

THE ROCK GARDEN



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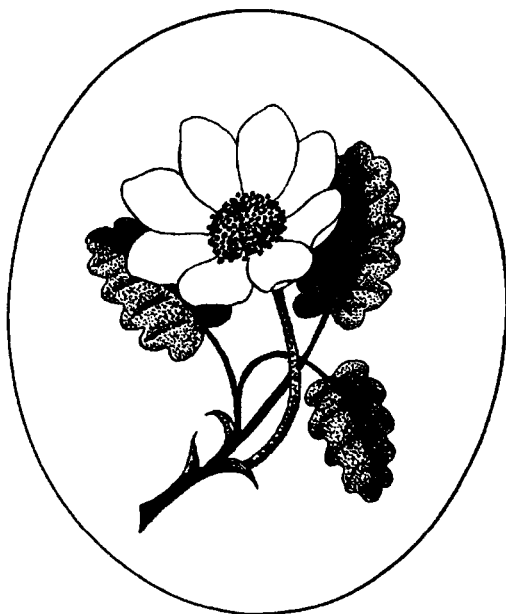
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**THE JOURNAL OF THE
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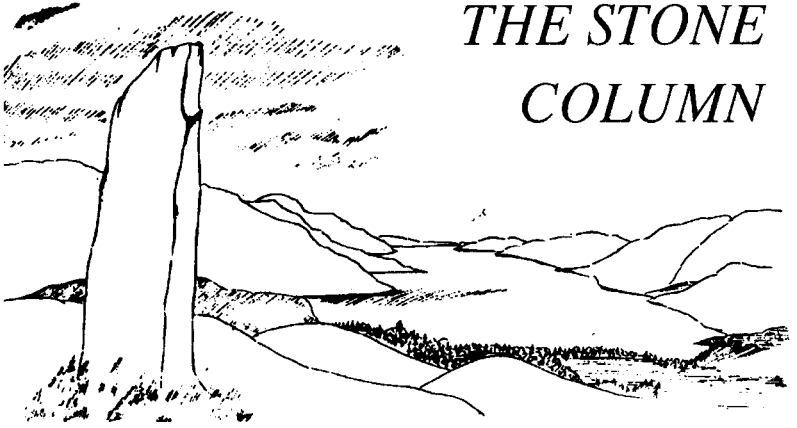
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Eritrichium nanum (see p.38) Drawing by R. Cole

THE STONE COLUMN



HOW FAR WOULD YOU GO?

It is perhaps inevitable that, after all these years, the contents of the Stone Column should show some kind of pattern. The autumn editions, which appear in January, naturally chronicle the previous summer's activities; whereas the spring numbers, following a period when there is far less happening outside to report, can range more widely, both geographically and into the realm of the philosophy of gardening. Trains of thought are often initiated by some chance remark, and one such was the comment made a couple of years ago by David Tattersfield, following a Show, that there were very few plants on the benches which could have been grown in the open ground. I must confess straight away to having hesitated for quite some time before following this up, as I do not wish to be thought of as 'anti-show'. In fact I am definitely not 'anti' anything of the sort except perhaps some of the excesses of competition, just pro-gardening. No one can be as involved with plants as we are and not admire the skill and dedication necessary to produce a Forrest Medal plant, or indeed a prize-winning leek.

Be that as it may, I now feel that the time is opportune, following Harry Jans' excellent lecture at the last Aberdeen Discussion Weekend, and his thought-provoking article in the AGS Bulletin for June 1997 (No. 268), to air the whole issue of the impact of technology on the growing of alpines and its implications for our shows.

Sooner or later those who compile our show schedules and formulate the rules will have to confront several issues which will

inevitably make their task even more complicated. One such is the application of genetic engineering to our beloved alpines, altering their physiology to adapt them better to cultivation, or making them less susceptible to disease, and more floriferous. Thus far the techniques have been mainly applied to crop plants, such as the notorious soya, but efforts are currently under way to produce a true blue lily, by introducing genes from other genera like *Notholirion*. Things have a habit of filtering down from initial research, through commercial applications, to everyday life. For example I am writing this on a PC which is far more powerful than any computer possessed by my University when I was an undergraduate. There is of course no difference in principle between genetically engineering a plant to alter, say, its flower size and colour, and conventional selective breeding; the steps are just potentially larger. The selection can be intentional as in the large flowered forms of *Androsace vandellii*, or the result of Darwinian natural selection. Survival of those individual *Lewisia cotyledon* best adapted to cultivation has resulted in genetic drift in the garden seed strains, making them easier to grow than the original wild species. The current show rules do not generally discriminate against hybrids; should they allow engineered plants on the benches? Drawing the line in any meaningful way may prove to be very difficult if not impossible.

The changes need not be major, an orange draba for example, a crimson acaulis gentian or a purple dionysia. All are probably achievable, but are they desirable? They would certainly fit within the definition of 'rock plants', suitable for the rock garden or alpine house as stated in the Year Book, and so be eligible for our shows. As to increasing the number of blooms, we are already doing so. In the wild, *Trillium rivale*, like most of the genus, generally grows as single stems; but what judge is going to mark down a large clump in full flower as 'out of character'?

Whether or not a given plant is considered suitable for exhibition is really a matter of opinion and it is for the judges to decide what they will accept. To an outsider, their decisions may appear somewhat arbitrary on occasion; tender cyclamen species are allowed while excluding the florist's type, not all of which are large-flowered. One important criterion often used is simply the size of the plant. Dwarf rhododendrons are acceptable, tree species are not, with a grey area in between. Suppose they were presented with a fully prostrate camellia, really short foxglove, or pygmy

paeony. Were one to regard such things as freaks and so expel them, then what of the dwarf conifer classes? If a new tiny cultivar of, say Blue Spruce, appears on the showbench, does it matter whether it originated as a witches broom, or in some laboratory? Most annuals are excluded, but this is another characteristic which could be altered, as is tolerance of low temperatures. Within our own gardens we can exercise our own aesthetic judgement as to what we wish to grow. I personally should exclude from Askival a perennial blue 'bedding' lobelia, but should probably accept a fully hardy streptocarpus. A camellia adapted to flower reliably in a cold garden would be most welcome here, prostrate or not, as would a really tough dull red or bronze phormium. Once one lets one's imagination run free, the list is endless. At the other extreme, one obvious logical stance to adopt is that of the 'species snob', growing only true wild plants. This position may not be tenable in the long run, for once genes are added to the pool of a given species, they may be impossible to remove. They could travel over the garden wall with pollinators, a frightening thought upon which to end this paragraph.

TECHNOLOGY IN THE GARDEN ITSELF

A second field where we all can make our own decisions as to where to draw the line is in the application of technology to the garden itself. All gardening techniques are, of course, artificial; but, to borrow from George Orwell, some are more artificial than others. There can be precious few gardeners who are fully content with their soil, as provided by nature or house builder; but it is not my intention at this time to go into all the special places alpine growers can produce for their plants. Such constructions are far better described as and when, so I shall restrict myself to the field of climate modification. Perhaps the most common alteration is to the effective rainfall within the garden. It can be increased during the growing season by irrigation, and decreased at other times by various covers such as framelights. Temperature probably comes next; shading can be used to lower the summer peaks, as with the nets over our frameyards. A large rock placed on the scree will create quite different microclimates on its north and south sides. Little can be done in the garden to raise the temperature in winter, but short term lows can be moderated by applying various forms of insulation to special plants. Troughs can be moved to more sheltered positions, against the house perhaps, and surrounded by

extra protection. Cold winds are often far more damaging than frost alone; measures such as the laying of conifer boughs onto beds of dwarf evergreens are quite effective at reducing the local wind velocity. Shelter as a means of local climate amelioration is of paramount importance in coastal gardens; whole books have been written on the subject. We have now passed the point at which I personally draw the line; we do not wrap up any of our garden plants during cold weather as is sometimes recommended for such things as tree ferns. As regular readers will know I am a simple dirt gardener, never happier than when heaving rocks around. Once a bed has been built and planted, however, our subsequent policy is one of minimum interference. We put plants into the ground; if they thrive we rejoice, if not then there are frames full of seedlings clamouring to take their place. Others have different priorities, and within the alpine house especially, they can go much further down the road of climate modification. A soil-warming cable can be added to the plunge to prevent the root zone of their plants from freezing. Forced ventilation may be provided by fans, combined perhaps with heaters in winter; and if fans are used why not cool the incoming air in summer by applying an air-conditioning unit? There is no need to stop with the air, what about refrigerating the plunge? *Ranunculus glacialis* should love it. The humidity can also be adjusted artificially; lowered for dionysias or raised if petiolarid primulas are to be grown. Dehumidifiers are quite common in Highland holiday homes, and there is, I am told, a considerable trade in stolen ones. Plants grown permanently in the alpine house often have a certain look about them which tells the experienced eye that they spend their days under glass. Supplementary lighting may provide the answer, possibly with an enhanced UV content to simulate the mountain environment.

We have now reached the point at which the glass itself is redundant, the whole set-up can be transferred to the basement and combined with the inevitable computer controls. Various compartments, in effect phytotrons or growing rooms, will be optimised to suit particular groups of plants, the computer adjusting the various environmental parameters accordingly, sensors in and around the plants providing the necessary feedback. The whole growing space will naturally be sterilised to eliminate pests and diseases. All this already exists and I feel sure that the pressure of competition will eventually force growers to adopt such methods or risk being left behind. If they do so they may have to show their

plants within plastic bubbles to avoid cross-contamination from neighbours on the bench. How many alpine enthusiasts would go this far I wonder?

GARDENING AS AN ART FORM

Amid all this talk of the application of technology to the practice of our craft, it is well to remember that gardening is also an art form. Just as paintings by Rembrandt or Picasso are obvious to the trained eye so should it be with a garden. One need only hear a few bars to recognise a piece of music by Mozart or Jimi Hendrix; their characters permeate their art. A garden is thus more than just an assemblage of plants; it should reflect the guiding presence and personality of the gardener, without whom it could not exist. The same cannot be said of a collection of show plants no matter how much skill, time and technology was devoted to its production, or how splendid the individual specimens. On the showbench itself the plants ought not to be obvious products of a particular personality; quite the reverse. The grower of each individual exhibit is supposed to remain anonymous until the cards are turned over after judging.

Reading back the above, I cannot help wondering whether I would have held the same opinions 25 years ago when we were actively showing. Today I have only to walk out into the garden, with its backdrop of the Highland hills to be quite certain where I stand. Watching the blossoms on some choice alpine dancing in the same breeze which is ruffling one's hair, it is all too easy to let one's mind wander back to the lonely mountain top where that same species was seen growing wild, and experience the thrill once again. This feeling of freedom and space would be quite impossible in an automated alpine house. "Won't you fly free bird?" Yes, a million times yes.

ARIZONA AUTUMN

It was never our intention to go back to the mountains of the American West in 1997; the trip just sort of happened. By the time the annual nursery cycle comes to an end in the autumn we are both badly in need of what the Americans call 'R and R', rest and relaxation. We had thought about going to Greece, but were told that the Eastern Mediterranean can be quite cold and wet by November. When Poll read a magazine article on fly-drives to Arizona it prompted a few enquiries, and we found that by going so

late in the year we could get a very good deal on the flights. Thus we decided to go for what we know; it makes for a much more relaxing trip. Letters were quickly despatched to friends in the SW, warning them of our intentions and requesting information, which was generously forthcoming.

We flew into Phoenix and as usual rented a 4WD once we got there. A few days were spent in the metropolitan area unwinding, getting over jetlag, and seeking out the necessary maps and hiker's guides. Our first insight into the local flora came at the Desert Botanic Garden in Papago Park. Set down in the desert amid some small buttes, this has a well cared for look; most of the main paths are beautifully paved, and the labelling is excellent. Although there were very few flowers left, we found the forms and shapes of the cacti and succulents quite fascinating, the former ranging from cushion plants, Arizona style, (Fig.3 p.14) to the inevitable giant Saguaro, *Cereus giganteus*, so familiar from countless westerns. The characteristic arm buds do not appear on the latter until they are at least 75 years old, and they can live to be 200 or more. Thus it is not really surprising that most specimens look rather the worse for wear, with many nest holes carved by woodpeckers. Some of the cacti, such as the Golden Barrel *Echinocactus grusonii* (Fig.2 p.14), have colourful spines which are particularly attractive in low angle sun. The garden also contains exhibits on the utility of the native flora to the Native Americans and early Spanish settlers. Here we made acquaintance with the 'ramada', originally a loosely thatched roof, supported on 2-2.5 m poles, to provide shade for outdoor activities such as cooking.

Out there on the upland Sonoran Desert many of the plants introduced to the garden also prefer some protection from the sun, and two large shadehalls hold collections of cacti and succulents respectively. In the latter house "them funny Stones", lithops species, were flowering (Stone Column, June 1984). Privately owned and funded, the Desert Botanical Garden has charitable status, and clearly has no trouble in attracting an army of volunteers. At a time when the population of the American SW is increasing rapidly it is opportune that their Center [sic] for Desert Living aims to minimise the impact of man on the desert, principally by example. I can remember how incensed Panayoti Keleidis was back in 1988 at many of his neighbours in Denver who ran their sprinklers every day in an effort to produce an "English" style lawn. I wonder if they realise that English lawns are

no longer always green, and that Prairie gardening is becoming fashionable in the Old World. As part of the effort at living in harmony with the desert, wildlife is encouraged in the park. As we sat out on the terrace having lunch a small flock of ground-feeding Gambel's Quail, with their peculiar topknots warbled gently past; relaxation therapy for jaded gardeners.

THE BOYCE THOMSON SOUTH WEST ARBORETUM

Lying some 60 miles to the East of Phoenix, the Boyce Thompson SW Arboretum is rather larger than the above, with a wider range of habitats, including a riparian zone along a perennial creek where the trees were in all their autumn glory. Run jointly by the University of Arizona and Arizona State Parks, this is more of a traditional academic botanical garden, concentrating on the plants themselves, but the educational side is not forgotten. A series of interpretative ramadas, like little wooden bandstands, are dotted around; also serving as convenient rest-stops. The garden is named after its founder, a wealthy mineowner, whose original 1920s cast-iron greenhouse still houses an interesting collection of desert plants from around the world. There is, for example, a nice specimen of *Welwitschia mirabilis* from the Namib desert of SW Africa, a species to which the word unique really applies. There is nothing even remotely like it. The house itself has many period features still in full working order, such as continuous side vents opened in long sections by winding shafts and worm gears. There is also a large rock garden, consisting mainly of raised beds built against and around natural rock outcrops. In spite of the setting, there are no pretensions at 'natural' rock gardening here; these beds are intended, as are our own back at Askival, to thicken up the soil and provide better homes for plants. By placing many of them in defiles between the native rocks (Fig.1 p.13), not only are various microclimates created, but also hidden corners to provide an essential element of surprise.

A problem with many small alpine gardens is that one can take in the whole design at one glance. On a sloping site one possible remedy we particularly liked was the steep-sided hollow in Josef Jurasek's Prague garden which he had lined with tufa. On a flat site, coming up with a good design is far more difficult. The traditional answer of subdividing the patch into tiny 'rooms' with fences, hedges, trellises, pergolas etc. is inappropriate as alpine plants prefer an open situation with free air movement. A large

mound or 'dog's grave' in the centre of the garden is aesthetically unacceptable, but place it in one corner backed by hidden dry walls and the mystery is back. The late General Murray-Lyon's 'Pass of Killiecrankie' concept (The Rock Garden No.19, p.101) represents a viable solution to the problems posed by a town front garden, where a so-called 'natural' style rock garden would be totally out of place.

Back at the Boyce Thompson it is not space but water which is the main factor limiting development. The annual rainfall is around 430 mm, not so much less than the 560 mm of the Moray coast in Scotland but in Arizona most falls as sudden storms converting dry washes briefly into torrents. The garden has its own reservoir, and irrigation is employed in many areas including the rock garden, especially on recent plantings. Education in dryland gardening and water conservation is provided by a series of well-maintained demonstration gardens. Shady courtyards and drought resistant plantings naturally feature, but the emphasis is on optimum use of available water. Runoff from hard areas, such as the main visitor car park, is channelled to the borders where it is impounded behind mini-embankments. This is really a modern version of the ancient Nabatean agricultural system employed in the wadis of the Negev. The method could even be relevant to the SE of England. Think how much grey irrigation water could be collected if the street drains in a housing estate were connected to a reservoir instead of the sewers. We were fortunate to be able to discuss this and many other points with the horticulturist in charge of the rock garden, Pete Petrie, over our picnic lunch.

In between visiting these two public gardens, we had our first day out in the hills, a hike up Peralta Canyon in the Superstition Mountains. It was another beautiful day, warm in the sun, cool in the shadows. As the trail winds up the canyon amid spectacular rock scenery, the Saguaros and Chollas, (shrub-like cacti) are left behind and one enters a zone dominated visually by the rosettes, and tall fruiting stems of the Agavaceae. Apart from Agave itself there, were the Sotol or Desert Spoon, *Dasyliirion wheeleri*, various Yuccas, and the local Beargrass, *Nolina microcarpa*. The last is another example of the danger of relying on common names; it is not related to the Northern Beargrass, *Xerophyllum tenax*, a large plant of which now blooms regularly on our Haze bed. The hollow rigid stems of the Sotol were once used by the Apache as lances, something I couldn't resist trying out. Stripping the individual

pedicels from the inflorescence on a long dry stem, I was left with a perfectly serviceable, if lightweight, weapon. How different were the cornel wood lances employed by Alexander the Great's hard men, his Companion Cavalry. When pruning some lower branches from our *Cornus mas* recently, after flowering, I was struck by the density of the wood; but to be of use the tree must grow much larger in Macedonia.

Of more peaceable use to the Native Americans are the Pinyon Pines, with their edible nuts, scattered specimens of which started to appear amongst the rock towers still higher up. From Fremont Saddle at the head of the canyon there is a dramatic and apparently much photographed view of the volcanic plug of Weaver's Needle (Fig.4 p.15). However, although this is supposed to be one of the most popular dayhikes in Arizona, within easy reach of Phoenix, we saw only two other parties all day; a couple who did not make the full 500 m ascent to the col, and a group of four, led by an alpha female in designer clothes which would perhaps have been more appropriate on the golf course.

A FEW DAYS IN THE WHITE MOUNTAINS

Leaving the desert behind for a while we headed north to spend a few days in the White Mountains. To reach them from the South one has to cross the spectacular Salt River Canyon, not so enormous as the Grand Canyon but impressive enough. We did not go to the latter, as our interest lies in the North Rim which is better visited in summer. Although the summits of the White Mountains are not quite high enough for true tundra, the extensive alpine meadows between the stunted trees are home to good plants such as *Townsendia formosa*. The true species resembles a smaller *Aster alpinus* whose white ray-florets are backed with blue, and is not at all like the lavender/pink erigeron species which has been grown under this name. Amongst the foothills of this range the late Sonia Collins (née Lowzow) once had a garden where *Meconopsis delavayi* flourished outside, thanks to the summer monsoon experienced by this part of Arizona. A number of the local plants which she had contributed to our garden were described in the Stone Column for January 1989; now came our chance to see them in the wild.

We went first to the Mogollon (pronounced moh-gi-yon) Rim, an escarpment which forms the Southern boundary of the Colorado Plateau, to find *Linanthastrum nuttallii*. Since I wrote the above

piece, this white-flowered phlox relative has made itself thoroughly at home at Askival, self-sowing mildly around. Another of Sonia's introductions was a fully hardy (to -20°C), dwarf form of *Commelina dianthifolia*. Having seen its natural habitat, a bleak, windswept peninsular jutting into a lake at nearly 3000m, we are not surprised that this form is so tough. While in the area, we also climbed Escudilla Mountain, at 3325 m the third highest in Arizona, on a day of subzero temperatures and brief snow showers. The lying snow and strange lighting turned the extensive stands of aspen into an ethereal landscape through which, in spite of the ascent, one appeared to float.

North again and into the track of El Nino derived storms, Winslow was our next objective. Poll says I have a natural affinity for holes in the ground, so we could not omit the famous Meteor Crater. Since it is privately owned, one is not allowed to descend to the crater floor, but the view from the rim is more than enough to convince one that it is indeed fortunate that such impact events are very rare. While in Winslow I stood on a corner; no girls came by, but I was with one who says she's a friend of mine. The ladies in the local bookstore told us that Route 66 through the centre of town hadn't changed since that song was written. An interregnum between the storm fronts allowed us to visit the Petrified Forest National Park on a sunny but cool day. This was especially lucky as the multicoloured fossilised logs glisten in the sunshine, set off in places by small plants of *Yucca angustissima*.

Sunset in the nearby Painted Desert seduced us into lingering through the brief twilight, which meant that darkness had fallen long before we crossed the State Line, to reach our night's lodgings in Gallup, New Mexico.

By next morning it was snowing again, and so we had to abandon a planned visit to Chaco Canyon, with its Anastazi pueblos, and head straight for Albuquerque. We managed to cross the Continental Divide just before the blizzard closed the freeway, outrunning the snow which however caught up with us again overnight. Ellen Wilde, who had visited Askival for a couple of very wet days in July 1995, had invited us to stay with them in Santa Fe, the oldest city in the US. Ellen is one of the mainstays of the American Penstemon Society, currently Custodian of the Slide Collection, and is also working on their Penstemon Manual. Although the fine weather had returned, her garden was still unfortunately blanketed by snow. However, we did have a most

enjoyable and productive time, and learnt much of the alpine flora of New Mexico that will be of great value when (not if) we return one summer. I welcome the chance to talk penstemons anytime.

THE FUTURE OF WILDERNESS AND WILDLIFE

Heading South again down the Rio Grande we followed 'El Camino Real', the Spanish Royal road linking Santa Fe and Mexico City, to Socorro and the Bosque del Apache. The National Wildlife Refuge here was built by Roosevelt's Civilian Conservation Corps (C.C.C.) just before the War, to replace wetland habitat lost for agricultural development. There is currently considerable argument over the future of wilderness and wildlife. On the one hand are those who believe in 'the balance of nature'; while others maintain human activity has so altered most ecosystems that even a park as large as Yellowstone cannot be simply left to its own devices, and so has to be managed. While I largely subscribe to the latter view, I do accept that the Wilderness concept, i.e. the setting aside of an area where logging, any kind of building including ski developments, all wheeled transport, and even helicopters, are forbidden is of great value, and one we would do well to adopt in Europe.

Hunting is normally allowed in most Wilderness areas, subject to control by a permit system; and here they differ from the National Parks where it is banned. As a result, Yellowstone is being badly overgrazed by elk, i.e. red deer in European usage. The changes are slow, and are only obvious if one compares the present vegetation with that in old photographs. Similarly, many British hill-walkers are probably quite unaware that the mountains they enjoy represent a depauperate environment, one not helped by centuries of overgrazing. Some grazing is necessary otherwise tree regeneration is unduly dense. Fort Augustus golf course has the balance about right, with healthy young groves of Scots Pine and Birch.

The much publicised reintroduction of a few wolves to Yellowstone is unlikely to make a significant impact on the large herbivore populations; sooner or later the Park Rangers will have to act. In Olympic National Park they grasped the nettle and severely culled the introduced mountain goats which were destroying the alpine vegetation, just as closer to home on Speyside the RSPB wardens have had to reduce deer numbers on their Abernethy reserve.

CLOSE ENCOUNTER OF THE RATTLESNAKE KIND

The Bosque del Apache is a very good example of the value of management, albeit of a quite different kind. Water levels are controlled by a system of sluices and the only culling is of the alien tamarisk. Predators such as coyotes are not persecuted; they play a significant role in keeping the bird populations healthy. When the refuge opened in 1939, there were less than 1000 sandhill cranes on the central flyway; now over 15000 overwinter at the Bosque alone. The recovery in the snowgoose population has been even more dramatic, with around 50000 arriving by the Rio Grande each Autumn. These flocks provide each evening one of the most dramatic wildlife spectacles in North America. During the day the geese and cranes feed on the reserve farmland, where crops are grown especially for them. At dusk they fly back to one of the artificial lagoons to roost, the cranes in small groups, but it is the geese which provide the drama. A disturbance starts at one corner, then ripples across the whole flock, the honking birds taking to the air in a continuous stream. Tinged pink at first by the setting sun, they thundered overhead in a vast torrent, so numerous that they darkened the sky like the Persian arrows at Thermopylae, finally to merge into the deep purple backdrop of the Magdalena Mountains.

It was earlier in that memorable day at the Bosque when we had the close encounter with a rattlesnake. Walking along a sandy trail I stepped over a 40 cm Prairie Rattlesnake without seeing it; Poll following close behind just stopped in time. These youngsters are said to be more dangerous than adults, since they have not yet learned to pull their punches when delivering defensive bites, and so avoid wasting expensive venom on non-prey species.

A WEALTH OF FERNS

Our next port of call, the gypsum dunes of White Sands National Monument, are also best seen at sunset, and so we timed our arrival for late afternoon, following a long drive around the Trinity Site where the first atomic bomb was exploded in 1945. Standing on the dunes with every ripple highlighted in shades of orange, pink and gold was a surreal experience, rendered the more so by sinister black triangles of 'stealth fighters' flying out of nearby Holloman AFB. It was the time of one of the periodic Gulf crises. It was the time of one of the periodic Gulf crises.



Fig.1 Rock Garden defile Boyce Thomson Arboretum (p.7) Polly Stone



Fig. 2 Golden barrel cactus *Echinocactus grusonii* (p.6) Polly Stone

Fig. 3 Cushion plants Arizona style (p.6) Polly Stone





Fig. 4 Weaver's Needle, Superstition Mountains (p.9) Polly Stone

Fig. 5 *Cheilanthes lindheimeri* with *Heuchera sanguinea* (p.17) Polly Stone





Fig.6 Weevil damage on primulas (p.22) Colette Coll

Nearby are the rugged Organ Mountains named for their jagged rock formations. Here we visited the Dripping Springs Natural Area, a reserve set up mainly to protect the endemic evening primrose, *Oenothera organensis*, and currently administered by the Bureau of Land Management. A trail leads into Ice Canyon and the ruins of a once fashionable resort, where the Mexican revolutionary, Pancho Villa once stayed. Scrambling further on up the rapidly narrowing canyon we noticed at least eight different ferns on the rock walls. Later the BLM staff told us that there are more species of fern in the Organ Mountains than in any other single range in the US. Several were exceptionally beautiful: an intensely silver *Cheilanthes* sp. (Fig.5 p.15), another with the most finely divided foliage we have ever seen in a fern, a strongly glaucous *Pellaea*, *Notholaena standleyi*, its triangular fronds dark green above but coated with golden wax beneath, *N. californica* also with triangular foliage, but this time more divided and shining cream underneath, another *Notholaena* (*N. aurea*?) with long thin fronds, brilliant white beneath, a *Woodsia* decorated with prominent sori and a further species whose fronds were so densely covered with cinnamon scales on the reverse so as to rival the indumentum of any rhododendron. We feel that any of these would make superb alpine house plants, not only beautiful but probably having the additional cachet of difficulty to boot. As chasmophytes, they should almost certainly require very careful watering. Several cacti, including some cushion-forming species, grew alongside the ferns.

Dionysias, which often grow in similar habitats, are accepted in our shows because they look like alpiners even if they're not, whereas the cacti would be banished. As I said in the previous item there is no logic; pleiones look equally out of place with alpiners, but are acceptable. Such thoughts only occur in retrospect; at the time the juxtaposition of ferns and cacti came to be viewed as perfectly normal. By now watching sunsets had become a habit, so on our way back down to Las Cruces we parked by the side of the dirt road, and sat on the open tailgate of our 4WD while the granite spires of the Organ Mountains were turned all too briefly into pillars of flame.

ISLANDS IN THE SKY

Continuing our circuit, and still enjoying fine weather, we crossed back into Arizona to visit several more of the 'Islands in

the Sky'. One of the largest of these is the Chiricahua Range, whose highest summits were by now blanketed with snow. We contented ourselves with a couple of hikes in the National Monument, amid the incredible thickets of rhyolite pillars which are home to *Penstemon pinifolius*. Access to most parts is only possible thanks to trails built pre-war by the C.C.C. largely by constructing retaining dry walls of huge boulders.

On a recent visit to the Lake District I was appalled by the state of many of the paths, huge scars created by walkers going to the side to find a firmer footing. They were not like this back in the 1950s when I was learning the hill-walking trade. At Chiricahua N. M. an entrance fee is charged, some of the money raised being used to maintain the trail system. In the Lakes, perhaps if all non-residents were charged admission, then there would be funds available to rehabilitate the paths and neighbouring hillsides. The use of local natural materials when constructing trails is far more appropriate than the monstrous concrete ribbon which the French have built up the Puy Mary in Cantal.

The SE corner of Arizona is home range to Sally Walker who, in the guise of South-western Native Seeds, has contributed a great many good plants to Askival over the years. Although a busy time for her, she generously gave up two days to show us a few of the special plants to be found locally. We went first to the Dragoon Mountains, where Sally took us up into the real Cochise Stronghold, a remote and steep hillside of tumbled rocks and thick scrub, into which the Chief and his band retreated after their forays against the invading 'Anglos'. Petrographs in a number of boulder caves indicated a far older Native American presence in the area.

After careful searching we found a few last blooms above the glaucous rosettes of *Echeveria rusbyi*, a northern outlier of a predominantly Mexican genus, and one which E. K. Balls recorded as containing a few genuine alpinines. It differs from *Sempervivum* in that the scapes arise from the leaf axils. Nearby the dwarf saxatile *Penstemon discolor* was in seed; a S Arizona endemic, it is closely related to *P. linarioides*, but has pale blue flowers. More familiar perhaps is *Heuchera sanguinea*, a few of whose rich scarlet blooms were still in evidence. Later that day we moved on to Stronghold Canyon where, on the far easier official trail, we came across a Forest Service gang planting beargrass to control the erosion initiated by too many trampling feet. Our second day with Sally was spent on a rather higher range where the road had been

closed by snow. Hiking in we found two species of dodecatheon in close proximity; *D. radicum* in a moist meadow and *D. ellisiae* by a creek in coniferous woodland. Both were fortunately still in seed. The same kind of ecological separation is repeated further north in the Rockies, where *D. pulchellum* favours stream-sides, while *D. conjugans* is found in dryish thin turf. *D. radicum* is to my mind a good species, the only one grown here which is strongly stoloniferous. There were many other interesting plants along the wayside which Sally could recognise in seed; we learnt a great deal of value during our time together, and not just about plants.

The circle was almost closed; there remained only Tucson where we had one last hike in the Santa Catalina Mountains, and did some last minute research in the University of Arizona herbarium. There I discovered a sheet with five specimens, four of which keyed as *Primula rusbyi*, and one as *P. ellisiae*. I have always considered *P. ellisiae* to be a doubtful species at one end of the range of variation within *P. rusbyi*, and this sheet would appear to confirm this view. Most of the opinions to the contrary are based on cultivated specimens, always a dangerous thing to do. Although morphologically doubtfully distinct, *P. ellisiae* does differ from most *P. rusbyi* in its earlier flowering. Thus I propose that *Primula ellisiae* Pollard et Cockerell should be reduced to a variety as *Primula rusbyi* Greene var. *praecox*. This is of course a matter which can only be finally resolved by a study of the wild populations in both Arizona and New Mexico. Such a venture would make a good hook upon which to hang a future visit, as if the sunsets and Saguaros weren't reason enough. Last autumn's trip really did loosen our loads; we shall be there again and I know which love is going to save me.

References

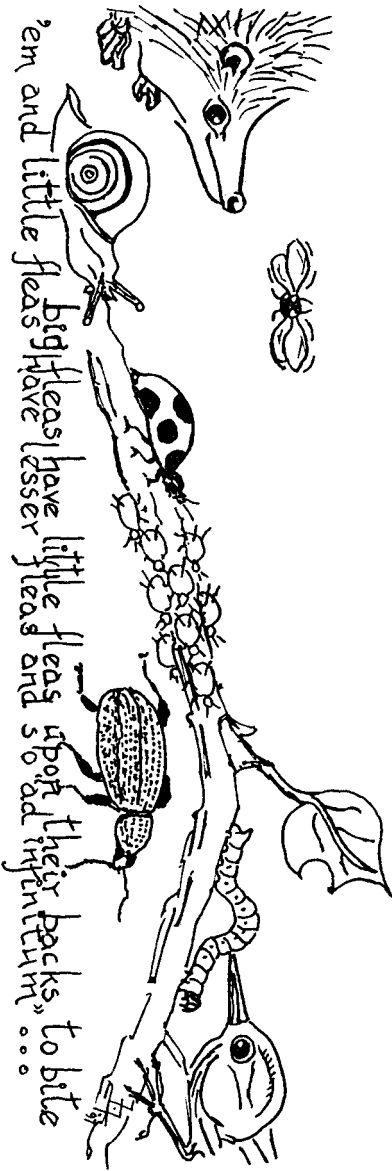
- Perennials and their Garden Habitats, by R. Hansen and F. Stahl. English translation, C.U.P. 1993.
- Land Degradation: Creation and Destruction, by D. L. Johnson and L.A. Lewis. Blackwell, 1995.
- Nature's Keepers, by Stephen Budiansky. Weidenfeld and Nicolson, 1995.
- Uncommon Ground: Toward Reinventing Nature, edited by W. Cronon. Norton 1995.
- Take it Easy, by Glenn Frey and Jackson Browne. W. B. Music Corp.

Big Fleas have little Fleas

This cartoon by Francis Ferns is very apposite for the article on the opposite page which is a beginner's guide to pest control.

Probably the largest pest problem some of us have to deal with is that of deer, something which Collette does not even mention!

However, a splendid book by Charles Coles "Gardens and deer: a guide to damage limitation" (Swan Hill Press £19.95) gives an excellent account, for those of us plagued by deer, of how to overcome them and get your garden back to growing plants rather than feeding deer.



DETECT A PEST- A BEGINNER'S GUIDE

by Collette Coll
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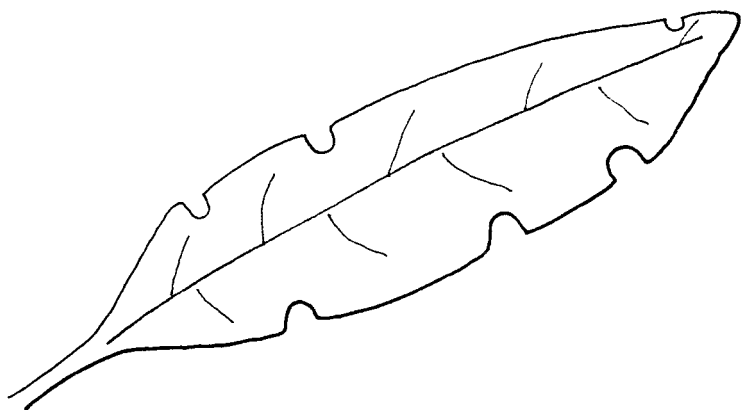
Just as the potential glory of a fine rockery display beckons, so too looms the awesome spectre of pests despoiling the petals, roots and stems of the most cherished specimens. When it comes to pest problems, there's no end to the crafty techniques they will use to catch you out, whether it is surviving the winter in a protected resting or egg-phase, or making use of high temperatures to allow further migration than usual. So every year we have to prepare to deal with the perennial pests as well as those that just turn up sporadically. This year will be no different, or will it? A relatively mild winter combined with an early spring could mean that many species will have overwintered more successfully than usual; slugs were egg-laying throughout February and March and soil dwelling larvae don't seem to have stopped feeding this year. Therefore we might be wise to anticipate heavier pest pressure this summer.

Experienced growers will have an armoury of strategies refined and honed (and sometimes legal) for combating the pests which cause them most problems, but for the newcomer to the pleasures of rock gardening, the most difficult hurdle is often knowing where to start. In dealing with any pest species, the first thing to do is identify it, which can be easier said than done, especially given that many pest species will have moved on after they have caused damage, leaving you to wonder in horror about what's made those dreadful holes in what was your prize *Campanula piperi*. When this happens, try not to panic but instead don your Sherlock Holmes cap and try using the following hints to help you to pinpoint the hidden enemy.

VINE WEEVILS

Most of the invertebrate (insects, slugs and nematodes) species that cause damage to plants leave behind an array of clues that you can use to help identify the culprit. It may help to consider that

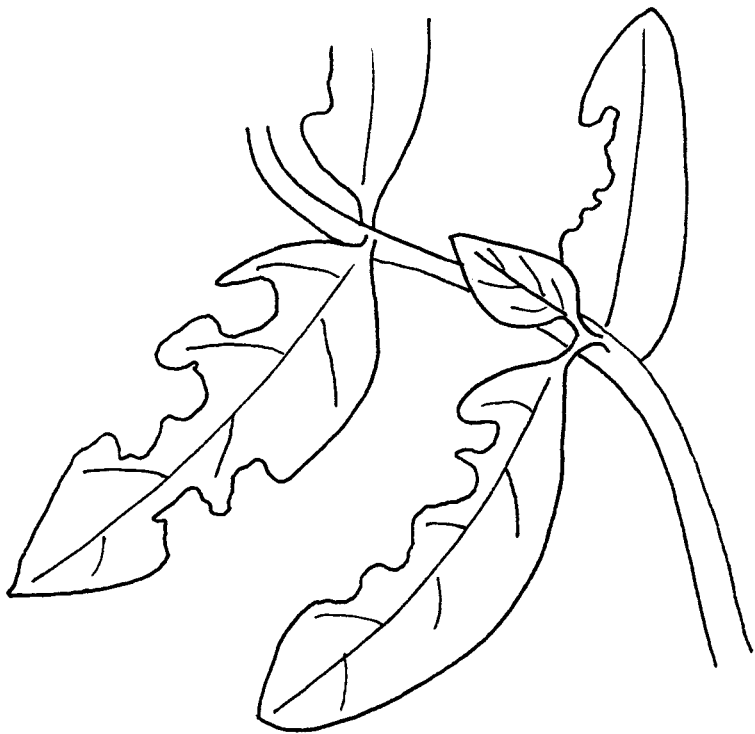
unlike ourselves, invertebrates don't have the advantage of arms and fingers to use when dealing with food but instead rely, more or less entirely, on using specialised mouthparts for feeding. For example, insects such as earwigs, wireworms, weevil larvae, leatherjackets and caterpillars have mouthparts specifically designed for biting and chewing; in your eyes that might be loosely translated as being suitably equipped to make 'horrendous big holes'. Even within this group it is possible to identify further which pest is the most likely problem. For example, let's consider the creature that produces a tremor of fear in the most long serving of plantsmen, the vine weevil. Adult weevils make a very characteristic notching on the edge of plant leaves because they have a distinctive and odd shaped snout (see drawing below).



They tend not to enlarge the feeding area but move along the leaf and take another notch and then, another and so on. So common is this type of damage that it may surprise you to learn that rhododendron leaves are not supposed to have serrated edges. This in itself can be a disaster if you are trying to produce a show specimen but the problem is further compounded by the fact that the larvae of the vine weevil feed deep in the soil within the roots and this makes them very difficult to control (Fig.6 p.16). When you see the damage on the leaves it alerts you to the fact that vine weevil adults are present, active and likely to be egg-laying, so giving you some early warning that you had best prepare to avoid future problems.

CATERPILLARS

By contrast, another common leaf feeder and one which might be equated to the Sumo warrior of the insect world, such are their voracious appetites, are caterpillars. Caterpillars can cause complete devastation because they have really well developed biting mouthparts and once they start feeding on green plant material they are not so tidy in their habits as the weevil and will feed ravenously, often skeletonising the plant completely.



Some species are more refined, feeding only on the underside of the plant and causing the appearance of little windows on the leaf surface. Previous experience of early springs has brought many species of moths to more northerly areas in Scotland. In particular, in recent seasons, the Silver Y moth has turned up so suddenly and in such large numbers that many gardens were hard pushed to produce a flower show at all. So this might be one to watch out for this year.

SLUGS

A species which causes a lot of problems in most rockeries is the ubiquitous slug. A rockery is a great place for a slug in that there are lots of nooks and crannies to shelter under and growers, most kindly, provide them with sufficient water when conditions start to become dry. If you think slugs might be your problem then look out for signs of shredded leaves. Slugs have an unusual mouth which is made up of rows of small curved teeth which are continuously replaced when they are worn out. The symptoms they cause might be likened to those caused by a tiny cheese grater rubbed up and down the leaf surface. Slugs also love to feed on seeds so if you are finding that plants sown from seed are not emerging, dig up some seed and check for damage. If the seeds are big enough then you might find some half-eaten ones. If not, then look out for the tell-tale slime trail, or small groups of spherical translucent eggs. Check under stones and clods of earth, especially where it might be damp, and you may well find them.

EARWIGS

The common earwig is another species which can be elusive but can cause considerable cosmetic damage to the show plant. Similar to many other chewing types it will cause the appearance of rather unsightly holes which can range from being quite small and irregular to almost wholly stripped and threadlike: my own solitary specimen of Solomon's Seal testifies to the latter symptom. Earwigs are one of the most primitive insects known to man and have probably fed on more species of plants than we will ever know existed.

NIGHT-OWL

The one thing that many of these pests have in common is that they tend to feed at night; vine weevil, slugs, moths and earwigs all become more active in the later part of the evening and again just before dawn. If you are stumped with respect to what is causing a particular problem then it is always a good idea to get out the torch and have a look around your plants in the evening and hope that your neighbours aren't watching. This self same tactic led to the removal of 32 earwigs from the aforementioned Solomon's Seal plant, now sadly reduced to Solomon's Shoelace.

BLACK/GREENFLY

Of course, not all insects have chewing mouthparts. Insects such as aphids (blackfly, greenfly) and bugs are equipped with a specialised feeding stylet - which resembles a straw. These insects insert their feeding stylet into the plant cells and then simply suck up the nutrients. Usually damage caused by this type of pest is not noticed as quickly as that caused by the chewing types as it takes some time for the symptoms to show. Individually the aphids don't cause a great deal of damage (except where they transmit virus) but unfortunately aphids multiply very quickly and large numbers can suck a lot of goodness out of a healthy young plant. What you are most likely to see is distorted leaves that are beginning to curl in on themselves as they desperately attempt to conserve water. Sometimes this effect is not seen until the aphids have moved on but you can usually find clues that aphids have been present by the appearance of old cast skins, which look like small white dead insects.

CONTROL

Having determined the pest, the next stage is to consider how to manage it. Generally speaking, pest management should be tailored to suit the specific problem but as a rough guide you might like to think about the following points. First of all, when bringing in new material, always check it for pests. Some people stand new container plants in water overnight and force hidden soil insects to come out themselves. If your patience doesn't stretch to this then at the very least have a good look at the plant and look at the underside of the soil as you remove it from the pot. This is often where you will spot the New Zealand flatworm which is renowned for seeking refuge under plant pots.

HABITAT

The next thing to consider is whether you can improve things by altering the habitat so that it is no longer suitable for the pest. For example, earwigs hide under stones, plant pots, bits of wood; it may be easy to remove these things. Slugs like a nice moist environment with lots of clods and stones under which to harbour. Try and ensure that you have prepared a fine seed bed for young plants and that you have consolidated the earth so that slugs cannot move freely.

Other possibilities include improving the habitat for natural predators. There are many species of other insects that help to keep a check on pest numbers. You will probably be familiar with brightly coloured flies, which look a bit like wasps, hovering over flowers during the summer. These are called hoverflies; the adults feed on pollen but the larvae have a rather voracious appetite for greenfly and blackfly. Planting flowers such as *Phacelia* will help to encourage their presence. You don't have to rely on assistance from insects; you can also enlist the help of birds, frogs, toads and hedgehogs but you do have to spend some time planning ways to encourage these creatures into your garden. There's not much point in encouraging these animals if you happen to be the owner of the local domestic leopard or the proud grand-parent of a two year old armed with a plastic hammer.

INSECTICIDES

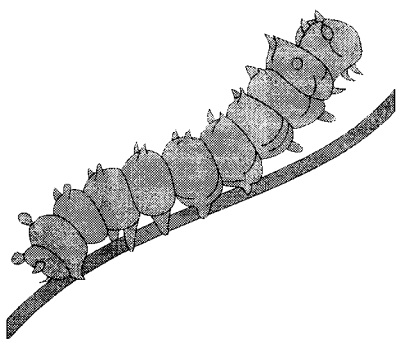
If you have reached the stage that only insecticides can refresh then don't be tempted to apply these continually as this will only lead to problems later. Insecticides are not designed as a panacea to all pest problems but should be used alongside other strategies. If we were to rely solely on one method of control then we would soon be faced with resistance problems so always alternate your control methods where you can. Where possible use insecticides which are most specific, for example, systemic insecticides will kill aphids feeding on the plant leaves but not ladybirds feeding on the aphids. If the insecticide is not specific try using it at a time when it will target the pest but will have minimum effect on other insects, i.e. treat at night for vine weevil when foraging insects such as bees are not active. Restrict the application to the affected area and don't be tempted to spray everything in the garden, however much your imagination depicts scenes of wanton destruction caused by a myriad of marauding insects. If it's soil dwelling larvae you are pursuing then you might consider placing insecticide into the soil, or using insecticide treated compost, such as Levington's new Plant Protection Compost, which is now available to the amateur gardener.

If you are not keen on using conventional insecticides there is also the possibility of using biological controls, the majority of which are best suited to the greenhouse. However, there are parasitic nematodes available which can reduce slug and vine

weevil levels, provided that you apply them in suitable conditions, i.e. when it is warm enough for the nematodes to be active. Don't be disheartened if you have tried biological controls and found they didn't work first time, it takes a bit of trial and error to create the right conditions and there may also be a time lag in seeing the benefits as they need a bit of time to work.

Always keep an ear to the ground for novel approaches used by others. I was recently introduced to a novel method of slug control by a group of American horticulturists. The idea was based on placing 1-2 inch hair clippings (collected from the local barber) around the base of affected plants. When the slugs come out at night they get coated in the hairs, which not only irritate the slugs but also start to penetrate the skin. According to their observations the slugs end up looking like small furry balls as they become coated in the hair clippings. Perhaps not an idea which will appeal to the faint hearted!

Of course, the other way to look at it is that insects and slugs needn't be the enemy and you could try planting to attract insects in. This is an idea that is becoming more widely accepted and you will easily find books devoted to the subject of Gardening for Wildlife, should you wish to pursue this line any further. You might be surprised to discover how quickly nature deals with imbalances in population levels if left to its own devices.



THE SCOTTISH ROCK GARDEN CLUB

DISCUSSION WEEKEND 1998

Friday 9th - Sunday 11th October at the Stakis Tree
Tops Hotel,
Springfield Road, Aberdeen, AB9 2QH

Friday 9th October

16.00 Registration

19.45 Evening lectures:

Bob Wallis "Ottoman Treasures" and

Rannveig Wallis, The Small Bulb Talk "Autumn Show"

Followed by the Bulb Exchange and fringe slides

Saturday 10th October

08.00 Registration

09.00 - 12.00 Workshops

12.00 Show opens

14.00 The WILLIAM BUCHANAN Memorial Lecture:

An Afternoon with Fred Case featuring

"The Trilliums of North America"

until 16.30

20.00 Informal Supper

Followed by A Diversion and The Plant Auction

Sunday 11th October

09.00 Registration

09.30 1st Morning Lecture:

Keith Lever "Selection and Serendipity"

11.15 2nd Morning Lecture:

Will McLewin "The Genus Hellebore"

14.30 The HAROLD ESSLEMONT Lecture:

Chris Grey Wilson "20 Years of Exciting Plants from Western
China "

**Trade Stands, Book Stall, the Autumn Show,
swimming pool sauna, gym, solarium and whirlpool
spa**

**For costs and booking details see the Booking Form
in this issue of The Secretaries Page**

PLANT-HUNTING IN THE DOLOMITES

A guide to the vast botanical treasures
of a mountain wonderland

by Michael J. B. Almond

According to Reginald Farrer, the Dolomites “is a land of magic, enclosed by peaks like frozen flames.” He went on to say that he was embarking on his book *The Dolomites* “in the hopes of tempting yet more and more of my fellow-countrymen” and lamented how few of them ventured further than Switzerland. The situation seems to be much the same today and it is time once again, I think, to remind those attracted by high mountains and their flora of the manifold attractions of the Dolomites

The Dolomites, as Lionel Bacon explained in his *Mountain Flower Holidays in Europe*, “is a mountainous area of North-East Italy. It is a scenically distinctive and beautiful area, whose name derives from the predominant local rock formation, *dolomite*, which is a crystalline magnesian limestone. These mountains are wonderful and exciting to see; great pinnacles of rock with vertical and horizontal cleavages. The crystals have curved surfaces which catch the light giving constant changes of colour.” Bacon’s book covered the whole of Europe and he could only devote a short section to the Dolomites. I hope to go into a little more detail; but I must stress that these articles cover only the places that Lynn and I have visited personally. There is a lot more of the Dolomites we have not seen. Furthermore, we have only been there at the end of June and the beginning of July, and have also suffered from the unpredictable weather to be found in these spectacular mountains. Although the area covered by the Dolomites is not particularly large (about 72 km or 40-five miles west to east, from Seis to the Passo di Mauria, and about the same north to south, from the Pustertal to the Piave valley west of Belluno — I am not including the Brenta Dolomites, to the south-west, in this survey) the nature of the terrain means that it is difficult to explore effectively from one base. If you are not camping and moving your base most nights

it is necessary to compromise and choose one or two hotels to serve as your base for a week or so at a time. Public transport is generally good but reliance on it will obviously further restrict your movements.

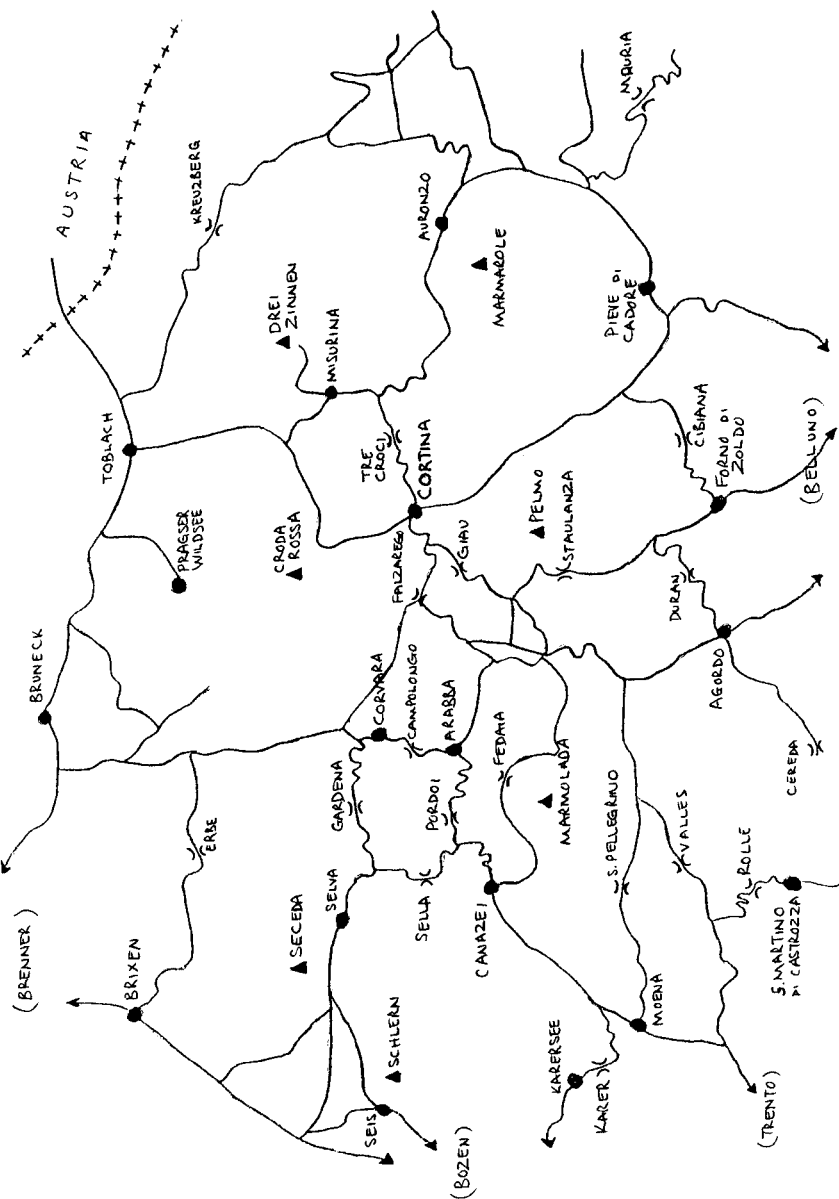
In the south of the Dolomites, place names are in Italian; in the north and west (part of the old Austrian province of *Süd Tirol*) names are German, with official Italian translations; in the central part of the Dolomites names are in the local language, Ladin, with Italian translations in all cases and with German translations in addition for those places formerly part of the *Süd Tirol*. I shall quote place names as far as possible in the local language, unless another form is more generally used in English texts; in which case I shall provide the more usual form in addition (this is often not possible in the Ladin-speaking areas of the provinces of Belluno and Trento, as maps usually only show the Italian names).

PART 1 THE CENTRAL DOLOMITES (See map opposite)

(Sella Pass - *Bindelweg* - Marmolada group as far south as San Pellegrino Pass - Sottoguda and Fedaja Pass: the whole of the area dealt with in this part, except for Sottoguda, is covered by the *Tabacco* 1:25,000 map sheet no. 06, *Val di Fassa e Dolomiti Fassane*)

The best base for exploring this central area is probably somewhere in the upper Val de Veisc (Val di Fassa), such as Canacei (Canazei), although parts of it are more or less accessible from the centres recommended for other sectors. Even while pottering around within a hundred yards of your hotel in (for example) Alba di Canazei, you should be able to see plenty of bright orange splashes of colour in the fields — the big, upward facing flowers of *Lilium bulbiferum* which gets its name from the small bulbils attached to the stem at the base of each leaf. In addition, we also saw the following flowers at the beginning of July: *Dianthus monspessulanus*, *Paris quadrifolia*, *Polemonium caeruleum* (including, near the church, a white form), *Pyrola rotundifolia* and *Rosa pendulina*. And this does not take into account the front gardens and rockeries, some of which boast such flowers as *Cyclamen purpurascens* and *Cypripedium calceolus*

The Paso de Salei (Sella Pass) lies above Canazei at a height of 2244 m with the vertical ramparts of the Sella Group to the east



and the jagged spikes of the Sasso Lungo and the Sasso Piatto to the west. The area immediately to the west of the Rifugio Passo Sella leads up towards the rocks of the Sasso Lungo and consists of a mixture of large boulders (the *Città dei Sassi*) and areas of open grassland. When we were there the steep meadows below the cliffs of the Sasso Lungo contained, among other things, some large *Leucorchis albida*, masses of *Campanula barbata*, trumpet gentians in seed, a few edelweiss growing on rocks, *Pulsatilla* seed heads (almost as attractive as the flowers themselves, particularly with the light behind them) and a few tall pale-blue *Gentiana verna*. In these steep meadows, the abundance of orchids was particularly striking — fragrant orchids, frog orchids and vanilla orchids in particular.

The full list of the flowers we found in this area is *Aster alpinus*, *Clematis (Atragene) alpina*, *Campanula barbata*, *Coeloglossum viride*, *Dryas octopetala*, *Erigeron* sp., *Gentiana acaulis*, *G. verna*, *Geum rivale*, *Gymnadenia conopsea*, *Gypsophila repens*, *Leontopodium alpinum*, *Leucorchis albida*, *Nigritella nigra*, *Paederota bonarota*, *Pedicularis* sp. *Phyteuma hemisphaericum*, *Pinguicula alpina*, *Polygala* sp, *Polygonum viviparum*, *Potentilla nitida*, *Pusatilla apiifolia*, *P. vernalis*, *Salix reticulata*, *Saxifraga caesia*, *S. exarata*, *Silene acaulis* and *Viola biflora*.

To the south of the pass, a track leads off to the Rifugio Valentino and across the Ciamp beyond to the Forcella Rodela. This is the *Friedrich-August Weg* and, as a scenic walk without an undue amount of climbing, rivals the more well-known *Bindelweg*. On the way up to the Forcella Rodela the meadows on either side of the path are bright with globe flowers (*Trollius europaeus*) and, in the damper areas, *Primula farinosa* (Fig.7 p.33). On the slopes beneath the Sasso Piatto are drifts of lemon-yellow *Pulsatilla apiifolia*, leading the eyes up to the crags above. On the limestone area surrounding the Forcella Rodela can be found *Daphne striata*, *Primula minima*, *Pulsatilla vernalis* and *Soldanella alpina*. Beyond the Forcella Rodela, the *Friedrich-August Weg* winds along the contours of the southern flanks of the Sasso Piatto, high above the Val Duron



Fig. 7 *Primula farinosa* (p.32) Michael Almond

Fig. 8 *Loiseleuria procumbens* (p.37) Michael Almond





Fig. 9 *Eritrichium nanum* (p.38) Michael Almond

Fig. 10 *Phyteuma sieberi* (?) (p.38) Michael Almond





Fig. 11 *Geum reptans* (p.39) Michael Almond

Fig. 12 *Campanula cochlearifolia* (p.40) Michael Almond





Fig. 13 *Potentilla nitida* (p.40) Michael Almond

Fig. 14 *Astragalus alpinus* (p.43) Michael Almond



The soils here are acidic and the flora includes *Aster alpinus*, *Coeloglossum viride*, *Daphne cneorum*, *Erigeron alpinus*, *Globularia* sp., *Gymnadenia conopsea*, *Linaria alpina*, *Loiseleuria procumbens* (Fig.8 p.33), *Nigritella nigra*, *Orchis mascula* (some particularly fine stands below the path, framing the distant views of the Val di Fassa below), *Primula elatior*, *P. farinosa*, *P. halleri*, *Pulsatilla apiifolia*, *Ranunculus glacialis*, *Soldanella pusilla*, *Traunsteinera globosa*, (a small insignificant orchid which repays examination, having finely marked petals) and *Trollius europaeus*.

Like most walks in the Dolomites, the *Friedrich-August Weg* is well provided with 'watering holes'. No need in the Dolomites to slum it with water bottle and cheese sandwich. You can, if you are so inclined, stop at frequent intervals in usually comfortable and always dry surroundings to have a *cappuccino* — with whipped cream if you like and a cake, or even a full-blown meal with wine. Such luxury does not come cheap, but it makes a welcome change especially when the weather is inclement.

About four kilometres (two and a half miles) south east of the Sella Pass as the mountain chough flies, is the Paso de Pordou (Pordoi Pass), at a height of 2239 m. On a fine day in summer the large car park at the top of the pass does take on somewhat the appearance of Blackpool on a bank holiday weekend but, as usual, it is easy to get away from the crowds. From here it is possible to ascend by cable car to the top of the great limestone blocks of the Sella Group (rising to 3152 m). There is little to see by way of plant life (in early July: *Draba aizoides*, *D tomentosa*, *Saxifraga oppositifolia*) but if the weather is kind to you the views will be ample compensation. Even if your experience is the same as ours, and watching the views materialise out of and dissolve into the cloud is rather like a celestial Dance of the Seven Veils and the wind is chilling you to the marrow, it still makes a memorable excursion nonetheless. Single minded plant hunters, however, set off from the Pordoi Pass in the opposite, southerly, direction, to wind round the side of the Sas Bece and up to the top of the ridge beyond. The ridge consists of acidic rock and along the contours of its southern flanks, high above the Val de Sóra and enjoying magnificent views south to the Marmolada, at 3343 m the highest mountain in the Dolomites, winds the *Viel del Pan* (more commonly known to British alpine plant enthusiasts by its German

name, *Bindelweg*). Like so many of the tracks of the Dolomites, with their (considering the terrain) easy gradients, this track is a legacy of the fighting between Austria and Italy in the First World War and was built to supply a gun emplacement, now known as the *Belvedere*, at the end of the track, which commands the Fedai Pass. Although the *Bindelweg* does follow the contours of the ridge in general, however, there are some fairly steep sections and it also takes quite a long time to do the full circuit (particularly if your progress is not only continually interrupted by the blandishments of the *Rifugi* along the way but also continuously impeded by seeking out, closely examining and photographing the many interesting flowers). The conglomerate rock of the *Belvedere* itself is covered in large cushions of *Eritrichium nanum* (Fig.9 p.34) which cover so much of the surface that the whole area takes on a blue colour (although, as so often with blue, this is difficult to discern at a distance and even more difficult to capture on film) and more of it can be found on the rocks and cliffs near the path. In fact there is a wealth of interest along the *Bindelweg* which more than justifies its popularity with mountain flower lovers.

As you first reach the top of the ridge above the Pordoi Pass you may encounter drifts of *Primula halleri* and large mats of *Douglasia vitalliana* and as you proceed further you may note some or all of the following: *Androsace hausmannii*, *A. obtusifolia*, *Anemone baldensis*, *Aquilegia alpina*, *Armeria alliacea*, *Arnica sp.*, *Aster alpinus*, *Bartsia alpina*, *Daphne striata*, *Doronicum sp.*, *Dryas octopetala*, *Erica carnea*, *Eritrichium nanum*, *Gentiana acaulis*, *G. punctata*, *G. verna*, *Geum montanum*, *Globularia nana*, *Gymnadenia conopsea*, *Horminum pyrenaicum* (as attractive for its glossy, dark green leaves as for its dark purple flowers), *Leucanthemum alpinum*, *Leucorchis albida*, *Lilium martagon*, *Linaria alpina*, *Nigritella nigra*, *Orchis mascula*, *Paederota bonarota*, *Pedicularis verticillata*, *P. sp.* (yellow), *Phyteuma sieberi*(?) (Fig.10 p.34), *Platanthera sp.* (like most of the helleborines recorded here, not yet in flower when we saw them), *Polygala chamaebuxus*, *Potentilla nitida*, *Primula halleri* (unmistakeable because of its long perianth tube which was reflected in its previous name, *P. longiflora*), *P. minima*, *P. veris*, *Pulmonaria angustifolia*, *Pulsatilla apiifolia*, *Ranunculus hybridus*, *R. keupferi*, *Salix reticulata*, *Silene acaulis*, *Soldanella minima*,

Traunsteinera globosa, *Trollius europaeus*, *Valeriana montana*, *Veronica fruticans* and *Viola biflora*.

After passing the Rifugio Viel del Pan it is possible (with great care) to gain access to the upper parts of the rather unstable cliffs that form the top of the other (north facing) side of the *Bindelweg* ridge. Here you can see (but not always closely approach) a lot more *Eritrichium nanum*, as well as *Douglasia vitalliana* and *Androsace hausmanii*. At the *Belvedere* itself, as well as the masses of *Eritrichium nanum* there are also mats of *Silene acaulis*. Beyond the *Belvedere*, on the way to the Porta Vescovo, can be found yet more *Eritrichium nanum* and quite a sprinkling of *Leuchorchis albida*. The fauna on this high and exposed ridge can also be interesting; although concentrating mainly on the ground, we did see choughs, ravens, a kestrel, snow finches, the odd marmot and chamoix.

From the Porta Vescovo it is possible to return to the Pordoi Pass along the north side of ridge, below the cliffs. Although it is perhaps not as interesting as the *Bindelweg* path, there is still plenty of interest; for example, *Primula minima* in the grass; in scree *Geum reptans* (Fig.11 p.35), *Linaria alpina*, *Papaver rhaeticum* and *Ranunculus glacialis*; *Androsace alpina* (including some pinkish ones) and *Sempervivum sp* on boulders beside the path; some *Gentiana verna* by streams; some good coloured thrift (*Armeria maritima ssp alpina*); masses of *Pulsatilla ?vernalis* in seed in places; and finally *Lilium martagon* just below the Pordoi Pass.

Below and to the south of the *Bindelweg* is the Val de Sóra, leading up to the Paso de Fedaa (Fedaiia Pass: 2057 m). The woods and the marginal scrub both to the west and east of the pass are rich in interest. In the open areas below the woodland west of the pass (above Canazei) we saw lots of *Lilium bulbiferum*, dotting the roadside fields with bright splashes of orange. In the woods themselves and on their edges are to be found *Aquilegia atrata*, *Atragene alpina*, *Coeloglossum viride*, *Corallorhiza trifida* (a tiny saprophytic orchid, insignificant both in size and colour but, like most orchids, amply repaying close examination; before closely examining one, however, you must first spot it and this is extremely difficult), *Gymnadenia conopsea* (the usual pink and also white), *Maianthemum bifolium*, *Moneses uniflora* (not quite as difficult to

spot as the coralroot orchid but very retiring nonetheless, and extremely difficult to photograph because of its almost invariable habit of hanging its flowers down within less than an inch of the ground), *Polygala chamaebuxus* (we found here both the lemon-yellow and the purple forms of this attractive little plant; although the flowers are brightly coloured, the fact that they are quite small and that the plant tends to scramble through and under other plants makes it often difficult to notice), *Paris quadrifolia* and *Pyrola rotundifolia*. In the meadows and wood margins south-east of the Passo di Fedaiia and above Malga Ciapela you can find *Aconitum vulgare*, *Allium victorialis*, *Arnica sp.*, *Campanula barbata*, *C cochlearifolia* (Fig.12 p.35), *C scheuchzeri*, *Corallorhiza trifida*, *Crocus albiflorus* (in seed in July), *Dactylorhiza fuchsii*, *Galiopsis speciosa* (this hemp-nettle is a very attractive member of the mint family (*Labiatae*), with its small but brightly coloured maroon and yellow flowers carried on a plant around a foot or so tall), *Gentianella amarella*, *G campestris*, *Geranium phaeum*, *Geum montanum*, *Lilium bulbiferum*, *L martagon*, *Moneses uniflora*, *Orobanche sp.*, *Paradisea liliastrum*, *Paris quadrifolia*, *Phyteuma nigrum* (a very striking and statuesque rampion with its claw-like flowers so dark they look black), *Polygonum bistorta*, *Ranunculus aconitifolius* and *Traunsteinera globosa*. At Malga Ciapela itself we found *Campanula cochlearifolia* and *C scheuchzeri*.

South of the Fedaiia Pass, below Malga Ciapela, is the dramatic gorge called Sottoguda. There is little to see by way of plant life in the gloomy depths but it is worth the drive to have a look at it. The old road along the bottom of the gorge is one way – up only and the bottom of the gorge must be reached via the new road, from which there is a fine view as it crosses high above Sottoguda on a bridge.

Above, and west of, Malga Ciapela (from which the top can be reached by cable car) towers the Marmolada. On the cliffs immediately below the first cable car station (but not accessible) we could see *Potentilla nitida* (Fig.13 p.36) in flower. There are no flowers to be seen at the top of the Marmolada. The summit is surrounded by permanent snowfields but the view is exceptional in clear weather.

To the immediate south of the main mass of the Marmolada is the Valle Ombretta, reached from Malga Ciapela via a steep climb

up the western flanks of the valley of the Ru Franzedas. Among the rocks hereabouts can be found *Cypripedium calceolus*, *Physoplexis comosa* (Fig.15 p.53) and *Rhodothamnus chamaecistus*, though not all in flower at the same time (in fact when we saw them the slipper orchid had already finished flowering and the devil's claw was still in fairly tight bud). On the way up to the Valle Ombretta beside the path you can see: *Atragene alpina*, *Aquilegia atrata*, *Codonopsis fragrantissima*, *Lilium martagon*, *Pyrola rotundifolia*, *Rhododendron hirsutum* (similar to *R ferrugineum* but with, as the name implies, hairy leaves; the flowers are often, as here, a much paler pink than *R ferrugineum*). After you pass the waterfalls below the Malga Ombretta, the Valle Ombretta reveals itself, with cliffs on the left hand side and steep grassy cow-grazed slopes on the right. In the steep meadow and scrub on the Marmolada (north) side of valley can be found cowslips or oxlips (not in flower when we were there) on an outcrop of apparently acid rock, along with *Dryas octopetala*, *Globularia cordifolia*, *Leucorchis albida*, *Linaria alpina*, *Nigritella rubra* (the botanists divide vanilla orchids into dark purple *N. nigra* and bright red *N. rubra* but, in reality, there is a seamless gradation from the one to the other through all the intermediate shades - often all together on one patch of ground; I refer to all as *N. nigra* unless they are clearly bright red), *Primula auricula*, *P. halleri*, *Saxifraga spp.* and *Thalictrum aquilegifolium*. On the opposite side of valley (where the snow lingers longer under the north-facing cliffs) are to be found *Gentiana verna*, *Saxifraga crustata*, *S. caesia* (on the cliffs), *Soldanella alpina* and *S. minima*, together with *Papaver rhaeticum* on the nearby scree.

West of the Marmolada the Val de Contrin and the Val Ciampac slope down northwards to the Val de Sóra. The Val Ciampac can be reached by cable car from Alba de Canazei, in the valley a couple of miles above Canazei. Beside the upper cable car station the ground was ablaze with massed red *Pedicularis* as we set out to explore the upper Val Ciampac. It proved to be very rewarding and it is one of those valleys with both acid and alkaline rocks. We noted the following: *Achillea alpina*, *Alchemilla sp.*, *Androsace obtusifolia*, *Anemone baldensis*, *Arnica sp.*, *Astragalus frigidus*, *Clematis alpina*, *Bartsia alpina*, *Campanula barbata*, *Chrysosplenium alternifolium*, *Coeloglossum viride*, *Daphne*

striata, *Dryas octopetala*, *Doronicum* sp., *Erigeron uniflorus*, *Eriophorum scheuchzeri*, *Eritrichium nanum*, *Gentiana acaulis*, *G bavarica*, *G brachyphylla*, *G punctata*, *Geum montanum*, *G reptans*, *Gymnadenia conopsea*, *Hutchinsia alpina*, *Leontopodium alpinum*, *Leucorchis albida*, *Linaria alpina*, *Loiseleuria procumbens*, *Myosotis alpestris*, *Nigritella nigra*, *Oxytropis jacquinii*, *Paederota bonarota*, *Papaver rhaeticum* (mostly with yellow flowers, in this valley this species sometimes develops petals of a intense, rich orange colour), *Pedicularis* spp. (pink and yellow), *Pinguicula alpina*, *Potentilla nitida*, *Primula halleri*, *P. minima*, *P. veris*, *Pulsatilla apiifolia*, *P. vernalis*, *Ranunculus glacialis*, *R. keupferi*, *Rhododendron ferrugineum* (Fig.16 p.53), *Salix reticulata*, *Saxifraga androsacea*, *S. bryoides* (Fig.17 p.54), *S. caesia*, *S. crustata*, *S. exarata*, *S. paniculata*, *Sempervivum arachnoideum*, *S. montanum*, *Silene acaulis*, *Soldanella alpina*, *S. minima*, *S. pusilla* (this species is found on acidic rock whereas *S. minima* is found on limestone; here the two species grow close together, where the two types of rock meet among the wet flushes in the valley bottom), *Thlaspi rotundifolium*, *Trollius europaeus*, *Veronica bellidioides*, *V. sp.*, and *Viola biflora*.

In some places the marmots, sitting safely in front of their bolt holes beneath the boulders, allow you to come quite close to them. The climb up to the Roseal ridge at the head of the valley is worth the effort both for the excellent view and for the interesting flowers up there on the acidic rock, including a very compact and attractive *Veronica* sp. which we have been unable to identify.

At the head of the Val de Contrin lies the Sasso Vernale (which separates it from the Valle Ombretta) and to the west of this mountain is the Passo di San Nicolò (2340 m). On the flat top of the pass can be found *Anemone baldensis*, *Aster alpinus*, *Dryas octopetala*, *Gentiana clusii*, *G. kochiana*, *G. punctata*, *G. verna*, *Geum montanum*, *Globularia repens*, *Loiseleuria procumbens* (the creeping azalea, another plant which has to be examined very closely for the beauty of its flowers to be appreciated; it forms dense, woody mats hugging the ground and has bright pink flowers which are usually fairly shy in flowering — here, however, there were some good, freely flowering specimens), *Pinguicula alpina*, *Polygala chamaebuxus*, *Potentilla nitida*, *Primula halleri*, *P. minima*, *Pulsatilla vernalis* (? - seed heads only), *Ranunculus*

glacialis, *R. keupferi*, *R. seguieri* (Fig.18 p.54), *Silene acaulis*, *Soldanella alpina*, and *S. minima*.

Although the Passo di San Nicolò is flat-topped, the descent into the Val di San Nicolò is extremely steep and very tricky. It is, once again, a military track, originally wide enough for a gun-carriage; in this case, however, the very steep ascent over slippery, grassy slopes means that the guns must have been in some way winched up to the top. You can, however, drive up into the valley from Meida (in the Val di Fassa) as far as the car park about a kilometre below the Baita Ciampietà; the walk up the valley across the meadows and through the woods is very pleasant and not too strenuous (provided you omit the final ascent to the Passo di San Nicolò).

In the valley you can see *Achillea clavennae*, *Anemone baldensis*, *Antennaria dioica*, *Aquilegia atrata*, *Aster alpinus*, *Astragalus alpinus* (Fig.14 p.36), *Clematis*(*Atragene*) *alpina* (Fig.16 p.53), *Campanula barbata*, *C. glomerata*, *C. rotundifolia*, *Cerinth glabra*, *Coeloglossum viride*, *Corallorhiza trifida*, *Crepis aurea* (looking rather like dandelions but with a rich orange colour to the flowers), *Daphne mezereum*, *D. striata*, *Dryas octopetala*, *Gentiana acaulis*, *G. lutea ssp symphyandra*, *G. punctata*, *Gentianella amarella*, *G. germanica*, *Geum rivale*, *Gymnadenia conopsea*, *Gypsophila repens*, *Hedysarum hedysaroides*, *Horminum pyrenaicum* (including one with a light lilac coloured flower instead of the usual dark purple), *Leontopodium alpinum*, *Leucorchis albida*, *Lilium bulbiferum*, *L. martagon*, *Moneses uniflora*, *Nigritella nigra*, *N. rubra*, *Paris quadrifolia* (an interesting, if hardly showy, plant of woodland, which, despite its name, often has five petals or more rather than the regulation four), *Paradisea liliastrum*, *Pedicularis ascendens*, *Phyteuma nigrum*, *P. orbiculare*, *Pinguicula leptoceras* (the usual purple butterwort of the Dolomites, as opposed to *P. alpina* which is white), *Platanthera chlorantha*, *Polygala chamaebuxus* (both colours), *Polygonum viviparum*, *Primula farinosa*, *P. veris*, *Prunella grandiflora*, *Pulmonaria angustifolia*, *Pulsatilla apiifolia*, *Pyrola minor*, *P. rotundifolia* (in parts of the valley wintergreens carpeted the ground under the trees and brushwood, and it was often difficult to decide to which species exactly they belonged), *Rhododendron ferrugineum*, *Rosa pendulina*, *Salix reticulata*,

Salvia pratensis, *Saponaria ocymoides*, *Saxifraga aizoides*, *S. aizoon*, *S. caesia*, *S. paniculata*, *Scabiosa lucida*, *Silene italica*, *S. rupestris*, *Tofieldia calyculata*, *Traunsteinera globosa*, *Trifolium badium*, *Trollius europaeus* and *Vicia argentea*. The valley is a favourite picnic area for the locals and there are several old wooden chalets, one of which is decorated with a very attractive painting of alpine flowers about four feet square, and including edelweiss, trumpet gentians, *Gentianella* and *Campanula barbata*. The meadows beside the path are alight with *Lilium bulbiferum* and *Gentiana lutea ssp symphandra* which has bigger and brighter flowerheads than the usual *G. lutea* and is very spectacular, particularly *en masse*.

South of the Val di San Nicolò is the Val dei Monzoni, which is steeper but very rewarding botanically. You must leave your car at the park about a kilometre above the fork where you leave the road up the Val di San Nicolò but you can get a ride in a minibus/taxi up as far as the Malga Monzoni (1862 m). If you decide to walk all the way, you will be able to see woodland flowers, such as *Moneses uniflora* and *Pyrola* beside the road, and also the occasional tree festooned with *Clematis alpina*).

After the Malga Monzoni there is more woodland and scrub and also some open areas before you reach the steep, but relatively short, climb up to the Rifugio Taramelli, perched above the torrent beside a sea of *Rhododendron ferrugineum*. Above the Rifugio Taramelli is another steep climb, up to what is the most interesting part of the valley. As you proceed up the valley you can find rocks crowned with fine, dark red forms of *Potentilla nitida*, marshy areas white with *Ranunculus seguieri* and loose scree dotted with insignificant little plants of *Ranunculus parnassifolius* (rare in the Dolomites, and not nearly as vigorous as it usually is in the Pyrenees). Higher up, just below the Pas de le Sèle (Passo delle Selle) a mass of *Primula glutinosa* (Fig.19 p.55) and *P. minima* results in the occurrence of hybrids between the two (*P. x floerkeana*). In the Val dei Monzoni we have seen the following: *Aceras anthropophorum*, *Ajuga pyramidalis*, *Androsace alpina*, *Anemone baldensis*, *Armeria maritima ssp alpina*, *Arnica sp.*, *Aster alpinus*, *Astragalus alpinus*, *Atragene alpina*, *Biscutella laevigata*, *Botrychium lunaria*, *Campanula barbata*, *C. cochlearifolia*, *Coeloglossum viride*, *Corallorhiza trifida*, *Doronicum*

grandiflorum, *Draba aizoides*, *Eritrichium nanum*, *Gentiana acaulis*, *G. punctata*, *G. terglouensis* (easily distinguished from *G. verna* by its tight rosette of minute leaves; it is only found on limestone rocks and scree), *G. verna*, *Geum montanum*, *G. reptans*, *Hedysarum hedysaroides*, *Leontopodium alpinum*, *Lilium martagon*, *Linaria alpina*, *Maianthemum bifolium*, *Moneses uniflora*, *Nigritella nigra*, *Oxytropis campestris*, *Papaver rhaeticum*, *Paris quadrifolia*, *Pedicularis kernerii*, *Phyteuma orbiculare*, *Pinguicula alpina*, *Potentilla nitida*, *Primula farinosa*, *P. x floerkeana*, *P. glutinosa*, *P. minima*, *P. halleri*, *Pulsatilla apiifolia*, *Pyrola rotundifolia*, *Ranunculus glacialis*, *R. keupferi*, *R. parnassifolius*, *R. seguieri*, *Rhodiola rosea*, *Rhododendron ferrugineum*, *Rosa pendulina*, *Salix reticulata*, *Saxifraga aizoides*, *S. caesia*, *S. oppositifolia*, *S. squarrosa*, *Silene acaulis*, *Soldanella alpina*, *S. pusilla*, *S. minima*, *Thesium alpinum*, *Thlaspi rotundifolium*, *Trollius europaeus*.

The top part of the Val dei Monzoni, as it comes up to the Pas de le Sèle, has limestone on one side (north) and acid rocks on the other. *Geum reptans* scrambles all over the acid screes beside the path, just below the pass, together with *Papaver rhaeticum* and *Ranunculus glacialis*, which can be distinguished from *R. seguieri* (sometimes with difficulty) by its leaf shape and (more easily) by the fact that it grows on acid soils whereas *R. seguieri* grows on limestone; *R. glacialis* flowers also normally turn an attractive pink or red after opening white, but although this is a clear indication that a pink-flowered specimen is *R. glacialis* it does not help so much with a white-flowered one which could also be *R. glacialis* newly opened. Along the mainly acidic Monzoni ridge to the southwest of the pass can be found *Eritrichium nanum* (lots of very good clumps), *Aster alpinus*, *Douglasia vitaliana*, *Primula halleri*, *Silene acaulis* (one we found was a double-flowered form, looking rather like a blousy garden paeony in close up), *Saxifraga ?depressa* (some very good forms), *S. oppositifolia* (in damp places below the Rifugio Passo Selle and along the ridge). On the small sections of this ridge composed of dolomite can be found *Androsace chamaejasme*, *A. helvetica* and, on the acid rock, *Androsace alpina* (very good white forms especially further west along the ridge). In spite of the precipitous, often sheer, drops on either side of the Monzoni ridge, there is a good path along the top.

Indeed there are numerous trenches, gun emplacements and other old military installations served by this path. There is no easy way down, however, other than to return to the Pas de le Sèle, unless you intend to walk right the way across to the pass above the Rifugio Valacia, at the head of the Gardecia valley.

From the Monzoni ridge you look down (south-east) on the Passo di San Pellegrino (1919 m) and the main road from the Val di Fassa to the Valle del Biois (north of the Pale di San Martino). If the weather is fine you can also see the Cimòn della Pala and the Pale di San Martino on the skyline. As the main road begins to descend eastwards from the Passo di San Pellegrino, a track (asphalted as far as the Albergo Miralago) leads off to the left, past the Lago di Pozze, and follows the contours up into the valley beneath the Cima dell'Uomo to the Rifugio Fociade. If you follow this track you pass first of all through woodland with the false helleborine (*Veratrum album*), whose leaves it is all too easy at first glance to mistake for the slipper orchid, and the martagon lily. This usually comes into flower a little later than *Lilium bulbiferum* but in favoured spots it is possible to see the two fairly close together. It prefers the margins of woodland but is sometimes found, as also here, on open hillsides. Above the woodland and below the lilies on their open hillside, in the wet flushes beside this path, you can see an abundance of chives and marsh orchids. On a short walk up this path we saw *Allium schoenoprasum*, *Aster alpinus*, *Atragene alpina*, *Campanula barbata*, *Dactylorhiza alpestris*, *Erigeron* sp., *Gentiana acaulis*, *Gentianella* sp., *Geum rivale*, *Gymnadenia conopsea*, *G. odoratissima* (smaller of stature and looser flowered), *Lilium martagon*, *Nigritella nigra*, *Paradisaea liliastrum*, *Primula farinosa*, *Senecio abrotanifolius* var. *tirolensis*, *Trollius europaeus* and *Veratrum album*. Below the Passo San Pellegrino to the east by the side of the main road can be found *Campanula barbata*, *Gymnadenia conopsea*, *Listera ovata* and some dark-coloured broomrape (*Orobanche* sp.). From the San Pellegrino pass it is possible to return (eastwards and then northwards) to Sottoguda and Malga Ciapela, or continue on to the southern and eastern Dolomites.

WHAT TO GROW WHERE

Attempts to relate things seen in the Himalaya to growing plants in the garden

by Alastair Mckelvie

You may think, quite reasonably, that the habitat in which a plant grows in the wild gives a lot of clues as to how it should be grown in a garden. In this article I am going to suggest that this is not always the case; not that I am the first person to suggest this. Many growers, much more skilled than I am, have regularly pointed this out but the myth still seems to be perpetuated, especially among those people who are always keen that man-made activities such as gardening, agriculture and forestry should be entirely 'natural'. According to them we should all be growing native plants in conditions as near their native habitat as possible.

For many plants, it is true that natural conditions are probably the best. A plant which grows in a peat bog in the wild is not going to take kindly to being grown on a dry limestone wall or a plant from the Mediterranean to growing in the monsoon climate of Asia.

One of the secrets of growing lewisias, for example, is to keep them dry in the summer after flowering which is exactly what they experience in the desert lands of western North America. Otherwise they succumb to crown rot. On the other hand, lewisias grow in the wild on a wide range of soils from sand to clay and acid to alkaline, thereby indicating that soil type is probably not particularly important in deciding where to grow them in the garden.

THE CACAO STORY

However, nothing is simple when it comes to deciding what a plant really wants in cultivation. Plants may grow in the wild in a habitat which is not optimal for their growth but it is the habitat in which they are best able to compete and survive. I had an excellent example of this many years ago when I was doing research on the cacao tree (*Theobroma cacao*) from which cocoa and chocolate are produced. The perceived wisdom was that because cacao trees up to 50 years old grew in dense forest shade in the Brazilian rain forest that was how they should be grown in cultivation. And so

that was how cacao was cultivated in West Africa. Yields were, however, low, the trees did not start cropping until they were 10 years old, they were dying from swollen-shoot virus disease and they failed to show any response to added fertiliser, giving rise to the idea that cacao trees relied solely upon root mycorrhiza for their mineral nutrition.

By the mid 1950s, however, it was shown that if all the shade was removed from the cacao trees they began cropping when they were four years old, responded readily to fertiliser and a four-fold increase in yield could be obtained.

As gardeners you will realise, of course, that this was not the end of the story. The trees deprived of protective shade started to die back at the tips and the leaves were no longer a lovely dark green but tended to be pale and chlorotic. In addition the trees suffered badly from attack by thrips so that insecticides had to be used extensively. And the trees still suffered from swollen shoot disease. So the conclusion we reached was that to achieve high yield and profits you had to adopt an intensive and expensive system of cultivation and accept that the trees had only a short life span. For most peasant growers this was not a feasible option and they just continued to grow their cacao in the old traditional way.

I have gone at some length into this cacao story because it is an excellent example of interaction between environment and management and shows that it is too simplistic to say that plants do best in cultivation in a regime similar to what they experience in the wild. It is essential to accept that growing plants in an alien environment invariably leads to problems.

WHAT IS MEANT BY "IN CHARACTER"?

Any attempt to grow plants in gardens and especially if they are grown for show soon brings up the question of whether or not they are in character. (See The Stone Column in this issue for further thoughts on this topic)

The cacao trees with the shade removed and given plenty of fertiliser were certainly not in character if by that we mean how they looked in their native Brazilian rain forest. Thus any attempt to describe how to grow Himalayan plants, for example, must bear in mind the question of character. Should one postulate growing conditions which will produce huge cabbage-like plants or should one try to achieve a 'natural' plant whatever that means? Or, since

so many Himalayan plants are difficult to grow will it suffice to postulate recipes that at least produce a living plant?

When I first started growing alpines in the 1960s, my mentor, Harold Esslemont, grew many of his alpine house plants in tufa thus producing compact slow-growing long-lived plants. *Clematis marmoraria* grown in this fashion was an incredibly slow plant whereas when grown with the regular liquid feeding which soon became the norm among show exhibitors it can produce a large plant which flowers at an early age.

Just to advance this question of character a bit further, consider the immaculate plants we see at shows. They are like chalk and cheese compared with the same plants in the wild which are probably starved of nitrogen, kept stunted by wind and, generally, needing a good brush-up to grace a show bench. For example, at the Aberdeen Show in 1995 the award for the best primula went to a huge magnificently grown *Primula forrestii*, which, however, in no way resembled the same plant in the wild. Was it in character? Opinion was obviously divided that day among the cognoscenti.

Anyone who has seen rhododendrons growing in the wild especially in the Himalayas or China will have been struck by how straggly they look; not at all like how we produce them in our own gardens.

LARGE AREAS OF IGNORANCE

While there is general agreement about how to grow plants from different areas of the world, the real problem is the difference between species within areas. We know roughly the differing cultural needs of Mediterranean plants compared with Japanese but don't know much about why closely related species growing side by side in the wild have such different requirements in the garden.

Good examples are autumn gentians in Nepal. Three species, *Gentiana prolata*, *G. ornata* and *G. depressa* grow quite close together, even if their areas of distribution do not entirely overlap. *G. prolata* is relatively easy to grow although it is the least beautiful and regularly fails to open its flowers. *G. ornata* is a bit more difficult but is growable in the hands of skilled practitioners while for most of us, *G. depressa* has to rank among the plants we would love to grow but can't. Having written that, of course, I will receive ever so many letters from people saying how easy it is to grow and to keep growing.

ENVIRONMENT AT THE GROWING END

Just as the environment in the wild is crucial as to what species grow in particular areas so the correct environment in our gardens is vital to successful cultivation. It is not, however, always realised that recommendations for the correct growing conditions depends on the latitude and longitude of the garden. For example, full sun on the south coast of England is a different kettle of fish to full sun in Aberdeen so that recommendations for a degree of shading on the south coast are unnecessary in Aberdeen. The North American woodlander *Phlox adsurgens* seems to prefer full sun in Aberdeen but would never tolerate that in the south.

As I write this on a dark February afternoon I am reminded that Aberdeen had only seven hours of sunshine in the whole of January 1996: no wonder that some of my Himalayan plants succumbed to a mixture of temperature of -15°C before Christmas, deep snow over Christmas, a mild spell with temperatures up to 12°C in early January (but no sun) and then a cold spell at the end of the month where daytime temperatures rarely got above freezing, followed by deep snow in February then torrential rain and gale-force winds and then back to snow.

What does a Himalayan plant such as *Primula gracilipes* make of such weather? Most petiolarids, whether in the wild or in cultivation, produce visible flower buds in the autumn. Here in Aberdeen, however, with our typical mild wet autumns these buds begin to expand so that we get sporadic flowering right through until the spring with the grotesque results seen in Fig.22 (p.56) photographed in November. Covering the plants with a pane of glass does not really help; it keeps the plants dry but does not prevent intermittent flowering. Contrast that with what happens in the wild where the flower buds sit tight until winter suddenly disappears. In Sikkim in 1994 I photographed (Fig.21 p.56) a fabulous plant of *Primula gracilipes* in full and magnificent bloom on banks where the snow had obviously melted very recently. If only I could achieve that. My friend Fred Carrie does but he gardens at Alford at a height of over 300 m so that his plants don't try to flower in the autumn. And yet, another Asiatic primula, *Primula bhutanica*, behaves quite differently in my garden keeping its flower buds tightly closed, irrespective of the weather until they all open together with lengthening days in March. Why this diversity of behaviour between the two species?

We can do nothing much to alter temperatures nor can we ameliorate another factor which is detrimental to our Himalayan plants and that is light. It is obvious to anyone who has seen mountain flowers in the wild that many have a neat compact habit which we can not reproduce in the garden. *Waldheimia glabra* in the wild (Fig.29 p.76) in Lahul, North India is neat and extremely floriferous. Compare that with the travesties we grow in our gardens; leggy monstrosities with barely a flower. With the light quality we have, not even an alpine house helps. I know that there are a few growers such as Henry and Margaret Taylor who have grown it relatively successfully but never to the standard seen in the wild I fancy.

For the widespread and easy Himalayan plants such as *Primula denticulata* it does not really matter how we grow them; they just carry on regardless, even tolerating long dry spells in summer but even with this easy species, plants raised from recently collected Himalayan seed are not as tough and easy as strains raised from commercial seed, selected over many generations. Figs.23 and 24 (p.73) show how recently collected forms of this primula differ markedly from commercial cultivars.

As a general rule, the more widespread a plant is in nature the easier it is to cultivate. This is such a good general rule that it is always worthwhile to find out how profuse any given garden plant is in the wild. Daisies, bishop weed (ground elder) and bluebells (*Hyacinthoides non-scripta*) are ubiquitous in the wild and almost indestructible in gardens. It amuses me to read of the danger to English bluebell woods by people not so much picking them but just tramping on them. I am sure my bluebells won't disappear if I walk on them. Maybe there is something about the Scottish strain of bluebells; I recently sent a great bagful of bulbs to a gardener in Devon who was unable to get hold of a strain which would grow well. By all accounts my bulbs did well down for him in Devon.

By contrast, the rarer species, almost by definition, have very particular requirements so that it probably makes sense to try to emulate as far as we can the conditions in which they grow in the wild, at least until we know any better from bitter experience and have to try something else.

THE IMPORTANT FACTORS

Factor	Aspect
Water	rainfall amount, periodicity, humidity snowfall amount, periodicity, damage and/or protective effect
Sun	hours of sunshine, intensity, shade aspect
Temperature	summer and winter temperatures (maximum and minimum)
Wind	wind direction, strength, shelter

I am sure you can not start to provide the correct conditions for particular plants without knowing a bit about where they grow in the wild. For example, you may know that *Primula rosea* likes plenty of moisture at its roots but fail to appreciate that it grows in the Himalaya in wet but bright open sunny positions. Growing it in the garden in shade, as I saw advocated recently in a Nursery Catalogue, is a sure-fire way to kill it. This plant definitely wants moisture plus sun which for most of us is a somewhat difficult combination and may be one reason why such a beautiful plant is not as widely grown as it should be.

DOES IT REALLY MATTER ?

So, is a knowledge of climate and topography going to help us much to grow better plants from particular areas or should we simply use our common sense and trust to our green fingers? Well, it may be true that the world would be a much better place if people used a lot more common sense but I am doubtful whether any great advances in knowledge have ever resulted from common sense. All great advances have resulted in people of genius who have gone beyond accepted practice, have studied the subject and then used imagination and ability. To those who ask whether it really matters where a plant comes from I would repeat the words of David Mowle who wrote in his article 'Does It Really Matter?' (The Rock Garden 1996, 24, 373) in relation to the correct naming of plants, " we know it matters in all the ways it can".

ADAPTATION

As well as knowing where plants come from it is important to realise that even within a given area there is a huge range of variability within the plants and that some plants will be better



Fig. 15 *Physoplexis comosa* (p.41) Michael Almond

Fig. 16 *Rhododendron ferrugineum* with *Clematis alpina* (p.42) Michael Almond





Fig. 17 *Saxifraga bryoides* (p.42) Michael Almond

Fig. 18 *Ranunculus seguieri* (p.42) Michael Almond





Fig. 19 *Primula glutinosa* (p.44) Michael Almond

Fig. 20 *Rhabdothamnus solandri* (p.77) Brian Wilson





Fig. 21 *Primula gracilipes* in Sikkim in April (p.50) Alastair McKelvie

Fig. 22 *Primula gracilipes* in Scotland in November (p.50) Alastair McKelvie



adapted to grow in our gardens than others

When I was a student the buzz words were 'ecotype' and 'ecospecies' which simply reflected the variation to be seen in the wild whether genetic or phenotypic (caused by the environment). We have all at some time, I suppose, collected a cutting in the wild of a particularly fine dwarf heather or juniper and grown it on in our garden just to find in a year or two that it has grown in to a normal sized plant with no trace of dwarfness; in other words the variation was phenotypic.

Another interesting aspect of this topic is the change in plant growth and flowering time with increased altitude. Most of us expect to find that plants become dwarfer and later as we go higher up a hill but this is not always true. In autumn 1995, I was leading a group of gentian enthusiasts up to the Gosainkund Lakes in Central Nepal at an altitude of around 4000 m. I had promised them that we would see this day, for the first time on the trek, gentians in flower. Imagine my chagrin when by lunch time we still had not seen any gentians, even out of flower. Then after lunch, as we climbed, we came across plants of *Gentiana ornata* and *G. depressa* but not a flower to be seen. I had seen them there in full bloom at the same time of year in 1991 but was this perhaps a late season? My clients were going to be bitterly disappointed if they had come all that way and paid all that money, to see non-flowering gentians. Then, as we plodded upwards, we spotted the odd flower — great excitement and much photographing. Then more and more flowers until we became quite blasé and only remarked when we saw a specially good colour form, white or even purple.

In other words, the gentians were flowering earlier the higher up we went which is contrary to what most of us think. But you can see this for yourself if you go up hills in late summer and note how heather plants (*Calluna vulgaris*) often flower earlier higher up.

Sir Joseph Hooker noticed this phenomenon when he travelled in Sikkim in the 19th Century. He was a great man for observation and made copious notes of weather and plant development.

Just as an aside I can not resist quoting Hooker who obviously kept his feet firmly on the ground and was influenced more by facts than by peoples' subjective judgements. He wrote "I may have greatly exaggerated the amount of mist and rain at Darjeeling from the two years I was there but I would point out that I have never visited any spot under the sun where I was not told that the season was exceptional, generally for the worse". How true that remark is!

He noted that "vegetation is often more advanced at higher altitude compared with lower and deeper regions" and he, with his meticulous scientific mind, produced some facts and figures to support his theory.

For example, he recorded that with asters:

Height (ft.)	
14,000	plants were brown and seeding
12,000	plants were green and un-ripe
10,000	plants were even greener

He also noted that high altitude rhododendrons have short seasons:

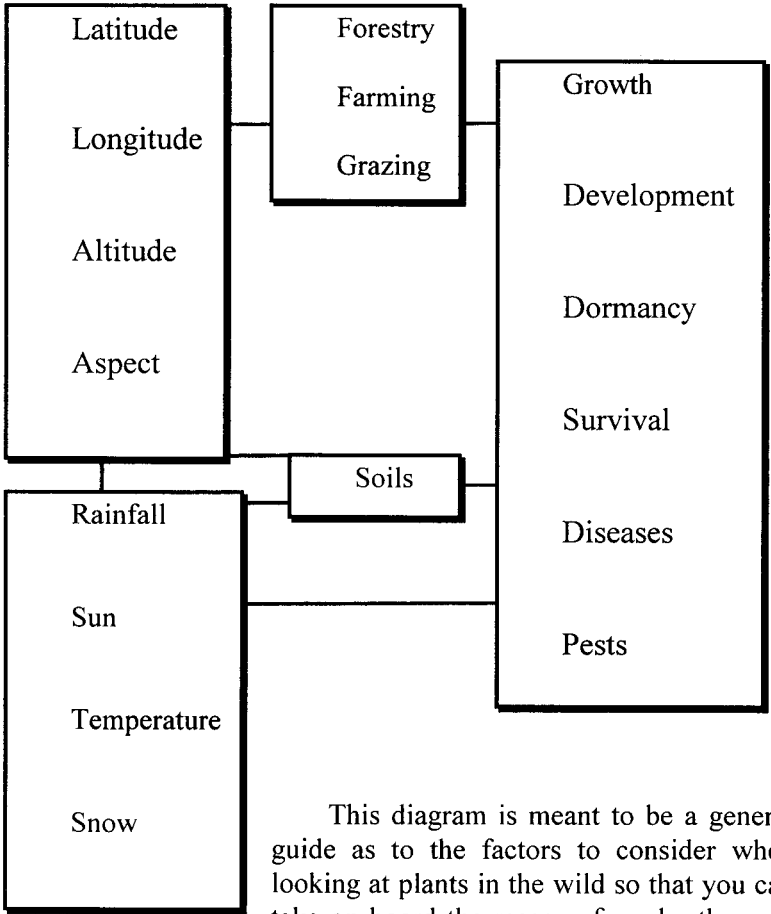
Height (ft.)	Species	Flowering	Ripe Seed
16-17,000	<i>R. nivale</i>	July	September
13-14,000	<i>R. anthopogon</i>	June	October
11-12,000	<i>R. campanulatum</i>	May	November
8-9,000	<i>R. grande</i>	April	December

He postulated that these effects were perhaps due to brighter skies and greater solar radiation at high altitudes. Of course, we now know that there are also increased levels of UV light at altitude which affect plant development.

CONCLUSIONS

As I have already suggested, plants do not necessarily thrive best in gardens if grown as they do in the wild but it does seem to

make sense, particularly when trying a new or difficult plant, to read up about how and where it grows in the wild. Obviously many factors contribute to the sum total of plant growth and distribution and we don't know half of what is important and how the various factors interact.



This diagram is meant to be a general guide as to the factors to consider when looking at plants in the wild so that you can take on board the reasons for why they are growing as they are. For example, latitude, longitude, altitude and aspect will all influence the local farming, forestry and grazing patterns as well as deciding the microclimates in relation to rain, sun, temperature and snow. All these things influence the soil structure and then everything interacts to decide the pattern of plant growth, development, dormancy, survival, diseases and pests.

FURTHER UPDATE ON WORKSHOP ON PERENNIAL BLUE MECONOPSIS

There have been further developments in the planned Workshop to look into the identity and nomenclature of the perennial blue meconopsis.

With the aim of achieving more satisfactory and complete results, the Workshop has now been rescheduled to take place in June 2001. In the meantime, a Meconopsis Group has been formed which has already received the support of the Royal Botanic Garden, Edinburgh. The Botanics have set aside some frames as a Trial bed for the Group's work. The aim is to collect together as many named /doubtfully named/ name-worthy etc . . . perennial blue poppies as possible from as far afield as possible and to establish these together in one place. They will then be assessed over time by a team of experts for identification. In due course it is hoped that the plants will be described (including photographs) and registered.

The inaugural meeting of the Group will take place at the RBGE on **Saturday 12 September** 1998 from 10.30 am —3.00 pm. Bring a picnic lunch. Coffee will be provided. Speakers will be:

Cameron Carmichael - "History of introductions of Meconopsis"
Ron McBeath - "Meconopsis in the Wild"
James Cobb (hopefully) - "Botanical Aspects"

In the meantime a questionnaire has already been prepared and is being distributed to known meconopsis enthusiasts. But we would like to hear from anyone else with a particular interest in meconopsis who would like to join the Group and help us with the work. A copy of the Questionnaire with further information can be obtained from Evelyn Stevens. Please send a SAE (21 x 11 cm).

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AROIDS IN THE COUNTRY OF DOINI POLLO THE SUN-MOON GOD

by L. and G. Gusman

This year we decided to go to NEFA, the “North East Frontier Area” of India, a few states enclosed between China, Burma and Bangladesh. Indeed the INTERNET site held by the Government of India announced that these regions were finally accessible to foreign tourists, some places being fully open, other still requiring a Restricted Area Permit (RAP). Owing to information provided by Madan Tamang, from Darjeeling (see Sino Himalayan Plant Association Newsletter No 10, p. 41), we wrote to a local Travel Agency to make reservations in Arunachal for a ten days trip. We always try to organise our trips carefully but, of course, we know that in India the unexpected will occur and we were prepared for it.

First, contrary to what was announced on the INTERNET page, we were refused the RAP necessary to visit Bomdila and Tawang, two famous Buddhist monastic centres near the Bhutan border. But we didn't suspect that our whole trip would have to be revised as soon as we had landed in Dibrugarh, in Assam. As the monsoon was particularly active, it was impossible to cross the Brahmaputra as no ferry would dare to leave the river side. It was raining heavily; the river was competing with the Amazon and its opposite bank was out of sight. After a briefing with our tour guide, we quickly decided to go by road; we rented a car with the driver, some kind of taxi, an Ambassador which seemed to date from the time of the British Empire and — all's well that ends well — we made the trip in the opposite direction, towards Guwahati to use the first bridge over the Brahmaputra and eventually entered Arunachal near Itanagar, the capital of the State.

INTO ARUNACHAL PRADESH

Immediately the road sloped up and its sides became covered with *Arundina graminifolia* (D. Don) Hochr., a beautiful orchid which was in full bloom at the beginning of July. Itanagar itself is a small town, whose main interest is an interesting ethnographic

museum. Just above the museum, at the summit of the hill, a modern Buddhist temple is found whose surrounding vegetation is brightened up by the huge yellow inflorescence of the taro or *Colocasia esculenta* (L.) Schott, a nice aroid with ovate dark green leaves. From Itanagar, we followed the unique road which passes through Arunachal, from West to East, at moderate altitude, between the plain of Assam to the south and the Chinese border in the high peaks of the Himalayan range to the north. Happily, the rain stopped and, from then on, we had dry and sunny weather till the end of our holiday.

The best region is the Apatani Plateau, near Ziro. It was the highest point we were allowed to visit. Apatanis have their own traditional fashion of tattoo on their face and we were told that the tattooing was done with local *Berberis* spines. Here, people are mostly animists. They honour the Sun-Moon God who taught them the art of making cloth. Living in villages where houses, built on piles, are made of bamboo canes, they grow rice and vegetables and are also involved in fish farming.

ARISAEMAS AT LAST

In the vicinity of Ziro, we came across the first arisaemas, enjoying here cooler mountainous conditions: *A. speciosum* (Wall.) Mart. ex Schott, the type or its var. *mirabile* (Schott) Engl. (we didn't see the inflorescence) and *A. consanguineum* Schott. They grow along roadsides where they are not rare. It is a pity that, as in many Himalayan countries, forests have been cut down, mainly to make room for farming. But, as houses are built with canes, each family has to grow its own building materials (some parts of the houses are rebuilt twice a year) and therefore has to keep up its own bamboo garden. These wonderful gardens host *A. speciosum* and *A. consanguineum*: plenty of them grow there and seem to enjoy the sheltered conditions provided by the canes. Both species look quite close to the forms encountered in Sikkim and Bhutan. On the contrary, in the Miri Hills (Siang District), a little more to the east, between Ziro and Daporijo, we came across a very exciting arisaema species, *Arisaema concinnum* Schott in one of its extreme forms (Fig.26 p.74) or perhaps even another species close to it. They were very tall specimens, up to 1.85 m high, a snake skin-like mottled petiole with vermilion dots, and one leaf, of course, with a radiate umbrella of 7-11 leaflets. It was growing along roadsides, always in very wet conditions, mostly on the banks

of torrents at the foot of shrubs. The inflorescence was out and the fruiting spike was still green.

Note that this was the rule during the whole trip: Mid-July is too late to see the inflorescence and too early for harvesting ripe seed even if many specimens, with male or unfertilised flowers, were already withering.

The Miri Hills seem to be the eastern limit of the distribution of *A. concinnum* which is no more found in Yunnan or Sichuan. The encounter with this huge form of the species is doubly unforgettable. In its vicinity, indeed, grew another plant, *Girardiana diversifolia* (Link) Friis, not an outstanding species at all, but as an efficient member of the Urticaceae, covered with severely stinging hairs. If you touch a leaf accidentally, you'll not forget it as it will take three days for the swelling to go away. Finally, we drove to Along, crossing plenty of *Callicarpa macrophylla* Vahl with their violet flowers in racemes, but this place is more interesting for its beautiful landscapes, bamboo bridges and tribal villages than for its flora. This was our last step in E. Arunachal because the road to Pasighat had been washed out by a serious landslide. We thus came back along the same road to Tezpur, a nice town worth a stop for its Hindu temples, recrossed the Brahmaputra and entered the Meghalaya to reach Shillong.

THE HIGH PLATEAU OF MEGHALAYA

Meghalaya is a strange area which has nothing to do with the Himalayan fold: it looks like a gigantic boulder suddenly rising from the Assam valley to a high altitude plateau (about 2,000 m) eventually abruptly falling down to the plain of Bangladesh. The flora of Meghalaya is at the junction of both Himalayan and NW Malaysian areas. Indeed, one finds species native of the Himalayan range. They probably took refuge there at the end of the latter Ice-period when all the plains became too hot and unsuitable for them. In this sense, a comparison can be made between the roles played by the Meghalaya and the Mt. Ventoux in France where species like *Saxifraga oppositifolia* L. became isolated from its relatives in the Alps and in Snowdonia in Wales. On the other hand, species growing in N.Burma and N.Thailand are also found in S. Meghalaya.

Just after leaving the Assamese plain, we came across a nice red-spined aroid, with conspicuously trifoliolate leaves logically bearing the name *Typhonium trilobatum* (L.) Schott. When driving

up further, we reached the nice Umian lake, a water reserve but also a nautical resort. The sides of the lake are planted with pines and, at their foot, we discovered a curious small form of *A. tortuosum* (Wall.) Schott with 7-9 deep green velvety folioles. Once more, it was out of bloom but the berries were still embedded in the remains of the green tube, like cherries in a paper cone.

Shillong has a central position in Meghalaya. The town itself reminds us of Darjeeling and, due to its colder climate, is considered a hill resort since British times. We decided to take it as starting point for all our further excursions. The region has one of the wettest monsoons in the world. No wonder that most of the hills were once covered with dense mixed deciduous and evergreen forest.

FOREST DEGRADATION

Unfortunately, the forest is now much degraded as trees have been cut for timber, agriculture spreading from the plains to the hills themselves. Some new forests have been replanted but they are still young, let's say less than 20 years old. Furthermore only *Pinus kesiya*, has been used. As a result, conditions have greatly changed and the flora has been impoverished. For instance, in spite of our efforts, we failed to find species like *Arisaema petiolulatum* Hook. f. and *A. decipiens* Schott which, according to D. Chatterjee (Bull. Bot. Soc. Bengal 1955, 8, 118-139 Indian and Burmese species of *Arisaema*) are reported to be endemic to Meghalaya and to the neighbouring Assamese areas. On two occasions, we came across small areas which were probably remnants of the primeval forest and we were lucky to find *Arisaema album* N.E. Brown (Fig.28 p.75) growing with plenty of *A. tortuosum* and a few specimens of *Tricyrtis maculata* (D. Don) Macbride and *Daiswa polyphylla* (Smith) Rafinesque; all of them growing in the deep shade of leafed trees in company of ferns and along misty river banks. *A. album* looks like a small *A. speciosum* with one trifoliate leaf. Of course, in July, there were no more visible spathes but green fruiting spikes could be collected in which seeds looked already well formed. Hopefully we will be lucky and they will germinate so that the species could be distributed. Even if there are plenty of them in these areas, the species seems quite endangered due to the vanishing size of its habitat. Each time some remaining primeval plots are found, the flora is completely different and appears to be rich. Obviously, species like *A. album* are less

adaptable than for example *A. tortuosum* which grows in various conditions, even in the centre of Shillong, not far from our hotel. *A. tortuosum* was thriving on the sides of the streets, and was naturalised in the central park of the town and in the small but interesting Botanic Garden.

The last arisaema species we came across was *A. nepenthoides* (Wall.) Mart. It grows in the same area, S Meghalaya, and in the same shady conditions in shrubs. It is interesting to note that these two species, *A. tortuosum* and *A. nepenthoides*, are both absent from Arunachal (and also from Yunnan and Burma). From Bhutan they extend south and *A. tortuosum* is still found in S. India in the Nilgiri Hills. When in Shillong, don't miss the meghalites of Nartiang. It is a strange spot where thousands of stones have been erected some centuries ago. This stone garden was enhanced by the wonderful spathe (the leaf grows up well after the inflorescence) of another aroid called *Amorphophallus napalensis* (Wall.) Bogner & Mayo (Fig.25 p.74) which was happily thriving among the stones together with a beautiful snake, whose skin perfectly mimicked the arisaema patterns; we saw this snake again in the Zoo of Guwahati, among some venomous species.

On one occasion, still in the vicinity of Shillong, when going to visit Cherapunjee and its waterfalls, we came across a quite strange arisaema specimen: two leaves, radiate at the centre but becoming progressively pedate towards the end, and a fruiting spike whose peduncle was declining. This unique specimen was growing among a mixture of *A. consanguineum* (Fig.27 p.75) and *A. tortuosum*. Obviously it was a hybrid: *A. consanguineum* provided the radiate disposition of the leaflets and the nodding behaviour of the fruiting peduncle while the nascent rachis and the presence of two leaves were attributed to its other parent *A. tortuosum*. To our knowledge, it is the first report of a hybrid between these two species. A little more to the south, we entered a strange landscape completely embedded in mist, a kind of moor covered with big rounded tufa-like stones. Between them, the grass was brightened with the white flowers of an orchid, *Cephalanthera longifolia* (L.) Fritsch and a yellow flowered *Wilkstroemia canescens* Meissner (Lauraceae), a small shrub with silky young leaves.

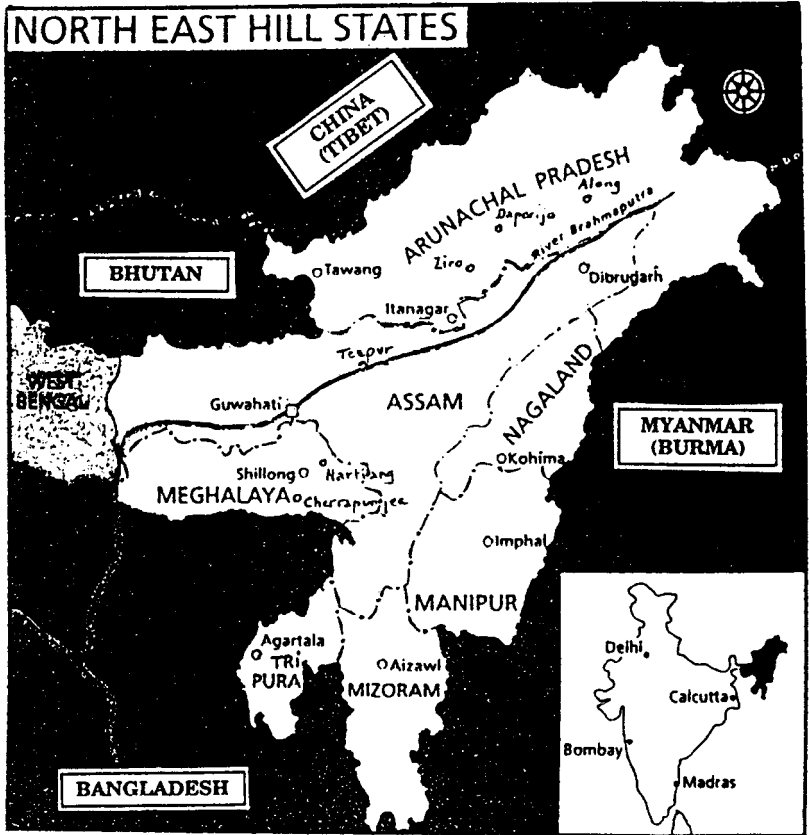
If you are planning a trip to Meghalaya, don't hesitate, it is easy as the state is now fully open to foreign visitors and no restrictions are encountered. There are good hotels in Shillong and,

from there it is easy to drive (with a private taxi, if the driver does speak English) to anywhere in Meghalaya. Arunachal is much more difficult for some reasons, probably military, as this border region is considered a Chinese province by China. Be sure to have a RAP, which indeed includes all the regions you plan to visit, before you land in Assam, as this permit is only provided by the central government in Delhi and not by the government of Arunachal. To complete this write-up, we would like to mention Michi Rajen, our Apatani tour guide; his kindness and efficient service were the main source of the success of this wonderful trip.

ARISAEMAS IN OUR GARDENS

When looking around at the plants in the wild, it is easy to notice in which kind of habitat they are living. Plenty of them like damp woodland conditions where the humus cover of the soil can reach the required depth. This is the case with *Arisaema album* which shares the same habitat as *Daiswa polyphylla*. But other species are inhabitants of more open and stony situations: the base of some shrubs seems to fulfil their main requirements. For instance, *Arisaema consanguineum* grows along roadsides and flourishes in more gravelly soils. Most species we came across were from altitudes high enough to cope with European winter conditions. Nevertheless, here in Belgium, we rarely have winter conditions with a snow blanket to protect the plants from the cold and dampness that they encounter in the wild (Scottish conditions may be better for them). This means that the tubers have to be protected by being planted deeply. We usually put them at a depth of about 20 cm in a well drained humus-rich soil. These precautions usually solve the problem of cold during the plants' dormant period. The only remaining condition is to plant them in an open but still cold site. Don't forget that even during a nice sunny summer day in the Himalaya, the temperature rarely exceeds 20°C at altitude, a challenge our alpine gardeners also have to overcome. Above all the humidity is high enough to protect leaves from desiccation. In our garden, on the other hand, plants have, each year, to face a few days which are at the same time hot and exceptionally dry: it is during these days that species such as *Meconopsis betonicifolia* and *Primula rotundifolia* are in danger of being lost. Finally we must remind ourselves that our 'heavy rains' cannot compete with monsoon conditions and that we have to make up for the lack of water during the growing period of arisaemas.

NORTH EAST HILL STATES



YET ANOTHER CONTENDER FOR THE SCOTTISH EMBLEM

St v Ts

The climate here in Scotland is quite beyond compare
providing opportunities for plants both choice and rare.

This fact has set some thinking about our national flower
there's just a chance the thistle is in its final hour.

It has been mooted in the past that one might take its place
which came from South America, a grand and distant place.

Tropaeolum speciosum is this strange and wondrous prize
its twining stems and bright red blooms seduce unwary eyes.

It's strange some find this renegade impossible to please
while others with machetes are driven to their knees.

Us Scots we are a canny lot and most would rightly groan
if such a floozy flower had pretensions to the throne.

If South America has to be the provider of the new
may I suggest another that might upset very few ?

I write here of a plant from which us Scots could not be prised
indeed it's true the very thought might leave us paralysed.

So let me warn before I name my plant for this contest
collectors of the 'choice and rare' will hardly be impressed.

Should any plant snob read these lines try not to be unhappy
I'll '*mince*' these words no more and now propose the humble
tattie

Footnote; Another strong contender the '*neep*' has been ruled out
reflecting the continuing unfashionable status of Cruciferae

West Haybogs March 1998

(PS a *tattie* is *Solanum tuberosum* and a *neep* a turnip. Ed.)

JOHN COPLAND'S TREASURES

Silene acaulis 'Frances' and *Calluna* 'Rona's Hill'
from Shetland

by Bill Paton

Silene acaulis is one of the best known of the Scottish cushion plants. The appearance in recent years of a variant, *Silene acaulis* 'Frances' has raised interest as to its origin and the identity of 'Frances'. It has generally been believed that the plant was found in Shetland and named after the wife of the founder but details have been tantalisingly absent.

JOHN COPLAND

The plant was, in fact, discovered by John Copland who farmed at Islesburgh Farm, Sullom, on the mainland of Shetland. Here, when John's health began to fail, he and his wife Frances had a house built which they called appropriately *Armeria* and here, in fulfilment of his lifetime's interest, he established and operated a nursery business from 1970 until his death in 1991 aged 76. Happily, at the age of 80, Frances still lives in *Armeria*.

SILENE ACAULIS 'FRANCES'

The plant was found in 1980 on the rough heather and grassy 'outlie' of Ingelsburgh Farm, growing along with *Armeria maritima* and the normal form of *Silene acaulis* close to the western seashore where they were regularly drenched with Atlantic spray.

It is a neat plant, more compact than the normal species and it grows in low, tight cushions, ideally suited to withstanding Shetland's notorious winds. At 2 mm, the leaves are less than half as long as those of the normal plant, yet they have the same linear shape and end in a particularly sharp tip. In colour, the cushion shows the attractive yellowish-green of the spring foliage, giving way gloriously to pink as the tiny two-lobed petals open and reverting to green foliage in the latter part of the year. Overall it is a very pleasing and distinctive plant.

Only one plant has ever been found and it is reasonable to assume that none are till growing in the wild. John brought this

single plant home, split it and planted one half in his garden where it died some years later. The other part he took to John Lawson of the Jack Drake Nursery who confirmed it as a significant variant of *Silene acaulis*. Given his choice of name, John named it 'Frances' after his wife, under which name it is now widely grown.

Why has only one plant been found in the wild? Is this because it does not produce viable seed or because the mutation took place only year or two before John found it and before any seedlings developed? If it does not produce seed, then all the plants in cultivation have been developed vegetatively and are clones, all with exactly the same genetic features. A little experimentation might yet add to our knowledge of this fascinating little plant.

CALLUNA VULGARIS 'RONA'S HILL'

But 'Frances' is not the only plant discovered by John Copland. For a description of the other we can do no better than quote from a book 'Hardy Plants in the North' written by him and published by Nelson Smith Printing Services of Brae, Shetland.

"Some years back at the side of a burn on Rona's Hill (the highest hill in Shetland situated on the northern part of the mainland), I found a small variegated plant of heather, the first I had seen wild in my life. It had beautiful foliage in shades of gold, pink and pale green, but it was lodged on top of a rock and, as heather cannot stand dryness at its roots, it is very doubtful whether it would have survived a really dry summer. I lifted the plant as carefully as possible and set it in my heather patch, where it lived several months.

"In the meantime I had rooted three cuttings, two of which I sent to Jack Drake's Nursery at Aviemore. Unfortunately I lost the remaining cutting but on enquiry at the Nursery, the proprietor, John Lawson, told me their two were making headway.

"More years went by till one year I received Jack Drake's latest catalogue and there — to my great delight — was listed the heather with an acknowledgment of how they'd come by it and under the name which I gave it 'Rona's Hill'. Thus an extraordinary and exquisite wildling could have disappeared with few to mourn it."

POSTSCRIPTS

There are three postscripts to this little story.

Firstly, John Copland followed a perfectly acceptable method for naming a new plant or a significant variant by agreeing a name with a nurseryman who will continue to use this name in his lists. However, where a plant belongs to a genus important enough to have its own national organisation, the name should be registered with this organisation so that it will have international acceptance.

If this level of permanence is sought for a genus which does not have its own organisation, the Royal Horticultural Society can be contacted with a view to their considering the plant for an Award such as a FCC or AM. On gaining this Award, the plant's name will be registered and a description of it be recorded by the RHS. The RHS Joint Rock Garden Plant Committee which incorporates the AGS and the SRGC is the awarding body for alpinists. But publication in a Catalogue and probably thereafter in 'The Plantfinder' is sufficient notice for a new cultivar to enter the lists without necessarily receiving an Award.

Secondly, endemics or distinctive natural variants are not plentiful, yet John Copland found two in the north of Shetland. Add to this the *Cerastium nigrescens* discovered by Thomas Edmonston in the Shetland Island of Unst (see 'The Rock Garden' Vol.24, 375-381) and we have the remarkable phenomenon of three new flowers all found within a very few land miles of each other. Doubtless the isolation of north Shetland, its latitude, climate and constituent rocks all contribute to this situation. One wonders, are others waiting to be discovered?

Finally our thanks and good wishes go to Frances Copland. Through her enthusiasm for this article and her input to it she has answered the questions of many interested gardeners and botanists and has done as much to make her husband's name be remembered as he has done for hers.

PLANT PORTRAITS

Rhabdothamnus solandri

Maureen and Brian Wilson

One of the lesser known gesneriads of the Southern hemisphere, *Rhabdothamnus solandri* (Fig.20 p.55) comes from the North Island of New Zealand. It is a monotypic species belonging to the same tribe of the *Gesneriaceae* as the more familiar South American trio of *Asteranthera ovata*, *Mitraria coccinea* and *Sarmienta repens*. Whilst none of them are alpiners, they do have a place in our compatible interests of woodland plants and alpine house culture.

In the wild, *Rhabdothamnus* is a straggly shrub found in high rainfall areas amongst dense vegetation of coastal and lowland rainforest. It grows on rocky slopes in thin, well drained soil enriched with organic debris, reaching a height of 1-2 metres. It likes high humidity and is therefore usually found growing near water under a broken canopy of trees which let in enough sunlight to ensure good flowering.

The small leaves are broadly ovate to orbicular, toothed and covered in short, bristly, brown hairs giving them a rough (scabrous) texture. The leaf veining too is brown resulting in an overall brownish/green appearance to the foliage. The many-branched, wiry stems come in two lighter shades of brown arranged in a snakeskin-like pattern. The small tubular flowers, flared at the open end are striped in two shades of orange. A rare yellow form is also known.

Were it not for the small size of the flowers (15-20 mm) and the straggly nature of the plant, it would be spectacular, — as it is, one would describe it as 'interesting'. It is definitely far removed from being a plant of 'Botanical Interest Only'. In New Zealand, it is not widely known, but is stocked by a few specialist nurseries and grown in gardens by enthusiasts of the country's native flora.

So, how does one 'tame' such an unruly plant into submission in a pot? The answer is to pinch out the growing tips to keep it more compact, and if it gets too big, then take cuttings. Some growers have reported difficulty in rooting cuttings, but taken in late summer and given bottom heat and humidity they have not presented us with a problem.

Our first plant was grown from seed and it was the only one to germinate. (We have since been sent seed by Joe Cartman which



Fig. 23 *Primula denticulata* collected Nepal 1990 (p.51) Alastair McKelvie

Fig. 24 *Primula denticulata* commercial strain (p.51) Alastair McKelvie





Left

Fig. 25 *Amorphophallus napalensis*
(p.65) L. & G. Gusman



Right

Fig. 26 *Arisaema concinnum*
(p.62) L. & G. Gusman

Right
Fig. 27 *Arisaema consanguineum* in fruit
(p.65) L. & G. Gusman



Left
Fig. 28 *Arisaema album*
(p.64) L. & G. Gusman



Fig.29 *Waldheimia glabra* in Lahul (p.51) Alastair McKelvie

gave excellent germination.) It does take rather longer to germinate than the 14-21 days of most other gesneriads we grow. We used our usual gritty 'alpine' mix, covering the pot with 'cling' film to prevent drying out and growing for the first year under house conditions with supplementary light in winter. (See The Rock Garden Vol.24 p.191) The plant was then transferred to a shady plunge of a (just) frost free greenhouse. It took three years to flower, but cuttings rooted from the flowering plant bloomed as soon as they were established. No seed has been set, but when the Cartman seedlings flower, we hope to get viable seed from cross-pollination of the differing clones.

What, then, about hardiness? We have it on good authority that it should be hardy in milder areas of Britain as indeed are *Asteranthera* and *Mitraria*, but we are not fortunate enough to live in such a region. Neither do we have a woodland garden like that of the late Brenda Anderson near Dundee who successfully grew *Asteranthera* in such a habitat. Now that we have more material to spare, we tried some of our rooted cuttings in a cold frame last winter and they have survived 4-5 degrees of frost. The exceptionally mild winter has hardly been the best for such testing, but we shall continue the trial next winter.

Rhabdothamnus shares the same chromosome number as *Mitraria* and *Sarmienta* so the next move might be to try some hybridising.

Corydalis solida ssp. solida

Alastair McKelvie

Over the years there has been considerable confusion about the 'Transsylvanian' group of *Corydalis solida* ssp. *solida*, which, as the name suggests comes from the Transsylvanian mountains in Romania. When first introduced by the firm of Van Tubergen in 1925 it was called *C. solida transsylvaniaca* 'rubra', 'salmonea' and 'alba'. Since then the group has received various different names but it is now generally agreed that it is a variety of *C. solida* ssp. *solida*. It was introduced into cultivation in 1959 by Ingwersen's as *C. s. transsylvanica* but as this is an invalid name under the rules of Nomenclature it was re-named *C. s.* 'George Baker' after G. P. Baker who first introduced it into cultivation in the early 1930s.

At least 12 cultivars of this plant have now been named, the most

confusion as to what the original plant really looked like. In addition, seed is readily produced so that many plants going under the name 'George Baker' are, in fact, seedlings which vary remarkably. Thus, as you can imagine, there is always confusion at Shows as to which plant is the true 'George Baker'. It is the same sort of problem as with *Pulsatilla* 'Budapest Blue'(see The Rock Garden Vol 24 p155) where generations of propagating from seed has led to a loss of true identity.

The plant illustrated on the front cover was given to me as 'George Baker' but is clearly not the rich red form which is how 'George Baker' was initially described. Since it is probably a seedling I feel it is pointless to try to say if it is identical to any of the named cultivars and so I simply call it *Corydalis solida* ssp. *solida* as described in 'Corydalis' the splendid book by Magnus Lidén and Henrik Zetterlund (published in 1997 by the AGS). This subspecies can vary in colour from an unattractive muddy greyish purple to a gorgeous salmon or rich red. The form illustrated is a beautiful clear reddish pink. Lidén and Zetterlund point out that the flower colour can vary depending on the climate, which makes Alan Leslie's proposed division of the 'Transsylvanian' forms (The Garden, July 1992) into Sunrise group with pink flowers and Sunset Group with red flowers of no real help.

The flowers come out in early March and last for at least four weeks. The plant grows readily in full sun in well drained soils and is fully hardy. It disappears in early summer, with leaves reappearing in March with flowers soon following.

It would be wise to see plants of this subspecies in flower before buying because of the variable nature of the plant, even if it is called 'George Baker'.

An excellent account of the genus can be found in the book 'Corydalis' by Magnus Lidén and Henrik Zetterlund published by the Alpine Garden Society

OBITUARIES

JACK DRAKE

Jack Drake, who died on 4 December 1997 aged 88, was a well known figure in the world of alpine gardening. Inshriach Alpine Plant Nursery in Aviemore, which he founded, is a household name to serious alpine enthusiasts.

Although interested in growing plants at an early age at his home in Hertfordshire, Jack followed his father in to the family firm and became a sugar broker. But, after several years of city life, he decided to become a nurseryman, training at Ingwersen's Nursery at Gravetye, West Sussex. When his parents retired in 1938, the family moved to Aviemore and settled into Inshriach House. Here, Jack started the Nursery in 1938.

The first spring and summer were disasters as nothing grew properly and seedlings and young plants died. However, he started using the new John Innes compost which worked like a dream and plants thrived.

The Nursery closed during the war and Jack served in the Royal Artillery for the duration of the war, serving in the USA, New Zealand and Australia where he made many contacts with enthusiasts who were very helpful after the war was over. In 1945 he returned to Inshriach to rebuild the Nursery.

Gradually the Nursery expanded and in the spring of 1949 I came to work for Jack, becoming a partner in 1955 and sole proprietor in 1971 on Jack's retirement. The Nursery is famous for its gentians, meconopsis and cultivars of phlox and dianthus.

Meticulous in whatever he did, whether it was growing plants or taking photographs, Jack's work was also his hobby. Music was his second love. There was nothing he loved better than to listen to his large collection of records, especially during the long winter evenings.

The RHS awarded Jack its highest accolade, the Victoria Medal of Honour (VMH) in 1978, seven years after his retirement. He was also awarded the Scottish Horticultural Medal (SHM) and was one of the three Honorary members of the SRGC, along with Her Majesty Queen Elizabeth the Queen Mother and Ron McBeath.

He is survived by a brother and a sister.

John Lawson

JOHN HALL

John Hall died on 17 February 1998 just one month short of his 96th birthday. He was Treasurer of the SRGC from 1970 to 1976 and it was he who registered the Club as a charity, though it was his successor, Lewis Bilton, who finally established the Covenant Scheme. In recognition of his services he was made an Honorary Vice-President of the Club.

John came to rock gardening late, via the gift of a subscription in 1960. Thereafter he was hooked. Though his heathers remained, his roses, bedding and herbaceous plants gave way to alpines, bulbs and woodlanders seen at Shows and at gardens of other members. Over the next 20 years he transformed an acre of steeply sloping neglected land on the north bank of the River Coquet in Northumberland into a garden of some merit: an alpine bank at the top and at the bottom, bulbs and woodland plants among trees and shrubs with, in between, an undulating slope chiefly with heathers.

He was not not a 'showing' man, nor did he have an alpine house. His great love was his garden in which he worked hard, with the assiduity and patience characteristic of him. Plants unhappy with the situation went on the compost heap but seedlings of happy plants abounded. A favourite maxim was "Never pull out anything until you can put a name to it". At the garden's peak the alpine bank was a sight for sore eyes and even now, after some year's of neglect, erythroniums, trilliums and cyclamen sow themselves with wild abandon on the river's 'flood plain'.

Sadly in the early 80's he became blind. It was typical of him that, having had an eye removed he came home next day and started lifting the potatoes. But his increasing blindness made gardening increasingly difficult. He managed the vegetable plot for some years but withdrew from Club activities. His beloved garden deteriorated in spite of his (and his wife's) efforts. Though his last years were spent in almost anchorite retirement, he was always happy to welcome old (and new) gardening friends.

Isa Hall

GEORGE SMITH

With the death of George Smith on 10 December 1997, the Club has lost a truly remarkable member. In his academic career, George was an organic chemist at Manchester University but he had many interests outside chemistry and one was his love and enthusiasm for alpine plants. His in-depth knowledge of the groups of plants he loved was unsurpassed especially primulas, androsaces, rhododendrons, saxifrages and gentians. Before he was convinced of any fact or statistic, George would go to incredible lengths to satisfy himself about the accuracy of even the minutest item and he was a frequent visitor to the library at Edinburgh, Kew and the British Museum, where he would arrive with a long list of facts he wished to confirm to satisfy his curiosity.

In his Mini or small Fiat he sped to the far corners of Europe and Turkey to check out the location, habitat or some small feature about a far-flung plant. He loved the Himalayan and Chinese mountains and made several major expeditions there, visiting difficult and remote areas and bringing back into cultivation a vast range of selected forms of choice, which he generously shared with anyone whom he thought could grow them. He was a first class photographer and delighted in lecturing on his travels, showing his slides and talking about the plants, mountains and people he encountered.

George put his great knowledge into print in his book 'Primulas of Europe and America' with Brian Burrow and latterly 'The Genus Androsace' with Duncan Lowe, a scholarly monograph written to the highest botanical standards. Happily this book was completed and in print just four days before his death and George was able to see, enjoy and approve his work.

George spoke fluent Italian, French and German and could switch languages in an instant and easily hold his own in an intense discussion in any of these languages. He had a great love and knowledge of classical music, European history and astronomy. He would go to great lengths to encourage his friends and anyone who showed real and genuine interest in plants, the mountains, science or other topics and enjoyed robust debate on any topic.

Ron McBeath

BOOK REVIEWS

The Encyclopedia of Rhododendron species

by Peter A. Cox and Kenneth N. E. Cox

Published by Glendoick Publishing

400 pages 1500 colour plates

Price £75 (*) ISBN 0 9530533 0X

This monumental work brings together for the first time in one volume all the temperate rhododendrons. For each species there is a full botanical description plus several colour plates showing flowers and leaves, habitats and variation within the species. Also for each species there are notes on how to identify plus brief cultural requirements.

For whom is the book intended? Well, obviously first and foremost for all rhododendron enthusiasts who grow many species and cultivars and want a reference book to enable them to identify their plants, to know what is available that might be suitable for their own gardens and to learn about cultural requirements.

When it comes to identification, however, the book is rather disappointing. There are no keys to identify species; instead the reader is simply asked with regard to cultivated plants to consider when the plant was collected and where it came from. For species in the wild you are expected to consult herbaria and to go into the wild armed with comprehensive notes about diagnostic characters of the species you are likely to meet. It is all perhaps all right to expect rhododendron experts to consider the *gesalt* of the plant (or *jizz* as the bird people say) which is a subconscious recognition of a host of botanical characters. But, for example, you would need to plough through 330 pages of text before finding a picture of *R. lepidostylum* to make your identification. There is no other way of doing it. Having, however, pointed out the lack of a key it has to be said that existing keys as in the European Garden Flora or the New RHS Encyclopedia of Gardening (perhaps written by the same hand?) are very difficult to use.

Although there are 1500 colour plates, for many of the species listed the pictures of the plants in their natural habitat are not always very helpful; pictures of large bushes of different species at a distance look awfully alike. The pictures are extremely useful and comprehensively cover varieties and subspecies but I have a sneaking preference for the illustrations, not of course as many, in Rix and Philip's Shrub book in the Pan Series because of their clarity.

There is unlikely to be another rhododendron book as comprehensive as this for a long time. It covers the gap splendidly between botanical texts and the many popular shrub books and should be on the shelf of every keen rhododendron gardener. It is extremely well produced with excellent

clear text. In spite of my reservations about identification and illustrations it is a splendid book which I can thoroughly recommend.

* A few copies at £65 are available from the SRGC Publications Manager.

AM

PPP Index (The European Plant Finder)

by Anne and Walter Erhardt

Published by Eugen Ulmer GmbH & Co

825 pages Price £25 (including CD-ROM)

ISBN 3 8001 6621 6

First we had the Plantfinder in the UK and now we have the European version which comprises data from the UK, French, Italian and Dutch versions. As the blurb for the book says, it includes 80,000 plants from 1200 suppliers across Europe and lists 200 European Plant Societies (but not the SRGC!). The book and the accompanying CD-ROM allow names to be searched for, orders put together, suppliers sought, and complete lists of plants from individual nurseries obtained.

It is unfortunate that only ten Scottish Nurseries are included in this book compared with 22 in the UK Plantfinder and it is to be hoped that more will put in an insert (free) in the next issue. One great advantage of this European version is that plants unobtainable in the UK can be ordered by FAX or E-Mail, and there are no customs formalities within the EC.

This is an excellent book which is best used in its CD-ROM version which, in a choice of six languages, allows searches to be made under a huge range of headings. The programme will run under Windows 3.1 or 95.

PC

The Genus *Androsace*

by George Smith and Duncan Lowe

Alpine Garden Society

208 pages 85 colour plates Price £39.95

ISBN 0900048 670

As noted in the obituary on p.81, George Smith sadly died soon after the publication of this book.

The book replaces a preliminary guide to the genus *Androsace* written by these authors in 1977. It can now certainly be called comprehensive with a description and illustration (colour plate plus line drawing) of each species, along with a distribution map. The identification keys are superb and just what is needed for the knowledgeable gardener. The line drawings are excellent and, in a way, even better for identification purposes than the colour plates.

It is a beautifully produced book with outstanding colour illustrations, many taken by the authors themselves who have devoted almost a lifetime to the study of androsaces. They have tackled classification problems with

great good sense and have suggested solutions to many problems which beset the genus. They have not been afraid to modify their views from the first version of the book. For example, whereas previously they felt that *Androsace studiosorum* (*A. primuloides*) and *A. sarmentosa* were two variants of the same species they now believe that the two species are distinct. Not that this matters unduly to the gardener but it is always nice to know that one is using the currently accepted name for a plant.

This book is a "must" for anyone interested in growing androsaces and also for anyone who just likes good books on gardening topics. Expensive but worth every penny.

JS

Merry Hall

by Beverley Nichols

Published by Timber Press

328pp. 24 line drawings Price £17.99

ISBN 0 88192 4172

Older readers will recall reading this delightful classic which has now been reprinted. It is almost a novel, witty and slightly malicious yet full of wise and wonderful remarks about garden plants. Not a reference book but one to be read from cover to cover and then dipped into from time to time. It is excellent that the Index has been brought up to date with modern nomenclature.

Beverley Nichols is perhaps not currently fashionable but his gardening books such as 'Down the Garden Path' and this one will always rank highly.

ST

Cuttings from a Rock Garden

by H. Lincoln Foster and Laura Louise Foster

Published by Timber Press

446pp. 14 colour plates 43 line drawings. Price £17.99

ISBN 0 88192 377X

This is a reprint of the original 1990 publication in which the Fosters explain how they helped to redefine rock gardening in America, particularly natural gardening, fitting rock and woodland plants into natural landscapes.

Articles published by the Fosters over 30 years have been assembled in this volume. A key part of the book is the assessment of over 100 genera and how to grow them, all helpful gems of erudition. For example, there are four pages on the genus *Diapensia*, its distribution and growing requirements along with its various quirks and problems, not something it would be very easy to come across elsewhere. These are all gems of erudition and helpful advice. Although written for America much of the

advice is apposite for UK and other temperate countries. This is a book to be read but also consulted as a reference text.

ST

My Garden in Spring

by E. A. Bowles

Published by Timber Press

320 pp. 24 black and white plates Price £17.99

ISBN 0 88192 3753

This book is a reprint of the first part of Bowles' trilogy ((the other two parts being 'My Garden in Summer (reviewed below) and 'My Garden in Autumn and Winter')). Unfortunately it has not been possible to reproduce the original Bowles' colour plates but the index has wisely been brought up to date with modern nomenclature.

There have been fewer better amateur gardeners than Bowles (1865-1954). who gardened at Myddelton House near London. He was also a distinguished writer, producing monographs on crocuses, daffodils and snowdrops which are still highly regarded. This account of his garden is most readable (almost Farrer-like) with an excellent account of how plants adapt from the wild to growing in gardens which is currently of interest to gardeners and which Bowles treats in a very erudite manner.

Bowles' love of plants is evident in this volume, ranging from 'When does spring begin?' to 'The culmination of spring' with an intriguing chapter entitled 'The Lunatic Asylum' where he discusses twisted hazels and other monstrosities. All in all a lovely book for garden lovers.

ST

My Garden in Summer

by E. A. Bowles

Published by Timber Press

320 pp. 24 black and white plates Price £17.99

ISBN 0 88192 413X

Part 2 of the Trilogy follows the same pattern as the first part. In it, Bowles takes us from 'The merging of spring and summer' right through to 'August'. Bowles never does anything half-heartedly. When, for example, he decides to try some grasses in his garden he visits the grass beds in every available Botanic Garden and then tries them out, keeping the ones most suited to his particular needs.

Bowles' tastes are catholic so that, even if the emphasis is not on alpine plants, he presents a lot of useful information about them as he wanders round his garden discussing his plants.

As with Part 1 this is a most readable book.

ST

NORTHUMBERLAND SHOW REPORT 4 APRIL 1998

The cool grey morning failed to dampen the spirits of exhibitors and visitors to another highly successful Show. In addition to a well-stocked group plant stall, nurserymen from as far afield as Sussex, Norfolk, Worcester, Angus and Aberdeenshire were in attendance together with our President and 96 exhibitors from an even wider area staged 631 exhibits. There was also a manned AGS Seed Sales Table, an SRGC Publicity display and a wide range of books for sale.

A Gold Medal winning display of alpines and dwarf bulbs was provided by the RBG Edinburgh and the host Group put on a display of lightweight troughs which was awarded a Silver Medal.

The host Group and our neighbours from the Cleveland AGS were well represented among the red tickets but the overall quality of plants and the impressive variety at this mid-season Show make it difficult to pick out plants for individual mention. The Forrest Medal was deservedly, if unusually, won by a large pan of *Narcissus bulbocodium* shown by A. Taylor of Leamington Spa. In other classes very similar forms were variously labelled as *N. b. tenuifolius* or *N. b. filicifolius*. Another narcissus which was well represented was *N. rupicola* though the variation in flower diameter from 12 to 30 mm might have caused some doubts.

G. Mawson, Dronfield, won the large six pan class and AGS Medal unopposed. This is a pity because it devalues the excellent display of *Draba mollissima*, *D. longisiliqua*, *Androsace villosa*, *Narcissus bulbocodium obesus*, *Saxifraga diapensioides* and a white form of *Lewisia tweedyi* which would have won in any company. The Sandhoe trophy for the best plant in a pan less than 19 cm was won by D. Sampson, Heathfield, East Sussex with a beautiful pan of *Erythronium americanum*.

The R. B. Cooke Plate for the most first prize points in the Open Section was shared between G. Mawson and local Group member Dr. A. J. Richards. The Gordon Harrison Cup for Section B aggregate was also shared between R. Bathe, Ware and A. Lovell, Ormskirk. The Cyril Barnes Trophy for the Section C aggregate went to D.J. Pickard, Stockton-on-Tees. G. Rollison, Holmfirth took the E.G. Watson Trophy for the best plant in Class 69, new or rare in cultivation with *Primula bracteata*. Helen Kidman of the local Group won the Northumberland Cup with a nice pan of *Primula* 'Wharfedale Village'.

Both before and after judging, and no doubt during, the large cushion plants (as in nature) caused much discussion. Firstly the winning rosulate *Viola dasyphylla*, A. Taylor: was this really a cushion? Then the completely split *Androsace vandellii*, G. Rollison: was this one plant or two and should cushions be flower covered? The *Helichrysum coralloides* which won Class 94 for Mr and Mrs A. Walker, Wallsend also raised doubts concerning whether or not it was alive. It would not have been the first plant to win a prize if it so transpires.

Barry McWilliam

THE ANNUAL GENERAL MEETING
will be held at the Battleby Conference Centre
Redgorton, Perth
on Saturday 7 November 1998 at 2 pm.

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