

he negotiated the most favourable rates for hotel accommodation ; he oiled the wheels of officialdom where necessary (about 50 cents seemed the going-rate for a nod and a wink from a police road-block, to avoid a long detour at Cuenca). He was not only concerned about our physical well-being but also our moral environment. When we had to turn-out of our Quito hotel for a couple of nights, we suggested that we move to 'The Embassy Hotel' recommended to us by Robert Rolfe. Angel was uncomfortable. "Yes, it costs about the same....but it's a very bad area...there are a lot of women around there..." and, leaning over in hushed tones, "...prostitutes."

LAS NATASHAS ALPINISTAS Does Robert have an unfortunate affinity for such establishments? He tells us that during his ill-fated, 1993 visit to NE Turkey he arrived in Borcka near the Georgian border. In response to his inquiries, the locals informed him that there was indeed a hotel in the town but that it was full of Russian women. "Really?" replied Robert, "Are they climbers?" We suppose so - in a manner of speaking.

CONGRATULATIONS A.G.S. - you now have a policy about collecting from wild plants. As might have been expected, the policy is almost concealed by a plethora of mealy-mouthed statements, elitist qualifications and unsubstantiated non sequiturs - nevertheless, it is there and, intrinsically, there is little any sensible person could disagree with. Is it necessary, however, for the Alpine Garden Society to set itself up as an arbiter of morality - 'Irresponsible collecting is morally objectionable' it says in bold type. If they had defined "irresponsible" we could discuss the matter. Some might consider it to be "morally objectionable" to use A.G.S. members money to provide free platforms for those involved in "conservation" for financial gain - employees of large organisations and wealthier charities. "Note : 8 extra pages added to accommodate CITES lists (Ed.)" - advertising space is available at a price for everyone else. The misapplication of CITES legislation to many plants is "morally objectionable". In Britain, we have recently acquired a bizarre piece of legislation relating to "dangerous dogs". It has been described as surreal. Beside CITES legislation, it appears reasonable common-sense. This legislation, which never could be satisfactorily applied to plants, covers many species long-cultivated or in no way endangered - included because they resemble a species which the whims (which can change overnight) of a few people - maybe only one person - decide is "endangered" - this is not only dictatorial, it is dishonest. All Sternbergia are included because of one species - could many people distinguish any Sternbergia bulb from a paperwhite narcissus - or even a shallot? Must we anticipate having to obtain licences to grow and sell every plant? Can we look forward to spot strip-searches of package-tourists returning from Greece to locate the odd Cyclamen graecum capsule concealed in a body-orifice - "I swear it's only C. hederifolium!" - "The accused is remanded in custody until the seed has been grown to flowering." This is all a deflection from facing reality - the last refuge of the smallest-minded "conservationist" - the reductio ad absurdum of "environmentalism" - truly "fiddling while Rome burns." With much of the world trashed and the remainder groaning under the twin pressures of pollution and over-population - the only really relevant issues - here we have the pettiest of bureaucratic empire-building burying us under pieces of (recycled?) paper.

THE DARK AGES The most "morally objectionable" statement, contained in the September, A.G.S. Bulletin, was, to us, Dr. John Richards' throw away parenthesis "(local politics permitting!)". To dismiss the Yugoslavian civil war, the most obscene European conflict of the latter half of our century, flippantly as "local politics" is disturbing but to juxtapose it with some scheme to dabble in Degenias in the Velebit is truly "morally objectionable" - but then we have long been known as eccentrics in the plant-world. Dr. Richards' article was well written and thoughtful but, as we read it, a terse remark from a correspondent replying to our 1992 comments, came to mind - "as a scientist I feel we are entering the Dark Ages." Dr. Richards is writing "as a scientist" but this is not the language of science - "may", "may", "may", "it is likely", "we must assume", "in all probability", "almost sure". He does not actually know much about all this, does he? He "may" be correct but then again he "may" not - whether he is or not "may" not matter much at all because he "may" be hit by a 'bus tomorrow. The article is by no means devoid of "facts", though these sometimes contradict what he has written elsewhere. Then there is the interesting "the bottom of the cliff" syndrome - we look forward to seeing a paper on this. Which cliff would that be? Personally, as collectors of seed of saxatile plants, we are more used to the 'half-way up the cliff' syndrome. "Species are infinitely variable" - really? "Infinitely" is a big word for a "scientist" to use. "Seed should never be collected from short-lived plants" i.e. do not remove annual weeds, such as groundsel and poppers from your rock-garden, you "may" cause their extinction. "A foxglove, Digitalis purpurea, can produce 300,000 seeds in its single flowering season, but in each case, on average, only one seed will survive to reproduce itself." Now this illuminating "fact" presupposes that at some time in history there was a great 'zap' and suddenly, let us say, 5,678,901 representatives of the "species", Digitalis purpurea, appeared on the earth. Good gracious! But let us not forget "a species is a unique creation" - we are not just "entering the Dark Ages" we are already there.

DEER, DEER DEER ! Don Elick writes from Japan, "What a coincidence that you should bring up Liliun speciosum clivorum in your latest list. I went to Agawa again in late November to try to get seed, though mainly to collect Tricyrtis. It is a long and uncomfortable traipse even from Osaka without a helicopter and when I got there (overnight from Osaka to Kochi on a cargo-ferry taking a load of overripe fish for a fertilizer works) I found the cursed serows had decimated virtually every liliaceous plant in the gorges. In case you aren't up on obscure East Asian ruminants, the serow is a graceless, perpetually browsing and belching deer-relation, that has been taken up as the trendiest cause celebre of the Japanese Brigitte Bardots. They had desecrated the landscape all the way up the river with 'Save the Serow' placards and it gave me great pleasure to burn a bunch of the things to warm up my lunch. The rare Hosta of the gorges, H. gracillima, was stripped of seed-pods, nearly all the Tricyrtis, the lily had been champed back to half the stem's length, even the Arisaemas, which would burn the guts out of most animals. So now you know how I stand on uninformed conservationism - give the A.G.S. Hell for me - and all the rest of 'em." Thanks Don - and all who wrote.

CONSERVATION QUOTES We are not sure if we should feel gratified that the September, 1993 AGS Bulletin included brief (and fair) quotations from our 1992 comments on "conservation", alongside the utterances of HRH the Prince of Wales, an Archbishop of Canterbury and the Dalai Lama (to say nothing of Jonathon Porritt and Richard Branson). We noted that one of the more notable 1992 'conservation quotes' was not included : the remark by George Bush, former President of the U.S.A., about us all "being up to our necks in spotted owls and out of work", "if these two bozos are elected." Bush - or at least his writer - was not unaware of a grass-roots resentment in rural America against attempts to interfere in rural life by bureaucrats and those seen as urban intellectuals. Pinned up in the village-store in Teasdale, a neat, pretty little Mormon town, at present looking sadly depressed, was the local 'conservation quote' : "If two kids can conceive in the cab of a pick-up in a crowded drive-in, how come it takes a pair of spotted owls 2,500 acres?" While the reasoning is faulty, the sentiments are real. In Ecuador, it is the young urban intellectual who regards the attempts at interference by the richer inhabitants of the world as a new imperialism (the rural population in such countries, like most of the world's population, is usually too concerned about its next meal to be troubled by such matters). The extraction of oil in the upper Amazonian Basin of Ecuador & Peru is causing vast and unpublicised destruction and pollution, while profits vanish abroad or remain in the hands of very few. Our 'base-camp', a small hotel in Quito was invaded briefly by a gaggle of intense and starry-eyed female school-teachers from Colorado, Nikon camera-pouches to the front, bum-bags to the rear, passing through on their way to "the jungle" "to stay with the Indians" - "We're with a group called 'Save the Rain Forest'". The night before their arrival a graffiti appeared opposite our hotel (a little chilling to think that they were expected) : "No llora por la Amazonia - tu compras Texaco." - "Don't cry for Amazonia - you buy Texaco." We fear it might have been too gentle and too subtle for the intellects of those at whom it was aimed ; perhaps none of them read Spanish ; anyway, no-one seemed to notice - they were off to save the rain-forest.

SECTION I : SEEDS COLLECTED IN ECUADOR, JULY, 1993, BY JIM & JENNY ARCHIBALD

THE CLIMATE cannot be summed up briefly. It is incredibly diverse and every mountainous area - if not every peak and valley has its own micro-climate. Warm, wet air rises from the Amazon Basin in the E and the Pacific in the W to produce an overall wet montane climate though it can be very dry locally in interandine valleys lying in rain-shadows. Summer and winter are replaced by irregular dry and wet seasons. Temperatures fluctuate more between day and night in the dry season because of a lack of cloud but it can be much colder overall during a wet season because there is no daily sunshine. For most montane plants in Ecuador, the wet season is winter and flowering peaks at the beginning of the dry season in many cases. This seems alien to gardeners used to "conventional climates" but the overall situation at higher altitudes (and it is only these which concern us here) is not so very different to cool, temperate climates, such as in the British Isles, parts of New Zealand and SE Australia and NW N America, where winters are not really very cold nor summers very hot. All the plants from which we have collected seed will be very much happier outside in such climates, during the summer. The treatment of equatorial Andean species in winter will depend on the altitude at which they grow and, rather than quote statistics, we feel it may mean more to gardeners if we look at three broad altitudinal categories and the foreign plants which are at home in them. It is only by adventurous and experimental interpretation of these that we can proceed.

2500 to 3500 m. Quito, at 2850 m., has a climate which has been described as "eternal spring", though in the wet-season it can be quite a chilly spring - rather like a Mediterranean winter. In the gardens, *Cyclamen persicum* grows and flowers non-stop, *Argyranthemum* cvs. thrive and *Watsonias* are naturalized. Between 2500 and 3000 m. plants will be unlikely to experience serious frosts and they should be grown frost-free in winter. Most of the population - Ecuador is the most densely populated country in S America - live in the intermontane basins around this altitude and the natural vegetation (montane scrub) is almost entirely removed. Approaching 3500 m. it is noticeably cooler.

3200 to 3700 m. This narrow band, which varies somewhat according to the locality, was, to us, the most interesting zone. About here montane scrub grades into grass paramo, sometimes abruptly, sometimes through dwarf "elfin forest". We should guess plants from here would be most successful in cool, moist climates, such as in W Coast Britain, provided frosts were not severe - Cornish and Irish material. Here, in some areas *Digitalis purpurea* is naturalized. These are plants for experimentation; some might be hardier than we imagine. Cool summers will suit them.

3500 to 5000 m. At the lower levels, there is paramo, the high altitude moorland so characteristic of the N Andes.

The dominant plants are grasses and the other species occupy specialised niches, such as wet sites or stony sites. Little in the way of new species occurs above 4300 m. *Nototriche* starts at about 4000 m. Only the odd *Draba* extends to over 5000 m.; there would be too little time uncovered by snow for most plants above 4500 m. The snow-capped summit of Chimborazo is 6310 m., Cotopaxi is 5897 m. and Cayambe is 5790 m. The problem in growing the alpinists is much more likely to be warm summers than cold winters. We should advise growing such plants outside throughout the year in the UK; many should thrive on British winters, autumns and springs. This is not the Peruvian or Bolivian altiplano; Ecuadorean alpinists survive rain, hail, sleet and snow-cover and skies which are often overcast with cloud. Long, hot summer days are another matter but the alpine-specialist has always been optimistic and inventive. Take heart and bear in mind what we have written here is an appalling generalisation - homely northern conifers have been planted in the paramo, which comes down to 3200 - 3300 m. W of Cotopaxi. It looks just like the Scottish Highlands.

NOMENCLATURE follows the excellent 'Flora of Ecuador', where it exists. Where families have not yet been covered, we have serious problems. Work is in process on several important families from our viewpoint and we hope to be able to provide names which will be used in the flora in due course. We had hoped to have determinations on our dried herbarium material in time to include them in this list but botanical wheels grind slowly. In 1994, our list will concentrate on S American species and we hope to have more names by then. We much prefer to list material identified only to generic level than to provide guesses likely to be incorrect - the wrong names tend to stick and cause confusion. In the meantime, please keep the field-numbers on your seedlings - they are the key to the correct name.

REFERENCE NUMBERS here are field-numbers and run in the order of collection. Seed-packets will carry only these numbers and a check-list of the numbers in numerical order will be sent with the seeds to facilitate identification.

- 13750 ALONSOA MERIDIONALIS Ecuador, Carchi, NW of El Carmelo (SSE from Tulcan). 3300 m. Margin of dense montane scrub. 8.7.93 (Erect perennial, about 1 m. high, with racemes of many, small, orange-red helmeted flowers. A N Andean species, which extends to over 4000 m. in Ecuador and should be moderately hardy in the UK.) (50+ seeds) B
- 13678 BARNADESIA ARBOREA Ecuador, Pichincha, crater of Volcan Pululahua (N of Quito). c. 3000 m. Dense, low, scrubby montane forest on steep slopes. 5.7.93 (An attractive composite shrub in the Mutisieae, about 2 m. high, with small, spine-tipped leaves and many flower-heads with rose-purple ray-florets. Endemic to Ecuador.) (15+ seeds) C
- 13834 BERBERIS SP. Ecuador, Pichincha, Cerro Pichincha, E slope above Quito. 3200 m. Scrub at margin of *Eucalyptus* plantation. 17.7.93 (A fine shrub, about 2 m. high, somewhat after the fashion of *B. darwinii* with prickly, glossy, evergreen foliage and drooping racemes of large orange flowers followed by black fruits.) (10 seeds) D
- 13645 BIDENS HUMILIS Ecuador, Pichincha, above Oton. 2700 m. Open banks in sandy, stony clay. 3.7.93 (This colourful little composite is widespread in Ecuador - usually in dryish habitats. There may be many intergrading taxa involved. Prostrate stems with small, cut leaves and yellow heads like little, single dahlias. (15+ seeds) C
- 14009 BIDENS HUMILIS Ecuador, Cotopaxi, N slope of Volcan Cotopaxi. 4200 m. Exposed, stony areas, in volcanic ash & debris. 12.7.93 (Extremely compact, high altitude form - it may not stay in character, of course.) (10+ seeds) E

BOMAREA This magnificent genus has remained little-known in cultivation and one of our aims was to make seed-collections from some of the higher altitude species. Belonging to the Alstroemeriaceae, these are mainly climbing, tuberous-rooted perennials with regular flowers (unlike *Alstroemeria*) centred on the N Andes but extending N into Central America and just entering N Chile in the S. They are particularly diverse in Colombia & Ecuador and have a great altitudinal range - from lowland jungle to almost 4500 m. There are allegedly about 50 species and they are being revised at present for the 'Flora of Ecuador', so we have desisted from guessing at names. In several cases, we had the impression that populations were intergrades or hybrid-swarms, such was their variability. They rely largely on humming-birds for pollination, so many are orange-scarlet flowered, and also often for seed-dispersal - capsules open to display the seeds with a fleshy, viscous, bright-orange skin. All the following should give no trouble under frost-free conditions but we persist in our advice that they will be much happier outside in summer. According to G.S. Thomas, the supposed hybrid of *B. caldasii*, *B. X cantabrigien-sis*, has grown outside, against a greenhouse wall, at Cambridge for over 40 years. It also thrives in Ireland.

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- 13627 BOMAREA SP. Ecuador, Napo, Papallacta. 3100 m. Margins of montane forest. 1.7.93 (Climbing to 2-3 m. with heads of up to 50 flowers - unspotted with scarlet outer segments and orange inner ones.) (10+ seeds) C
- 13676 BOMAREA SP. Ecuador, Pichincha, ESE of Volcan Cayambe - Hacienda Piemonte. 3500 m. Vestigial vegetation between grazed areas. 3.7.93 (Climbing to 2 m. with heads of up to 25, dark-spotted, orange & scarlet flowers.) (8 seeds) D
- 13686 BOMAREA SP. Ecuador, Pichincha, crater of Volcan Pululahua (N of Quito). c. 3000 m. Dense, low, scrubby montane forest on steep slopes. 5.7.93 (Climbing to 2 m. Heads of about 9, speckled, scarlet flowers.) (8 seeds) D
- 13761 BOMAREA SP. Ecuador, Carchi, SW of Tulcan. 3200 m. Dense montane scrub. 8.7.93 (From a cold area, swathed in drifting cloud, on the Colombian border. Spectacular, rounded heads of about 50, tubular campanulate flowers, evenly speckled with maroon inside. Orange-scarlet. Climbing to 2-3 m.) (10+ seeds) C
- 13833 BOMAREA SP. Ecuador, Pichincha, Cerro Pichincha, E slope above Quito. 3200 m. Among scrub. 17.7.93 (Slender-growing to about 2 m. with about 12 pendant flowers - scarlet outer segments, spotted orange inner.) (10+ seeds) C
- 13866 BOMAREA SP. Ecuador, Azuay, Rio Quinuas valley, WNW of Cuenca. 3250 m. Vestigial stands of montane scrub. 21.7.93 (Climbing to 2 m. with dark, leathery leaves and heads of rose-pink and green flowers.) (8 seeds) E
- 13987 BOMAREA SP. Ecuador, Imbabura, NW of Laguna Mojanda (S of Otavalo). 3700 m. Dense 'elfin-forest' at edge of paramo. 9.7.93 (The highest collection - and largest species - stout, downy stems climbing to 2-3 m. with leathery leaves and enormous heads - we counted 120 flowers in one - of huge, chocolate-spotted, apricot-yellow bells. The whole genus is magnificent but this is the creme de la creme. It must be tried in the UK.) (8 seeds) E
- CALCEOLARIA The superlative account by Ulf Molau of the 52 species in the 'Flora of Ecuador' made identification straightforward. Many are annuals or herbaceous climbers and there are no tiny alpine developments but some of the diverse shrubby species ascend to great elevations and open up exciting possibilities for gardeners in temperate climates. Even if some prove tender, it should be possible to overwinter cuttings frost-free.
- 13818 CALCEOLARIA ERICOIDES Ecuador, Chimborazo, NE slope of valley of Rio Chimborazo. 4000 m. Steep, stony slopes. 15.7.93 (An extraordinary, erect shrub, up to 1 m. but usually less, with tiny, linear leaves, altogether like Erica arborea but with upper stems packed with little, upturned, bubble-flowers. This is a bright lemon-yellow form from around the altitudinal limit for the species. Worth trying in UK in a well-drained site.) (100+ seeds) D
- 13840 CALCEOLARIA ERICOIDES Ecuador, Pichincha, Cerro Pichincha, E slope above Quito. 3600 m. In montane scrub on steep slopes. 17.7.93 (A paler, sulphur-yellow form - exactly the same habit. About 1 m. high) (100+ seeds) C
- 13911 CALCEOLARIA HELIANTHEMOIDES Ecuador, Azuay, Paramo de Tinajillas, WNW of Nabon. 3200 m. Dry grass paramo with sparse scrub. 22.7.93 (About 30 cm. high, woody-based with small, dark, leathery leaves and wiry stems of little sulphur-yellow flowers. A dainty plant, sympatric here with the closely allied & very similar C. lavandulifolia (hybrids have never been found) - this may be a mixed collection. No problem in sorting them out.) (100+ seeds) C
- 13648 CALCEOLARIA HYSOPIFOLIA Ecuador, Pichincha, SE of Cayambe. 3500 m. Open areas, along eroded, stony banks. 3.7.93 (About 50 cm. high, shrubby endemic to Ecuador. Narrow, sticky, leathery, bright-green leaves and cymes of big, rounded bubbles with smugly closed mouths - white shading to pale-yellow. A lovely thing.) (100+ seeds) D
- 13860 CALCEOLARIA LANATA Ecuador, Canar, SSW of Chunchi. 2800 m. Dryish rock fissures on cliffs & steep slopes. 20.7.93 (Herbaceous endemic of the Cordillera Occidental in central Ecuador. A saxatile plant from dry areas suited to alpine-house or Mediterranean conditions. Leaves, stems & inflorescence densely clothed in cream-white wool - altogether rather like Salvia argentea - 20-50 cm. high. Yellow flowers with purple throats.) (100+ seeds) D
- 13888 CALCEOLARIA NIVALIS Ecuador, Azuay, upper Rio Miguir valley, WNW of Cuenca to Molleturo. 3400 m. Montane scrub on sides of steep-sided gully. 21.7.93 (A neat species, here about 50 cm., characteristic of high scrub and grass paramo in S Ecuador into N Peru. Shrubby with shining, dark-green, Ligustrum-like leaves and cymes of bright-yellow bubbles with closed mouths. Like all the above coll. at around its upper limits.) (100+ seeds) C
- 13736 CALCEOLARIA PERFOLIATA Ecuador, Carchi, NW of El Carmelo (SSE from Tulcan). 3100-3300 m. Montane scrub on steep slopes. 8.7.93 (A representative of the several, scandent herbaceous perennials. Climbing to 4 m. with downy leaves and a multitude of bright-yellow flowers. From a cold, very wet area.) (100+ seeds) B
- 13772 CHUQUIRACA JUSSIEUI (C. insignis) Ecuador, Cotopaxi, N slope of Volcan Cotopaxi. 4300 m. Paramo on open N & W facing slopes. 12.7.93 (The amazing shrubby composite, characteristic of the highest altitudes in Ecuador - it extends from SW Colombia just into N Peru and then reappears in S Peru & adjacent Bolivia. Here at about its highest elevation & 50 - 80 cm. high with erect, woody stems clothed in little, stiff, spine-tipped, imbricate leaves and producing large, terminal, 'everlasting' heads of shiny, papery, bronze-orange phyllaries from which the yellow-orange flowers appear with exerted scarlet styles. Both bizarre and very beautiful.) (10+ seeds) D
- 13841 CLEMATIS SP. Ecuador, Pichincha, Cerro Pichincha, E slope above Quito. 3600 m. Montane scrub on steep slopes. 17.7.93 (Perennial climbing to about 4 m. Not seen in flower but we do not imagine it looks like 'Nellie Moser'. We did not know there were any Clematis in Ecuador - the only one we saw - so a name should be easy.) (15+ seeds) C
- 13931 CLEOME SP. Ecuador, Canar, NW of Canar to Chunchi. 2400 m. Dense montane scrub on steep, wet slopes. 23.7.93 (An erect shrub, 2-3 m. high, with the characteristic, strange yellowish flowers followed by bizarre fruits like hanging sausages covered in pink felt. From this altitude for frost-free conditions only.) (10+ seeds) B
- 13905 EMBOTHRIMUM GRANDIFLORUM Ecuador, Azuay, Paramo de Tinajillas, WNW of Nabon. 3200 m. Dry grass paramo with sparse scrub. 22.7.93 (A sumptuously beautiful species alongside which the scarlet Chilean E. coccineum would seem rather vulgar. Stiff shrubs approaching 3 m. in height with thick, leathery, greyish leaves and enormous flower heads, about 20 cm. high by 12 cm. across, of shell-pink and ivory flowers from cream, green-tinged buds. A typical species of the S Ecuadorean scrub, which starts to predominate down here towards the Peruvian border, where it is drier and many different species occur. It should be possible in milder areas in the UK.) (10+ seeds) D
- 14008 EPHEDRA AMERICANA Ecuador, Cotopaxi, N slope of Volcan Cotopaxi. 4200 m. Exposed, stony areas. 12.7.93 (Tight, prostrate mats of greyish, interlacing stems with a profusion of orange-scarlet fruits.) (8 seeds) C
- 13912 ERYNGIUM HUMILE Ecuador, Azuay, Paramo de Tinajillas, WNW of Nabon. 3200 m. Open paramo among grass tussocks. 22.7.93 (A "sweetie" - tiny rosettes of entire, spine-edged leaves and branching stems of heads with silvery white bracts surrounding a dome of navy-blue flowers. Like a miniature, papery blue and white Astrantia maxima. Very polymorphic (this is a 'good' form), it is 2 - 30 cm. high here. Try it in scree or raised bed.) (15+ seeds) D
- 13742 ESEPELETIA HARTWEGIANA Ecuador, Carchi, NW of El Carmelo (SSE of Tulcan). 3300 m. Wet paramo, in black, peaty soil. 8.7.93 (The arborescent alpines of this incredible genus, characteristic of Colombia & Venezuela, just enter Ecuador in this cold, mist-shrouded corner on the Colombian border. All wrapped up in thick, white wool but with quite conventional 'daisies' in dark, dull yellow, Venezuelan material is being maintained in the Kew alpine-house in character (even starting trunks) - outside from March to November may be just as good.) (10 seeds) D

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FUCHSIA Once again it is the highest limit of the montane scrub, which yields the most exciting material. Most of these should be possible outside in the UK using some imagination - if trying them against a wall, we suggest a N or W facing one. They do not need high light intensity nor will they enjoy hot summer conditions. We do not consider them likely to enjoy being under glass in summer. This genus was dealt with a long time ago for the 'Flora of Ecuador' (by P. Munz of Californian fame); the treatment does not work convincingly in the field. It appears to be a "difficult" genus in Ecuador with much hybridization or intergradation occurring. The first three collections are what may be considered to be "pure" stands but the key does not work well. All are c. 2 m. high.

- 13733 **FUCHSIA AYAVACENSIS** Ecuador, Carchi, NW of El Carmelo (SSE of Tulcan). 3100-3300 m. Montane scrub on steep slopes. 8.7.93 (Distinctive light crimson-red flowers with expanded, rounded petals.) (20+ seeds) D
- 13957 **FUCHSIA CANESCENS** Ecuador, Napo, Paramo Guamani WNW of Papallacta. 3700 m. Dense montane scrub at margin of paramo. 27.7.93 (About the altitudinal limit for the genus. A marvellous thing forming stiff, upright, lichen-draped shrubs with thick, dark glossy leaves and elegant, fleshy, downy flowers in pure scarlet.) (20+ seeds) D
- 13770 **FUCHSIA CORYMBIFLORA** Ecuador, Carchi, Huaca (S of Tulcan). 2700 m. Among scrub. 9.7.93 (Distinct from the others here (which have axillary flowers) in its panicle-like inflorescence. Graceful orange flowers with green-tipped sepals in huge heads. Likely to be the least frost-tolerant of our collections.) (20+ seeds) C
- 13865 **FUCHSIA aff. LOXENSIS** Ecuador, Azuay, Rio Quinuas valley, WNW of Cuenca. 3250 m. Vestigial stands of dense, montane scrub. 21.7.93 (There appears to be a hybrid-swarm in this locality, possibly involving *F. canescens* or another species. This has scarlet flowers and a scandent habit - worth trying against a wall.) (20+ seeds) C

FERNS

We list these separately as the spores need somewhat different treatment to the seeds. The bewildering, diverse profusion of ferns at some lower elevations, especially the cloud-forest areas, was tempting but we restricted ourselves to a few representative high altitude ones - we could not find sufficient fruiting fronds on the extraordinary Jamesonias of the highest wet-paramo. All names should be confirmed in our next list, in 1994.

- 13695 **ADIANTUM POIRETTII** Ecuador, Pichincha, crater of Volcan Pululahua (N of Quito). c. 3000 m. Steep, volcanic cliffs, usually in shade. 5.7.93 (Attractive Maidenhair - same treatment as for Californian *A. jordani*.) C
- 13696 **CHEILANTHES MYRIOPHYLLA** Field-data as above. (Like all here about 15-20 cm. & will suit cold greenhouse.) C
- 13766 **CHEILANTHES SP.** Ecuador, Carchi, SW of Bolivar. 2600 m. Among rocks on steep, clay slopes. 9.7.93 (A 'summer'-dormant plant from a very dry inter-andine valley. Should fit in with the species from Mexico & SW USA.) C
- 13668 **CYSTOPTERIS SP.** Ecuador, Pichincha, SW of Volcan Cayambe. 4200 m. In fissures on moist cliff. 3.7.93 (A tiny, dainty fern - only seen here. It may not even be a *Cystopteris*. Like the next, should be hardy in UK.) C
- 13787 **ELAPHOGLOSSUM SP.** Ecuador, Cotopaxi, Paramo de Zumbagua (WNW of Pujili). 3900 m. Among rocks. (We also found this at well over 4300 m. on Volcan Cotopaxi. Entire, dark-green, leathery fronds with fawn wool beneath.) C

GAULTHERIA Ecuador is rich in Ericaceae with many genera unfamiliar at northern latitudes - we were too early for seed of the magnificent *Befaria* spp. - the *Rhododendrons* of the Andes. We have a few other ericaceous collections which we shall include in our next list when more complete determinations on our dried specimens have been received. For the moment we confine ourselves to those which appear to be *Gaultheria* spp., a genus which now includes *Pernettya*, - some may be *Vaccinium*, as we are none too skilled at distinguishing these in fruit. All should grow in the alpine-house or cold-greenhouse and several may prove hardy outside in the UK.

- 13712 **GAULTHERIA SP.** Ecuador, Imbabura, above Laguna Cuicocha (W of Cotacachi). 3200 m. Low, montane scrub on steep sides of crater. 7.7.93 (An attractive, neat shrub, about 30 cm. high, with large, black fruits.) (50+ seeds) C
- 13738 **GAULTHERIA SP.** Ecuador, Carchi, NE of El Carmelo (SSE of Tulcan). 3100-3300 m. Sloping rock slabs with sparse vegetation. 8.7.93 (Lax, prostrate stems with bright red flowers and fruits. About 15 cm. high.) (50+ seeds) D
- 13740 **GAULTHERIA SP.** Field-data as above. (Very dwarf with white flowers and little, pearly-white fruits.) (50+ seeds) D
- 13844 **GAULTHERIA SP.** Ecuador, Pichincha, Cerro Pichincha, E slope above Quito. 3800 m. Exposed grass paramo. 17.7.93 (A *Pernettya* with white flowers and wine-purple fruits, about 20 cm. high here in an open site.) (50+ seeds) C
- 13972 **GAULTHERIA SP.** Ecuador, Imbabura, NW of Laguna Mojanda (S of Otavalo). 3700 m. Edge of dense montane scrub on tree-line. 28.7.93 (Shrub of about 60 cm. with masses of large, pearl-pink to white fruits.) (50+ seeds) C
- 14004 **GAULTHERIA SP.** Ecuador, Cotopaxi, WNW of Volcan Cotopaxi, above Rio Daule. 3300 m. Open, stony areas. 12.7.93 (*Pernettya* of low habit. White flowers and maroon fruits. About 15 cm. high) (50+ seeds) C

GENTIANELLA Apart from the genus *Nototriche*, the Andean Gentians are the high-altitude plants most likely to excite the alpine-plant specialist. There are a few members of *Gentiana* (we were just a little early for seed) but most have now been placed in *Gentianella*. The *Gentianaceae* are under review at present for the 'Flora of Ecuador' and we hope to have appropriate names for all the following for our 1994 list. We doubt if you would thank us for every Ecuadorean *Gentianella* but the following collections constitute a good representative range of some of the more worthwhile. Keep them outside from March to November at least - maybe all year in the UK.

- 13880 **GENTIANELLA HIRCULUS** Ecuador, Azuay, WNW of Cuenca to Molleturo, SE of Laguna Toreadora. 3850 m. Open, stony areas in paramo. 21.7.93 (We can be reasonably sure of this name as this most distinct and spectacular little plant seems quite narrowly restricted to this miserably cold, wet area, whence it was introduced to the UK by Robert Rolfe in 1990 and successfully grown at Kew by Tony Hall, in Scotland by Henry Taylor - it has even appeared on the show-bench. See Robert's account with an excellent photograph in the June, 1991 AGS Bulletin (Bull. Alp. Gard. Soc., Vol. 59, No. 2, p. 155). Tufts of little, narrow, dark-green leaves with profuse, short-stemmed, bright-yellow flowers, in which each lobe has a scarlet flame up one side, so that they look like tiny red and yellow striped balloons. This should be one of the easiest in the UK - do try it outside.) (30+) E
- 13848 **GENTIANELLA SP.** Ecuador, Pichincha, Cerro Pichincha, E slope above Quito. 3800 m. Exposed grass paramo. 17.7.93 (Upright-growing with stems of about 15 cm. closely set with wide-open, lilac flowers.) (30+ seeds) D
- 13870 **GENTIANELLA SP.** Ecuador, Azuay, WNW of Cuenca to Molleturo, SW of Lagunas de dos Chorreros. 3700 m. Wet turf along stream. 21.7.93 (Almost certainly the plant illustrated in Robert's article (p. 165) as "*G. cf. muscoides*" - possibly correctly *G. cerastioides*: "diapensia-like mounds of yellow-green, elliptic leaves surmounted on the shortest of stems by lilac to purple cups" - "merits an all-out effort" writes Robert. Very few.) (30+ seeds) F

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- 13850 GENTIANELLA SP. Ecuador, Chimborazo, Paramo Urbina (SSW of Mocha to Riobamba). 3500 m. In turf on exposed paramo (May be a different form of 13870 - similar tight rosettes but with many pink flowers. Moist grower.) (30+ seeds) F
- 13890 GENTIANELLA SP. Ecuador, Azuay, upper Rio Miguir valley, WNW of Cuenca to Molleturo. 3400 m. Among montane scrub on side of steep-sided gully. 21.7.93 (Campanula-like with 20 cm. stems of starry, deep lilac flowers.) (30+) D
- 14003 GENTIANELLA SP. Ecuador, Cotopaxi, WNW of Volcan Cotopaxi, above Rio Daule. 3300 m. Open, stony areas among Gaultheria scrub. 12.7.93 (A most attractive, floriferous plant with neat, basal leaves and upward-facing, lavender-blue, cup-shaped flowers, up to 5 on each stem of 5-10 cm. Like a lilac-blue NZ Gentian.) (30+ seeds) E
- 14011 GENTIANELLA SP. Ecuador, Cotopaxi, N slope of Volcan Cotopaxi. 4200 m. Exposed, stony areas, in volcanic ash & debris. 12.7.93 (Hummocks of tight rosettes of tiny leathery leaves covered with flowers like wide-open crocuses in pink to carmine with occasional whites - breathtaking. Try it outside in scree in the UK.) (30+ seeds) F
- 13948 HYPOCHAERIS SP. Ecuador, Pichincha, SE of Pifo. 3300 m. Dryish turf - in sandy clay. 27.7.93 (Many of the stem-less composites are bright-yellow and we felt they would look too like sessile dandelions for British tastes. This is creamy-white and most attractive, forming a mound of big, stemless heads on a flat rosette.) (15+ seeds) C
- 13687 KOHLERIA SP. Ecuador, Pichincha, crater of Volcan Pululahua (N of Quito). c. 3000 m. Among low, montane scrub on steep volcanic slope. 5.7.93 (Salvia-like, scarlet herbaceous gesneriad about 30 cm. high.) (100+ seeds) D
- 13706 KOHLERIA SP. Ecuador, Pichincha, Rio Alambi valley W of Calacali. 2000 m. Dense cloud-forest on very steep slope 5.7.93 (Similar, herbaceous, salvia-like habit with downy leaves but more slender, with narrower scarlet tubes and 30-50 cm. high. This is strictly for the frost-free cool greenhouse. These may belong in Isoloma.) (100+) D
- 13626 LAMOUROUXIA VIRGATA Ecuador, Napo, Papallacta. 3100 m. Margins of montane scrub. 1.7.93 (A spectacular member of the Scrophulariaceae widespread in Ecuador. A woody-based herbaceous perennial with racemes of large, magenta flowers, pink inside, rather like fat Penstemons. About 60 cm. or more high.) (30+ seeds) C
- 13855 MARGYRICARPUS SP. Ecuador, Chimborazo, S of Palmira. 3100 m. Open, dry, sandy 'flats'. 20.7.93 (Tight mats of prostrate stems with small, finely dissected leaves, covered with white rice-like fruits.) (8 seeds) C
- 13644 ONOSERIS HYSSOPIFOLIA Ecuador, Pichincha, above Oton. 2700 m. Open banks in sandy, stony clay. 3.7.93 (A most charming little daisy, more or less endemic to Ecuador. Woody decumbent stems with linear leaves, dark above & woolly white below. Heads with lilac-pink rays, apricot-buff on the reverse. About 20 cm. high here.) (20+ seeds) C
- 13940 ONOSERIS SALICIFOLIA Ecuador, Chimborazo, S of Alausi. 2600 m. Loose, stony soil on steep, dry slopes. 23.7.93 (Altogether larger, about 50 cm., and rather coarser but with bigger, showier heads with red-violet rays - both could be very worthwhile in a dry, sunny site even if frost-tender. Endemic to S Ecuador.) (20+ seeds) C
- 13743 ORTHROSANTHUS CHIMBORACENSIS Ecuador, Carchi, NW of El Carmelo (SSE of Tulcan). 3300 m. Grass & espeletia-paramo, in wet, black, peaty soil. 8.7.93 (A characteristic plant of the N Andean paramo. Iridaceous & rather libertia-like with clumps of tough, iris-leaves and erect, 60 cm. stems packed with rich-blue flowers.) (50+) B
- 13666 OURISIA CHAMAEDRIFOLIA Ecuador, Pichincha, SW of Volcan Cayambe. 4200 m. Fissures on moist cliff. 3.7.93 (Prostrate, rooting stems with small, rounded, crenate leaves. Tubular flowers, held horizontally on 1-2 cm. pedicels, in a lovely old-velvet red with buff lines in the throats. An exquisite, little plant.) (30+ seeds) F
- 13988 PASSIFLORA CUMBALENSIS Ecuador, Imbabura, NW of Laguna Mojanda (S of Otavalo). 3700 m. Dense 'elfin-forest' on tree-line. 9.7.93 (Achieves the highest altitude in this genus. Climbing to c. 3 m. with small, dark-green, 3-lobed, leathery leaves and pendant, waxy flowers with long tubes (this is in subgenus Tacsonia) - steely slate-blue on the outside and soft lilac-pink within. Keys out as var. goudotiana but is var. cumbalensis.) (8 seeds) F
- 13730 PASSIFLORA MANICATA Ecuador, Carchi, NE of Mira (to El Angel). 2800 m. Along banks & in scrub. 7.7.93 (A most spectacular species with upward-facing flowers in eye-burning scarlet with reflexed segments. Dark, leathery, 3-lobed leaves. Often just trails down banks & slopes. Hates being under glass in summer - from this altitude (in a cold area) worth trying on a wall outside in UK - likes well-drained, sunny sites in nature.) (10+ seeds) C
- 13982 PASSIFLORA TRIPARTITA Ecuador, Pichincha, Cerro Pichincha above Quito. 2900 m. Scrub. (Splendid Tacsonia with big, hanging, long-tubed, soft-pink flowers. Climbs to 10 m. or more. Tolerant of light frosts.) (10+ seeds) B
- 13714 PITCAIRNIA SP. Ecuador, Imbabura, above Laguna Cuicocha (W of Cotacachi). 3200 m. Among rocks on steep sides of crater. 7.7.93 ('Summer'-dormant bromeliad. Long, narrow leaves die back to a spiny, bulbous base. Stems of long scarlet flowers, like salvias without the lip. About 30 cm. high - a high altitude for this genus.) (20+ seeds) D
- 13718 PUYA SP. Ecuador, Imbabura, above Laguna Cuicocha (W of Cotacachi). 3200 m. Among grass & low, montane scrub on steep sides of crater. 7.7.93 (Big, spine-edged, evergreen rosettes send up spires to 2-3 m. with buds wrapped in brown wool opening to tubular, waxy flowers in opalescent duck-egg blue-green. Amazing thing.) (30+ seeds) C
- 13800 SALVIA HIRTELLA Ecuador, Cotopaxi, Valle del Rio Mestizo, near Tigua. 3500 m. Clay banks. 14.7.93 (Woody-based mat-forming perennial. Erect, 30-50 cm. stems whorled with brilliant scarlet flowers from purple-bronze calyces. Many thanks to James Compton (University of Reading, UK) for identifying Salvia quickly.) (10+ seeds) C
- 13961 SALVIA SCUTELLARIOIDES Ecuador, Napo, Rio Papallacta valley. 2700 m. Among dense scrub. 27.7.93 (Creeping perennial to 50 cm. Downy azure-blue flowers - a bit sparse & leafy. Likes damp, shady places.) (10 seeds) C
- 13930 SALVIA SPRUCEI Ecuador, Canar, NW of Canar to Chunchi. 2400 m. Dense, montane scrub on steep, wet slopes. 23.7.93 (Woody-based perennial with erect stems of rose-pink to salmon-pink flowers rising to about 1.5 m. All these, except maybe S. hirtella, will need treatment like the Mexicans in UK - overwinter frost-free) (10+ seeds) C
- 13924 SALVIA SQUALENS Ecuador, Azuay, Rio Leon valley, NNW of Ona. 2200 m. Open areas in sandy clay. 22.7.93 (About 30 cm. high with brilliant orange flowers. From a rather dry area down towards Peru. Perennial.) (10+ seeds) C
- 13975 SENECIO FORMOSUS Ecuador, Imbabura, NW of Laguna Mojanda (S of Otavalo). 3750 m. Wet grass-paramo. 28.7.93 (This splendid species is in cultivation in the UK from Venezuelan seed - in most gardens it has been given winter-protection in a cold-frame. It resents root-disturbance and drying-out. Typical of N Andean wet-paramo, we saw it many years ago in Colombia but Ecuador is probably the type-locality. About 50 cm. high here with incised leaves and many nodding, intense violet-purple heads. We suggest a peat-bed might be best.) (20+ seeds) D
- 13713 STENOMESSON AURANTIACUM Ecuador, Imbabura, W of Cotacachi to Laguna Cuicocha. 3200 m. Clay banks among montane scrub. 7.7.93 (Beautiful member of the Amaryllidaceae, distributed from S Colombia to N Peru, with soft-orange bells hanging on long pedicels on 30 cm. stems - usually before the leaves. Rather like an orange Leucojum vernum - can probably be kept growing throughout the year but inducing a dormant-season in winter is sensible.) (10+) D

ENOUGH OF THIS NOVEL EXOTICA FOR THE PRESENT : MORE ECUADOREAN COLLECTIONS WILL BE INCLUDED IN OUR NEXT, 1994, LIST

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SECTION I : SEEDS COLLECTED IN NORTH AMERICA

The majority of seeds listed here were collected by ourselves during June, 1993, or during the May-July period, 1992. Also included, in alphabetical order, is seed from other collectors, such as Stan Farwig and Vic Girard, with a particularly significant contribution, as on previous occasions, from John Andrews. All seed collected prior to 1993 has been stored in low humidity under refrigerated conditions and experience over several years has convinced us that little, if any, deterioration in viability will have occurred. In some cases, such storage even appears to enhance the capacity for germination. We have now a considerable range of North American material stored in our 'seed-bank' but in this list we have concentrated on the 'bulbs'. We anticipate making a wider range of alpine and herbaceous species available in a year or so, when we may have some fresh, late-season collections to supplement. One or two earlier, 1987 and 1989 collections are now listed as 1993 seed from cultivated plants (marked *). California is abbreviated to "Cal."

REFERENCE NUMBERS are field-numbers, which run in the order of collection. Packets of our collections will carry only these numbers and a check-list of the numbers in numerical order will be sent with the seeds to facilitate identification.

NOMENCLATURE for Californian species has in general been put in line with the most recent account : 'The Jepson Manual - Higher Plants of California' published in 1993. The value of this wholly depends on the quality of the work of the author of each account - it is "good in parts" but in no way approaches the rather outdated, somewhat insular and often functionally imperfect 'A Californian Flora' of Munz & Keck (1959), which will continue to be our primary reference. The superlative standard set by the continuing 'Intermountain Flora' and 'A Utah Flora' (Welsh, 1987) means that they are almost invariably used for taxa occurring within their areas. We edit with the interests of gardeners in mind.

- 13139 ABRONIA VILLOSA var. AURITA Cal., Riverside Co., Garner Valley, 1380 m. Open, level areas in sandy clay. 25.6.92 (A stunning annual Sand Verbena. Procumbent stems with sticky, hairy leaves and heads of large, fragrant flowers in intense, purplish rose-pink, followed by big, winged fruits.) (10+ fruits) A
- 13050 ALLIUM DICHLAMYDEUM Cal., Sonoma Co., S of Jenner, above Shell Beach. 20 m. Ledges on coastal cliffs. 18.6.92 (Fine heads of bright pink on 20-30 cm. stems. One of the best of the larger species.) (20+ seeds) A
- 13422 ALLIUM FALCIFOLIUM Oregon, Josephine Co., NNE of O'Brien, near Rough & Ready Creek. 450 m. Open, stony area among Artemisia. 13.6.93 (An extremely robust, showy form of this 'tumbleweed' species - we initially thought it was the more eastern A. platycaule. Bright red-purple heads between two thick, falcate leaves.) (15+ seeds) B
- * 11410 AQUILEGIA BARNEBYI Colorado, Rio Blanco Co., above Piceance Creek. 1980 m. Steep-sided gully in loose, fragmented shale. 1993 seed grown in isolation here from our 1989 coll. (Local endemic of the oil-shale barrens of the Uinta Basin - a habitat now largely owned by multinational oil companies. Discovered by Ripley & Barneby in 1948, it is distinct in its glaucous basal leaves, downy, sticky 50 cm. stems and pink-orange and cream flowers with greatly projecting, yellow anthers.) (20+ seeds) C
- * 11451 AQUILEGIA LARAMIENSIS Wyoming, Albany Co., Laramie Mts., above Friend Creek. 2280 m. Granite fissures. 1993 seed grown in isolation from our 1989 coll. (Laramie Mts. endemic - pure white flowers with short, incurved spurs from creamy buds. Our photograph of this at 3110 m. is in 'A Century of Alpines'. 10 cm.) (20+ seeds) C
- 13592 AQUILEGIA MICRANTHA Utah, San Juan Co., Sunbonnet Rock above Bluff. 1550 m. Seepage lines below overhangs on shady, sandstone cliffs. 23.6.93 (Type-locality coll. of this 30 cm. high, downy, sticky endemic of the 'hanging gardens' of the Colorado Plateau canyons. Many small, opalescent-white columbines.) (20+ seeds) C
- 13579 AQUILEGIA SCOPULORUM Utah, Garfield Co., Red Canyon above Butch Cassidy Draw. 2500 m. Loose limestone talus on steep slopes. 22.6.93 (A few early seeds. In this locality, about 30 cm high with the characteristically long-spurred flowers wholly rich-blue. Beautiful, bluish leaves similar to A. jonesii.) (15+ seeds) C
- 13329 ARCTOMECON CALIFORNICA Nevada, Clark Co., SE of Valley of Fire. 500 m. Exposed ridgetops on eroded clay and gravel hills. 5.6.93 (Endemic to S Nevada - it has never been recorded in California - this has not, as far as we know, been attempted in cultivation. Writing of the plants of this area in 1942, Dwight Ripley describes its "bluish leaves, clothed in long pale hairs" and 25cm. "smooth stems, almost leafless, each branching into a corymb of fabulous gold poppies, sometimes fifteen or twenty, the buds pendent on the glaucous pedicels." He also describes it as growing on the "gumbo flats" of gypsum-clay, which extend "for many miles in every direction round Las Vegas". In the intervening fifty years, the vast suburban sprawl of the city has doubtless engulfed most of this habitat but we found it abundant here and there on gravelly ridges all along the NW edge of the flooded Lake Mead Recreation Area. For us it would be the horticultural triumph of the decade if this trio of narrowly endemic Bear Poppies could be established & maintained in cultivation - in cold, wet climates they would be for strictly all-year-round alpine-house cultivation, where they would welcome all the heat, sun and ventilation available. All are exquisite and worth every effort.) (20+ seeds) D
- 13322 ARCTOMECON HUMILIS Utah, Washington Co., Bloomington Hills, S of St. George. 920 m. On tops & sides of ridges on eroded clay hills. 5.6.93 (A few capsules from a different site (a play-area for "off-the-road recreational" vehicles) to John Andrews' 1991 coll. (currently used for garbage-dumping, which would seem to be the first attempt at introducing this to cultivation since Dwight Ripley's in 1942. Ripley described this as "one of the most startlingly beautiful plants in all Utah" - rosettes of narrow, lobed, blue leaves clothed in long, soft, white hairs can produce up to 70 white poppies, in which the petals become papery and persistent, on branching stems, which can reach 20 cm. but are usually about 10 cm. The dwarfest of the three it would make a superlative alpine-house plant, which might secure its future until xero-gardening, rather than irrigated, emerald lawns, becomes the vogue with the residents of the expanding Bloomington Hills housing development. Germination is unpredictable, though it has occurred quickly with some, and we have asked Norm Deno to run experiments with some of this seed - cultivation must be investigated.) (15+ seeds) E
- ARENARIA HOOKERI J. Andrews, 1992 coll. : Utah, Emery Co., Molen Reef, E of Moore. 1935 m. (A classic, firm dense, cushion-plant which can cover itself with stemless, fine, white flowers. Very seldom seen in gardens but widespread, though very local, from Nevada to Nebraska - here in its var. desertorum.) (15+ seeds) C
- 13193 ARGEMONE MUNITA subsp. ARGENTEA Cal., Inyo Co., White Mts. NE of Big Pine. 2000 m. Stony, gravelly banks. 29.6.92 (A splendid Prickly Poppy with glaucous, lobed leaves and branching, whitish, 60 cm. stems. Masses of diaphanous, white, Romneya-like flowers. Best sown direct in a hot, dry site.) (20+ seeds) A

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- * 11245 ASARUM HARTWEGII Cal., Plumas Co., between Caribou & Seneca. 1220 m. Rocky slopes in mixed woodland. 1993 seed ex M. Tucker from our 1989 coll. (Weird, shade-loving member of the Aristolochiaceae. Cordate, white-veined leaves overtop the bizarre brown-purple & white, 3-parted calyx with attenuate lobes.) (5 seeds) C
- 13318 ASTRAGALUS AMPHIOXYIS var. VESPERTINUS Utah, Kane Co., E of Kanab. 1500 m. Openings among Pinus in sandy clay. 4.6.93 (Bright purple-pink flowers on short, prostrate stems from silvery tufts, followed by large, reddish, silky pods. Like most of the others here in Sect. Argophylli, the showiest group.) (10+ seeds) C
- 13560 ASTRAGALUS CALYCOSUS Nevada, White Pine Co., W side of Pancake Summit. 1980 m. Open gravelly areas among sparse Juniperus. 21.6.93 (Sect. Scaposi. Pads of tiny, grey-white leaves. A widespread, variable species, not seen in flower here but can be anything from white to blue-purple. One of the dwarfest.) (10+ seeds) C
- 13538 ASTRAGALUS COCCINEUS Cal., Inyo Co., White Mts., Toll House Springs. 1980 m. Steep, loose slope in stony clay. 20.6.93 (Sect. Argophylli, Subsect. Coccinei. A few only of this extraordinary plant. Elongated, glowing scarlet flowers on hummocks of white, woolly foliage, followed by amazing, white-velvet, horned pods. It has now appeared on the show-bench in the UK and a small plant, sown directly into tufa at Goteborg Botanical Garden is illustrated in 'A Century of Alpines'. Like most, usually easy to germinate.) (10 seeds) E
- ASTRAGALUS LOANUS J. Andrews coll., 1991: Utah, Sevier Co., E of Glenwood. 1960 m. Loose, igneous gravel. (Like the next two in Sect. Argophylli, Subsect. Newberryani. An extremely compact, narrow endemic forming pads of silky, silver leaves with white, lavender-tipped flowers and striking, woolly pods.) (10+ seeds) E
- ASTRAGALUS MUSINIENSIS J. Andrews coll., 1992: Utah, Emery Co., E of Moore. 1935 m. Stony clay. (Distinct central Utah endemic. Tufts of grey foliage, usually with 3, lanceolate leaflets, and racemes of pink and purple flowers on 3 cm. stems. Beautiful, large, inflated, pink-velvet, papery pods.) (10+ seeds) E
- ASTRAGALUS UNCIALIS J. Andrews coll., 1991: Utah, Millard Co., N of Sevier Lake (dry). (Described by Rupert Barneby as "one of the most ornamental dwarf astragali" with "silvery 3-5 foliolate leaves" and "narrow" "narrow, long and showy purple flowers...disproportionately large for the plant's diminutive stature.") (10+ seeds) E
- 13091 BLOOMERIA CROCEA var. AUREA Cal., San Luis Obispo Co., NE of San Luis Obispo. 170 m. In heavy clay among grasses on open slope. 22.6.92 (Wide umbels of starry, pale yellow flowers, the segments with dark median lines, on wiry 20-30 cm. stems. Not difficult but seldom-seen corms near Brodiaea & Allium.) (20+ seeds) B
- 13112 BLOOMERIA CROCEA var. MONTANA Cal., Ventura Co., Wagon Road Canyon. 1450 m. Openings among scrub. 23.6.92 (Infraspecific taxa, distinguished mainly on filament characters, are not recognized in "Jepson" but they remain important for gardeners, as habitats are distinct - this is a montane-chaparral plant.) (20+ seeds) B
- BRODIAEA. We follow "Jepson" in splitting this genus - see *Dichelostemma* and *Triteleia* in this list.

CALOCHORTUS

We are continuing to build on the extensive collections we have made of this genus in 1989 and 1992, though it becomes increasingly difficult to list a large number of species new to our list each year. Our own 1993 collections are mainly planned to update earlier ones with the important addition of *C. aureus* from N Arizona but we have several Californians not previously offered, as well as further material of some of the southern species, from which we could collect only a few early capsules in 1992. Well over half of the entire genus is listed here, an achievement which would be impossible without the assistance of many friends who share our enthusiasm for these plants. Over the past four years, we have been able to build on the composite knowledge shared by John Andrews, Wayne Roderick, Stan Farwig and Vic Girard, David King, Frank Callahan and Boyd Kline, to all of whom we (and, we hope, you also) are extremely grateful. It is not physically possible to collect seed from every Calochortus species in a single season but seed fortunately appears to store extremely well, so with the assistance of our 'seed-bank' we hope to maintain a wide and expanding range and to ensure that this amazing and diverse genus becomes established with bulb-enthusiasts in suitable climates throughout the world. Since our 1989 list, seed-grown bulbs from our own and John Andrews' collections have been offered commercially. One or two, such as *C. luteus*, are now being propagated in large numbers in Holland. We hope to see the genus eventually settled in cultivation with a few species generally grown and the remainder maintained and propagated by a core of enthusiastic specialists. In spite of a considerable interest in seed of this genus, demand for the introductory "Calochortus collection" we offered in our December, 1992, Supplementary List indicated that some of you may well have been deterred by its reputation for difficulty and needed a little encouragement to experiment with it. We are, therefore, continuing to offer a special 'starter' collection of some of the better-known species.

CALOCHORTUS COLLECTION One packet each of *C. albus* (13363), *C. amabilis* (12805), *C. kennedyi* (13544 - the only difficult one but indispensable), *C. luteus* (13026), *C. splendens* (13103), *C. tolmiei* (13455), *C. vestae* (13288), *C. venustus* from a wide range of cultivated forms plus *C. venustus* "Cuddy Valley Reds", cultivated seed derived from this extraordinary, velvety red population. 9 packets, list value £17, for only \$15.00 or £10.00

It is not possible to generalise on cultivation. The range of habitats is enormous - from sea-level to alpine elevations. The field-notes should give a good basic start regarding treatment. The early-flowering members of Subsect. Pulchelli usually fit in easily with Eurasian bulbs with a Mediterranean growth-pattern. The later-flowering Mariposas and more eastern steppe species flower at the end of their growing season and have a similar cycle to some *Oncocyclus* and *Regelia* Irises - they may be best not watered until later in winter. There are desert plants, like *C. flexuosus* and *C. striatus*, species from wet, high habitats, like *C. nudus*, and alpine-meadow plants, like *C. greenei* - use your imagination!

In many species, each population is a little (sometimes a lot) different; they may also vary in 'growability'. This is the reason we have placed the locality in brackets after most collections here and have considered it worthwhile to list the same species from different localities. Most localities would be immediately intelligible to American specialists who know these in the wild and we hope they will become increasingly important to growers elsewhere.

- 13344 CALOCHORTUS ALBUS (Adelaida Road) Cal., San Luis Obispo Co., W of Paso Robles. 550 m. Steep, stony banks in deciduous woodland. 7.6.93 (A population of the Fairy Lantern with an extraordinary colour-range. It butts on to the York Mt. population and varies from ruby through pearly, opalescent pinks to white.) (20+ seeds) B
- 13363 C. ALBUS (Italian Bar) Cal., Tuolumne Co., above S Fork Stanislaus River, NE of Columbia. 750 m. Steep, scrub-covered slopes. 8.6.93 (Pendant, globular, white flowers on 20 cm. stems. Easy from seed.) (20+ seeds) A
- 13340 C. ALBUS var. RUBELLUS (York Mt.) Cal., San Luis Obispo Co., W of Templeton. 400 m. Steep, stony, shaded banks. 7.6.93 (Famous & outstanding population with translucent ruby-pink lanterns.) (20+ seeds) C

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CALOCHORTUS

- 12805 *C. AMABILIS* (Mix Canyon) Cal., Solano Co., Mix Canyon NW of Vacaville. 550 m. Steep, scrub-covered slopes. 7.6.92 (Nodding, flowers in clear, deep yellow, with widespread outer and incurved inner segments, on branched 30 cm. stems. A species of the N Coast Ranges, easy to grow under glass in the UK.) (20+ seeds) A
- 13368 *C. AMABILIS* (Butts Canyon) Cal., Lake Co., SE of Middletown. 350 m. Among *Arctostaphylos* on stony, serpentine slopes. 10.6.93 (This and the next are dwarfers - possibly due to the impoverished habitat.) (20+ seeds) B
- 13382 *C. AMABILIS* (Walker Ridge) Cal., Lake Co., Walker Ridge. 600 m. Serpentine outcrops. 10.6.93 (20+ seeds) B
- 13353 *C. AMOENUS* (Camp Wishon) Cal., Tulare Co., above Tule River NE of Springville. 1100 m. Steep granite slopes, among scrub. 7.6.93 (Like the preceding two species, in Subsect. *Pulchelli* but with nodding flowers in deep purplish rose. Native to the western foothills of the Sierra Nevada. Maybe not quite so easy.) (20+ seeds) B
- 12789 *C. AMOENUS* (Mineral King Road) Cal., Tulare Co., NE of Three Rivers. 750 m. Rocky outcrops. 27.5.92 (20+) B
- 13599 *C. AUREUS* Arizona, Coconino Co., WSW of Kayenta. 1980 m. Open areas among *Artemisia* with occasional *Junipers* 23.6.93 (This is our main contribution to extending the range of *Calochortus* seed available for 1993 - the logistics of arranging 'one-off' collections of the more outlying species are not simple. This is a splendid thing, the only one we have come across which increases so well vegetatively as to form clumps of a single clone. Its generous bulblet production, we are told, is a manifestation of its tetraploid character. Apart from this it is very close to *C. nuttallii* - Ownbey placed it under this as a variety - but with a more southern distribution, across N Arizona into NW New Mexico, just entering S Utah. The large tulip-like flowers, characteristic of Sect. *Mariposa*, are a beautiful rich, soft yellow, varying a little in depth of colour but always with a contrasting maroon-purple crescent above each gland and sometimes with maroon basal blotches as well. A Colorado Plateau endemic which should be attempted in similar conditions to many Central Turkish and Central Asian species - cold and dryish in winter with a warm, dry rest in summer. About 10-30 cm)(20+ seeds) D
- 11727 *C. BRUNEAUNIS* (Conway Summit) Cal., Mono Co., N side of Conway Summit, S of Bridgeport. 2230 m. Among *Artemisia* on open 'flats' overlaid with volcanic debris. 28.8.89 (Another steppe species allied to *C. nuttallii*. Distributed in an arc round the NW rim of the Great Basin. White flowers with purple spots above the glands and green-striped petals, which are the diagnostic characters. Cold & dry again.) (20+ seeds) C
- C. CLAVATUS* (subsp. *clavatus*) J. Andrews coll., 1993 : Cal., San Luis Obispo Co., Cuesta Ridge N of San Luis Obispo. 665 m. (The most sumptuous of the *Mariposas* - a big plant with large, bowl-shaped, lemon-yellow flowers, up to 6 on the zig-zag stems, looking up to show the brown-purple anthers and red-brown lines around the dense basal hairs. The type-race occurs locally on the Coast Range serpentines. 50 cm. plus.) (20+ seeds) C
- C. CLAVATUS* var. *AVIUS* S. Farwig & V. Girard coll., 1993 : Cal., El Dorado Co., ENE of Pollock Pines (Sierra Nevada, American River drainage, ENE of Placerville). 1280 m. (An extraordinary and distinct disjunct race, a very long way from the coast on the other side of the Central Valley, thought to be in a very tenuous state of survival (Forest Service botanists reckoned there were about 120 plants left here) until this year when an estimated 20,000 appeared and deer were grazing them off while still in bud - possibly the combined result of a 'burn' through the site with the exceptionally wet 1992-93 winter. Anyway, this may be the chance of a life-time. This is amazingly robust, up to 1 m. high, with umbel-like inflorescences of many huge, pure butter-yellow bowls, in which the sepals usually exceed the petals & with deeply pitted nectaries.) (20+ seeds) D
- C. CLAVATUS* ssp. *RECURVIFOLIUS* J. Andrews coll., 1993 : Cal., San Luis Obispo Co., N of Arroyo de los Chinos 60 m. (Another extremely local race restricted to a small coastal area - slender & dwarf, between 8 and 20 cm but with the deep yellow flowers and purple anthers not reduced in size. Like the coastal *Fritillarias*, this may not tolerate much frost but neither will it want a hot summer rest - it's very cool here!) (15+ seeds) E
- C. COERULEUS* - We remain at a loss in placing seed collections of the little Cat's Ears under this or *C. tolmiei* - opinions of others who have seen some of the colonies in flower indicate that most of our colls. belong to the latter, so, see under *C. tolmiei* and *C. sp.* 13205 for members of this confusing group.
- C. CONCOLOR* J. Andrews coll., 1993 : Cal., Riverside Co., San Jacinto Mts., Morris Ranch Road. 1570 m. Among chaparral in granite grit. (The huge Goldenbowl *Mariposa* from the far South which certainly rivals *C. clavatus*. Stunning big rich-yellow tulips marked inside with dark red, up to 7 on the stems reaching 60 cm., superficially resemble altogether larger versions of *C. aureus*. These southerners are little tried.) (15+ seeds) C
- 13240 *C. COXII* (Boomer Hill) Oregon, Douglas Co., W of Myrtle Creek. 450 m. Among grasses & sparse conifers on steep serpentine slopes. 6.7.92 (A narrow, serpentine endemic, described in 1988. About 15 cm. high with up to 7 bowl-shaped flowers, appearing pink & gold - actually white with red striae densely covered & fringed with yellow to white hairs, with a broad lavender chevron above the green gland. This dwarf species should find immediate favour with the alpine-specialist and should be well-suited to alpine-house or bulb-frame in the UK. Our sincere thanks to Cliff & Bernie Bryden for their hospitality and allowing us access to collect seed for distribution - we hope it will ensure this unique plant establishes in cultivation.) (15+ seeds) E
- C. DUNNII* (Inspiration Point) J. Andrews coll., 1993 : Cal., San Diego Co., SE of Julian. 1350 m. Open slopes with sparse chaparral, in red clay overlaid with volcanic debris. (A narrow edaphic endemic, restricted to gabbro-derived clays from San Diego Co. into the Guadalupe Mts. in adjacent Mexico. A little *Mariposa*, about 30 cm. high. Erect, white flowers marked red-brown. Should be established by the specialist.) (15+ seeds) E
- 11548 *C. EURYCARPUS* (Sawtooth Valley) Idaho, Custer Co., Sawtooth Valley S of Obsidian. 1980 m. Stony clay among *Artemisia*. 6.8.89 (Wiry, 30-50 cm. stems carry elegant, bowl-shaped flowers in white or lilac-pink, blotched with maroon and broadly striped with green. A steppe-species covered with snow all winter.) (20+ seeds) B
- 13535 *C. EXCAVATUS* (Gerkin) Cal., Inyo Co., Gerkin (Owens Valley, S of Bishop). 1350 m. Among *Rosa* & *Salix* scrub in clay (dry in summer). 20.6.93 (Another very local plant from a few vernal damp seeps in Owens Valley. Near to *C. invenustus* in Subsect. *Nuttalliani* with up to 6 widely bell-shaped flowers in pale lavender to white, dark purple at the base, with red-brown anthers. From winter-wet sites in a cold area.) (20+ seeds) E
- 13174 *C. FLEXUOSUS* (Daylight Pass) Cal., Inyo Co., Amargosa Range, Daylight Pass between Grapevine Mts. & Funeral Mts. 1315 m. Along dry gullies. 28.6.92 (The strangest *Mariposa*, local but widespread through the deserts S & E from here all the way to SW Colorado. Sinuous stems, 30-40 cm. long if straightened, twine through scrub or twist & spiral on the ground. Up to 6, erect, white, lilac-tinged flowers, purple-spotted & yellow-banded inside. Flowered well here, following heavy rain early in 1992 - no trace of it in 1993.) (20+ seeds) D

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- C. SIMULANS (Reservoir Canyon) J. Andrews coll., 1993 : Cal., San Luis Obispo Co., NE of San Luis Obispo. 180 m. In heavy clay among grasses on open slope. (There is some uncertainty as to whether this colony may be better placed under *C. argillosus*, an equally obscure local plant - our 1992 photographs do not match either description! A beautiful, white Mariposa, more or less flushed lilac with complex and variable dark basal markings. Has grown easily & flowered well in the UK & Holland from 1989 colls.) (20+ seeds) C
- 13103 C. SPLENDENS (Sulphur Spring Canyon) Cal., Ventura Co., off Lockwood Valley Road. 1280 m. Openings among *Artemisia* in sandy clay. 23.6.92 (One of the most widespread Mariposas, well established in Europe from 1989 colls. of this form from adjacent Lockwood Valley. Soft lavender with long, wispy basal hairs.) (20+ seeds) A
- 13021 C. SPLENDENS (Walker Ridge) Cal., Lake Co., Walker Ridge. 600 m. Among grasses & scrub on steep, E-facing slope. 17.6.92 (Splendid form from the N limit. Deep purple basal markings, 60 cm. or more high.) (20+ seeds) B
- C. SPLENDENS (Descanso) Cal., San Diego Co., Cuyamaca Mts. W of Descanso. 1090 m. J. Andrews coll., 1993 (A more pinkish lilac form from the far S (the species just extends into northern Mexico).) (20+ seeds) B
- 12757 C. STRIATUS (Lancaster) Cal., Los Angeles Co., N of Lancaster. 760 m. Open, level sites among alkaline-desert scrub. 25.5.92 (A most distinct endemic of alkaline seeps in the Californian Mojave Desert, just extending into W Nevada. A Mariposa with many pale lavender flowers, veined with maroon-purple - exactly like the petals on *Geranium cinereum* 'Ballerina'. It may need individual treatment by the adventurous.) (20+ seeds) C
- C. STRIATUS (Cushenbury Springs) J. Andrews coll., 1993 : Cal., San Bernardino Co., Cushenbury Springs (E of Hesperia). 1260 m. (From the N base of the San Bernardino Mts. at the edge of the Mojave.) (20+ seeds) C
- 13357 C. SUPERBUS (Hell Hollow) Cal., Mariposa Co., MNW of Hell Hollow above Merced River. 500-700 m. Steep, open rocky slopes. 8.6.93 (From just N of the type-locality for this magnificent, classic Mariposa - one of the superficially similar trio, including *C. venustus* & *C. vestae*, most easily separated on the shapes of the nectaries (in this linear, like an inverted V) but with staggering variation in ground-colours and markings within each species. Here usually white with purple markings & blotch on a yellow zone.) (20+ seeds) B
- 13198 C. SUPERBUS (Shoo Fly Road) Cal., Eldorado Co., N of Placerville. 720 m. Openings among *Pinus*. 30.6.92 (These are far from "average" in amazingly subtle ground-colour shades like faded violet and rose-coloured silks & a seemingly infinite variety of colour-zones and purple-brown markings inside the wide flowers.) (15+ seeds) D
- 13455 C. TOLMIEI (Eight Dollar Mt.) Oregon, Josephine Co., Eight Dollar Mt. SW of Selma. 450 m. Open S-facing slope overlaid with volcanic debris. 13.6.93 (We are never early enough to see these Pussy Ears in flower - all are different in height & habit - "the most variable species in the section..." writes Ownbey. All will have rose or purple-tinted white flowers, bearded on the inside of the petals. This is impressively robust - "a giant form" according to Vic Girard. Boyd Kline tells us hybrids with *C. uniflorus* occur here.) (20+ seeds) B
- 13497 C. TOLMIEI (Callahan Creek) Oregon, Douglas Co., S of Tiller. 460 m. Openings among *Pinus*. 15.6.93 (20+ seeds) B
- 13523 C. TOLMIEI (Pulga) Cal., Butte Co., SW of Pulga. 420 m. Serpentine slopes. 17.6.93. (1993 as *C. coeruleus*). B
- 12988 C. TOLMIEI (Shingletown) Cal., Shasta Co., S of Shingletown. 1000 m. Openings in mixed woodland, often in deep shade. 15.6.92 (Reputedly another large-flowered form - should be tried outside in UK.) (15+ seeds) B
- 12974 C. UMPQUAENSIS (Callahan Creek) Oregon, Douglas Co., S of Tiller. 460 m. Steep, open, stony serpentine slopes 12.6.92 (Another very local serpentine endemic, described in 1989, closely allied to *C. howellii* and rather similar in its very hairy, cream-white, purple-black centred flowers but most obviously distinct in its large drooping seed-capsule. Early indications are that this may be a much easier plant to grow & maintain in the U.K. than many southerners - it grows with *Camassia*, *Erythronium*, *Dodecatheon* & *Silene hookeri*.) (15+ seeds) E
- C. UNIFLORUS (Coyote Valley) S. Farwig & V. Girard coll., 1992 : Cal., Lake Co., NE of Middletown. 290 m. (A dwarf, lilac-flowered member of Subsect. *Nudi*, one of the easiest to grow in Europe. From heavy clays in sites which are extremely wet in winter & spring, it flowers early and goes dormant as they dry.) (20+ seeds) B
- 13058 C. VENUSTUS (Italian Bar) Cal., Tuolumne Co., NE of Columbia. 650 m. Steep, open, stony slopes. 19.6.92 (See our comments under *C. superbus* - this species, distinguished by its rather square nectary, is the ultimate in variability of ground-colour & markings - here mainly white patterned dark red.) (20+ seeds) A
- 13348 C. VENUSTUS (Adelaida Road) Cal., San Luis Obispo Co., W of Paso Robles. 550 m. Among long grass on open banks. 7.6.93 (An outstanding and exceptionally variable population, mainly with pink and rose ground-colour, and a vast variation in the basal marking of yellow and purple-red among the golden hairs.) (15+ seeds) C
- 11703 C. VENUSTUS (Mt. Pinos) Cal., Kern Co., above Cuddy Valley to Mt. Pinos. 2120 m. Openings among *Pinus*. 27.8.89 (White or soft lilac with a ghostly thumbprint of pale blood-red at the tip of each petal.) (15+ seeds) C
- C. VENUSTUS (Cuddy Valley) J. Andrews coll., 1991 : Cal., Kern Co., Cuddy Valley. 1840 m. Openings among *Pinus*. (As far as we know, this famous and very limited colony is unique - a series of subtle red shades, like scarlet velvet faded to varying degrees. Of course, the complex basal markings are lost but the golden basal hairs stand out strikingly. Of enormous horticultural importance, it should be widely grown) (15+ seeds) D
- C. VENUSTUS : For cultivated strains see Section III
- 13288 C. VESTAE (Coyote Valley) Cal., Lake Co., NE of Middletown. 290 m. Among grasses in heavy clay. 12.7.92 (Huge, spectacular flowers in solid white with purple-pencilled bases & big, brown-purple blotches in yellow zones. Double-crescent glands and a different chromosome number to *C. venustus* & *C. superbus*.) (20+ seeds) A
- C. WEEDII (Banner Grade) J. Andrews coll., 1993 : San Diego Co., ENE of Julian to Banner. 1260 m. (The two big, southern *Cyclobothras* in Subsect. *Weediani*, this and *C. plummerae*, are truly stunning plants and very different to all the others here. From about 30 cm. to almost 1 m. high with up to 6 erect, bowl-shaped, rich yellow flowers, variably brown-tinted at the rim and filled with a mass of long, golden hairs. Thanks to John for travelling so far down for these southerners, from which we had but a few early seeds in 1992) (15+ seeds) C
- 13070 C. WESTONII Cal., Kern Co., above Rancheria Road, S of Alta Sierra. 2050 m. Coniferous woodland. 21.6.92 (A tiny, disjunct, subalpine Cat's Ear stranded on top of the Greenhorn Mts. at the S end of the Sierra Nevada - this should be established & maintained by the alpine-specialist. A very few only.) (10+ seeds) F
- 13205 CALOCHORTUS SP. Cal., Trinity Co., Lassics Lookout Road above Zenia. 1630 m. Openings in coniferous woodland. 3.7.92 (1989 list as "*C. coeruleus* var. *fimbriatus*" but seed is like the above or *C. nudus*! Photograph in 'A Century of Alpines' Plate 57 - covered in white hairs, stained wine-purple at the base. Tiny.) (15+ seeds) D

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- 13498 CAMASSIA QUAMASH (Oregon, Douglas Co., S of Tillier. 460 m. Steep, stony, serpentine slope. 12.6.92 ("Jepson" throws everything under C. quamash - not a lot of help to gardeners confronted with plants from 20 cm. to well over 1 m. high in anything from white to deep-blue. Usually growable & trouble-free in UK gardens, recalling Eremurus in their spires of starry flowers but in pale to violet-blue. Not seen in flower here but only 30-50 cm. high in seed. Likely to be satisfactory in a well-drained, sunny border.) (20+ seeds) A
- CLEMATIS LASIANTHA S. Farwig & V. Girard coll., 1993 : Cal., above N Fork Feather River. 850 m. (A climber endemic to California and possibly the most horticulturally desirable of the three native species - not spectacular but with lots of axillary, creamy flowers about 5 cm. across. Downy leaves & stems.) (20+ seeds) A
- COREOPSIS GIGANTEA S. Farwig & V. Girard coll., 1993 : Cal., Santa Barbara Co., Point Sal W of Santa Maria. 20 m. Heavy clay. (An extraordinary shrub up to 2 m. high, though usually less than half as much, endemic to SC Californian coast. Forms a big, succulent trunk to which it dies back in summer and from which the 3-4-pinnate leaves and cymes of many, yellow, somewhat bell-shaped daisy-heads appear. Almost certainly not tolerant of frost but well worth experimenting with outside in summer in colder climates.) (15+ seeds) B
- CORYDALIS CASEANA (subsp. caseana) J. Andrews coll., 1993 : Cal., Tulare Co., Jordan Peak (Sierra Nevada ENE of Porterville). 2560 m. (Another amazing, giant relic species but this time from wet areas in the high coniferous forest. We collected the eastern race, C.c. subsp. brandegei on Grand Mesa in E Colorado in 1989 - it was not one of our more successful collections. We did not store the seed correctly and no germination was reported. We hope to do better this time but it will be a 'one off' listing for winter 1993-94 only. All the widely separated sites for this species (N to Oregon & Idaho, E to Colorado) are extremely limited but we feel it should be easily grown & maintained by gardeners in cold, wet areas, if only we can establish it initially. In this race, it reaches about 1 m. with fleshy stems clothed with glaucous, compound leaves and narrow panicles, densely packed with white to pink, purple-tipped, spurred flowers.) (15+ seeds) D
- 13258 DARLINGTONIA CALIFORNICA Oregon, Josephine Co., SW of O'Brien. 480 m. Wet areas with constant seepage on slopes. 8.7.92 (Another unique & isolated relic - a monotypic genus of insectivorous plants from N California & Oregon. Great winged translucent pitchers, about 50 cm. high, overtopped by bizarre yellow-green & dull purple flowers. In spite of our admonitions that it does not like warm summer conditions, we are told it does not object to being stood in a saucer of water under glass! A montane plant, fully temperature-hardy.) (50+) B
- 12717 DARMEIRA PELTATA Cal., Plumas Co., Butterfly Creek, N of Quincy. 950 m. Among boulders along & in stream. 21.5.92 (Just as narrow an endemic with the same distribution as the preceding but an easy garden-plant, well known in Europe - *Peltiphyllum peltatum*. Huge, rounded leaves & pink saxifrage-heads in spring. 1 m.) (50+) A
- DELPHINIUM. Although there are over 40 taxa in this genus in California, we very seldom manage to collect much seed. Most are extremely local plants seldom occurring in large numbers. Most flower early and mature their seed quickly. All the following are available only in small quantities. All are summer-dormant perennials, retiring to tubers or thickened, fibrous rootstocks; they should be growable in the bulb-frame or a sunny scree in wetter climates. Taxonomically, the genus is difficult with many hybrids - so far, in our very limited experience, Michael Warnock's account in the new "Jepson" is very workable and very impressive.
- 13359 DELPHINIUM HANSENII (subsp. hansenii) Cal., Mariposa Co., NNW of Hell Hollow to Coulterville. 700 m. Steep, open rocky slope. 8.6.93 (Downy leaves and stems, around 50 cm. high; dark blue-purple flowers.) (20+ seeds) C
- 13513 DELPHINIUM NUDICAULE Cal., Plumas Co., S of Greenville. 1370 m. Steep, gravelly slope among conifers. 17.6.93 (A high altitude, inland form, about 30 cm. high, of this orange-scarlet species.) (20+ seeds) C
- 13461 DELPHINIUM NUTTALLIANUM Oregon, Josephine Co., SW of Selma above Josephine Creek. 550 m. Steep, rocky slope with sparse conifers. 13.6.93 (Deep blue form of this tuberous-rooted species. About 30 cm.) (20+ seeds) B
- 13512 DELPHINIUM NUTTALLIANUM Cal., Plumas Co., S of Greenville. 1370 m. Steep slopes among conifers. 17.6.93 (Another representative of this highly variable complex - it includes *D. nelsonii*, *D. menziesii*, etc.) (20+) B
- 13545 DELPHINIUM PARISHII Cal., Inyo Co., SW of Gilbert Summit. 1620 m. Open stony slope with sparse *Artemisia*. 20.6.93 (Erect 50 cm. high racemes of downy, white-eyed flowers in a beautiful pale azure-blue.) (20+ seeds) C
- * DELPHINIUM VARIEGATUM Cal., Alameda Co., SE of Livermore. c. 500 m. (Cultivated seed from an extremely fine deep royal-blue form selected in the wild by Vic Girard. Branched inflorescence to about 50 cm.) (20+ seeds) C
- 13458 DICENTRA OREGANA Oregon, Josephine Co., SW of Selma above Mike's Gulch. 820 m. Loose serpentine talus on N-facing slope. 13.6.93 (Now 'disappeared' under *D. formosa* in "Jepson", this is a most distinct plant both horticulturally and ecologically - only known in a few places on the serpentines along the California line. Dwarf (15-20 cm.) with beautifully cut glaucous leaves & shallowly cordate cream, rose-tipped flowers.) (20+) C
- 13505 DICHELOSTEMMA CAPITATUM Cal., Tehama Co., NE of Red Bluff. 380 m. Open area among long grasses & volcanic debris. 17.6.93 (Widespread & variable 'brodiaea' with dense heads of blue-purple flowers. 30 cm.) (20+ seeds) A
- 13356 DICHELOSTEMMA VOLUBILE Cal., Tulare Co., NE of Springville. 1100 m. Among scrub on steep, granite slope. 7.6.93 (Contorted stems to 2m. long twine among scrub. Umbels of rose flowers with white stamens.) (20+ seeds) B
- 13066 DENDROMECON RIGIDA Cal., Tulare Co., NE of Springville. 1150 m. Among scrub on steep slopes. 29.6.92 (Woody stemmed poppy about 2 m. high with brilliant yellow, four-petalled flowers held above the narrow, leathery, bluish foliage. A sought-after garden-plant in the UK, seldom available commercially because of the problem of vegetative propagation. Give it the best-drained, sunniest site available in wet climates.) (20+ seeds) B
- DODECATHÉON. All the following are summer-dormant and require a resting-period. This beautiful genus of the Primulaceae is too little grown by 'bulb' enthusiasts, perhaps influenced by thoughts of the big, eastern *D. meadia* or the wet-growers like *D. alpinum* & *D. jeffreyi*. Not all of these have been seen in flower and identifications are somewhat tentative in a few cases - naming of the genus is often difficult as variation between colonies can be considerable and 'species' and races can intergrade or hybridise. All are delightful.
- 13346 DODECATHÉON CLEVELANDII Cal., San Luis Obispo Co., W of Paso Robles. 550 m. Open slopes among grass. 7.6.93 (The characteristic magenta to pink species of S & central California W of the Sierra Nevada.) (30+ seeds) B
- * DODECATHÉON CLEVELANDII subsp. INSULARE 1992 seed from Wayne Roderick of his coll. : Cal., Santa Cruz Island (A big, striking plant, to 40 cm., with maroon-black anthers from the pink shooting-star heads.) (30+ seeds) B
- DODECATHÉON CLEVELANDII ? subsp. SANCTARUM (or ? subsp. patulum) J. Andrews coll., 1992 : Cal., Santa Barbara Co., Figueroa Mt., NNW of Santa Ynez. 1180 m. (These two are separated on anther-colour.) (30+ seeds) B
- 12984 DODECATHÉON CONJUGENS Cal., Modoc Co., Warner Mts., E of Davis Creek. 1750 m. Among *Artemisia* on gravelly clay slopes. 14.6.92 (Snow-melt species - the eastern, cold-climate version of *D. clevelandii*.) (30+ seeds) B

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- 13397 DODECATHEON HENDERSONII Cal., Trinity Co., S of Bear Creek Trailhead. 960 m. Among conifers on steep, stony slope. 11.6.93 (The characteristic species of NW California, usually in well-drained shady sites.) (30+ seeds) A
- 13515 DODECATHEON HENDERSONII Cal., Plumas Co., S of Greenville. 1370 m. Steep, gravelly slope among conifers. 17.6.93 (Extremely variable over its range from magenta to deep lavender ; dark filament-tubes.) (30+ seeds) A
- 13480 DODECATHEON SP. (Illinois Valley) Oregon, Josephine Co., above W Fork Illinois River, SW of O'Brien. 500 m. In clay on open, level, stony areas - moist in spring but dry in summer. 14.6.93 (We are indebted to the doyen of Oregon plantsmen, Boyd Kline, for taking us to one of the few sites for this exciting little plant, known to local plant-enthusiasts as the 'Illinois Valley Dwarf' and usually assigned to *D. hendersonii*, one suspects more on geographical arguments (nothing else is supposed to grow around here so it must be this) The whole area is so rich in narrow endemics and odd relicts, that it is hardly surprising that it is home to a distinct development in *Dodecatheon*. It grows in a highly specialised habitat with other local endemics like *Lewisia oppositifolia*, *Calochortus howellii* & *Viola hallii*. All we can tell you is that it is dwarf - no more than 10 cm. in seed and much less in flower. Boyd is enthusiastic about its qualities and we'd take his word on the garden-worth of any plant. Looks ideal for pan-cultivation in the alpine-house.) (30+ seeds) C
- DRABA QUADRICOSTATA J. Andrews coll., 1992 : Cal., Mono Co., W of Conway Summit, above Mormon Meadow. 2300 m. Rock fissures on volcanic ridge. (A narrow Sierra Nevada endemic, now separated from *Draba* as *Cusickiella quadricostata* by the arch-splitter Reed Rollins in his account in the new "Jepson" - suit yourself. One of the most densely caespitose of the Californian cushions with pale-yellow flowers and enthusiast-ically recommended by John. Robert Rolfe tells us it has been grown successfully in the UK.) (20+ seeds) C
- 13330 ENCELLOPSIS ARGOPHYLLA Nevada, Clark Co., SE of Valley of Fire. 500 m. Exposed, eroded clay & gravel hills. 5.6.93 (Superb cold-desert composite with big clumps of silver-white foliage and sumptuous, yellow daisies - very unlikely to be growable in wet climates and too large for the alpine-house. A few seeds.) (10+ seeds) B
- 13549 ERIGERON COMPACTUS Nevada, Eureka Co., W of Eureka, 2100 m. Exposed, bare alkaline 'flats' with sparse *Juniperus*. 20.6.93 (Of extreme, pulvinate habit, the firm rounded hummocks cover themselves with daisies on 5 cm. stems - usually white, sometimes lilac-pink and sometimes red on the reverse of the rays. Described by Dwight Ripley as "one of the choicest of its race, for the interlacing stems with their minutely linear leaves leaves have been moulded by centuries of Nevada's intolerable climate...into the stoniest little cakes...") C
- ERIOGONUM. We are continuing to offer some J. Andrews 1991-92 colls. of this important & diverse western N American genus. These should all be growable under alpine-house conditions in wetter climates. Several are covered in Jack Elliott's excellent review of this genus in cultivation in the summer, 1993, AGS Bulletin.
- ERIOGONUM HEERMANNII subsp. SULCATUM J. Andrews coll., 1992 : Nevada, Clark Co., NE of Charleston Peak. 2100 m. (Densely, intricately branched, 20 cm. shrub. Yellow heads darken to orange. Limestone.) (15+ seeds) C
- ERIOGONUM KELLOGGII J. Andrews coll., 1991 : Cal., Mendocino Co., Red Mt. 1180 m. (Dense, flat, woolly mats 5 cm. stems with heads of pink flowers flushing to orange. Only known from Red Mt. serpentine.) (15+ seeds) D
- ERIOGONUM NERVULOSUM S. Bach coll., 1992 : Cal., Napa Co., Devilhead Road NNW of Lake Berryessa. 460 m. N-facing serpentine scree. (Rather like a red-flowered version of *E. ovalifolium* - mats of round leaves, densely tomentose beneath & red heads on 5 cm. stems. Stunningly illustrated in summer, 1992, 'Pacific Horticulture', growing in a scree-bed near Berkeley - a local Coast Range plant untried in Europe.) (15+ seeds) D
- ERIOGONUM SOREDIUM J. Andrews coll., 1991 : Utah, Beaver Co., Frisco (NNW of Milford). 2010 m. Limestone slopes. (Densely pulvinate with firm, woolly, grey-white mounds to 50 cm. across. Almost stemless heads of white, sometimes pink-flushed, flowers. Only known from above the mining ghost-town of Frisco.) (15+ seeds) E
- ERYTHRONIUM. See next page - followed by *Fritillaria* & *Iris*.
- FERNS
- As with S American material, we are now listing these separately, as they require different, specialist conditions to the seeds. Information is available in any book on fern-cultivation. All these have been grown successfully in the 1992-93 period and should give no problems with appropriate treatment. Plenty spores.
- 12809 ADIANTUM JORDANII Cal., Solano Co., Vaca Mts., Mix Canyon. 300 m. Shaded rocks & steep banks in woodland. 1.6.92 (Summer-dormant Pacific Coast endemic. Possibly best in a pan in a shaded alpine-house. 20 cm.) B
- 13237 ADIANTUM ALEUTICUM Oregon, Douglas Co., NW of Glide. 320 m. On & at base of shaded cliffs. 6.7.92 (Elegant moist-grower well-suited to the British climate - now split from the eastern version, *A. pedatum*. 50 cm.) B
- 12962 CHEILANTHES GRACILLIMA Cal., Siskiyou Co., W of Yreka, NNW of Gunsight Peak. 1750 m. Fissures on igneous cliffs. 11.6.92 (Dainty, 10 cm. high, lacy, tufted fern. Fronds backed with cinnamon-brown wool.) B
- 13119 PELLAEAE MUCRONATA Cal., Los Angeles Co., San Gabriel Mts., above Soledad Canyon. 1350 m. Among scrub on decomposed granite slope. 23.6.92 (Summer-dormant with erect, stiff, prickly, greyish fronds. 20 cm.) B
- 12810 PENTAGRAMMA TRIANGULARIS Cal., Solano Co., Vaca Mts., Mix Canyon. 300 m. Shaded rocks in woodland. 1.6.92 (The Goldenback Fern (*Pityrogramma*) - a beautiful, summer-dormant species ideal for the alpine-house. 15 cm.) B
- 13276 FREMONTODENDRON CALIFORNICUM Cal., Shasta Co., S of Shingletown. 850 m. Among *Arctostaphylos*, *Pinus*, etc. on open slopes. 9.7.92 (A marvellous shrub from what is possibly its most northern locality. More or less evergreen, 3-lobed leaves & spectacular, wide-open, rich-yellow saucers on stiffly branched shrubs)(15 seeds) B
- 13590 GILIA CAESPITOSA Utah, Wayne Co., SE of Teasdale to Grover. 2450 m. Fissures on sloping, white sandstone outcrops. 22.6.93 with additional material coll. July, 1993, by J. Andrews (At last we have enough seed of this extraordinary species for a wider distribution, thanks to some planned teamwork in 1993. The first seeds are mature before flowering is over and we were either too early or too late in 1987, 1989 and 1992 - John has also tried during this period. The few seeds which have been distributed previously to one or two botanic gardens and specialists have been notably successful and the species has been exhibited - we have high hope that this can be maintained as a classic alpine-house plant. Only known from this area, it is something like a mound of *Saxifraga cochlearis* with long-tubed, *Dionysia*-like flowers of a distinctive, soft orange-scarlet on thready, 5 cm. stems. Our Photograph is in 'A Century of Alpines' Plate 53 - redder than life.)(15+ seeds) E

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 \$ 3.00 ; £2.00 ; DM5, - ; FF17. - E : \$7.00 ; £4.50 ; DM12, - ; FF40. -
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ERYTHRONIUM

In nature, most species grow in very well-drained habitats usually in light shade. When areas are hot & dry in summer, the corms are likely to be growing very deeply among stones, where soil-temperature and moisture remain constant. Their preference for serpentine areas is marked - singularly inhospitable, infertile soils, deficient in nitrogen, phosphorus and calcium, with high concentrations of magnesium. We should suggest caution in attempting these in pure peat - a mixture of half granite chippings and half sphagnum-peat or leaf-soil might be more appropriate. Species from warmer, drier summer habitats might be best in well-drained sunnier sites in cool, wet climates but, in general, they thrive surprisingly well under open garden conditions in such climates. Though the genus now has its centre of diversity in N California, it appears to have inherited qualities from ancestors which evolved and spread when cool, northern forests encircled the world. All seem remarkably temperature-hardy when established.

- 13216 E. CALIFORNICUM Cal., Humboldt Co., Friday Ridge, SSW of Willow Creek. 1580 m. Stony areas in openings among conifers, on serpentine. 4.7.92 (Leaves beautifully mottled with brown. One to several creamy white flowers, deepening to gold in the throats. Endemic to the N Californian Coast Ranges.) (15+ seeds) B
- 13462 E. CITRINUM Oregon, Josephine Co., above Josephine Creek SW of Selma. 550 m. Steep, rocky slopes with sparse conifers. 13.6.93 (Restricted to localities in the Coast Ranges on either side of the California/Oregon line. Flowers white to cream with lemon-yellow bases. Mottled leaves.) (20+ seeds) C
- 13387 E. CITRINUM var. RODERICKII California, Trinity Co., above Scott Mt. Creek. 1200 m. Shaded serpentine slopes in coniferous forest. 11.6.93 (A fresh, type-locality coll. of this recently described taxon - a very interesting plant. The nearest recorded populations of *E. citrinum*, *E. californicum* & *E. hendersonii* are each about 35 km. (22 miles) distant to the N, S & NW respectively. We suspect this owes characters to two, or all of them. Almost certainly our 1989 coll., 11018, as *E. californicum* with purple filaments.) (10+ seeds) E
- 11394 E. GRANDIFLORUM subsp. CHRYSANDRUM Colorado, Montrose Co., Uncompahgre Plateau, Columbine Pass. 2900 m. Openings in mixed woodland. 15.7.89 (The western race, characterized by the golden-yellow anthers, dominant in the Rocky Mts., where it often grows as a snow-melt plant at high altitudes. An outstanding plant with bright yellow flowers and plain green leaves, generally accepted as one of the finest.) (20+ seeds) B
- 13374 E. HELENAE Cal., Lake/Sonoma Co., NW slope of Mt. St. Helena. 700 m. Steep serpentine slope among *Pinus* & *Arctostaphylos*. 10.6.93 (Very local & confined to this area. Described by Applegate in his monograph as "a strikingly beautiful & responsive plant in cultivation" with a noted capacity to increase vegetatively in gardens. Mottled leaves & pure-white flowers - close to *E. californicum* but with yellow anthers.) (15+ seeds) C
- 12945 E. HENDERSONII Oregon, Jackson Co., N of Medford. 450 m. Open grassland & openings among deciduous oak-scrub. 10.6.92 (A very beautiful, robust species with purplish stems & darkly mottled foliage. Pale to deep lavender-pink flowers with deep purple throats, surrounded by white or yellowish zones.) (20+ seeds) B
- 13466 E. HENDERSONII Oregon, Jackson Co., Siskiyou Mts. SSE of Ashland. 1340 m. Deciduous oak woodland in deep humus over heavy clay. 14.6.93 (From a much higher locality - one of the few sites we have seen the genus growing in the deep leafsoil usually quoted as its normal habitat - and loving it!) (20+ seeds) C
- 13441 E. HOWELLII Oregon, Josephine Co., E of Takilma. 850 m. Among sparse conifers on open, turfy, stony, serpentine slopes. 13.6.93 (A very local species little-known in cultivation, related to the above and to *E. citrinum* but with no basal appendages on the segments. White flowers, usually yellow basally, and maturing to pink. Mottled leaves. Only known from the upper drainage of the E Fork Illinois River.) (15+ seeds) C
- 13428 E. HOWELLII Oregon, Josephine Co., Waldo Hill. 650 m. Openings in mixed woodland & among scrub. 13.6.93 (A small type-locality coll. from the once extensive, now wholly vanished, town of Waldo.) (15+ seeds) C
- E. IDAHOENSE Persson & Zetterlund 92-292 : Idaho, Kootenai Co., Worley. 800 m. Pine forest in sandy clay. (A few left of this 1992, type-locality coll. of this species limited to a narrow strip along the Idaho/Washington line, N & S of Coeur d'Alene. White with greenish centre & white anthers. Unmarked leaves.) (10+) E
- E. MULTISCAPOIDEUM S. Farwig & V. Girard coll., 1993 : Cal., Butte Co., E of Paradise, Concow Road. 30.5.93 (Mottled leaves and white flowers with pale greenish-yellow centres & white anthers. With no close affinities among the western species, it is the only one with stoloniferous corms, like some of the easterners. The typical form, usually a plant of very stony serpentine slopes, is little-known in gardens.) (20+ seeds) C
- E. MULTISCAPOIDEUM ("E. cliftonii") S. Farwig & V. Girard coll., 1993 : Cal., Butte Co., S of Pulga. 420 m. Steep serpentine slopes & scree. (This population, more or less a giant form of the species, has never been described botanically but is proving fairly adaptable & growable in the UK - as "E. cliftonii".) (20+ seeds) D
- 13494 E. OREGONUM subsp. LEUCANDRUM Oregon, Douglas Co., S of Tiller above Callahan Creek. 460 m. Steep, serpentine slopes among *Pinus*. 15.6.93 (The southeastern race with white anthers of this superlative species with mottled leaves and white flowers, often maturing to pink, with striking basal markings in orange, dark-red or brown around the yellow bases. The northern race, usually seen in gardens, is easily grown.) (20+ seeds) B
- E. FLURIFLORUM J. Andrews coll., 1992 : Cal., Madera Co., Shuteye Peak (Sierra Nevada, E of Merced). 2360 - 2400 m. NW-facing granite ledges. (Described in 1990, although the first coll. was made in 1907 & misidentified by Applegate & others as *E. purpurascens* - allied to this & *E. pusaterii* with plain green leaves but the 30 cm. stems carry up to 10 - exceptionally 20 - nodding, bright yellow flowers, maturing to bronze or pinkish. Isolated and somewhat inaccessible high on Chiquito Ridge between Shuteye & Little Shuteye Peaks, flowering as late as July, this may prove one of the most important introductions of the decade.) (15+ seeds) E
- 13511 E. PURPURASCENS Cal., Plumas Co., S of Greenville, above Round Valley Lake. 1370 m. Steep, gravelly slopes among conifers. 17.6.93 (Plain green leaves and yellow-centred, white flowers become purple-tinged with age - the most widespread of this trio of high altitude species, most numerous around the upper drainage of the Feather River, reaching to almost 2500 m., but still very little-known in cultivation.) (15+ seeds) D
- E. PUSATERII J. Andrews coll., 1993 : Cal., Tulare Co., Jordan Peak (Sierra Nevada ENE of Porterville) 2774 m. (Again described in 1990 - the Purpus coll. of 1895 had been placed under *E. purpurascens*; Samuel Pusateri's later colls. were assigned to *E. grandiflorum*. The most southern of the westerners & confined to the area at the sources of the Tule & Kaweah Rivers, it resembles a larger version of *E. purpurascens* with well-developed appendages on the segments & a larger yellow centre. John's 1992 coll. from Moses Mt. yielded only a few good seeds, as summer snow & frost had caused the immature seeds to rupture.) (15+ seeds) E
- E. TUOLUMNENSE J. Andrews coll., 1993 : Cal., Tuolumne Co., NE of Columbia. 750 m. Steep slopes in deciduous woodland. (Unmottled leaves & up to 5, bright yellow flowers. Easily grown in European gardens but a notable relic of limited distribution in the wild, though more locally abundant than previously thought.) (15+ seeds) B

PRICE CODE A	:	\$2.00	;	£1.50	;	DM4, -	;	FF13, -		PRICE CODE D	:	\$5.00	;	£3.50	;	DM 9, -	;	FF30, -
B	:	\$3.00	;	£2.00	;	DM5, -	;	FF17, -		E	:	\$7.00	;	£4.50	;	DM12, -	;	FF40, -
C	:	\$4.00	;	£2.50	;	DM6, -	;	FF21, -		F	:	\$9.00	;	£6.00	;	DM15, -	;	FF50, -

FRITILLARIA

About 20% of the genus occurs in N America, centred on N California, where they appear to be actively evolving, showing considerable variation within the current concepts of each 'species' - names here follow the account in "Jepson", which is largely derivative from work done by Roger MacFarlane, whose names are already largely in use in the UK. By far the most useful account for gardeners is that written by Dr. Sylvia Martinelli, accompanied by some fine photographs by David Haselgrove, in the March & June, 1992, AGS Bulletins. The nomenclature she uses follows Munz and is as used in our 1989 list. Successful cultivation of these plants is becoming much more evident in recent years. The basic criteria would appear to be well-drained, lime-free, low-nutrient composts and, in the UK, giving them their first winter-watering late, about the end of December. Excess nitrogen should be avoided, especially for species exclusive to serpentine. This year, largely due to the efforts of John Andrews in 1992 & 1993, we are able to offer seed of all but one of the Californians - we hope this may help to establish them more widely in gardens.

- 12806 F. AFFINIS (F. lanceolata) Cal., Solano Co., Vaca Mts., Mix Canyon. 550 m. Steep scrub-covered slopes. 1.6.92 (An average, 50 cm. high form of this species, widely distributed down the Coast Ranges & usually one of the easiest in cultivation. Very variable - nodding bells mottled in brown-purple & pale yellow.) (20+ seeds) A
- 13452 F. AFFINIS Oregon, Josephine Co., Eight Dollar Mt. SW of Selma. 450 m. Open S-facing slopes overlaid with volcanic debris. 13.6.93 (Usually a yellowish green with just a few brown lines on the bells here - dwarf, often single-flowers on 15 cm. stems but Boyd Kline tells us it can grow rather larger in cultivation. May be just as distinct as some 'splits' but no-one really looks at this genus outside California. The following two collections are likely to represent the same race - label it 'Illinois Valley Form' - all few) (15+ seeds) C
- 13430 F. AFFINIS Oregon, Josephine Co., Waldo Hill. 650 m. Among scrub & on open stony slopes. 13.6.93 (15+ seeds) C
- 13444 F. AFFINIS Oregon, Josephine Co., SW of O'Brien. 550 m. Open, stony 'flat'. 13.6.93 (Very few) (15+ seeds) C
- 10500 F. AGRESTIS Cal., Alameda Co., E of Livermore. 170 m. Heavy clay in open grassland. 13.5.89 (This colony now destroyed by development - last chance of our seed-bank material. Valley grassland version of F. biflora with stout, 50 cm. stems & up to 8, green-cream bells, purple-brown inside. An adobe-clay species.) (20+ seeds) B
- 12985 F. ATROPURPUREA Cal., Modoc Co., Warner Mts., E of Davis Creek. 1750 m. Among Artemisia on gravelly clay slopes. 14.6.92 (Usually with wide bells mottled in purple-brown and yellow or white but very variable. A plant of montane steppe extending E to S Dakota - the inland version of F. affinis, more or less.) (15+ seeds) C
- 13338 F. BIFLORA Cal., San Luis Obispo Co., above San Simeon Bay. 10 m. Coastal grassland. 6.6.93 (Dark, brown-purple, green-striped bells but extremely variable. A coastal plant extending S to around the Mexican border - maybe best grown frost-free but remember the coast is cool in summer. 20-30 cm. high.) (20+ seeds) B
- 13274 F. EASTWOODIAE (F. phaeantha) Cal., Shasta Co., S of Shingletown. c. 1000 m. Openings in mixed woodland - mainly Quercus. 9.7.92 (A dubious 'species', apparently a fairly recent hybrid between F. recurva and F. micrantha. Dr. Martinelli describes the colour of this colony as from all red or all apricot to brown-orange edged with yellow and orange with yellow inside. Whorled bluish foliage. About 40 cm.) (20+ seeds) C
- F. FALCATA J. Andrews coll., 1992 : Cal., Stanislaus Co., above Adobe Creek. 490 m. Unstable serpentine talus on steep, N-facing slope. (A local, dwarf, serpentine endemic with a few, fleshy, glaucous leaves, folded & curved. Upward-facing, bowl-shaped flowers - brown-speckled but variable. 10 cm.) (15+ seeds) E
- * 11035 F. GLAUCA Cal., Humboldt Co., SSW of Willow Creek. 1580 m. Loose talus on steep, open, W-facing slope. (A few 1993 cultivated seeds ex D. Hoskins from our 1989 coll. - all seed was eaten by deer here in 1992 and it was still in full flower on 12.6.93 - extremely variable from bright yellow to mottled browns.) (10 seeds) E
- F. GLAUCA J. Andrews coll., 1993 : Cal., Mendocino Co., Hull Mt., NNE of Lake Pillsbury. 2030 m. Loose talus on steep slopes. (A purplish brown flowered population of this serpentine-scrub Coast Range species. Thick, glaucous leaves and (normally) single, nodding bells on 15 cm. stems. For the skilled specialist.) (15+ seeds) E
- 13040 F. LILLIACEA Cal., Marin Co., NW of Nicasio. 15 m. Among scrub on low, grassy, coastal hills. 18.6.92 (Very limited distribution N & S of San Francisco but quite easily grown, kept frost-free in winter & cool in summer. Bright-green leaves & up to 5, pendant, creamy-white bells on 30 cm. stems. Handsome.) (15+ seeds) C
- 13062 F. MICRANTHA Cal., Mariposa Co., Greeley Hill NE of Coulterville. 1000 m. Grassy slopes in thin, coniferous forest. 19.6.92 (Can reach 90 cm. high with up to 10 nodding bells, varying greatly, according to Martinelli, in markings & from chestnut to yellow shades. Here 30-50 cm. with whorled, bluish leaves.) (20+ seeds) B
- F. OJAIENSIS J. Andrews coll., 1993 : Cal., Ventura Co., Wheeler Springs NNW of Ojai. 533 m. (The one all the specialists keep asking for! Pronounce it "Oh! Hi! -ensis". A disjunct southern member of the F. affinis group, with 50 cm. stems of nodding, widely bell-shaped flowers in dull greenish-yellow with sparse to profuse dark dots. The broad, almost diamond-shaped nectary is diagnostic. Untried in cultivation.) (15+ seeds) E
- F. PINETORUM J. Andrews coll., 1993 : Cal., Kern Co., Mt. Pinos. 2600 m. Granite slopes. (Another obscure species, virtually unknown in cultivation & sparsely documented. Close to F. atropurpurea but the purple, yellowish-mottled flowers face out or upwards and the capsule is markedly different. A high-altitude plant possibly best kept dryish in winter, wet in spring & cool when dormant, as for F. atropurpurea.) (15+ seeds) E
- 13380 F. PLURIFLORA Cal., Lake Co., Walker Ridge. 600 m. Open, grassy areas in heavy clay. 10.6.93 (One of the most distinct & beautiful in the genus with up to 7, rather conical bells in a rich & pure, unmarked pink. A very local, adobe-clay plant of the northern Central Valley foothills, it remains a challenge.) (15+ seeds) C
- 12992 F. PUDICA Cal., Modoc Co., S of Davis Creek. 1450 m. Open, gravelly sites. 14.6.92 (Nodding, clear-yellow bells on 20 cm. stems. A northern plant, widespread E to S Colorado, usually in stony, montane steppe, and unlike any other North American species - except in its bulb, it resembles E Turkish F. minima.) (20+ seeds) B
- 13395 F. PURDYI Cal., Trinity Co., Trinity River Valley S of Bear Creek. 960 m. Open, stony, serpentine slope. 11.6.93 (Dwarf with a few wide bells, described by Martinelli as "voluptuously curved", "the shiniest, most delectable, fritillaria flowers." Very variable in brown veining & tinting on a green-white ground. Local on the N Coast Range serpentines (here at the NE limit) and now being very successfully cultivated.) (20+ seeds) C
- 13467 F. RECURVA Oregon, Jackson Co., Siskiyou Mts. SSE of Ashland. 1340 m. Deciduous oak woodland - in deep humus over clay. 14.6.93 (Narrow, nodding bells of luminous scarlet with just a hint of chequering. A plant of montane woodland & scrub - growing here with Erythronium - keep it cool! Not easy - a few only.) (15+) C

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 E : \$7.00 ; £4.50 ; DM12, - ; FF40. -
 F : \$9.00 ; £6.00 ; DM15, - ; FF50. -

FRITILLARIA STRIATA J. Andrews coll., 1992 : Cal., Kern Co., Greenhorn Mts., Rancheria Rd. NE of Bakersfield. 760 m. (Closest to *F. pluriflora*, which grows about 400 km. to the N, but utterly distinct in its pendant bells with recurved tips. Described by Alan Galloway, the discoverer, as "white or creamy with purplish dotted striae" - appearing pink - and "with the most delicious fragrance". Little known but it may need a hotter, drier summer rest (also *F. ojaiensis*) than most. An adobe-clay plant. 20-30 cm.) (15+ seeds) E

F. VIRIDEA J. Andrews coll., 1992 : Cal., San Benito Co., above Clear Creek W of San Benito Mt. 820-1000 m. (A narrow serpentine-endemic, almost unknown in cultivation. In the *F. affinis* group but lacking rice-grain bulblets and with the nodding bells only on one side of the 30-50 cm. stem. According to Martinelli variable in green, brown & yellow tones ; Ness in "Jepson" says "pale green to almost black, not mottled.") (15+ seeds) E

IRIS

We were a little early for many 1993 collections but there is some excellent *I. munzii* seed. These Pacific Coast Irises (Series Californicae) exemplify better than any other genus how much speciation is actively occurring in the area - variation, intergradation and hybridization are considerable. Dr. Lee Lenz's 1958 classification (adopted by "Jepson", Munz & Brian Mathew in 'The Iris') is a brilliant and acceptable compromise but do not imagine his taxa are clearly defined units in the wild. In gardens, much material is of hybrid origin and it should be remembered that many of the wild plants are likely to be both less showy and less easy to grow than garden hybrids. Most grow in light woodland or among scrub, usually on steep slopes - they need excellent drainage and a neutral to slightly acid soil. In cooler climates, a site in sun might be preferable to half-shade ; a few might be best in a bulb-frame.

- 13427 IRIS BRACTEATA Oregon, Josephine Co., Waldo Hill on Sanger Peak Rd. 650 m. Open, stony areas among scrub. 13.6.93 (Most distinct with thick, broad leaves & large, showy flowers, always in yellow veined with maroon or brown. Very limited in its distribution, this is from near Howell's 1884 type-locality.) (15+ seeds) C
- 13233 I. CHRYSOPHYLLA Oregon, Douglas Co., Calapooya Divide E of Huckleberry Mt. 1120 m. Among scrub at margins of coniferous forest. 6.7.92 (Essentially a plant of S Oregon, between the Cascades & the Coast Ranges. Cream gold-veined flowers and narrow, glaucous leaves. From a high, cold locality, this should suit UK gardens)(15+) B
- 13052 I. DOUGLASIANA Cal., Sonoma Co., Irish Hill above Coleman Creek. 150 m. Grassy slopes with coastal exposure. 18.6.92 (A tough, vigorous plant with no particular soil preference in gardens. Rich purples here)(15+ seeds) B
- 12807 I. FERNALDII Cal., Solano Co., Vaca Mts., Mix Canyon. 550 m. Steep, scrub-covered slopes. 1.6.92 (Restricted to the Coast Ranges around San Francisco Bay. Unique, narrow, grey leaves and creamy yellow flowers. Growing well here under glass from our 1989 coll. but thrives outside with Brian Mathew in Surrey, UK.) (15+ seeds) C
- 13056 I. HARTWEGII subsp. COLUMBIANA Cal., Tuolumne Co., NE of Columbia. 650 m. Steep, open, stony slopes. 19.6.92 (Only known from around the type-locality and "much more attractive" than the type-race, according to Victor Cohen. Virtually a pale-yellow version of splendid *I. munzii*, which occurs 225 km. to the South.) (15+ seeds) C
- 13282 I. HARTWEGII subsp. PINETORUM Cal., Plumas Co., N of Quincy. 1070 m. Openings in coniferous forest. 10.7.92 (A Plumas Co. endemic - the only taxon creeping over to the E slope of the Sierra Nevada. Much dwarfier than the long-stemmed type-race, it often opens two of its creamy-yellow flowers simultaneously.) (15+ seeds) C
- 13225 I. INNOMINATA Oregon, Curry Co., N of Agness & W of Illahe. 400 m. Steep, stony slopes, facing E & SE, in coniferous zone. 5.7.92 (The jewel of the group as far as rock-gardeners are concerned. Little tufts of very narrow, glossy leaves and 20 cm. stems. In 1992 we traced Victor Cohen's 1965 journey to his sites above the Rogue & Coquille Rivers where the flowers were "rich golden-yellow and orange" progressing to "pale apricot or light creamy buff." Galen Burrell travelled through this iris-country in 1993 and writes that "nearly all of the *Iris innominata* on or near the divide of the Coquille & Rogue River drainages is a beautiful orchid color - not yellow. A few are light creamy buff but I didn't see any apricot forms." You'll have to wait to see these in flower in cultivation - fully hardy & well-adapted to the UK climate in lime-free scree.) (15+) C
- 12897 I. INNOMINATA Cal., Del Norte Co., NNW of Gasquet. 390 m. Margins of dense undergrowth on steep, wooded slopes. 6.6.92 (About 5 km. SE of Cohen's locality for deep purple forms - late flowers seen here in 1989 were lavender. The new "Jepson" implies all *I. innominata* are yellow - so what are these?) (15+ seeds) B
- 13350 I. MUNZII Cal., Tulare Co., above Coffee Camp E of Springville. 520 m. Among boulders on sides of scrub-filled gully. 7.6.93 (The largest flowered & most spectacular of this group, limited to a few colonies above the Tule & Kaweah Rivers in the southern Sierra Nevada. Broad evergreen leaves & stout stems of about 60 cm. with up to 4 flowers, described by Cohen as "from pale powder-blue through lavender to purple... delicately veined in violet or turquoise-blue." We are trying this under unheated glass in our wet Welsh climate but it may be temperature-hardy against a S-wall in the UK - *Dendromecon* grows here also.) (15+ seeds) C
- 13203 I. MACROSIPHON Cal., Lake Co., NE of Lake Pillsbury. 1300 m. Openings among Pinus in stony clay. 3.7.92 (A very variable species from the hills bordering the N Central Valley - here with fairly dwarf, narrow leaved tufts and, we are told, creams and yellows, as well as the more usual purples & lavenders.) (15+ seeds) B
- 12825 I. PURDYI HYBRIDS Cal., Mendocino Co., W of Boonville, near Faulkner Park. 200 m. Open & part-shaded slopes among conifers. 2.6.92 (From the only known site of the complex trihybrid : *I. purdyi* x *I. macrosiphon* x *I. douglasiana* (L.W. Lenz & E.K. Balls 1953). We have not seen these in flower and, for all we know, this may by now have settled into quite an even population. *I. purdyi* itself, described as "common" in "Jepson" is in fact a rare plant in its "pure form", through introgression by other species - logging and road-building have favoured these plants and allowed previously isolated "species" to hybridize.) (15+ seeds) B
- 13215 IRIS ? PURDYI X TENUISSIMA Cal., Humboldt Co., SSW of Willow Creek. 1580 m. Stony areas in openings among conifers. 4.7.92 (We have seen these in flower - while obviously *I. tenuissima*, these have larger, flatter flowers with broader falls, in creamy shades, veined with purple. The hybrid of this parentage cited by Lenz (L.W. Lenz 18320) was collected in the same area but at 1000 m. less elevation.) (15+ seeds) B
- 12867 IRIS TENAX subsp. KLAMATHENSIS Cal., Humboldt Co., Klamath River Valley NNE of Orleans. 180 m. Among grass on open stony slope at margin of woodland. 5.6.92 (Perhaps the most local & obscure of the taxa described by Lenz. In foliage & habit, superficially like *I. innominata* with narrow leaves stained red or pink at the base and, according to Cohen, flowers of pale creamy apricot, gold in the throats and veined red-brown on the falls..."deserving of specific status"... We could find no seed set here in 1993 - a few left.) (10 seeds) D
- 13275 IRIS TENUISSIMA Cal., Shasta Co., S of Shingletown. 1000 m. Openings in mixed woodland. 9.7.92 (A dainty, delicate plant with narrow, greyish foliage & flattish flowers in creamy white, sometimes faintly veined with purple. Quite widespread in the cold interior of N California - growable in the UK.) (15+ seeds) B

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- 13600 GILIA FORMOSA New Mexico, San Juan Co., NW of Aztec to La Plata. 1900 m. Along ridgetops of eroded, clay hills with sparse Juniperus & Pinus. 24.6.93 (Our N American journeys are now so contrived and tightly scheduled that they all but preclude the possibility of our finding a superlative species, wholly new and unfamiliar to us, quite fortuitously. On a return visit to some strange grey, alkaline, mud-hills, which had intrigued us and yielded some Calochortus and Astragalus seeds, in July, 1987, we found, dotted here and there along the tops, a dainty, little, woody-based cushion-plant, looking from afar like a fairy cushion Dianthus. Closer, we could see the wiry-stemmed sprays of long-tubed flowers in pink shot with violet-blue belonged to a Gilia. Another visit exactly 3 weeks later was unusually perfect for a seed-collection. Subsequently, Gilia-specialist Dr. Alva Day has identified our dried specimens as the narrowly endemic G. formosa. Needless to say our heroes of the American West, Barneby & Ripley, have been there before : visiting this area in 1943 to search specifically for this species, Dwight Ripley writes "...the special glory of Aztec, Gilia formosa, known only from here and as beautiful as it is rare...makes a neat tuft of very small, linear leaves, almost hair-thin and of a lively green, from which in every direction spring quantities of three-inch stems furnished with panicles of clear lavender-pink, the whole thing most delicate and charming." Our predecessors could not collect any seed and this is almost certainly the first significant seed-collection. We feel we must almost apologise for tempting specialists with two such potentially outstanding alpine-house plants as G. caespitosa and G. formosa in one year and can only lamely excuse ourselves by saying we did not plan this.) (20+ seeds) E
- GILIA STENOCHYRSA J. Andrews coll., 1992 : Utah, Emery Co., Molen Reef, E of Moore. 1930 m. (Restricted to 'barrens' around the Uintah Basin, the exquisite basal rosettes of overlapping, beautifully cut, flat, grey-felt leaves send up a 30 cm., cylindrical spike of white to pale lavender-blue flowers.) (20+ seeds) D
- 13548 HAPLOPAPPUS ACAULIS Nevada, Eureka Co., W of Eureka. 2100 m. Gravelly clay among sparse Juniperus. 20.6.93 (Hard, rounded cushions of compacted, green rosettes with short-stemmed orange-yellow 'daisies'.) B
- 13163 HESPEROCALLIS UNDULATA Cal., San Bernardino Co., ESE of Barstow. 610 m. Low hills - in sand overlaid with volcanic debris. 27.6.92 (This did not even appear above ground in 1993 - these desert bulbs are unpredictable and possibly difficult. A monotypic genus confined to the Mojave - linear, white-margined, bluish leaves and white lilies, striped silver-green outside, on short stems. The flat seeds are brittle.) (15 seeds) C
- 13555 HYDROPHYLLUM CAPITATUM var. ALPINUM Nevada, White Pine Co., SE of Eureka, Pinto Summit. 2250 m. Open, stony E-facing slope. 21.6.93 (A summer-dormant relative of Phacelia - in this race the stems are subterranean and the capitulate cymes of many, small flowers, in white through lavender to purple-blue, appear almost on the ground, followed by the coarsely pinnatifid leaves, which retire quickly to a deep rhizome.) (20+ seeds) C
- HYMENOXYIS LAPIDICOLA J. Andrews coll., 1992 : Utah, Uintah Co., Blue Mt. 2020 m. (This pulvinate-caespitose species, the most reduced member of this genus, is only known from sandstone fissures on Blue Mt. but is so far proving surprisingly growable in some UK alpine-houses - well documented lately in ARGS & AGS journals (see Bull. Alp. Gard. Soc. 60, 2, p.133 (June, 1992)). Stemless, gaillardia-like, yellow heads.) (10+ seeds) E
- 13550 LEPIDIDIUM NANUM Nevada, Eureka Co., W of Eureka. 2100 m. Gravelly, bare-patches among sparse Juniperus. 20.6.93 (At last we have succeeded in making a collection of our own from this classic Great Basin endemic - from a different colony to John's 1991 coll. "Its hummocks look like those of some extra-tight Dionysia, of a peculiarly intense shade of sap-green...this is the Draba to end all Drabas..." wrote Dwight Ripley in 1944 Now being grown successfully by some skilled cultivators, becoming more compact as it ages and even producing its stemless, straw-yellow draba-flowers quite generously. An unique development of a weedy genus)(20+ seeds) E
- LESQUERELLA TUMULOSA J. Andrews coll., 1992 : Utah, Kane Co., SE of Cannonville, Kodachrome Basin. 1500 m. (Another pulvinate-caespitose crucifer, by far the most condensed of the genus forming dense, hard mounds of downy leaves with yellow flowers on 1-4 cm. stems. Extremely local on "white, bare shale knolls" in a small area of Kane Co. If it can be grown in character, destined to become an essential cushion-plant.) (15+ seeds) E
- 12959 LEWISIA COTYLEDON Cal., Siskiyou Co., W of Yreka, NNW of Gunsight Peak. 1750 m. Fissures on serpentine out-crops along summit ridge. 11.6.92 (The type-race has leaves with entire margins and usually pink-flushed white flowers with a deeper pink stripe on each petal. A local plant of the Klamath Ranges.) (20+ seeds) C
- 13402 LEWISIA COTYLEDON var. HECKNERI Cal., Trinity Co., N of Junction City, above Canyon Creek. 1640 m. Fissures on vertical, shaded serpentine cliffs. 12.6.93 (A disjunct taxon limited to this area, which Lewisia-enthusiasts should try to preserve in a pure state in cultivation. Strongly toothed leaves and flowers which are about twice the diameter of the type-race. Much cultivated material is now of hybrid origin.) (20+ seeds) C
- 13450 LEWISIA OPPOSITIFOLIA Oregon, Josephine Co., Eight Dollar Mt. SW of Selma. 450 m. Vernal moist seeps - in red-clay - on open, S-facing slope. 13.6.93 (In its 'pure' form this appears to be an Illinois Valley endemic - N Californian plants appear to have some characteristics of L. nevadensis. Summer-dormant with narrow, blunt, succulent leaves and umbels of up to 6 white flowers from pale pink buds and with red-fringed sepals on 15 cm. stems. Should be growable with L. rediviva treatment - maybe much wetter in spring.) (15+ seeds) D
- 13484 LEWISIA OPPOSITIFOLIA Oregon, Josephine Co., above W Fork Illinois River SW of O'Brien. 500 m. In clay on open, level, stony area - still wet but drying-out. 14.6.93 (Unlikely to differ from above.) (15+ seeds) D
- LILIUM KELLEYANUM J. Andrews coll., 1992 : Cal., Tulare Co., E side of Moses Mt. (Sierra Nevada E of Visalia) 2070 m. (An obscure high altitude, wet-grower from the central & S Sierra Nevada, collected in an area where Wayne Roderick considers the true plant grows - further N it seems to intergrade with L. parvum. Pendant widely bell-shaped, yellow flowers, up to 25 on stems of about 1 m. Should be growable in the UK.) (15+ seeds) D
- LILIUM PARDALINUM S. Farwig & V. Girard coll., 1993 : Cal., Plumas Co., Caribou Rd. E of Belden. 750 m. (The most widespread of the wet-growing westerners from a splendid colony we know well. Stems of 2 m. or more with up to 35, pendant flowers - pale orange to red with maroon spots margined with yellow towards the recurving tips of the segments. Does very well outside in the UK in acid soil, if moist - squelchy in nature)(20+ seeds) A
- LILIUM PARRYI J. Andrews coll., 1993 : Cal., Los Angeles Co., San Gabriel Mts., along Little Rock Creek. 1990 m. (The most southern of the western lilies and a most distinct plant - bright yellow, trumpet-shaped flowers, with a few tiny, sparse maroon dots, held horizontally or slightly nodding - up to 30 on stems of about 2 m. A local plant of wet meadows & stream-sides in coniferous forest. Should be growable.) (15+ seeds) D
- LILIUM PARVUM S. Farwig & V. Girard coll., 1993 : Cal., El Dorado Co., NE of Placerville, Ice House Rd. 1500 m. (A burnt orange form of this species, which replaces L. kelleyanum as the high altitude lily of the N Sierra Nevada - distinct in its nodding to ascending, rather trumpet-shaped flowers, up to 40 on stems of under 2 m. A wet-grower from stream-sides, willow-thickets and meadows in coniferous forest.) (15+ seeds) C

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- * 11167 LUPINUS VARILICOLOR Cal., Sonoma Co., above Shell Beach, S of Jenner. 1992 cultivated seed from Craig Irving (Victoria, Australia) from our 1989 coll. (A woody based perennial with downy, greyish leaves, about 60 cm. high in the wild, it produced "very spectacular...impressive" plants in Victoria, to over 1 m. with lavender to purplish spires. We have also had favourable reports from the UK as well.) (20+ seeds) A
- ODONTOSTOMUM HARTWEGII S. Farwig & V. Girard coll., 1993 : Cal., Butte Co., E of Paradise, Concow Road. 1060 m. Dry creek bed & surrounding flood-area. (A strange, monotypic genus belonging to the Tecophilaeaceae (if you want to split this from Liliaceae) local in N California in serpentine-derived clays. Corms produce 30 cm. high racemes of many, tubular, yellow-white flowers. Surprisingly easy in cultivation.) (20+ seeds) C
- 13571 OENOTHERA CAESPITOSA var. CRINITA Utah, Millard Co., SSE of Garrison. 1600 m. Steep, loose, stony slope. 21.6.93 (By far the most important race of this stunning, widespread & variable species for the alpine-house specialist. The dry climate development with downy, grey leaves, this has remained in character with us from our small, 1987 coll. - here other races are much more exuberant. A succession of long-tubed, white flowers, maturing to rose. Will take all the warmth & sun going under glass, in a stony mix, in the UK.) (15+ seeds) C
- 13539 OENOTHERA CAESPITOSA var. MARGINATA Cal., Inyo Co., White Mts., Toll House Springs. 1980 m. Steep, clay slope. 20.6.93 (A better one to try outside in sunny scree or a raised bed - some races prove quite easy. The same huge, bowl-shaped flowers, flushing pink with age, from rosettes of toothed, green leaves.) (15+ seeds) B
- OENOTHERA LAVANDULIFOLIA J. Andrews coll., 1992 : Nevada, Clark Co., Spring Mts., S of Hilltop Campground. 2500 m. (One of the most distinct & beautiful of the genus - really best separated from *Oenothera* into the monotypic genus *Calylophus*. Dwarf & woody-based with wiry, decumbent stems, sparsely clothed in little, linear leaves. Large, 4-petalled flowers in soft-yellow mature to orange. 15 cm. Grow hot & dry.) (15+ seeds) C
- 13585 OXYTROPIS OREOPHILA Utah, Garfield Co., Butch Cassidy Draw off Red Canyon. 2600 m. Gravelly areas among sparse Pinus. 22.6.93 (This appears to be *O.o.* var. *oreophila*, though the tightly pulvinate *O.o.* var. *jonesii* grows nearby - Rupert Barneby discusses the problem in the 1989 Intermountain Flora - it is uncertain whether differences are genetic or a result of habitat. Mats of silky, white foliage with pink-purple racemes on short scapes, followed by inflated, papery pods. May be easier to grow & keep in character than -) (10 seeds) C
- 13552 OXYTROPIS OREOPHILA var. JUNIPERINA Nevada, Eureka Co., W of Eureka. 2100 m. Eroded clay slopes among sparse Juniperus. 20.6.93 (Downy, silver hummocks with stemless purple pea-flowers. A reduced eastern version, like *O.o.* var. *jonesii* but with even smaller leaves. Possibly very difficult to grow in character. Few.) (10 seeds) E
- PAEONIA BROWNII G. Burrell coll., 1993 : Oregon, Klamath Co., N of Klamath Falls. 1300 m. Volcanic soils. (About 30-40 cm. high with glaucous leaves & globular, nodding flowers with rounded, thick-textured petals. In bronze-maroon, thinly margined with yellow. A summer-dormant plant of cold, inland steppe.) (8 seeds) D
- 13333 PAEONIA CALIFORNICA Cal., San Luis Obispo Co., NE of San Luis Obispo. 150 m. In scrub on steep, stony slopes 6.6.93 (Between 40 & 70 cm. high with greener leaves and larger, black-red petals margined with pink. Endemic to coastal chaparral in S California, where it grows in winter and goes dormant early - possibly best grown frost-free or at least protected in winter in cold climates but, on the whole, not difficult.) (8 seeds) D
- PENSTEMON. We are giving this outstanding genus of the American West something of a rest this season, except for one or two late 1992 and 1993 collections, particularly those of interest for the alpine-house. *Penstemon* seed stores very well and we shall return to our seed-bank to support some fresh collections to provide you with an extensive range again in a year or so. In the meantime, we hope you will enjoy the following.
- PENSTEMON ACAULIS J. Andrews coll., 1993 : Wyoming, Uinta Co., W of Lonetree. 2200 m. (Sect. *Caespitosi*. After several attempts John has collected a reasonable number of seeds from this tiny plant, the most reduced of the genus, confined to a few barren ridges near the Utah/Wyoming line. Tiny tufts of little, linear leaves eventually form a rooting mat to 30 cm. across with stemless flowers of a rich, clear blue with gold throats. It has been grown quite well from our 1987 coll. but remains a challenge to maintain.) (10+ seeds) E
- 13603 P. ANGUSTIFOLIUS var. VENOSUS New Mexico, San Juan Co., SE of Bloomfield. 1800 m. Sandy clay among *Artemisia* 24.6.93 (Sect. *Coerulei*. Smooth, glaucous foliage and 40 cm. spires of soft-blue, lavender-pink tinted, flowers - around here this SW race merges into var. *caudatus* of the southern Great Plains.) (20+ seeds) A
- P. CAESPITOSUS var. DESERTIPLICI J. Andrews coll., 1992 : Utah, Garfield Co., W of Ruby's Inn. 2260 m. Openings among *Artemisia*. (Sect. *Caespitosi*. Most compact race of this species - mats almost as tight as *P. acaulis* but with little, narrow, grey leaves. Lavender-blue flowers with yellow-bearded palates.) (15+ seeds) D
- P. DUCHESNENSIS J. Andrews coll., 1993 : Utah, Duchesne Co., E of Duchesne. 1680 m. (Sect. *Cristati*. Very local, "much showier" version of *P. dolius* - the smallest of its section and confined to this area. Little flat, grey leaves and cymes of rich-blue flowers with pale-yellow bearded staminodes. 5 cm. high.) (15+ seeds) C
- 13595 P. EATONII Utah, San Juan Co., Sunbonnet Rock above Bluff. 1550 m. Steep, sandstone slope. 23.6.93 (The spectacular Firecracker *Penstemon*. About 1 m. high with rather one-sided spikes of many, tubular flowers in eye-burning scarlet. A widespread plant in the wild, which should be tried more in cultivation.) (20+ seeds) A
- P. GRAHAMII J. Andrews coll., 1992 : Utah, Uintah Co., S of Sand Wash. 1600 m. (Sect. *Cristati*. Famous endemic of the oil-shales of the Green River drainage. Dwarf, 5-20 cm., but with the largest flowers in its section - pinkish lavender with gaping mouths lined with dark violet & projecting staminodes covered in gold-orange hairs. It has been grown successfully in Colorado and should be tried elsewhere.) (10+ seeds) E
- P. HETEROPHYLLUS S. Farwig & V. Girard coll., 1993 : Cal., Butte Co., E of Paradise, Concow Rd. 1060 m. (A puzzling colony of *Penstemons* in Sect. *Saccanthera*, varying greatly in width of foliage. Keys out most easily to this but otherwise seems nearer *P. azureus* - may be better placed under this or another member of its section. Woody-based with stems of about 50 cm. carrying flowers in "deep burgundy to royal-blue".) (15+) B
- 13551 PENSTEMON JANISHIAE Nevada, Eureka Co., W of Eureka. 2100 m. Stony clay among sparse Juniperus. 20.6.93 (Sect. *Cristati*. Superb endemic of the W Great Basin, reputedly dwarfer & easier in cultivation than closely related *P. grahamii*. Ascending flowers in violet-pink, marked with red-violet and with cream-bearded palates and conspicuous orange-woolly staminodes. About 15 cm. high with grey leaves & erect stems.) (10+ seeds) D
- 13573 PENSTEMON NANUS Utah, Millard Co., SSE of Garrison. 1900 m. Open slope in calcareous gravel. 21.6.93 (Quite like *P. duchesnensis* but confined to this area. Blue-violet flowers with orange-bearded staminodes and only about 7 cm. high. The glandular pubescence & anthers separate it from the *P. dolius* group. Few.) (10 seeds) E
- PENSTEMON PURPUSII J. Andrews coll., 1993 : Cal., Mendocino Co., Hull Mt., NNE of Lake Pillsbury. 2040 m. (A magnificent, dwarf alpine from high in the N Californian Coast Ranges, remaining very much in character under glass here - try it outside in granite scree. Woody, decumbent stems form a loose mat; rounded, ash-grey foliage; dense heads of big, baggy flowers in rich, luminous imperial-purple.) (20+ seeds) C

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- PENSTEMON PETIOLATUS J. Andrews coll., 1993 : Nevada, Clark Co., Charleston Mts., Indian Ridge. 1615 m. E-facing limestone cliffs. (Sect. Petiolati. A little-known, dwarf, saxatile shrub, so unlike any other, that it is placed in a section all on its own, from which John has been trying to collect seed for some time. It crops up in limestone-fissures in one or two sites (some now within the Nevada Test Site) in S Nevada then reappears in the Beaver Dam Mts. of S Utah. 'A Utah Flora' describes the flowers as "carmine pink" ; Elizabeth Neese in 'Rocky Mountain Alpines' calls it "a natural for rock gardens" with "rich magenta" flowers and her photograph (Plate 24) backs this up ; Noel Holmgren in 'Intermountain Flora' also says "magenta". John was somewhat perplexed when he found the flowers here are blue but he is in the best of company - Dwight Ripley, writing in 1942, describes the S Nevada plants as "neat fruticose...with flowers of intense turquoise and small leaves sharply toothed." We may be looking at at least two taxa worth subspecific rank, as John says the Nevada plants do not greatly resemble the one in the Utah photograph but they do match the line-drawing and description in 'Intermountain Flora' except in colour. Maybe he'll go to the Beaver Dam ones to sort this out sometime. This should be ideal for the alpine-house with as much sun as possible and a compost heavy on limestone chippings. Eventually forms a much-branched 5-15 cm. shrub from a gnarled trunk.) (10+ seeds) E
- PENSTEMON THOMPSONIAE subsp. JAEGERI J. Andrews coll., 1992 : Nevada, Clark Co., NE of Charleston Peak. 2500 m. (Sect. Caespitosi. Limited to this area, this has a more erect, ericoid habit than other races of *P. thompsoniae*, with thyrsoid panicles of violet-blue flowers with yellow palates. Tiny, rounded leaves with ash-white, scale-like hairs are typical of the species. For the alpine-house in the UK. 15 cm.) (10+ seeds) D
- PHLOX SPECIOSA G. Burrell coll., 1993 : Washington, Klickitat Co., summit of Dalles Mt. 700 m. (An attractive, shrubby based species - in this form (rather different from the S Oregon coll. listed last year) with blush-white to light-pink flowers generously produced in loose cymes - about 20 cm. high.) (10+ seeds) B
- 13566 PHLOX TUMULOSA Nevada, White Pine Co., NW of Ely, SE of Robinson Summit. 2200 m. Openings among *Juniperus* in gravelly clay. 21.6.93 (The famous & incomparably firm hummock-forming endemic of the W Great Basin - an extreme pulvinate-caespitose development of the genus. White to lavender flowers. Very few.) (8 seeds) E
- PRIMULA DOMENSIS J. Andrews coll., 1991 : Utah, Millard Co., House Range, Notch Peak. 2450 m. Ledges on & at base of limestone cliffs in part-shade. (Recently discovered - the largest-flowered of the *P. cusickiana* group, proving growable in Dionysia-conditions. Tends to summer-dormancy. Rose to lavender. A few)(20+ seeds) E
- PRIMULA NEVADENSIS J. Andrews coll., 1991 : Nevada, White Pine Co., Snake Range, Mt. Washington. 3125 m. N-facing limestone cliffs & limestone-scrub under *Pinus*. (A few large, violet-purple, yellow-eyed flowers on 9 cm. stems. Little-known but now being grown - may be best plunged outside in summer in UK. Few.)(20+ seeds) E
- 13591 PRIMULA SPECUICOLA Utah, San Juan Co., Sunbonnet Rock above Bluff. 1550 m. Seepage lines below overhangs on shady sandstone cliffs. 23.6.93 (An extraordinary relic, endemic to the 'hanging gardens' of the Colorado River canyons, like a giant *P. farinosa* with clumps of dark-green leaves, backed with dense white farina, & umbels of up to 40 flowers in lavender, pink or white, on 15 cm. stems. Not so easy to grow well.)(50+ seeds) D
- 13327 PSILOSTROPHE COOPERI Nevada, Clark Co., NNW of Logandale. 460 m. Exposed, gravelly ridgetops. 5.6.93 (Very distinct, 50 cm. high, sub-shrubby desert composite - a tracery of white-tomentose stems & linear leaves covered with bright yellow heads with a few large rays (just like *Zinnia grandiflora*, if you know it), which persist & become papery - you'll see for yourself if you order it!) (5+ heads - possibly about 50+ seeds) A
- 13325 SCLEROCACTUS POLYANCISTRUS Nevada, Clark Co., NNW of Logandale. 460 m. Exposed gravelly ridgetops on clay hills. 5.6.93 (A beautiful, little Fish-hook Cactus, cylindrical & 10-20 cm. high with rose-purple flowers - we think correctly named but this is a very variable, difficult genus. Cold here in winter.) (15+ seeds) B
- SCLEROCACTUS WHIFFLEI J. Andrews coll., 1992 : Utah, Carbon Co., S of Price. 2000 m. (This name now covers most Utah Fish-hooks, diverse in habit, spine-formation & in flower colour from pink to violet, white to yellow. Usually a dwarf dome of 5-10 cm. Both these should suit alpine-house cultivation.) (15+ seeds) B
- 13563 SCUTELLARIA NANA var. SAPPHIRINA Nevada, White Pine Co., SE of Little Antelope Summit. 1980 m. Among *Artemisia*, in calcareous clay. 21.6.93 (A few more fresh seeds of this tiny, Great Basin endemic, discovered by Barneby & Ripley. Little tufts of rounded grey-green leaves set with gentian-blue skullcap flowers pop up from wide-growing subterranean rhizomes. Potentially a superb alpine-house plant if it can be grown in character - try an alkaline gritty mix and all available sun throughout the year. About 5 cm.) (20+ seeds) E
- 13503 SILENE HOOKERI subsp. BOLANDERI Cal., Trinity Co., S of Hayfork to Peanut. 750 m. W-facing banks among scrub and openings in coniferous woodland. 16.6.93 (In this form, which as far as we can ascertain is narrowly limited to this area, utterly distinct horticulturally, though all subspecific divisions of this species are currently disregarded by taxonomic botanists. Seed we collected in 1989 from the Illinois Valley (we were too early in 1993, though flowering was magnificent) was from what can be regarded as the soft-pink type race, though it keyed-out in Munz to this subspecies. This population is altogether different with larger flowers on the decumbent, grey-leaved stems, the petal-blades evenly & deeply cut into linear segments and the colour invariably pure white. We can remember seeing a stunning pan of this grown by Kath Dryden but don't know if its still around in the UK. This species is summer-dormant and not exceptionally difficult in the alpine-house in the UK. Collecting seed is difficult - timing is critical - & we have but a few of both.) (8 seeds) E
- 13495 SILENE HOOKERI var. INGRAMII Oregon, Douglas Co., S of Tiller. 460 m. Steep, serpentine slopes - in openings among *Pinus*. 15.6.93 (We grew this splendid race for many years in the 1970's but have not seen it lately. We would not be able to list it now but for the help of Boyd Kline - this is a very local plant indeed, only known from the Roseburg area, along the Umpqua River drainage of SW Oregon. Notably large flowers with each of the 5 petals notched into 4 lobes and much more richly coloured than in the Illinois Valley - usually a beautiful, rich, cherry-pink. These local races really should be maintained & propagated.) (8 seeds) E
- 13472 SISYRINCHIUM DOUGLASII Oregon, Jackson Co., Siskiyou Mts. SSE of Ashland. 1370 m. Open meadow on SW-facing slope. 14.6.93 (Surely the finest of the genus with "a succession of noble hanging bells in a deep and flashing imperial violet..." Early-flowering, 20 cm. high & summer-dormant. Alpine-house or scree-bed)(20+ seeds) B
- 13574 SPHAERALCEA aff. CAESEITOSA Utah, Millard Co., SSE of Garrison. 1900 m. Open slope in calcareous gravel. 21.6.93 (Possibly not from the same site as John's small, 1992 coll. - extremely variable here though this must be virtually next-door to the type-locality - only known in this area. These are woody-based dwarf perennials, 5-25 cm. high with tightly clustered, orange flowers - so far so good - but the foliage is very variable & often deeply cut. Typically leaves should be thick, grey-white & crenate - barely, if at all, lobed. May be grading into *S. ambigua*. Seed should still give some good dwarf plants.) (15+ seeds) C

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- SPHAEROMERIA COMPACTA J. Andrews coll., 1992 : Nevada, Clark Co., Charleston Peak. 3320 m. (We'll leave the description of this most reduced member of its genus entirely up to Dwight Ripley, writing in 1942 : "...probably the most decorative of all the Charleston Peak plants is *Tanacetum compactum*, a species so distinct that Rydberg gave it the generic name of *Chamartemisia*. In habit and general appearance it bears a really striking resemblance to *Artemisia granatensis*...The minute leaves are trifid and densely sericeous, spring from a stout woody stock...this exquisite tansy from desert snows should vie successfully with persistent winners in the 'Silver Foliage' class..." Pads a few cm. high and 10 cm. across.) D
- 13460 TRILLIUM RIVALE Oregon, Josephine Co., SW of Selma, above Josephine Creek. Steep rocky slopes with sparse conifers. 13.6.93 (Maybe the loveliest of the smaller Trilliums, about 10 cm. high with white flowers, sometimes marked with carmine, sometimes flushing to pink tones. Slow but successful in cultivation in the UK, where this form from the Oregon side of the mountains is seldom seen - larger, mottled leaves)(15+ seeds) D
- 12899 TRILLIUM RIVALE Cal., Del Norte Co., Gasquet Mt. 390 m. At margin of undergrowth on steep, wooded slopes. 6.6.92 (The more generally cultivated Californian population - we have found second-year seed still gives excellent germination with this species, which does not object to seed being dried.) (15+ seeds) D
- 13496 TRITHELEIA HENDERSONII Oregon, Douglas Co., S of Tiller. 460 m. Openings among Pinus on steep, serpentine slopes. 15.6.93 (A rather local S Oregon endemic, seldom occurring in any quantity. Straw-yellow flowers, each segment with a neat, central blue-black line, on 20 cm. stems. A few only.) (15+ seeds) C
- 12878 VIOLA HALLII Cal., Humboldt Co., SSW of Willow Creek. 1420 m. Opening in coniferous forest, in stony turf. 5.6.92 (From our excellent, 1992 coll. - far too early for seed on 12.6.93 - it was a late spring up here. Close to *V. beckwithii* but with darker, purple-violet upper petals & cream lower ones. Similar dissected leaves and habit - it all dies back to an underground rhizome in summer - alpine-house or scree.) (10+ seeds) C
- 13069 YUCCA WHIPPLEI subsp. CAESPITOSA Cal., Tulare Co., NE of Springville. 1150 m. Among scrub on steep, rocky slopes. 20.6.92 (The most northern race which produces clumps of rosettes and is thoroughly perennial. Beautiful, stiff, narrow, grey-green, spine-tipped leaves and a breathtaking, spire-like panicle of hundreds of cream bells, approaching 3 m. high. We have flowered it from seed in Dorset - it can be done!) (15+ seeds) B

ADDITIONAL COLLECTIONS OF NORTH AMERICAN SEED

- ARCTOMECON MERRIAMII J. Andrews coll., 1993 : Cal., Inyo Co., Grapevine Mts., Red Pass (W of Beatty, Nevada). 1650 m. Steep, volcanic slopes. (John's late collection completes this trio of Bear Poppies - an unprecedented event - very few people can have seen all three growing wild and there has never been an attempt to bring the entire genus into cultivation. The opportunity to list all of them might not occur again. When we visited this locality in May, 1989, we saw no trace of this but in 1993 there was an extensive flowering. It is all but impossible to reach this habitat for much of the year and by the time John could gain access almost all seed had dispersed. Poppies usually retain a few seeds in the base of each capsule, however, and we have a limited amount. For general comments on this genus, see *A. californica* & *A. humilis* at the beginning of this section : "...in its way almost lovelier", writes Ripley in 1942, "with white poppies held fastidiously, and singly, above the typical shaggy pale-blue leaves, broadly toothed at the apex." The most western species, just entering California, perennial & about 30 cm. high.) (10+ seeds) E
- CALOCHORTUS aff. PANAMINTENSIS J. Andrews coll., 1993 : California, Kern Co., Walker Pass, W of Ridgecrest. 1550 m. (A somewhat mysterious plant from the SE extremity of the Sierra Nevada on the opposite side of Searles Valley to the Panamints. A white-flowered Mariposa, this may be better placed under another member of this group - it needs more detailed investigation. John has tried to collect seed from the Panamint plants in both 1992 & 1993 but they have been grazed off by deer. While this collection is of very specialised interest, it gives us the opportunity to grovel apologetically over the misidentification of John's 1990 collection, listed & distributed by us as *C. panamintensis*. This was almost certainly all *C. kennedyi* var. *munzii* - the two taxa are clearly separated by altitude and we have now seen both in flower. Andrews has been severely reprimanded and this may be a pathetic attempt to ingratiate himself to you - if you feel strongly you may have a compensatory packet of this.) (15+ seeds) E
- DICHELOSTEMMA MULTIFLORUM S. Farwig & V. Girard coll., 1993 : Cal., El Dorado Co., ENE of Pollock Pines. 1070 m. About 50 cm. high with dense umbels of violet to light purple flowers. An attractive, easily-grown bulb.) (20+ seeds) A
- ERIOGONUM BREEDLOVEI J. Andrews coll., 1993 : Cal., Kern Co., Piute Peak (Sierra Nevada, E of Bakersfield). 2510 m. (Recently described and new to cultivation, this is a high-alpine only known, in the type race, from metamorphic limestone, summit-ridgetops here. Another race, *E.b.* var. *shevockii*, grows on granite, a little to the N. Tight mats, up to 20 cm. across of little elliptic leaves, woolly white below and grey-tomentose above. Dense umbels of flowers, in pinkish to yellow tones, on stems of under 10 cm. Such alpine species are not usually too difficult.) (15+ seeds) D
- HESPEROCHIRON CALIFORNICUS J. Andrews coll., 1993 : Cal., Sierra Co., N of Sattley. 1520 m. (A delightful, tiny member of the Hydrophyllaceae, relying on snow-melt for its brief spring appearance. Rosettes of rounded, basal leaves & short-stemmed (2-5 cm.) bowl-shaped flowers, usually white here but sometimes lilac-tinted. It can make an exquisite & trouble-free pan-plant for the alpine-house but remember it is all but impossible to find the tiny dormant roots in summer, so think before you report. May be best to sow thinly & leave them alone.) (20+ seeds) C
- ZAUSCHNERIA CALIFORNICA S. Farwig & V. Girard coll., 1993 : Cal., Contra Costa Co., N slopes of Mt. Diablo. 250 m. (A gorgeous, late-flowering perennial - *Epilobium canum*, as in the new "Jepson", if you like (we don't). Subshrubby & about 30 cm. or more high with narrow, greyish leaves & brilliant red-orange flowers. Hot, dry site.) (15+ seeds) B

While our main aim is to offer you seeds collected by ourselves, help from friends in Britain and abroad is much in evidence in this list. This is particularly evident in Section III, where space does not allow us to name the sources. We are grateful to : John Andrews, Steve Bach, Stan Farwig & Vic Girard, Wayne Roderick (all California, USA) ; Jim Almond (Shropshire, UK), Helen Barton (Devon, UK), Dinah Batterham (Dorset, UK), Helen Beaufort-Murphy (Peru), John Blanchard (Dorset, UK), Simon Bond (Glos., UK), Galen Burrell (Washington, USA), Paul Christian (Clwyd, UK), Phil Cornish (Glos., UK), Kath Dryden (Herts., UK), Alan Edwards (Surrey, UK), Don Elick (Japan), Bert Hopwood (Devon, UK), Terry Hatch (New Zealand), Dave Hoskins (Hampshire, UK), Hans-Erik Jensen (Denmark), Melvyn Joep (Surrey, UK), Ruth Lord (NZ), Will McLewin (Cheshire, UK), Jimmy Persson & Henrik Zetterlund (Sweden), Ivan Rankin (NZ), Richard Riedy (New Mexico, USA), David Stephens (Surrey, UK), Norman Stevens (Cambridge, UK), Geoff Taylor (Dyfed, UK), Graham Tonkin (Tasmania), Mike Tucker (Somerset, UK), A. Watt (Victoria, Australia), Peter & Penny Watt (Hampshire, UK).

We are sure we have omitted several friends - our apologies. Sincere thanks to all and to all our customers for continuing to support our attempt to collect and distribute seed from a wide range of new or interesting plants.

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FROM : JIM & JENNY ARCHIBALD, 'BRYN COLLEN', FFOSTRASOL, LLANDYSUL, DYFED, SA44 5SB, WALES, U.K.

We have more or less restricted this section to seed collected in 1993. There are obviously no wild collections by ourselves from this area in 1993 but we have some interesting contributions from others as well as cultivated material.

CULTIVATED MATERIAL is only listed here if it is derived from plants of known wild origin, accompanied by a reasonable amount of field data. Even with first generation seed, a certain amount of selection has occurred (i.e. an ability to grow and set seed under particular garden conditions) and there is the possibility of hybridization. With successive generations raised from seed in cultivation, field data and the original numbers become more and more irrelevant. Such cultivated seed will be found in Section III, though our decisions as to which section seed is included are somewhat arbitrary.

REFERENCE NUMBERS in Section II are our permanent references for particular populations within the area of Europe, SW Asia and N Africa. If seed is collected by us - or anyone else - from an identified species in a defined locality, it is listed under the same reference as previous collections from the same place. Seed packets carry only this number but, as these six-digit numbers run in alphabetical, as well as numerical, order here, identification of packets from this list is a simple matter. The five-digit field-numbers used in Section I apply only to particular collections on particular dates.

NOMENCLATURE in general follows 'Flora Europaea' and 'Flora of Turkey' with a degree of editing and updating.

* : indicates seed from cultivated plants of known wild origin. Field data applies to the original collection.

- 154.200 ANDROCYMBIUM RECHINGERI Greece, Crete, Hania, Falassarna. Sea-level. In sandy soil among coastal, limestone rocks. (An exceptional, 1993 coll., by Prof. P. and Dr. P. Watt. This genus of Colchicum-relatives only barely enters Europe (its main distribution is African) and this species, as far as we are aware, is known only from the island, Elaphonisos, off the W coast of Crete. This is from the NW tip of the Cretan mainland and it would be reasonable to assume it is *A. rechingeri* - if not it is a new species. It has the characteristic rosette of leaves, like involucre bracts, surrounding the flowers - possibly pink or white in early spring.) (20+ seeds) E
- 161.904 ANEMONE PAVONINA Greece, Poros, near the temple of Poseidon. Coll. M. Jope, April 1993. (The brilliant, pure scarlet Greek anemone; usually growable in the UK in a well-drained, sunny site outside.) (20+ seeds) A
- * 185.550 ARISTOLOCHIA LONGA subsp. PAUCINERVIS Morocco, Middle Atlas Mts., SW of Ain el Leuh. 2000 m. Stony places on open, limestone slopes. 1993 seed ex M. Tucker from our 1982 coll. (A dwarf, tuberous-rooted, summer-dormant species for the bulb-frame or a deep pot. Weird, elongated, yellow-brown flowers.) (10 seeds) B
- * 227.702 BELLEVALIA DUBIA Italy, Sicily, Castel Mola near Taormina. 1993 seed from an A. Edwards coll. of a selected form with particularly brilliant blue young flowers. The most striking European species. 30 cm. (15+ seeds) A
- * 227.770 BELLEVALIA FORNICULATA Turkey, Agri, Sac Gecidi W of Eleskirt. 2300 m. Hay meadow. 1993 seed grown by Dinah Batterham from our 1986 coll. (An outstanding plant, locally abundant but restricted to a few sites in the Erzurum area, with flowers of pure turquoise-blue. Possibly best outside in the UK - don't dry it.) (15+ seeds) B
- * 228.150 BELLEVALIA ROMANA Greece, Ioanina, Mitsikeli. 860 m. Ledges on S-facing, limestone cliffs. 1993 seed from M. Tucker from our 1964 coll. (have we really been around that long?) (white to brown bells. 50 cm.) (15+ seeds) A
- * 256.001 CAMPANULA HAWKINSIANA Greece, Ioanina, Katara. 1700 m. Steep, unstable, S-facing, serpentine screes. Our 1992 from our 1985 coll. (The classic serpentine endemic of the Pindus with wiry, tiny-leaved, prostrate stems and wide bells in intense violet with white or electric-blue centres - superb but not easy.) (50+ seeds) C
- * 257.400 CAMPANULA LACINIATA Greece, Karpathos, Cape Paleokastrou WSW of Arkassa. Sea-level. Limestone fissures. 1992 seed ex Helen Barton from the 1983 re-introduction by H. & I. Barton. ("The fairest Campanula in all Greece" wrote Tournefort, its discoverer; "one of the finest monocarpic species known" wrote Peter Davis in 1938. An unique plant with deeply cut leaves on a stout stem, producing in time an erect flower-stem of 50 cm. or more, up which huge, shallow bowls cluster - "cold crystalline lavender" with a large white centre.) (50+ seeds) D
- * 340.350 CROCUS ASUMANIAE Turkey, Antalya, S of Akseki. 900 m. Open areas on limestone slopes with Quercus scrub. 1993 seed from our 1985 coll. (Pale lilac to white flowers with striking scarlet styles in autumn.) (15+ seeds) B
- 344.090 CROCUS GARGARICUS (subsp. *gargaricus*) Turkey, Mugla, Goktepe above Mugla, between Kazagac & Mentese. 1800 m. Pine forest. 3.6.93 (A most significant coll. for the Crocus specialist by a specialist: D.B. Stephens 93-12. The type-race of this fine, yellow, spring-flowering species is barely, if at all, in cultivation; what is grown is usually the Ulu Dag race - *C. gargaricus* subsp. *herbertii* - with stolons & a finely reticulate tunic. A very hardy, neat little species, usually with rich orange-yellow flowers; keep cool in summer.) (15+ seeds) D
- * 345.200 CROCUS GOULIMYI Greece, Messinia, between Kalamata & Areopoli. 300 m. Humus-filled crevices among stones in old olive-groves & among oaks. 1993 seed from our 1983 coll. (A very local plant in nature but easy in the garden, where it is prolific with its distinct, long-tubed, pale lavender flowers in autumn.) (15+ seeds) A
- * 347.402 CROCUS LAEVIGATUS Greece, Evia, above Nea Artaki. 300 m. Openings among Pinus & Cistus macchie. 1993 seed from our own & a D. Hoskins coll. (A little, late-autumn flowerer; very variable in markings.) (15+ seeds) B
- 348.805 CROCUS NIVEUS Greece, Messinia, SE of Kalamata. Rocky, N-facing slopes. 23.5.93: D.M. Hoskins 93-31 (The magnificent, pure-white species of the S Peloponnese with a gorgeous scarlet style. Autumn.) (15+ seeds) C
- * 358.500 CYCLAMEN BALEARICUM Spain, Islas Baleares, Mallorca, N of Andratx. 350 m. Among Quercus in humus. Coll. & ex hort. D. Hoskins, 1993 (The charming, reduced version of *C. repandum* with delicately pencilled white flowers in spring. Distinct, mottled, grey-green leaves. Best grown frost-free and in shade.) (20+ seeds) B
- * 359.003 CYCLAMEN CILICIMUM Turkey, Konya, NW of Bozkir. 1100 m. Base of N-facing, limestone cliffs. 1993 seed from our 19 5 coll. (Pink, red-nosed flowers in autumn. Very hardy - for a well-drained sunny, site in UK.) (15+ seeds) A
- * 363.003 CYCLAMEN GRAECUM Greece, Lakonia, Agios Nikolaos NW of Githio. 500 m. Steep slopes under olives. 1993 seed from our 1984 coll. (Pink, autumn-flowerer - borderline hardiness in the UK. Best grown dryish under glass in the UK. This is from selected leaf-forms from a very fine and variable population.) (15+ seeds) B
- * 363.007 CYCLAMEN GRAECUM Greece, Argolida, Epidavros. 1993 seed from a D.B. Stephens' coll. Good leaves. (15+ seeds) B
- * 363.008 CYCLAMEN GRAECUM Greece, Atiki-Pireas, Imittos (Hymettus). A notably fine form grown by S. Bond (15+ seeds) B

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- * 364.003 CYCLAMEN HEDERIFOLIUM Greece, Evia, above Metohi W of Karistos. 200 m. N & W facing sides of gully. 1993 seed from a D. Hoskins coll. (Distinct with large flowers & large leaves, like *C. africanum*.) (20+ seeds) A
- * 364.005 CYCLAMEN HEDERIFOLIUM Greece, Preveza, above Lichnos near Parga. 100 m. Steep slope under olive-trees. 1993 seed from a D. Hoskins 1987 coll. (Petals with an extra twist - like *C. trochoptheranthum*.) (15+ seeds) A
- 364.007 CYCLAMEN HEDERIFOLIUM Greece, Kefalonia, near Sami. 100 m. Olive groves. Coll. M. Jope, 9.8.93. (15+ seeds) A
- * 367.500 CYCLAMEN PURPURASCENS Italy, Friuli-Venezia Giulia, W of Opicina, N of Trieste. 100 m. Openings among scrub. 1993 seed from our 1966 coll. (This lower altitude Adriatic population may be easier to grow than those from higher, alpine woods - we grew it under apple-trees in Dorset for many years and it was excellent in a pot, not objecting to warmer, drier summers. Beautiful, scented, rosy flowers in late summer & autumn.) (15+ seeds) C
- * 367.900 CYCLAMEN REPANDUM France, Corsica, N of Bastia. 100 m. Castanea woodland. 1993 seed from another of our very early colls. (1962), again maintained by D. Hoskins. These were selected from thousands for richness of colour and gained an FCC for the species. Can produce some luminous carmine-pinks. Spring. Likes shade.) (15+ seeds) C
- * 369.000 CYCLAMEN ROHLFSIANUM Libya, Cyrenaica, Benghazi to Jabal Akhdar, above Tukrah. 200 m. Limestone pockets in macchie and under Pistacia scrub. 1993 from our 1966 coll. plus some seed from other sources - as far as we know there have been only three introductions, all likely to be from around the same area, where it is very numerous. Not difficult if you can keep it frost-free. Beautiful leaves and pink, autumn flowers.) (15+ seeds) D
- 409.401 DIGITALIS OBSCURA Spain, Jaen, Sierra de Cazorla. 1100 m. Stony limestone slopes in light shade. 11.8.91 (Shrubby based with dark, narrow leaves; amber-orange flowers marked yellow & red inside. 60 cm.) (50+ seeds) B
- 410.000 DIGITALIS THAPSI Spain, Avila, Sierra de Gredos, Puerto del Pico. 1300 m. Granite fissures & in loose granite grit on steep slopes. 8.9.91 (Downy, sugar-pink flowers & leaves with yellowish indumentum.) (50+ seeds) B
- 430.250 ECHINOPS EMILIAE Turkey, Mugla, Baba Dag. 1600 m. Limestone scree. Coll. P. & P. Watt, 1992 (Peter & Penny Watt's significant collection of this unique plant, 45 years after Peter Davis discovered it here, where "the most spectacular plant was an undescribed Echinops...the heads can be nearly 6 inches across - incredible spheres of pale jade-green...on stems of no more than 18 inches, it was a great disappointment that seed of this wonderful species could not be obtained." Has germinated quickly but seedlings need care.) (5 seeds) E
- * 492.100 FRITILLARIA BITHYNICA Greece, Samos, Ambelos (Mt. Lazarus). 450 m. At edge of Pinus woodland on mica-schist. 1993 seed from a D. Hoskins coll. (Glaucous, yellow-green bells, yellow inside - the island races from Samos & Khios are little-known. This & the next are documented on Samos in the March, 1993, AGS Bulletin)(15+ seeds) C
- * 492.400 FRITILLARIA CARICA (subsp. *carica*) Greece, Samos, Profitis Elias. 950 m. Under Pinus in mica-schist. 1993 seed from a D. Hoskins coll. (Dwarfer with grey-green leaves and dark nectaries inside its yellow bells - the two have utterly distinct seed-capsules. Otherwise known from a few localities in SW Turkey.) (10+ seeds) E
- * 493.000 FRITILLARIA CONICA Greece, Messinia, S of Pilos. 200 m. Limestone slope; edge of Quercus scrub. 1993 seed from M. Tucker from our 1985 coll. (Allied to the above & *F. forbesii*, this is one of the more robust, up to 25 cm., with larger flowers among these E Mediterranean species with yellow bells. Not difficult.) (10+ seeds) D
- 494.000 FRITILLARIA DAVISII Greece, Lakonia, NW of Pargos Dirou. 200 m. Olive-grove on limestone. 21.5.93. Coll. : D.M. Hoskins 93-14 (A Mani endemic, near *F. graeca* but with shiny, green leaves and lacking the green stripe on the brown-chequered bells. See also comments under *F. graeca* 496.002. Quite easy under glass.) (15+ seeds) C
- * 494.400 FRITILLARIA DRENOVSKII Greece, Drama, Falakro above Volokas. 1500 m. Meadow among sparse Pinus. 1993 from our 1986 coll. (A most delicate, elegant, montane plant, too seldom seen in the UK, where it should be quite easy to grow - absolutely hardy it wants to be cool & dryish in summer - never 'baked'. Endemic to the mountains along the Greek/Bulgarian border with narrow, purple-brown bells & thin, greyish leaves. 15-20 cm.)(15+ seeds) E
- * 494.800 FRITILLARIA EHRHARTII Greece, Evia, above Metohi, W of Karistos. 200 m. N & W facing sides of gully among scrub, on mica-schist. 1993 seed from our own & a D. Hoskins coll. (A beautiful native of S Evia & the nearby Kiklades. Bloomy, grape-black bells, ruby against the light. Easy under glass in the UK.) (15+ seeds) C
- * 496.000 FRITILLARIA GRAECA (var. *graeca*) Greece, Ahaia, Ori Aroania, Helmos above Kalavritta. 2000 m. Stony slopes in alpine-steppe. 1993 seed from our 1986 coll. (A most handsome, very dwarf, high altitude race with glaucous leaves and big, elongated bells in chestnut-brown with broad, yellow-green fascia.) (15+ seeds) D
- * 496.002 FRITILLARIA GRAECA Greece, Lakonia, Akr. Tainaro (Cape Matapan). 1993 seed from an A. Edwards coll. (This is to us an extraordinary collection from the infamously wild, windswept promontory at the end of the Mani, the southernmost tip of the Greek mainland. We know this comes down to almost sea-level on some of the Kiklades but here it should be *F. davisii* - Alan tells us both are sympatric here. Who else has searched?) (15+ seeds) D
- * 498.503 FRITILLARIA LUSITANICA Spain, Jaen, Sierra de Cazorla. 1993 from an A. Edwards coll. (The extremely variable fritillaries of the Iberian peninsula & NW Africa really need reviewing. Here they are usually rather dwarf with somewhat rounded bells in dark red-browns banded with yellow-green. Narrow, greyish leaves.) (15+ seeds) D
- * 499.400 FRITILLARIA MESSANENSIS (subsp. *messanensis*) Greece, Pieria, Oros Olimbos. 1500 m. Steep gravelly slopes among Buxus. 1993 seed from our 1984 coll. (A very fine, elegant form of the type-race with brown-chequered, waisted bells. Not so vigorous as the next but not at all difficult in a bulb-frame or pot in UK.) (15+ seeds) B
- * 499.700 FRITILLARIA MESSANENSIS subsp. *GRACILIS* (Jugoslavia) Bosnia & Hercegovina, W of Trebinje. 500 m. Among Quercus scrub over limestone. 1993 seed from our 1984 coll. (Untessellated, chestnut-brown bells edged with gold. Very hardy & a good grower in cultivation - worth trying outside in a well-drained site.) (20+ seeds) A
- 502.600 FRITILLARIA RHODOCANAKIS Greece, Argolida, Idra, above Idra town. 150 m. Coll. M. Jope, 1993 (A neat, dwarf species, more or less endemic to the island of Hydra. Wide, flaring bells in chocolate-purple with yellow margins but can vary to yellow-greens. Definitely for the alpine-house, maybe frost-free, in UK.) (10+ seeds) E
- * 503.700 FRITILLARIA THESSALIA subsp. *IONICA* Greece, Kerkira, Pantokrator. 1993 seed from A. Edwards & E. Sewell colls. (Usually with solitary, light green bells, just tessellated with purple around the margins. We follow Kamari's classification in the 'Mountain Flora of Greece' but prefer to keep this name for Corfu plants.) (20+ seeds) C
- 503.800 FRITILLARIA TUBIFORMIS France, Hautes-Alpes, Pic de Gleize NW of Gap. 1800 m. Among grasses on steep, SE - facing slopes. 20.9.91 (Large, fat, chequered, brown-purple bells on relatively short stems. An outstanding plant, seldom available, which from this locality, where it is dry in summer, may suit the bulb-frame.) (20+) C
- * 518.400 GENTIANA GELIDA Turkey, Gumushane, Kop Dag above Kop. 2300 m. Meadows in moist to dryish turf on N-slope. 1993 seed from D. Batterham from our 1986 coll. (Superficially like *G. septemfida* but with creamy-yellow trumpets, striped with deeper yellow & green outside. Not an easy plant but well worth some effort)(20+ seeds) C

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 B : \$3.00 ; £2.00 ; DM5, - ; FF17. - E : \$7.00 ; £4.50 ; DM12, - ; FF40. -
 C : \$4.00 ; £2.50 ; DM6, - ; FF21. - F : \$9.00 ; £6.00 ; DM15, - ; FF50. -

- * 531.802 GLADIOLUS ANATOLICUS Turkey, Adana, above Hasanbeyli. 1100 m. Among deciduous *Quercus* scrub on W-facing slope. 1993 seed from our 1988 coll., grown by M. Tucker, who describes this as having "superb, large, widely flared flowers" - showy, purple-pink, S Turkish endemic proving easy to grow in SW England. (20+ seeds) B
- 532.503 GLADIOLUS ITALICUS Greece, Kefalonia, near Sami. Cultivated fields. Coll. M. Jope, 1993 (Also known as *G. segetum*, the purplish pink species of dryish, Mediterranean fields. Easily grown.) (20+ seeds) A
- * 532.605 GLADIOLUS KOTSCHYANUS Turkey, Van, valley W of Yukari Narlica (to Bahcesaray). 2200 m. Stony alluvium in river bed (dry later). 1993 seed from our 1988 coll. (From a spectacular colony of this wet-grower, mainly in pale lavender shades with occasional whites. This should be easy outside in UK. Elegant. 30 cm.) (20+ seeds) B
- * 572.300 HYACINTHOIDES REVERCHONII Spain, Jaen, Sierra de Cazorla, above source of the Guadalquivir. 1400 m. Pockets of red clay on limestone cliffs. 1993 seed from our 1990 coll. (An obscure narrow-endemic but proving easy to grow & most attractive. About 15 cm. high with glossy leaves and wide-open, rich-blue flowers.) (15+ seeds) C
- 600.413 IRIS UNGUICULARIS Greece, Messinia, S of Kalamata. 100 m. In macchie on rocky, N-facing slope. 1993 coll. : D.M. Hoskins 93-31. (The Greek races are much dwarfer with narrower leaves and darker violet flowers than the Algerian ones - somewhat intermediate to the Cretan ones. Easy in a hot, dry site in the UK.) (10+ seeds) C
- * 630.451 LEUCOJUM ROSEUM France, Corsica, Pont de Calancone. 1993 seed from an A. Edwards coll. (A delightful, little, autumn-flowering bulb with shell-pink bells - much dwarfer than pinkish forms of *L. autumnale*, which are sometimes distributed as this. Best in 'cyclamen conditions' under glass in the UK.) (15+ seeds) B
- * 633.201 LILIUM CHALCEDONICUM Greece, Magnissia, Oros Pilio above Portaria. 1500 m. Steep, SW-facing, schist slope. 1993 seed from our 1985 coll. (Luminous scarlet, pendant, waxen flowers - rather dwarfer and more slender than old commercial stock. Growable in a sunny, well-drained site in the UK & easy in a large pot.) (15+ seeds) C
- * 634.401 LILIUM POMPONIUM France, Alpes-Maritimes, Montagne de Maurel, NE of La Mure. 1000 m. Among scrub in steep-limestone gully. 1993 seed from our 1988 coll. (A glorious plant, about 60 cm. tall, with grassy leaves and brilliant scarlet flowers. Can be maintained in rich, limestone-scrub in sun in the UK.) (15+ seeds) C
- 654.801 LITHODORA ZAHNII Greece, Messinia, between old Kardamili & Ag. Sofia. 200 m. N-facing limestone cliffs. 28.5.93. Coll. : D.M. Hoskins 93-38 (A dwarf, saxatile shrub restricted to a small area SE of Kalamata ; easy neat & attractive as an alpine-house plant with sky-blue flowers in late winter and spring. 20 cm.) (10 seeds) D
- * 689.901 MUSCARI LONGIPES Turkey, Sivas, WSW of Hafik. 1300 m. In steppe-vegetation on calcareous hills. 1993 seed from our 1986 coll. (Rated as a "super plant" by David Stephens, who sent this seed. A *Leopoldia* with a big tassel of violet, sterile flowers & usually with twisted leaves, it extends E through Iran.) (15+ seeds) B
- * 690.700 MUSCARI PSEUDOMUSCARI Iran, Mazanderan, S of Chalus. 1520 m. Ledges on limestone cliffs. (This is from the 1963 coll., BSBE 842, but the Furse colls. & our 1131 are all from the same area - it is only known from the Chalus gorge. Heads of china-blue bells - open not pinched in. Maybe better known as *M. chalusicum*.) (15+) B
- * 696.200 NARCISSUS BULBOCODIUM subsp. NIVALIS (sensu Maire in 'Flore de l'Afrique du Nord') Morocco, High Atlas, above Tizi-n-Tichka. 2000 m. In turf. 1993 seed from our 1982 coll. (Broad, prostrate, glossy leaves with bright yellow hoop-petticoat flowers, very variable in size & shape, on short stems. A very hardy plant.) (15+ seeds) B
- * 705.701 NARCISSUS RUPICOLA subsp. WATIERI Morocco, High Atlas, above Tizi-n-Tichka. 2300 m. Moist or shaded sites on rocky slopes. 1993 seed from our 1982 coll. (The incomparable, pure crystalline-white race from the high, acid mountains of the central High Atlas. Grow this cool and never 'bake' it when dormant in summer.) (10+ seeds) C
- 746.002 PAEONIA BROTEROI Spain, Jaen, Sierra de Pozo, NW of La Nava de San Pedro. 1300 m. Among *Pinus* on steep, limestone slopes. 12.9.91 (The last opportunity for seed-bank seed of this Iberian endemic with large, bowl-shaped flowers in varying shades of rose-pink, holding massed golden stemens. Good drainage.) (10+ seeds) C
- * 709.502 PANCRATIUM ILLYRICUM France, Corsica, Venaco SSE of Corte. 500 m. 1993 seed from an A. Edwards coll. (Heads of large, white, scented trumpets. A magnificent native of Corsica & Sardinia, hardiest of the genus.) (5) C
- * 801.000 PULSATILLA MONTANA Slovenia, NW of Permani (WNW of Rijeka). 500 m. Open karst in rich meadow vegetation and on slopes of dolines. 1993 seed from our 1990 coll. (Proving an excellent plant in the open garden with Dinah Batterham (Dorset, UK). Black-violet bells - most distinct from the *P. vulgaris* group. Dry & limy.) (15+ seeds) B
- * 812.505 RANUNCULUS ASIATICUS Greece, Crete, Rethimno, Oros Idi above Fourfouras. 1993 seed from an A. Edwards coll. (The spectacular scarlet race (var. *punicus*), not previously recorded for Crete, of this splendid, summer-dormant buttercup. Bulb-frame or alpine-house in UK - perhaps at its best grown just frost-free.) (20+ seeds) B
- 853.000 SARCOPOTERIUM SPINOSUM Greece, Messinia, between old Kardamili & Ag. Sofia. 200 m. S-facing cliffs. 28.5.93 Coll. D.M. Hoskins 93-39 (Dwarf, congested, spiny shrub characteristic of E Mediterranean hills.) (20+ fruits) A
- * 874.800 SCILLA LITARDIERI (Jugoslavia) Bosnia & Hercegovina, above Dubrovnik to Trebinje. 500 m. Fragmented limestone. 1993 seed from our 1984 coll. (Heads of starry, pale-blue flowers on 20 cm. stems. Hardy.) (15+ seeds) A
- 941.400 TANACETUM PRAETERITUM Turkey, Antalya, Bey Dag. c. 2000 m. Limestone slopes. Coll. 1991 by P. & P. Watt. (SW Turkish endemic, superficially like a harder, high-altitude, more silvery leaved version of the more eastern *T. densum* - intricately cut silver-filigree for the alpine-house or scree-bed.) (About 20+ seeds) C
- 950.603 THALICTRUM ORIENTALE Greece, Messinia, below old Kardamili. 30 m. At base of N-facing, limestone cliffs in deep shade. 27.5.93. Coll. D.M. Hoskins 93-34 (As far as we know, this relic, extremely local Greek population has never been introduced to cultivation. The pink Turkish race, locally common in the Taurus and extending E into the Lebanon, survives in cultivation but is seldom seen. As we have seen it, the Greek plants are always pure-white. This & *T. tuberosum* are the only two European species with large, showy perianth segments - this dies back to fibrous-rooted rhizomes not tubers and probably resents being completely dried out. Try it with 'cyclamen conditions' to start - light shade, winter protection & cool in summer. About 20 cm. high.) (8 seeds) B
- 969.600 TULIPA CRETICA Greece, Crete, Hania, Akrotiri NE of Hania. 100 m. In terra rossa. Coll. 1993 by P. & P. Watt. (The smallest of the endemic Cretan tulips. Somewhat like a miniature *T. saxatilis* with narrow, red-edged leaves lying flat on the ground. Flowers white with a yellow base inside ; pink to purple outside (20+ seeds) C
- * 982.950 VERBASCUM WIEDEMANNIANUM Turkey, Gumushane, WNW of Bayburt. 1600 m. Fallow fields - in stony clay. 1992 seed from our 1988 coll., grown in New Mexico by Richard Riedy - "flowered magnificently...lovely fragrance." It has also been grown with success in the UK. A rich violet-purple, 1-2 m. Turkish endemic.) (100+ seeds) B

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B	:	\$3.00	;	£2.00	;	DM5,-	;	FF17,-		E	:	\$7.00	;	£4.50	;	DM12,-	;	FF40,-	
C	:	\$4.00	;	£2.50	;	DM6,-	;	FF21,-		F	:	\$9.00	;	£6.00	;	DM15,-	;	FF50,-	

- ABUTILON VITIFOLIUM** Splendid Chilean shrub. Downy, grey-green leaves & violet to white mallow-flowers. (20+ seeds) A
- ACACIA aff. RUPICOLA** Prostrate - coll. 1100 m. on summit of Mt. William, Victoria, Australia. (20+ seeds) B
- ACER PENNSYLVANICUM** E N American 'snakebark maple' - green stems striped with white. A lovely small tree. (10+ seeds) A
- ACIPHYLLA SQUARROSA** A fine colour form with grey-orange foliage, coll. Palliser Bay area, New Zealand. (20+ seeds) B
- ALBUCA HUMILIS** Almost hardy, dwarf S African bulb. Uprturned, almond-scented, green & white snowdrops. (20+ seeds) B
- ALLIUM CAESIUM** A fine rich blue form, originally from Tashkent BG, with no bulbils in the flower-heads. (30+ seeds) A
- ACUMINATUM** Very hardy, widespread W N American. Rose-pink umbels. 15 cm. Well-behaved in the bulb-frame. (20+) A
- PENINSULARE** Rose-purple Californian, about 30 cm. high, proving excellent in the bulb-frame in the UK. (20+ seeds) A
- ANEMONE CORONARIA - PURPLE FORM** Original coll. in Turkey. Can be hardy in a well-drained, sunny site. (20+ seeds) B
- ANEMONOPSIS MACROPHYLLA** Aristocratic Japanese woodland herbaceous-plant. Waxy lavender-blue & white. 50 cm. (20+ seeds) C
- AQUILEGIA DESERTORUM** Originally from Gothenburg under this name - orange-red & yellow near *A. elegantula*. (30+ seeds) A
- FORMOSA** Fine, vigorous form, originally from Denver BG. Masses of scarlet & yellow flowers. 60 cm. (50+ seeds) A
- ARISAEMA EXAPPENDICULATUM - BROWN FORM** Large, divided leaves on chocolate-striped petioles. 60 cm. (10 seeds) B
- TORTUOSUM** Amazing spathes. From a clone of this Himalayan species hardy in Somerset, UK. 1 m. (10 seeds) B
- ARISTOLOCHIA FIMBRIATA** From an Alberto Castillo, Argentina, coll. Fringed, hairy flowers. Summer-growing. 1 m. (20+) B
- ARTHROPODIUM CIRRATUM** Hardy with us in an unheated greenhouse. Yucca-like, evergreen leaves. White. 1 m. (15+ seeds) B
- ARUM ALPINUM** From Christian & Hoog 806 - a small, hardy, high-altitude Greek endemic. (10 seeds) B
- CRETICUM** Elegant, bright-yellow spathes, scented of violets. Good garden-plant in a hot, dry site. (10 seeds) B
- CYRENAICUM** Striking large spathes, purple inside. Tender Libyan relative of *A. palaestinum*. (10 seeds) B
- ORIENTALE** One of the finest. Huge, boat-shaped, brown-purple spathes. Reasonably hardy in the UK. (10 seeds) B
- PURPUREOSPATHUM** Cretan endemic from the type-collection, P. Boyce 51. Shiny, purple spathes. (8 seeds) D
- RUPICOLA var. VIRESCENS E.K.** Balls coll. (= *A. conophalloides*) Slender, bright-yellow spadix. Hardy. (10 seeds) B
- RUPICOLA var. VIRESCENS N.Stephens** coll. Green spathes, whitish inside, with grey spadix. Tall, vigorous. (10 seeds) B
- ASPHODELINE LUTEA** Blue-green, grassy clumps. Spires of starry, yellow flowers. 1 m. Good border-plant. (20+ seeds) A
- ASTRANTIA MAXIMA** Strawberry-pink heads from running mats of 3-lobed leaves. The true species is not common. (20+ seeds) A
- BELAMCANDA CHINENSIS** Border-line hardiness in UK. Orange-yellow spotted dark red. Blackberry seeds. 1 m. (10 seeds) A
- BELLEVALIA LONGISTYLA** From L & P 7044, Van, SE Turkey. Purple, green & white - "super" says M. Tucker. (10 seeds) B
- BYCNANTHA** Tight heads of strange flowers, like blue-black grapes. A wet-grower in E Turkey. Hardy. (15+ seeds) A
- WEBBIANA** N Italian endemic, near *B. romana*, with deep purple flowers maturing to brown. About 30 cm. (15+ seeds) B
- BERGENIA - RED HYBRIDS** From our best, named crimson clones. Tough, beautifully coloured winter foliage. (50+ seeds) B
- BERGENIA - WHITE HYBRIDS** From white clones bred from *B. stracheyi* 'Alba'. Compact, dark-green leaves. (50+ seeds) B
- BLANDFORDIA PUNICEA** Tasmanian endemic, hardiest of the genus. Scarlet, orange-tipped bells. About 60 cm. (20+ seeds) C
- CALOCHORTUS VENUSTUS 'ELDORADO STRAIN'** British-grown seed. Originally a Carl Purdy name. Very variable. (20+ seeds) B
- CASUARINA MUELLERI** Another coll. from the top of Mt. William, Victoria, at 1100 m. by Alistair Watt. (30+ seeds) B
- CELMISIA SP.** Possibly a new species from Terry Hatch. Coll. Tai Hape, NZ - cold, very wet area. 30 cm. (10+ seeds) C
- CLEMATIS** - Some very interesting wild colls. from Terry Hatch in New Zealand. Several NZ species are proving quite hardy in the UK. All Australian, Tasmanian & New Zealand seed has been stored under refrigeration since receipt here.
- CLEMATIS AFOLIATA** Coll. Palliser Bay area. Very fine scented, cream to lemon-yellow forms. Bushy, 1 m. (15+ seeds) C
- CUNNINGHAMII** Coll. Great Barrier Is. Sparkling green flowers - "a gem". Climbing, 2 m. (15+ seeds) D
- FOETIDA** Coll. Tai Hape. Lemon-scented, yellow flowers. 2 m. Should be frost-hardy from this area. (15+ seeds) C
- HOOKERIANA** Coll. Palliser Bay. Strongly scented, pale-green. Climbing, 2-3 m. Lumped into *C. forsteri*. (15+ seeds) D
- NAPAULENSIS** Our seed of this N Indian, winter-flowerer. Cream with purple stamens. Climber to 3 m. plus. (20+ seeds) B
- PANICULATA** Coll. Tararua foothills. "Very good form" - white with yellow stamens. Climbing, 3 m. (15+ seeds) B
- COLCHICUM AUTUMNALE** Lovely, autumn-flowering European meadow-plant. Lilac-pink. Naturalises in UK. (30+ seeds) A
- CORSICUM** Lilac-pink, unchequered flowers in autumn before the narrow, lanceolate leaves appear. Hardy. (20+ seeds) B
- CROCUS BIFLORUS GROUP : DBS 93-10** Coll. Turkey, Mugla, Goktepe between Kazagac & Mentese. Almost certainly either C.b. subsp. *isauricus* or C.b. subsp. *nubigena*, with its black anthers. Both are lilac-blue to white. Spring. (15+ seeds) C
- KOTSCHYANUS** (subsp. *kotschyanus*) Originally from an Erich Pasche coll. in Turkey. Blue-lilac. Autumn. (20+ seeds) A
- CYCLAMEN** Low temperature germination - these may not come up until they have experienced a temperature drop over the next year. Sow as soon as possible - soaking seed in warm water for 24 hours before sowing appears to aid germination. For further information on each species, C. Grey-Wilson's monograph (1988) is an unrivalled reference.
- C. CILICIMUM f. ALBUM** Derived from the pure-white, Frank & Koenen 82-10, coll. near Akseki, Turkey. (10+ seeds) D
- C. CILICIMUM - WHITE, PINK NOSE** From a clone given to us by Ken Aslet from a Peter Davis Turkish coll. (10+ seeds) C
- C. COUM - PEWTER LEAVES** Mainly from white 'Maurice Dryden' but including other fine silvery-leaved forms. (15+ seeds) D
- C. HEDERIFOLIUM 'APOLLO'** A 'strain' bred from the Bowles' plant at Wisley. Unrivalled silver patterns. (15+ seeds) C

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- CYCLAMEN HEDERIFOLIUM 'WHITE APOLLO' Developed by D. Hoskins. Will give plenty whites with Apollo leaves. (15+ seeds) D
- C. HEDERIFOLIUM 'SILVER CLOUD' Developed by Phil Cornish. Unpatterned leaves in solid, misty silver. (15+ seeds) D
- C. PURPURASCENS 'SILVER LEAVES' Derived from a few wild tubers coll. by Manfred Koenen in the 1970's near Limone on Lake Garda, N Italy. Rounded leaves almost entirely suffused with silver - a good proportion come 'true'. (15+ seeds) D
- C. AFRICANUM Large leaves & flowers. Tender. (15+) B C. HEDERIFOLIUM Pink. Autumn. Hardest. (20+) A
- C. CILICIMUM Pink, red nose. Autumn. Hardy in sun. (15+) A C. HEDERIFOLIUM f. ALBUM Vigorous whites. (15+) B
- C. COUM - MIXED Reds & pinks. Hardy. Winter. (15+) B C. HEDERIFOLIUM 'HIGHFIELD' Glossy leaves. (20+) A
- C. COUM - WHITE, PLAIN LEAVES Seldom available. (15+) C C. INTAMINATUM Tiny white. Autumn. Hardy. (20+) A
- C. CYPRIUM White, pink nose. Autumn, Tender. (15+) B C. LIBANOTICUM Sumptuous pink. Tender. Spring. (15+) B
- C. GRAECUM From very variable leaves. Tender. (15+) B C. PSEUDIBERICUM Stunning magenta. Borderline. (15+) C
- DAPHNE ALPINA Compact with greyish leaves and creamy flowers followed by orange fruits. Sun. (10+ seeds) A
- PONTICA Scented, yellow-green flowers & polished, evergreen leaves. Early spring. Shade. 1 m. shrub. (10+ seeds) A
- DEINANTHE BIFIDA Hardy, herbaceous Hydrangea-relative. Fleshy, cream flowers. Sheltered shade. 40 cm. (50+ seeds) C
- DELPHINIUM FATSIIENSE From a selected form with large, deep blue flowers. Good drainage & sun. 50 cm. (20+ seeds) B
- DIERAMA aff. PENDULUM Hilliard & Burt's superlative monograph on this genus has enabled us to sort out the plants which we have listed under various inaccurate names. Old cultivated material is likely to be of hybrid origin between these two. Consummately graceful, arching, 1.5 m. stems with pendant, wide-spreading, pink bells. (20+ seeds) A
- DIERAMA aff. PULCHERRIMUM Taller with larger, longer, narrow bells in deep, glowing carmine-pink. 2 m. (15+ seeds) B
- DIGITALIS FERRUGINEA Long, dense racemes of yellowish, red-brown-veined tubular flowers. Perennial. 1 m. (100+ seeds) A
- DISELMA ARCHERI Coll. Western Tiers, Tasmania by A. Watt. Local Fitzroya-relative - shrubby conifer. (15+ seeds) C
- DODECATHRON DENTATUM Creamy white flowers with maroon-black anthers. Cool, well-drained site. 15 cm. (30+ seeds) B
- EMBOTHRUM COCCINEUM Welsh seed of this spectacular Chilean. Dense orange-scarlet racemes. 3 m. shrub. (15+ seeds) B
- ENKIANTHUS CAMPANULATUS Splendid Japanese ericaceous shrub with stunning autumn-colour. Lime-free. 2-3 m. (30+ seeds) A
- ERYNGIUM BOURGATII Pyrenean Sea Holly with cut, greyish leaves and blue-green heads. 60 cm. (20+ seeds) A
- SERRA S American with yucca-like clumps of shiny, toothed leaves. Candelabra of small green heads. 1.5m. (20+ seeds) A
- FRITILLARIA ACMOPETALA Elegant green & maroon bells. Easy in full sun & well-drained soil in UK. 40 cm. (20+ seeds) A
- BUCHARICA A fine form from Tadjikistan. Wide open bells in white, tinted green. Bulb-frame in UK. (15+ seeds) C
- GUSSICHAIE Distinct from *F. graeca* & *F. thessala* in its winged capsule. Yellow-green & fawn. 30 cm. (15+ seeds) D
- INVOLUCRATA Pale green bells, faintly brown-chequered. Possible in limestone-scrub outside in UK. 30 cm. (20+ seeds) A
- LUSITANICA A vigorous form grown by D. Hoskins - no data. Yellow green & brown. 30 cm. (20+ seeds) A
- MICHAJLOVSKYI Fat, glossy, mahogany-brown bells tipped with yellow. Has proved very 'growable'. 15 cm. (20+ seeds) A
- PALLIDIFLORA Splendid, very hardy Central Asian. Greyish leaves and big, pale-yellow bells. 50 cm. (20+ seeds) B
- PONTICA From a large, apple-green & lime-yellow form. Easy outside in UK in a cool, moist site. 30 cm. (20+ seeds) A
- RAUDEANA Daintier, 40 cm., pale-yellow version of *F. imperialis*. Not difficult in a bulb-frame. (15+ seeds) C
- STENANTHERA From Kath Dryden's selected good pink forms. Easiest of the Rhinopetalums. Bulb-frame. (10+ seeds) D
- GEISSORHIZA BRACTEATA S African corms. Branched 20 cm. stem. White, bluish-throated flowers. Frost-free. (20+ seeds) A
- HETEROSTYLA Up to 4, lavender flowers with yellow tubes. Cape winter-grower. Frost-free. (20+ seeds) A
- GENTIANA PARADOXA Limestone-relic from Abkhazia. Blue & green trumpets. Linear verticillate leaves. 20 cm. (50+ seeds) B
- GERANIUM CLARKEI Rhizomatous version of *G. pratense*. From the glowing 'Kashmir Purple' clone. 50 cm. (10+ seeds) A
- SANGUINEUM From Max Frei's outstanding clone 'Elspeth' - bright purple-reds for the sunny border. (10+ seeds) A
- WALLICHIANUM From an Udai Pradhan coll., N India. White-centred rose-pink. Wide-spreading trailer. (10+ seeds) B
- WALLICHIANUM 'BUXTONS VARIETY' Better-known, lavender-blue form with larger white centres. 1 m. across. (10+ seeds) A
- GEUM COCCINEUM The true species (not *G. chilense*). Orange-scarlet. Easy in a moist spot. 30 cm. (30+ seeds) A
- HABRANTHUS TUBISPETHUS Bright yellow trumpets, coppery outside. Almost hardy & seeds itself. 15 cm. (20+ seeds) A
- HEDYCHUM DENSIFLORUM From the 'Assam Orange' clone of the KW 13875 coll. A ginger-lily which seems totally hardy in the UK. Exotic foliage, up to 1.5 m. high, with dense spikes of scented, deep orange flowers. (10+ seeds) C
- GLADIOLUS CARDINALIS Spectacular crimson with white flash. S African best grown frost-free - do not dry. (10+ seeds) B
- MACULATUS subsp. MERIDIONALIS Lovely salmon-flowered winter-grower from the Cape. Frost-free. (10+ seeds) B
- HELLEBORUS Although we have some important wild collections from Will McLewin here, we are listing everything together in Section III. The species of Sect. *Helleborastrum* (all here except *H. niger*) are very variable and poorly defined - they will hybridize readily in cultivation; in nature their identities are preserved only by the isolation of colonies. Specific names are really best applied only to wild material. The garden hybrids cannot be relied on to come true to colour and we have kept them in colour groups or under parents' names to indicate what is most likely to materialise. Our lists go out too late for the ideal sowing period but acceptable results have been reported by N Hemisphere growers and good results can be expected from sowing soon in the S Hemisphere. Sow as soon as possible - soaking in warm water as recommended for Cyclamen may help; stand or plunge outside and protect from mice; after germination, progress will be more rapid with some protection. Late sown seed will not germinate until the following winter. Seed here is from our selves, Dinah Batterham & Will McLewin (EC gardeners wanting plants to colour & vegetatively propagated species can write to the last at Phedar Nursery, Bunkers Hill, Romley, Stockport, England. SK6 3DS - despatch in spring each year.)

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- HELLEBORUS ATORRUBENS** One of the most local Balkan species. 1993 wild seed from two sites near Novo Mesto, Slovenia, (W. McLewin population refs. 12.1. & 12.3). A very variable entity both in foliage & flower colour. (10+ seeds) E
- CROATICUS** Recently described and regarded by B. Mathew as a synonym of *H. torquatus*, Will tells us this may be best at infraspecific level under *H. atorrubens*. Type-locality coll. by W. McLewin in Slavonia, E Croatia. (10+ seeds) E
- DUMETORUM** Coll. Vertes Mts., W of Budapest, Hungary, 1993 (W. McLewin population ref. 13.1) - possibly the type-locality. Quite a distinct, dainty species of mature deciduous woodlands. Reputedly a good garden-plant. (10+ seeds) E
- DUMETORUM** Cultivated seed from Alan Edwards & David Stephens from W. McLewin 90-25, grown in Surrey, UK. (15+ seeds) C
- NIGER** The lovely, white Christmas Rose. Likes us here in Wales but not always the easiest to grow well. (20+ seeds) B
- NIGER 'SUNSET'** Cultivated seed from a Slovenian population (McLewin ref. 11.3) maturing to red shades. (15+ seeds) D
- ODORUS** Wild coll. seed from the Mecsek Mts., E of Pecs, Hungary (McLewin population ref. 17.1). (10+ seeds) C
- PURPURASCENS** Wild coll. seed coll. by W. McLewin, 1993, in the Borzony Mts., NE of Budapest, Hungary. (10+ seeds) E
- TORQUATUS** Cultivated seed from selected clones of the N Bosnian population, original coll. NW of Vrtoce (our ref. 562.800; McLewin population 20.1), possibly of different origins to the Montenegrans assigned to this. (10+ seeds) E
- HELLEBORUS X HYBRIDUS** We emphasise comments on the previous page regarding the variation to be expected from garden seed. We have received many inquiries for seed of the "new" hellebores illustrated in "The Gardener's Guide to Growing Hellebores" published in 1993. Studio lighting or the use of electronic flash tends to produce an effect not discernible to the eyes of most people. Most of us who grow hellebores enjoy them for the subtle, muted tones of the coloured sepals; those in search of fruit-jelly colours will be likely to be disappointed with reality.
- From **'ANDROMEDA'** (and similar) Parents are good, rounded, dark to mid-purples with few or no spots. (20+ seeds) C
- From **'COSMOS'** From a vigorous white, evenly speckled all over with maroon. Usually gives fine seedlings. (20+ seeds) C
- From **'TITANIA'** From our favourite *H. torquatus* hybrid - mushroom outside and soft-yellow inside. (15+ seeds) C
- From **SELECTED PURPLES** From a very wide range of maroon and plum shades, some spotted with darker shades. (20+ seeds) B
- From **SELECTED HEAVILY SPOTTED** Pale to deep pinks with especially heavy maroon to purple-black speckles. (20+ seeds) C
- From **SELECTED BLUES & BLACKS** From Will McLewin - his colour categories 46 & 48. (15+ seeds) D
- From **SELECTED McLEWIN SEEDLINGS** From what Will thinks are some of his best current seedlings. (20+ seeds) C
- From **A WIDE, MIXED RANGE** A good 'starter', including some seed from named clones insufficient to list. (20+ seeds) A
- HEPATICA NOBILIS** From a good, blue form of this lovely European, spring-flowering woodlander. (15+ seeds) A
- HIERACIUM ALPINUM** Neat clumps of beautifully felted, silver-white leaves. Well-drained, sunny site. 30 cm. (30+ seeds) A
- IRIS BULLEYANA** The true plant from a C. Grey-Wilson coll. - Yunnan, China. Series *Sibiricae* - open garden. (8 seeds) B
- MILESII** Himalayan with lavender-pink, purple-mottled flowers. 70 cm. Sect. *Lophiris*. Easy & hardy here. (10+ seeds) B
- ORIENTALIS** Imposing, greyish leaves & stems to over 1 m. White with yellow signal-patch. Ser. *Spuriae*. (15+ seeds) A
- TROJANA** Distinct, W Turkish Bearded Iris. Pale-blue standards, red-purple falls. 70 cm. (10+ seeds) B
- KALMIA LATIFOLIA** Beautiful, ericaceous evergreen with massed, pink flowers. 2-3 m. Lime-free soil. (50+ seeds) A
- KIRENGESHOMA PALMATA** Aristocratic Japanese woodlander. Pendant, waxy, pale-yellow bells. Autumn. 1 m. (20+ seeds) B
- KNIPHOPIA CAULESCENS** Blue-grey, yucca-like clumps. Dense racemes of lemon-cream from coral-red buds. 1 m. (15+ seeds) B
- LAPEIROUSIA LAXA** Lovely, little, summer-flowering S African corm. Soft-red. 20 cm. Hardy in S UK. (20+ seeds) A
- LEPOSERMUM NITIDUM** Coll. 1100 m., Mt. William, Victoria, Australia. Dwarf shrub, white flowers. Hardy. (100+ seeds) B
- LEUCOJUM NICAENSE** Delightful, dwarf, pure-white, spring-flowering bulb. Grow in cyclamen-conditions. (15+ seeds) A
- LEWISIA NEVADENSIS** Summer-dormant & easy in the alpine-house or scree-bed. Stemless, white flowers. (20+ seeds) A
- LIBERTIA IXIODES** Coll. 700 m., Rangiwahia, New Zealand. Iris-like foliage. White panicles. 50 cm. (20+ seeds) B
- LILLIUM MARTAGON 'QUARRY WOOD STRAIN'** Very variable from paler pinks to dark forms with some whites. (30+ seeds) A
- MARTAGON f. ALBUM** The lovely, ivory-white, green-tinged version of this easily grown lily. (20+ seeds) A
- MICHIGANENSE** UK seed from plants raised from our 1987 coll. from Fred Case's colony. Orange-scarlet. (20+ seeds) C
- PHILADELPHICUM** Coll. NW of Worcester, Massachusetts, USA. Vivid orange, wide-open, erect flowers. 50 cm. (15+ seeds) C
- POLYPHYLLUM** UK seed from a 1983 Chris Chadwell coll. : KBE 93 - Kashmir, NW of Pahlgam, 2200 m. Exquisite, pendant ivory flowers dotted with purple. Reputedly difficult but doing well here under a N wall in peaty soil. (15+ seeds) C
- PYRENAICUM** Bright-yellow, speckled flowers. From a taller, 1.5 m. form than our local population. Easy. (20+ seeds) A
- SPECIOSUM var. CLIVORUM** Hand-pollinated UK seed from D. Hoskins raised from Don Elick's 1988 coll. : Japan, S Shik-oku, Agawa River gorge, on damp shady cliffs. "Like a giant *Tricyrtis*", up to 2 m., to 20 light-pink flowers. (15+) D
- TSINGTAUENSE** Distinct, bright-orange NE Asian. Very hardy and good outside in NE USA & the UK. 70 cm. (15+ seeds) B
- LOBELIA GIBBEROA** Australian seed from A. Watt from his own coll. on Mt. Kenya. One of the huge species from the mountains of equatorial Africa - "cathedral spires" of green-white flowers from rosettes of leaves with pink midribs. Some of these are now being maintained in the alpine-house at Kew - the main problem is red spider in summer. To accompany this and our Ecuadorean *Espeletia*, we have extracted M. Wickenden's 1990 colls. from the 'fridge'. (50+) C
- BEQUAERTII** Coll. Uganda, C Ruwenzori, Bigo Swamp, over 3000 m. Purple-blue spikes. Purplish rosettes. 2 m. (30+) D
- WOLLASTONII** Coll. Uganda, SW Ruwenzori, Batoda Plateau. Extends to 4300 m. Grey-blue bracts & flowers. 4 m. (30+) D
- LYONOTHAMNUS FLORIBUNDUS var. ASPLENIFOLIUS** Relic evergreen shrub from Santa Catalina Is., Cal. White. 10 m. (50+) B
- MAURANDYA ERUBESCENS** (*Lophospermum* e.) Herbaceous climber with rose-pink foxgloves. Frost-free or "annual". (50+) A
- MELASPHAERULA RAMOSA** Monotypic S African genus near *Gladiolus*. Many, little, yellow-green flowers marked with purple, on branched, wiry stems. Winter-growing - does well in our unheated greenhouse, almost frost-free. 30 cm. (20+ seeds) B
- MORINA LONGIFOLIA** Rosettes of thistle-leaves. Stems whorled with white to pink tubes. Sun. 1 m. (10 seeds) A

PRICE CODE A : \$2.00 ; £1.50 ; DM4, - ; FF13. - PRICE CODE D : \$5.00 ; £3.50 ; DM 9, - ; FF30. -
 B : \$3.00 ; £2.00 ; DM5, - ; FF17. - E : \$7.00 ; £4.50 ; DM12, - ; FF40. -
 C : \$4.00 ; £2.50 ; DM6, - ; FF21. - F : \$9.00 ; £6.00 ; DM15, - ; FF50. -

NARCISSUS Very few species set seed in sufficient quantity for us to list, with our mainstay, John Blanchard, in 1993. We are working on our own stocks for seed production but it will take some years. A few here from John & others.

- NARCISSUS BULBOCODIUM** var. **GRAELLSII** Dwarf, green-tinged white. From a JWB coll. - Spain, S. de Guadarrama (10+ seeds) C
- CORDUBENSIS** Sect. Jonquillae. From C. Stocken coll. Spain, Grazalema - Ubrique. Yellow, good grower. (10+ seeds) B
- CUPULARIS** Sect. Tazetae. From a T. Norman coll., Sardinia, c. 800 m. Glaucous leaves. Pale yellow. (10+ seeds) B
- FERNANDESII** Sect. Jonquillae. Poorly defined yellow jonquil but a good grower in cultivation. (10+ seeds) B
- aff. **FERNANDESII** JWB 86-03 From an isolated colony - SE of Almaden, S Spain. Mentioned on p. 83 of John Blanchard's monograph. Grown by M. Tucker, who describes it as "stunning...tall with up to 7 very large flowers." (10+ seeds) D
- ROMLEUXII** var. **RIFANUS** JWB 89-28 Morocco, Rif Mts., Iguermalet. Pale yellow - the true plant. (10+ seeds) C
- SEROTINUS** White, autumn-flowering. From a 1984 P. & P. Watt coll. near Areopoli, S Greece. (10+ seeds) C
- OROBANCHE HEDERAE** Purple to cream parasite - sow on the roots of ivy (*Hedera* spp.) says Alan Edwards. (100+ seeds) A
- PABONIA CAMBESSEDESII** Balearic endemic, the dwarfest species - alpine-house or shelter. Rose-pink. (10 seeds) C
- MLOKOSIEWITSCHII** Beautiful, pale-yellow Caucasian endemic. Usually an excellent garden-plant in UK. (10 seeds) B
- VEITCHII** var. **WOODWARDII** Nodding, clear-pink flowers. Glossy, bright-green foliage. Easy Chinese (10 seeds) B
- PAPAVER PAUCIFOLIATUM** From E. Pasche 83-65 - Kars, NE Turkey. Unblotched, brick-red flowers. Good in UK. (50+ seeds) A
- PARIS POLYPHYLLA** Beautiful, Himalayan Trillium-relative (q.v.). Elegant, green. Damp-stored 1993 seed. ((10 seeds) C
- QUADRIFOLIA** European representative. These are from Kath Dryden's stocks - damp-stored, 1993 seed. (15+ seeds) B
- PHORMIUM TENAX** Spectacular in its massive, sword-leaves & flowers. UK seed from a hardy, upright clone. (20+ seeds) A
- PIMELEA URVILLEANA** Coll. near Anatoki River, S Island, NZ, by Terry Hatch. Local, pinkish-flowered shrub. (15+ seeds) B
- PRIMULA HELODOXA** Superlative, fragrant, golden-yellow wet-grower from W Yunnan. Sect. Candelabra. 50 cm. (100+ seeds) A
- SECUNDIFLORA** Another, fine Chinese wet-grower. Umbels of nodding rich red-purple. Sect. Sikkimensis. (100+ seeds) A
- RAMONDA MYCONI** Beautiful, hardy, saxatile Pyrenean gesneriad. Treat seed as for *Rhododendron*. Violet. (100+ seeds) B
- REMUSATIA HOOKERI** Strange, epiphytic aroid. From an E. Needham coll. - Nepal, Modi Khola, 2300 m. Easy here in a moist shady crevice in our unheated greenhouse - summer-growing. Stems of tiny tubers like *Clematis* seed-heads. (20+) C
- RHODODENDRON** We cannot live in W Wales without becoming involved with this genus. We should like to develop a wide range of seed in time but it will take some years for us to do this and to connect with specialists interested in this. Most of the following is from our neighbour, the well-known enthusiast, Geoff Taylor. Nomenclature is largely now in line with the Cullen & Chamberlain revision. Ideally seed should be sown (in the N Hemisphere) in January - February, on a peat-sand mix, watered from below, at 55-60°F (13-15°C); dust-over with fine grit to anchor when it germinates; prick-off into boxes as soon as large enough to handle. Kept moving, young *Rhododendrons* grow quickly. All seed is from correctly named material, often of wild origin, but it can hybridize. About 30-50 seeds per packet.
- AMBIGUUM** Subsect. Triflora. Yellow. 2 m. B **R. KELETICUM** Ss. Saluenensia. Compact, purple form. 30cm. B
- ARBOREUM** Ss. Arborea. Spectacular red. to 10 m. B **R. LEUCASPIS** Ss. Boothia. Milk-white. Early. 60 cm. B
- AUGUSTINII** Ss. Triflora. Good blue form. 3 m. B **R. MACABEANUM** Ss. Grandia. Stunning, lemon-yellow. 5 m. B
- CILIATUM** Ss. Maddenia - hardiest. Pink-white. 60 cm. B **R. MORII** Ss. Maculifera. Crimson-spotted white or palest pink. Little-known hardy, free-flowerer. Taiwan. 3 m. C
- DAVIDSONIANUM** Ss. Triflora. Clear pink. 3 m. B **R. SCABRIFOLIUM** var. **SPICIFERUM** Rose-pink. 1 m. B
- DECORUM** Ss. Fortunea. From a fine pink. 4 m. B **R. SELENSE** Ss. Selenisia. Rarely seen in cultivation. Distinct, pale pink. Dark, rounded leaves. 3 m. C
- GLAUCOPHYLLUM** Ss. Glauca. Bell-shaped pink. 1 m. B **R. YUNNANENSE** Ss. Triflora. Outstanding pale pink. 3 m. B
- GRIERSONIANUM** Scarlet. Needs some shelter. 1-2 m. B
- ROMULEA** This genus of little corms has never achieved the same 'cult-status' as its close relative *Crocus*, though they are more diverse in habit & colour. All the following are winter-growers suitable for the alpine-house or bulb-frame - some are best grown frost-free. The genus is mainly centred on S Africa with a secondary Mediterranean centre.
- BULBOCODIUM 'KNIGHTSHAYES FORM'** Hardy, rich violet. A **R. GADITANUS** From an A. Edwards coll., Corsica. (15+) A
- BULBOCODIUM 'LATE FORM'** From David Stephens. (15+) A **R. HIRTA** Pale yellow S African, Frost-free. (15+) A
- CITRINA** Lemon-yellow S African. Frost-free. (15+) A **R. SALDANHENSIS** Bright yellow S African. (15+) B
- CLUSIANA** Superb Spanish R. bulbocodium. (15+) B **R. SETIFOLIA** var. **AGGREGATA** Gold to apricot. (15+) B
- FLAVA** Sulphur-yellow S African. Frost-free. (15+) A **R. TABULARIS** Lilac S African. Frost-free. (15+) A
- MACOWANII** var. **ALTICOLA** Summer-growing & very hardy from high in the Drakensberg. Brown-backed yellow (15+ seeds) A
- ROSCOEIA CAUTLEIODES** Exotic-looking, hooded, pale-yellow flowers. 30 cm. Absolutely hardy. Shade. (20+ seeds) A
- SILENE DELAVAYI** From CLD 778 : China, Yunnan, Lijiang, Yulong Shan. 3200 m. Attractive, dark violet. (20+ seeds) B
- TRILLIUM ERECTUM X FLEXIPES** Amazingly variable in whites, reds & pinks - see the article & stunning photographs by the Cases in the Summer, 1993, ARGS Bulletin. UK seed from Kath Dryden, stored moist - sow as soon as possible and do not dry out. Theoretically needs 2-3 months at 2-5°C/35-40°F, followed by a rise to 10°C/50°F. (10+ seeds) D
- RUGELLII** Pedunculate species from SE USA. Thick-textured white flowers with dark purple stamens. (10+ seeds) D
- TRITHELEIA BRIDGESII** Attractive, blue-purple species, quite local in NW California. Easy in bulb-frame. 30 cm. (15+) A
- TROPAEOLUM SPECIOSUM** Hardy, S Chilean climber. Scarlet flowers. Cool & moist in rich, peaty soil. (8 seeds) B
- TULIPA SPRENGERI** Elegant, orange-scarlet. Latest of all. Grows well in light shade in open-garden in UK. (30+ seeds) A
- VALLEA STIPULARIS** Reputedly from Ecuador, 2 m. shrub growable in SW UK. Waxy rose-pink flowers. (8 seeds) C

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THE BACK-YARD

Last December we remarked facetiously that "we have no intention of ... claiming you can save the world in your back-yard." One correspondent replied that, while this may be so, "at least it's a start." Accordingly, we entitle our back-page 'The Back-yard' and continue to use it to emphasise the great number of plant-species being preserved by a few thousand specialist-gardeners throughout the world. We are well aware that maintaining a species in cultivation is not at all the same as allowing it to survive naturally along with its entire habitat. Frequently, the plants we shall list here have already lost most of their habitat or had it drastically altered over recent centuries; many more plants of these species can be maintained in cultivation than can survive in the wild. While it is the current fashion among some misguided "conservationists" to demonize horticulture, we believe that it is we gardeners, who will earn the gratitude of better-informed future-generations. Our knowledge, skills and understanding of plant-life must survive and develop.

NARCISSUS NEVADENSIS

This is the most southern member of Section Pseudonarcissus, the trumpet daffodils, included under *N. pseudonarcissus* itself, as a subspecies, in 'Flora Europaea'. It is quite easily grown outside in the UK, provided that it does not become too hot and dry in summer. This seed is from Alan Edwards in Surrey, where it grows well in the open garden. As far we know, a few bulbs have been introduced only twice: the first time by Chris Stocken between 1961 and 1964; the second time by Lyn Weeks and myself in 1970 (field-number 3480). John Blanchard received both collections and was initially responsible for establishing and distributing this. Both collections came from the same small site: Spain, Granada, Sierra Nevada, upper Rio Monachil valley. 2200 m. Wet-flush on W-facing slope, among *Juncus* (with another local relic, *Primula elatior* subsp. *lofthousei*). We were not back in the area until June, 1990, and we could not even find the site - road-building, forestry and tourist developments had so altered the area. In September, 1991, we took a little more time and traced the headwaters of the Rio Monachil up towards the little meadow to find that it is now occupied by the new Parador de Sierra Nevada, built by the Spanish government on the type-locality. *N. nevadensis* may well grow in profusion around the Parador. It may occur in quantity elsewhere in the range but such moist sites are few in these summer-dry mountains. We have been told it can still be found but have no details - we do know it can be maintained in UK gardens. Up to 4 flowers on each stem; white to pale yellow with a deeper yellow trumpet. (10+ seeds) Price code : D

TRICYRTIS MACRANTHOPSIS

The trio of closely allied, Japanese *Tricyrtis* with short-spurred outer tepals on the nodding, bell-shaped flowers are distinct in this genus and among the most local and specialized of plants. All grow on moist, shady cliffs, often in the vicinity of waterfalls: *T. macranthopsis* on Honshu; *T. macrantha* on Shikoku; *T. ishiana* in Sagami Prov., Honshu, with it var. *surugensis* in Suruga Prov. All have thick-textured, clear-yellow flowers dotted with brown-purple and need similar conditions in cultivation. We grow this at the 'wet-end' of our unheated greenhouse, where it is misted two or three times a day in summer. We do not doubt it is perfectly hardy in the UK but it needs high humidity, shelter and almost complete shade - foliage scorches readily in sun or wind - the sort of place one would choose for *Deinranthe* or *Epigaea*. This is cultivated seed from Don Elick in Japan, from a plant collected near the Great Falls of Nachi, Wakayama Prefecture. The parent is figured in the monumental and sumptuous book 'Japonica Magnifica', published recently, with a text by Don and paintings by the Yorkshire artist, Raymond Booth, who is also a great plantsman and gardener. (10+ seeds) Price code : E

MYOSOTIDIUM HORTENSIA

The Chatham Islands, lying in the South Pacific about 650 km. E of the New Zealand mainland, at about the same latitude S as N Japan or Nova Scotia to the N, possess an isolated and unique flora. In 1990, New Zealand grower Terry Hatch, who has contributed seed to our lists for many years, visited the islands. Terry has made the offshore island flora of New Zealand a speciality and has brought many endemics into cultivation. He found the unique flora of the Chathams tragically degraded and had difficulty in collecting even small numbers of seeds. Like the Falkland Islands in the South Atlantic, the Chathams are home to intensive sheep-farming and much of the native flora is now grazed out. This most famous Chatham endemic has long been grown in the UK. According to G.S. Thomas it was introduced in 1859 (the same year as the genus was established) and it has long been a cult-plant in Gulf Stream gardens. Farrer called it "the county-flower of Cornwall" and we imagined it tender until we visited Ireland some years ago. Looking at it thriving on a frosty winter-morning in a garden in the centre of Ireland convinced us we could grow it here at about 150 m. in W Wales. As we have commented on the Ecuador flora, what this wants is a cool, moist summer. We have a large plant of Irish stock growing in a bed against the N-facing wall of our house. The bed was filled with two parts peat and one-part old mushroom-compost and was meant to be for small, choice plants. These now need rescuing and next year the bed will be devoted to *Myosotidium* with *Tropaeolum speciosum* growing on the wall, with a ground-cover of *Gunnera magellanica*. We have not protected our plant but have no doubt that, like most maritime plants, it will not take severe and prolonged freezing. It does like the air around it and the big leaves are remarkably wind-resistant. Terry tells us it grows in seaside sand with shells and seaweed and waves will wash over it during storms. The seaweed is unnecessary - just plenty 'old muck'. In spite of Farrer's sneers, this is a beautiful plant. The long succession of huge heads of giant forget-me-not flowers look very like celestial-blue *Bergenia*s from afar, an illusion re-inforced by the big, ribbed, shining leaves. Do try it in sheltered shade in a very rich, moist soil. Seed is rather irregular in germination but definitely comes up at a low temperature, in spring or autumn, so do not cook it in a propagator or it will rot. We can offer a choice of seed - or both for Code E. Our Welsh seed from old Irish stock; Terry Hatch's NZ seed from Pitt Is. stock. (8 seeds of either) Price code : C

GERANIUM TRAVERSII

This is another coastal, Chatham Islands endemic, known in cultivation in the UK in a single, remarkably even garden-race, grown as *G.t.* var. *elegans*. On the Chathams it is very variable in leaf-shape, flower-size, habit and depth of colour. This is cultivated seed from a small collection made by Terry Hatch on Pitt Island and we hope it may bring 'fresh blood' to garden-stocks and enable new, worthwhile cultivars to be developed. As we have it, *G. traversii* var. *elegans* is a beautiful thing, low-growing with lobed, grey foliage and large, rounded flowers of a lovely, solid, milky-pink. Long ago there was a white form around but we have never had the chance to acquire deeper shades. It is not a difficult plant in the UK, grown in a raised bed, the front of a border or the rock-garden but it will vanish in a cold winter. Collecting a few seeds, taking cuttings or lifting a plant is but a small chore. (10+ seeds) Price code : C

Among "back-yard plants" featured in previous lists, you will find *Gentiana paradoxa*, *Kirengeshoma palmata* and *Lilium speciosum* var. *clivorum* in Section III; *Verbascum wiedemannianum* in Section II. No seed available this year of *Daubnya aurea* (we sowed all left - germinating well after 4 weeks in October), *Crocus pelistericus* nor *Erythronium elegans*.