conscience is clear. The damage which I inflicted was miniscule compared to the voracious herds of sheep and goats which we encountered along the way.

Conservation should include propagation as well as protection of natural habitats. While there are several fine research organizations (e.g.-Garden in the Woods, various arboreta and botanical gardens) which have active programs, funding and staffing are limited. I would argue that experienced and knowledgeable gardeners can contribute as much to the cultivation of rare species and that success can only be obtained by experimentation. Seed collected from native plants provides one of the best sources of material with which to work.

Finally, I strongly believe that most "commercial" seed collectors are knowledgeable about the dangers of over collecting, are careful to treat their seeds to ensure optimal viability, and are conservationists at heart. I do not think that they pander to the need for a new ornament in the scree; I think that they offer the serious gardener an opportunity to experiment, to learn about plant geography, and to introduce more species into a hobby which, after all, delights in exploring nature's vast variety. Also, new strains can be valuable for those who are interested in developing improved varieties by hybridization.

Let's refrain from prohibition - it didn't work for alcohol, it doesn't work for drugs, and it won't work for plants.

Education and informed discussion about the problem of plant conservation in general are essential. Also, let's have more contributions on the successes and failures of seeds collected in the wild. Much can be learned from mistakes. The greater the number of attempts at responsible propagation, the better the chances of success, and the greater the likelihood of species survival.

Hope that you have many other responses.

Sincerely yours,

Phil W. Cook
Burlington, VT
Feb. 6, 1989

Dear Richard Critz:

I just had a chance to look at the 1989 Quarterly/APS. Hooray for "Where Have All The Flowers Gone"!! Having been involved in ecology for years and having been raised to respect the environment and to preserve what's left of it, I got so annoyed and tired reading about plant hunters and seed collectors who, willy-nilly, do just that. The APGS Bulletin had an article about some people having a 'wonderful time' in Chile, collecting seed here and there. I was appalled. I'm tired of hearing about how "well, the plant is disappearing and has to be preserved." Get the governments to start preserving, and, if seed has to be collected, be sure a trained botanist/horticulturist does it, one who can recognize if the seed, i.e. seed pod, is even fertile.

Our government has made a start under the auspices of the National Resources Council. I tried to fire up my brother who is second-in-command for World Wildlife in Canada, in 1988, to get some interest in Canada. In fact, I just had a long conversation with Dr. Jose Castillo re. these same issues re. the extinction of plants in Argentina. I try to do what I can and notify individuals, groups, etc. I wish I could do more but my present work load (I'm a counselor) and health situation do not permit.

Rohilah Guy
Bio-planting, Inc.
Berkeley, CA

Dear Mr. Critz,

At this time, when the Dictionary of Primulae is being rewritten, I hope there will be mention and tribute to Mrs. Susan Watson, who did so much in preparing the previous edition. She still takes a great interest in affairs of the society, and is delighted to discuss and see Primulae at every opportunity. I see her here from time to time and I'm very interested to hear stories of the old days. I believe she is a life member.

With regards,

Dr. John H. Kerridge
Vancouver, B.C.
Canada

Dear Mr. Critz,

Do you publish news of members in Primroses?
I have recently completed, with co-author Ruth Rogers Clausen, Perennials for American Gardens which will be published by Random House in April 89. It has been chosen as a Main Selection of the Garden Book Club and as an Alternate Selection of the Book-of-the-Month Club.

With 400 genera to cover, space was limited, but several pages are devoted to Primula.

I enclose a descriptive leaflet. (Copy on request from Editor.)

With warmest regard,
Nicholas H. Ekstrom
New York, N.Y.

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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.

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