NEWS FROM : JIM & JENNY ARCHIBALD, 'BRYN COLLEN', FFOSTRASOL, LLANDYSUL, DYFED, SA44 5SB, WALES, U.K. : JULY, 1991

The emphasis in this summer list is on summer-dormant species, mainly bulbs, corms and tubers, as well as other plants, like Helleborus, which will give more satisfactory germination if sown before winter. A further list, concentrating on alpine-plants and herbaceous perennials, will be issued in winter 1991-1992. In order for us to have some fresh wild material for this winter-list, we shall be collecting in September, 1991, and no orders for seed will be sent during this month. We shall be able to clear September orders as soon as we can in October, which should still give ample time for sowing. The sooner we have your order, the faster the seed can be with you ; we shall do our best to send you the seed as soon as we possibly can. Any urgency is less important for southern hemisphere customers and we shall keep this list valid into 1992, though it must be appreciated that many items are in very limited amounts & will not last long.

ORDERING could not be easier. We shall accept your personal cheque in US $, £ sterling or DM, with two qualifications. US $ cheques must be on a US bank account - charges for negotiating cheques on foreign accounts are very high in the USA : please do not send Eurocheques made out in US $ - they are unfamiliar to the US banking system.
PAYMENTS FROM FRANCE do cause us some problems. While we have continued pricing in FF, we must ask French customers not to send personal cheques in FF and especially not to use cheques on 'La Poste'. These are proving very difficult to negotiate. A Eurocheque made out in £ sterling is excellent ; a Giro payment in sterling is used by several French customers - you can price in FF and have the current equivalent sent to us in £ sterling ; FF cash sent to us by registered letter is also no problem. Sorry about this but we have no control over the vagaries of banking.
If fluctuations in exchange-rates mean it is advantageous to you to select a currency other than your own, please do so - it makes little appreciable difference to the operation of our business. Apart from personal cheques, payments can be made in bank-notes in any of these currencies (please send by registered mail), a bank draft or International Money Order (in sterling for these please). We do not operate a Giro account to enable direct transfers nor do we accept credit card payments. If remitting by sterling cheque, it is a great help both to you and to ourselves, if you send us an open cheque, limited to the total value of your order (obviously it cannot be made out for more than the limit but it can certainly be made out for less, avoiding annoying credits or refunds ; you will pay only for what we have sent after the order is despatched). If you cannot do this, a list of some substitutes will be very helpful - we shall not use them unless we have to. We do not pay-in your cheque until after your order has been despatched - it is obviously in our interests, as well as yours, to complete orders as quickly as possible. Finally, we should stress :

THERE IS NO CHARGE FOR AIRMAIL ON THE SEEDS OR ON THE SEED-LISTS ::: PLEASE PRINT YOUR NAME & ADDRESS CLEARLY

PLEASE UNDERSTAND There may be a delay of some weeks before you receive your order. The majority of orders come in very quickly, during the first week or so after we send out a list. We receive your orders very much faster than we can despatch them. You may think that because you ordered as soon as you received this list, we can send back seed just as promptly. A great many other people ordered that same day ; we have to handle a lot of orders to derive an income from such a business as this. We try to avoid listing collections unless we think there will be enough seed to satisfy the demand, so there should be no great concern over this, even if you are not ordering by return. On the other hand, many items, especially those in Section III, do run out as the season advances and it is also more in your interests than ours that much seed in this list is sown as soon as possible. We are well-advanced with packeting and hope to be able to move fairly quickly, as we did last season. If you feel that your order is too long in arriving check with your bank to find out if your cheque has been cashed - we do not pay-in cheques until after your order has been despatched. If it has been cashed, let us know immediately. A very few items do become lost or delayed each year and in such an unlikely event you will find us totally sympathetic. Such occurrences are really very rare indeed.

ANOTHER DRY SEASON - ANOTHER WET SEASON "Is this your first visit to Chile?", asked Dr. Marticorena, when we visited him at Concepcion in March. "What a pity. It has been such a poor, dry season. You should have been here when we have had a wet year." In January Alberto Castillo had written to us that his "collecting trip in NW Argentina, which, for the immense region covered, was a disaster...just barren land for the rains were late for a long time...I am afraid not much better luck will meet you in Chile." The fact is that,when we go to a region for the first time, we do not know what to expect and have no personal experience on which to base a comparative judgement of whether or not it has been a 'good season'. We have to take things as we find them ; how much better it might have been in a "good season" cannot have much relevance to the work in hand - we have to collect what we can. Certainly, collecting in South America was a little 'Turkish' at times, involving a time-consuming scrape to put together a reasonable amount of some species. We have found that, in general, however, it is always possible to come up with a reasonable range of species, even in a poor year. You will never know what you might be missing. One problem we often have, because of the fact that we issue a list in this format, is that we cannot collect a sufficient quantity of seed of a particular species in an economic space of time. This was the case with quite a lot of groups, such as the Nassauvias, in 1991. In such instances, we usually return our seed to nature by sowing the contents of the collecting envelope in a suitable site. In spite of this, we usually return with quite a few unlistable oddments - we do our best to find good homes for them. To be honest, we did not find collecting either particularly poor or much more disappointing than usual but we are accustomed to dry areas - the Great Basin, North Africa and the Middle East are good areas in which to harden yourself against such tribulations. Our companion for the first three weeks of the trip, John Andrews, was well pleased with his collections of rosulate violas, which were top of his list for collect-ion, but John, like ourselves, is more used to dry years than wet ones.

In complete contrast, we have never known such a late season for seed in Britain. We decided that we might as well wait until we had some fresh cultivated seed to include with this list. We did not realise we should be waiting quite so long. Recent weeks here have been cool and cloudy and wet and seed has hung on and on and on. When we were growing a lot of hellebores and cyclamen in Dorset, we used to say that we had to keep an eye on them as soon as Chelsea Show was over. A few hot days and the hellebores would drop their seeds. As I write this towards the end of July, it is almost two months since Chelsea week. The hellebores are ready but we still have firm capsules on several Cyclamen species outside. For the first time we are sending out a list without having everything 'in the bag' - we could wait no longer as we plan to make a short collecting-trip in September. By the time that this reaches you we hope the few items we are missing will be collected, cleaned and packeted but quantities of these few Section III items remain unpredictable until then. It is an excellent concept to send out a list in summer to distribute this type of material but the logistics are daunting. We did so last season, though we were about a month later than we had hoped to be in doing so, and we plan to do so next season, with an even tighter time-schedule for distributing the seed to you between 1992 collecting trips. We can try to make the business of distribution as efficient as we can but we cannot make the weather perform to our requirements. There are few activities more frustrating and more humbling to arrogant human beings than the uncertainties of dealing with plants.

POST MORTEM We always enjoy reading comments from customers in response to the spontaneous prattle with which we preface our lists. We regard this as a piece of throw-away journalism, written to amuse or be mildly provocative and of no great consequence. Never before have we received so many supportive letters as we did last year, when we commented on the cost of the 1991 6th International Rock Garden Plant Conference. Obviously, a great many alpine-plant enthusiasts, apart from ourselves, were seriously upset over this. Charges of "financial elitism" and much else were made. In due course, I (rather than we) was savaged in a letter from the organisers. There was mention of public apologies, indeed, being made before my lecture for making "uninformed accusations""without having the courtesy to check my facts". Subsequently it was admitted that I had not, in fact, made any accusations but when I attempted to "inform" myself and "check facts" I was told that they could "see no useful purpose in supplying...detailed figures." Apparently one way of finding out the figures involved in this year's conference is to be a member of the committee organising the 2001 conference. Even a hardened cynic like myself could not fail to be mildly appalled at an attitude which seemed to preclude my rights to simply ask some questions (which, of course, remain unanswered). Perhaps mistakenly, I sensed a certain outrage that I had betrayed the privilege of being asked to speak by questioning the costs of the event. It seemed to escape the writer of the letter that it was my audience I was concerned about. I - and I am sure every other speaker - would have been delighted to see the several hundred vacant seats available at all lectures fully filled.

While many fewer delegates attended this event than even the organisers had conservatively estimated, this is very far from saying the event was a failure. It most certainly was not. I wrote last year that "we have no doubt whatsoever that for those who attend it will be a memorable event." It most certainly was. Possibly the finest gathering of accomplished speakers ever assembled at such an event were put together into a well-balanced programme. It was a daunting place at which to speak ; the standard was frighteningly high ; after each lecture one felt "follow that then!" Of course, there were the seemingly inevitable problems. It would not seem to me impossible to have projection difficulties smoothed out before such events commence. Fortunately, this year, Henry Taylor, a 'belt and braces' man if ever there was one, like the good Scotsman he is, did not trust the Sassenachs one inch and transported a projector and screen from Scotland. As he had not thought to bring a vacuum cleaner to remove the dust from the university's back-projection screen, this SRGC equipment was appropriately mated with a hastily produced projector and screen from the Birmingham AGS group to provide adequate, if not outstanding, projection. While it is unfair to single out individual contributions to an occasion like this, Henry does merit special appreciation - not only for his resourcefulness, not only for all the letters he wrote to organise the speakers but also for the fact that he spent almost the entire conference slaving over a hot projector.

Writing to commiserate that there was no way his wife could afford to attend either, one fellow--speaker commented that he thought this conference might be "the last of its kind". It may well be and it partly prompted my heading'Post Mortem'. If it is, in one way it will be sad. The association of the conference with a show makes it especially significant to overseas delegates. The show in 1991, which, of course, was open to any--one was splendidly supported, superbly organised and altogether outstanding. A few visitors to this even found they could crack the system and take-in a lecture for £5. "Seemed a bit steep to me", commented my neighbour at one talk. It was not really - you could have had all the lectures for £115! One friend, a fully paid-up delegate still felt "It was worth every penny." It was - but I would still like to know where all the pennies went.

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SECTION III : LAST MINUTE ADDITIONS - just received from Dr. Paul Christian (Clwyd, UK)

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| COLCHICUM TURCICUM Long, pale red-purple flowers in autumn. Narrow, twisted, glaucous leaves. | (10+ seeds) | D |
| CROCUS ALATAVICUS The most eastern species, from Central Asia into China. White stippled with grey. | (8 seeds) | D |
| DICHELOSTEMMA MULTIFLORUM (Brodiaea multiflora) Rounded umbels of violet flowers in summer. 50 cm. | (15+ seeds) | B |
| DICHELOSTEMMA PULCHELLUM (Brodiaea capitata) Tight lilac-blue umbels above purplish bracts. 50 cm. | (15+ seeds) | B |
| FRITILLARIA BIFLORA Coastal Californian with brown-purple, green-striped bells. Best frost-free. | (10+ seeds) | D |
| FRITILLARIA BUCHARICA A very beautiful Central Asian species, about 20 cm. high with many, pure-white bells. Seed from the Romit Gorge population, considered to be the finest and the only one which Paul grows. | (10+ seeds) | E |
| FRITILLARIA STENANTHERA Another Central Asian Rhinopetalum. Pale-pink with purple nectaries. 15 cm. | (10+ seeds) | F |
| NARCISSUS CANTABRICUS (subsp. cantabricus) Pure-white hoop-petticoat. Mid-winter. Dry-out in summer. | (10+ seeds) | C |
| SCILLA PERSICA From the 1963 BSBE coll. in Iran. Pale-blue. 20 cm. From meadows flooded in spring. | (15+ seeds) | B |

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SECTION III : LAST MINUTE ADDITIONS - just received from Melvyn Jope (Surrey, UK)

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| CYCLAMEN COUM - SELECTED GOOD LEAF FORMS For other forms of this hardy winter flower see Section III. | (15+ seeds) | D |
| COUM - SELECTED SILVER-LEAVED FORMS We shall throw in the few seeds we have of 'Maurice Dryden' | (10+ seeds) | E |
| GRAECUM From wild material collected near Tolon, Greece, by Melvyn Jope. | (15+ seeds) | D |
| INTAMINATUM - WELL PATTERNED LEAF FORMS Hardy. White flowers in autumn. Good drainage and sun. | (15+ seeds) | D |
| TROCHOPTERANTHUM Distinct in its wide, windmill flowers in intense pink in spring. Not the easiest to grow - hardy but more easily managed under glass - grow cool, not too shaded & do not bake in summer. | (10+ seeds) | E |
| TROCHOPTERANTHUM - PALE PINK FORM The species as a whole has a comparatively limited distribution in SW Turkey - most cultivated material derives from the Davis & Polunin colls. in 1956, which Stuart Boothman used to grow well outside in Berkshire (as C. coum alpinum). They can be successful with C. cilicium conditions. | (10+ seeds) | E |
| LEUCOJUM NICAEENSE Delightful dwarf, pure-white, spring-flowering bulb. Culture as for C. repandum. | (15+ seeds) | B |

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While our main aim is to offer you seed collected by ourselves, our lists would be much the poorer were it not for the additional material contributed by some friends in Britain and abroad. You will find some seed from the following in Sections I & II and, of course, in Section III, where our own contribution is still comparatively small : John Andrews (California, USA), Helen Barton (Devon, UK), Dinah Batterham (Dorset, UK), John Blanchard (Dorset, UK), Peter Chappell (Hampshire, UK), Paul Christian (Clwyd, UK), Don Elick (Japan), Bert Hopwood (Devon, UK) Henrik Zetterlund (Sweden), Dave Hoskins (Hampshire, UK), Melvyn Jope (Surrey, UK), Will McLewin (Cheshire, UK), Ivan Rankin (New Zealand), Wayne Roderick (California, USA), Norman Stevens (Cambridge, UK), Mike Tucker (Somerset, UK), Peter & Penny Watt (Hampshire, UK), Michael Wickenden (Kirkcudbrightshire, UK), Alberto Castillo (Argentina).

Our sincere thanks to them all and to you, the customer, for continuing to support our work.

REFERENCE NUMBERS in Section I are our field-numbers and do not run in numerical order in this part of the list, which presents our collections in alphabetical order, so that members of each genus appear together. Seed ordered from this list will arrive with a separate check-list of the numbers in the numerical order of collection to facili--tate identification of the seed-packets, which carry only the field-number.

NOMENCLATURE offers considerable problems at present. There is no modern, standard flora for either Chile or Argentina. The 'Flora Patagonica', which deals with the southern part of Argentina is not yet complete. While we have followed the nomenclature in this when we have no modern alternative, it must be appreciated that this does not by any means represent a definitive treatment of this flora. For instance, the names of three out of the four Alstroemeria species included for this area are considered by Bayer, whose monograph we have used, to be either mis--applied or invalid. Wherever possible, we have attempted or are attempting to have herbarium material determined by a specialist, whose work is likely to contribute to the projected 'Flora Chilensis'. This project, however, is only barely 'off the ground' and no part of it is yet published. Dr. C. Marticorena (Barrio Universidad, Concepcion, Chile) is co-ordinating this work and has kindly provided determinations for a number of herbarium sheets, as well as indicating genera, such as Leuceria and Oxalis, where it might be prudent to remain uncommitted at present. In the case of some genera, like Calceolaria, we did not always have the opportunity to collect adequate material for determination so late in the season. Our overall approach has perhaps been over-cautious. So many seed collections have been distributed in the past under names which are either invalid or, much worse, misapplied, that we are reluctant to place ourselves in the position of adding to further confusion; especially so, as we are likely to see a more stable and acceptable set of names for the plants of this area within comparatively few years.

THE REGIONS OF CHILE. As usual in our field-notes, we indicate the locality starting with the name of the country followed by regional subdivision(s). In the case of Argentina (abbreviated Arg. in the notes), we use the name of the province (e.g. Neuquen) followed by the name of the department (e.g. Norquin). Chile, stretching from Peru in the North to the Antarctic in the South, is divided into twelve administrative divisions, numbered from North to South using Roman numerals, except for a large area around Santiago, the Region Metropolitana (abbreviated Reg. Metro.). The Roman numeral following Chile in the notes refers to these regions, of which we are concerned with the following in this list. Running from North to South, their full titles are as follows :

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| Region III | : Region de Atacama | Region VII | : Region del Maule |
| Region IV | : Region de Coquimbo | Region VIII | : Region del Bio Bio |
| Region V | : Region de Valparaiso | Region IX | : Region de la Araucania |
| Region Metropolitana de Santiago | | Region X | : Region de los Lagos |
| Region VI | : Region del Libertador General Bernardo O'Higgins | | |

SECTION I : SEEDS COLLECTED IN CHILE AND ARGENTINA, JANUARY - MARCH, 1991, BY JIM & JENNY ARCHIBALD

## ALSTROEMERIA

In 1991 we were just a little too late in arriving in Chile to anticipate collections from the majority of species, which are more concentrated at the middle to lower altitudes in the central parts of the country. Most of the higher altitude species and those from the more southern, colder, areas are listed here but, at the end of the list of our collections, you will find a further more extensive list of Chilean Alstroemeria. Together these constitute the most comprehensive range which has ever been made available to gardeners ; well over half the known Chilean taxa are included ; about half the known species of the genus are listed - while centred on Chile, the genus has a secondary centre in Brazil. The only comparable range of material was that distributed by Beckett, Cheese and Watson from their 1971-72 collections. Tragically, most of their seeds went to alpine-plant enthusiasts, who imagined that Alstroemeria had no relevance to their interest. None of the B.C. & W. collections became generally cultivated but many were (and we believe still are) very successfully grown at the R.B.G. Kew. In the late 1970's, we tried to salvage and propa--gate the remnants with the help of material from unprejudiced growers like Peter and Penny Watt and Alan King. We made the serious error of growing them in unplunged pots in an unheated glasshouse. One winter the pots froze and we lost most of them. We believe that many species will be successful in the open ground in Britain, given a sunny, well drained site such as a raised bed or, in the case of the high-alpine species, a rock-garden scree. For the lower altitude (say below 1000 m.) species which may tend to grow too much in autumn, a bulb-frame would be ideal and their growth cycle would fit in perfectly with such other late-flowering, summer-dormant groups as the Aril Irises or the genus Calochortus. Planting them out enables the roots to grow at a depth where the soil does not freeze. Sensitivity to freezing soil is a characteristic of many bulbs, corms and tubers and Alstroemeria are no more susceptible than a great many Crocus, Narcissus and Fritillaria. The same year as we lost our Chilean Alstroemerias we lost most of the stock we had of Iris winogradowii - in a large pot unplunged in a cold-frame. The parents of the A. ligtu hybrids, the only group widespread in cultivation in British gardens, are both low to middle altitude species seldom extending above 1500 m. One of the two B.C. & W. introductions we still have is A. pulchra, which is not recorded above 750 m. It is proving perfectly hardy in our cold garden here ; we have listed seed for several seasons and it is now being accepted as a hardy plant in much of Britain. Bearing in mind that the highest growing of the alpine species extend to an altitude of 3500 m., there is a lot of potential to be investigated and we hope exploited. As far as the species, which grow little above sea level, are concerned, the conditions they grow in are similar to those enjoyed by an Atlantic coastal species such as Leucojum trichophyllum in southern Spain or Morocco, or even more precisely like the climate and habitat of such Californian coastal species as Fritillaria liliacea and F. biflora. As with California, a cold Pacific current sweeps along the Chilean coast resulting in overcast and distinctly chilly weather for much of the year. Chilean sea-side summers may be as cool as British ones but winters, while cool, are likely to be frost-free. The only coastal species we have had in cultivation to any extent are A. pelegrina and A. hookeri. They can be grown in an unheated greenhouse or frame but, as with the Californian Fritillarias, are definitely better if the temperature does not fall below freezing. If you must grow these in pots, give them plenty depth, protect them from severe frost and, if you cannot grow them in frost-free conditions, at least keep the pots plunged. Raising them from seed has always been a simple matter in our experience - and we have raised many thousands commercially. In spite of 'research' which indicates complicated procedures, we have always found germination occurs easily and quickly at a reasonably even temperature between 5-10°C (40-50°F). Higher temperatures inhibit germination. If sown early enough, they usually come up in the autumn ; spring sowing, if early, is just as reliable. Alstroemeria seed stored in dry refrigerated conditions remains viable for a long period. Eight-year old seed of A. hookeri, which we sowed in mid-November, 1990, germinated within a few weeks under unheated glass. If you feel your soil temperature may be too low or too high, we suggest placing the seed container at the bottom of a domestic refrigerator, which should give the even 5°C required, but we have never felt it necessary to try this. Ideally, we should sow them where we wanted them to grow, as the seedlings can reach a good depth to form their first-year tubers - we do practise what we preach and currently have hundreds of A. ligtu hybrid seedlings from seed sown broadcast in a bed last autumn - germination was mostly in spring. With a few irreplaceable seeds, a pot might be safer! The dormant tubers can be potted up individ--ually the first summer and grown on for another year if you do not want to plant out at that stage. There is some--times a depauperate flower or two the first year but most should flower well the second season. They are among the most gorgeous of flowers and the genus is more diverse than most growers imagine - do try some and discover them!

## ALSTROEMERIA

Nomenclature follows that used in 'Die Gattung Alstroemeria in Chile' by E. Bayer (Botanische Staatssammlung München 1987). This is an impressive and meticulously researched monograph, likely to be accepted as the definitive, modern work on the genus in Chile, where the majority of species grow. While we were far too late to see most species in flower and cannot express an opinion on how well the monograph works in the field, we have a suspicion that there is likely to be a considerable degree of intergradation or hybridisation between some taxa and identification might not be a simple, clear-cut procedure. We have given the heights in the wild but, in general, it can be assumed they may grow twice as high in favourable conditions in cultivation. An indication of the altitudinal range of the species is also given - remember a habitat at 500 m. in Region IV is very different to 500 m. in Region X - but all of our own collections listed here will be totally temperature hardy when established in Britain. Seed of several is only avail--able in small quantities - about 90% of seed of the higher growers was eaten by larvae before it could mature.

12648 ALSTROEMERIA AUREA Chile, VIII, Nuble, SW of Termas de Chillan. 1500 m. Open banks in Nothofagus woods. 9.3.91 (This population in one of the most northern stations for the species approaches the A. ligtu group in the coppery reds and orange-scarlets of its flowers, far removed from the even yellow populations which are such a feature of the Chilean and Argentinian lake districts. We hope this race from the Chillan Andes, singled out for mention by Bayer, might prove a spectacular addition to hardy plants. 60 cm.) (20+ seeds) B

12543 A. ? AUREA Chile, VIII, Nuble, NE of Termas de Chillan. 1900-2000 m. Steep, stony, W-facing slopes. 21.2.91 (An extremely variable high altitude population - orange-scarlet to straw-yellow, inner segments streaked with red. This has to stand much colder temperatures than any A. ligtu. 50 cm.) (20+ seeds) D

12538 A. ? AUREA Chile, VIII, Nuble, Puente Asseradero SW of Termas de Chillan. 1300 m. Openings in woodland 21.2.91 (Growing with A. presliana and not in flower. May include some A. presliana q.v. 60 cm.)(20+ seeds) C

12497 A. PALLIDA Chile, Reg. Metro., W of Farellones. 2000 m. Steep, open, stony slopes. 13.2.91 (Few alpine--plants could rival the sumptuous spectacle of this in flower. More or less limited to the ranges to the SW of Aconcagua, between 1500m. and 2800m., it was described by Graham when it flowered "in the collection of of Mr. Neill at Canonmills" (Edinburgh) in 1829. It is strange that we do not have this well established in British gardens - perhaps Mr. Neill grew it in a pot. It must tolerate exceptionally low temperatures and growing it outside in a sunny scree might retain its dwarf habit. In the wild it is only 5-20 cm. high and its umbels of huge flowers sit almost on the ground. Basically, anything from deep to pale pink or white with the upper inner segments blotched with gold and streaked with dark crimson.) (20+ seeds) D

12524 A. PALLIDA Chile, Reg. Metro., Lagunillas ENE of San Jose de Maipo. 2100 m. Open, level, stony areas on exposed ridge. 18.2.91 (Perhaps more of a tendency to pale pinks and whites here.) (10+ seeds) D

12541 A. ? PRESLIANA (subsp. presliana) Chile, VIII, Nuble, Puente Asseradero SW of Termas de Chillan. 1300 m. Openings in Nothofagus woodland. 21.2.91 (Though almost all the collections of this are from this area, it extends into Argentina ("A. diazii" in 'Flora Patagonica'), growing within the range of the more dominant A. aurea. We suspect the extraordinary colours of the A. aurea here are due to introgression by this species, which generally remains distinct by flowering earlier. A smaller, more slender, narrower-leaved plant than either A. aurea or A. ligtu with a distinct rootstock and beautiful flowers of an even pink, the upper inner segments streaked with red on a pale yellow ground. 20-50 cm. high.) (20+ seeds) D

12590 A. PRESLIANA subsp. AUSTRALIS Chile, IX, Malleco, Cordillera de Nahuelbuta, W of Vegas Blancas. 1200 m. Openings in deciduous woodland, often in shade. 26.2.91 (One of the most southern taxa, distinct from the type race in its striking, red-brown anthers, more elongated outer segments and the intense, deep pink colour. At above 1400 m. on the crest of the coast range here, this was still in full flower in the national park established to protect the relic Araucaria cloud-forest, forming swathes of pink in the woodland glades. A brilliant and elegant plant about 30 cm. high, which we feel should be growable in the U.K. and we hope might retain its habit of flowering from late summer into autumn.) (20+ seeds) E

12585 A. ? PRESLIANA subsp. AUSTRALIS Chile, IX, Malleco, NNW of Curacautin. 800 m. Openings among scrub. 25.2.91 (Not seen in flower and may turn out to be A. aurea which grows around here as well.) (20+ seeds) C

12321 A. REVOLUTA Chile, VI, Cachapoal, Rio Cachapoal valley W of Pangal. 950 m. Openings among scrub in sandy soil. 23.1.91 (A widespread species recorded from 200m. to 1800 m. in central Chile. Large, rounded umbels of lilac-pink to purple flowers, individually smaller than most but numerous, on stems reaching 1 m. From afar this looks like something between a rosebay willowherb and a ball-headed Allium. This has a similar habitat and altitudinal range to the A. ligtu group and will be worth trying if these can be grown.) (20+) C

12512 A. UMBELLATA Chile, Reg. Metro., Lagunillas ENE of San Jose de Maipo. 2200 m. Loose igneous talus on steep slope. 18.2.91 (An extraordinary high-alpine centred on the mountains above the Rio Maipo, where it climbs to over 3000 m. Out of flower it is virtually indistinguishable from the larger A. spathulata and the two have been much confused by collectors. Both are plants of deep, mobile screes, often growing with Tropaeolum polyphyllum, with extraordinary succulent sterile rosettes of rounded, grey-green leaves, just like Echeverias. The flowers, sitting almost on the stones, are pink with darker tips and with the upper, inner segments speckled with crimson on a bright yellow ground. An amazing alpine development.) (15+ seeds) E

12513 ALSTROEMERIA SP. Habitat and field data as above - this grew in stable scree occupying a narrow band between the territories of A. umbellata and A. pallida. Fleshy leaves almost precisely intermediate between the two but flowers are larger, longer and flatter than either of these and always a rich pink. Material has been sent to the author of the monograph for an opinion! (10+ seeds) E

12470 ALSTROEMERIA SP. Chile, Reg. Metro., NNE of Farellones. 2800 m. Steep, loose, stony slope. 11.2.91 (Looks much the same taxon as 12513 to us but neither A. umbellata nor A. spathulata are known here.) (10+ seeds) E

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PLEASE REFER TO THE SUPPLEMENTARY LIST FOR AN EXTENSIVE RANGE OF THE LOW AND MIDDLE ALTITUDE ALSTROEMERIA SPECIES

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12455 ANEMONE MULTIFIDA Arg. Neuquen, Minas, W of San Martin de los Andes to Passo Hua Hum. 1000 m. Grassy openings among scrub. 3.2.91 (Not seen in flower but the pale-yellow, cup-shaped flowers, followed by woolly seed-heads, are usually small in proportion to the height of the plant. The clumps of much-cut, dark-green leaves are attractive and the species is usually easily grown. 50 cm.) (30+ seeds) B

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## ARGYLIA

A spectacular genus of herbaceous perennials, with perhaps about a dozen species, belonging to the Bignoniaceae, these are not unlike compacted versions of such climbers as Campsis or Tecoma, which have taken their woody stems underground to run through the Andean screes or the sandy soils of the Patagonian steppes. There is no question as to the temperature hardiness of the following but these are plants of sunny sites in areas of high light-intensity and dry climates. Growing them outdoors in cool, moist climates may be quite feasible but flowering them well and keeping them in character are other problems. In northern Europe, a bulb-frame might well be the answer - they will be perfectly capable of finding moisture if covered with glass. These come with strong recommendation to gardeners in the drier areas of the U.S.A. or Australia as being of enormous potential as stunning herbaceous plants. No matter where they are attempted, they should be given poor sunny conditions to keep them compact and floriferous.

12294 ARGYLIA ADSCENDENS Chile, Reg. Metro., Lagunillas, ENE of San Jose de Maipo. 2200-2300 m. In rock 'stripes' on open, stony slopes. 21.1.91 (The only high-growing alpine here - variable in height from about 20 cm. with big heads of flower in deep, loose, igneous talus to prostrate mats of grey, much-cut leaves, with the huge trumpets sitting on them. Also varies much in colour as the flowers mature from purplish-red tinges to oranges and apricot-yellow. It is being growing satisfactorily outside in the U.K. but not flowering ; it might just be worth trying a deep pot full of chippings in full sun in the alpine-house.) (20+ seeds) C

12505 ARGYLIA POTENTILLIFOLIA Chile, IV, Elqui, W of Juntas de Toro. 2000 m. Among loose stones on steep, North--facing slope. 15.2.91 (Pale orange-yellow trumpets, smaller than the next, on 50 cm. stems.) (15+ seeds) D

12390 ARGYLIA SP. (we hope for an acceptable name soon!) Argentina, Mendoza, S of Ranquil del Norte. 1300 m. Open level, sandy areas among scrub. 30.1.91 (Glaucous, 5-lobed basal leaves and 60 cm. stems with up to 50 4cm. long trumpets of brilliant orange-yellow - a sumptuous thing to find in this cold steppe area.) (20+ seeds) D

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12371 ARMERIA SP. Arg., Mendoza, Malargue, Valle de las Lenas. 2700 m. Open, level, stony areas. 29.1.91 (A pleasant, if not eccentric, little alpine thrift for which it is probably better not to suggest a name at present. Little pink heads on 5 cm. stems from clumps of dark-green, purple-tinged leaves.) C

12376 ASTRAGALUS ? PALENAE Arg., Mendoza, Malargue, Valle de las Lenas. 2700 m. Open, stony slopes. 29.1.91 (Mats of little, downy, greyish leaves with heads of cream flowers tipped with lilac-blue before the inflated pods, densely mottled with red-purple and recalling the North American A. whitneyi.) (15+ seeds) E

12479 ASTRAGALUS ? VESICULOSUS Chile, Reg. Metro., NE of Valle Nevado (E of Farellones). 3100 m. Loose, volcanic ash slope. 12.2.91 (Mats of woolly, grey-white leaves, running underground, with large, inflated, parchment -coloured, lilac-tinged pods. Not seen in flower. There were some plants of a larger, coarser plant (A. ? cruckshanksii) in the area but we think all seed is of the rather rare dwarf one.) (15+ seeds) E

12578 BLECHNUM CHILENSE Chile, VIII, SE of Antuco. 500 m. Dense scrub on steep sides of wet gulley. 24.2.91 (At last something from the wet South! Deep green, glossy, leathery fronds, 1 m. or more long, with upright fertile fronds. A spectacular foliage-plant growing here with Gunnera and Escallonia. Ample spores!) C

12482 CAJOPHORA CORONATA Chile, Reg. Metro., NE of Valle Nevado (E of Farellones). 3200 m. Among rocks at bases of igneous boulders and cliffs. 12.2.91 (This has to be a prime contender for the title of the world's most incredible high-alpine plant. High-growing it certainly is - up to 3500 m. on the desolate slopes on either side of Chilean - Argentinian border around the great mountains of Aconcagua and Tupungato. Surprisingly lush clumps of dissected, dark-green foliage resemble a compact tuft of the spiniest of Acanthus spinosus forms. Around their bases flop out enormous, five-ribbed lampshades, about 7 cm. across of diaphanous white silk. A long-lived perennial which can be propagated from root-cuttings, this was successfully grown in both pots and beds under glass from B.C. & W. seed in the early 1970's. It will not, however, have a future in the garden-centre trade - "el inconveniente de su inexpugnable proteccion", as A. Ruiz Leal puts it, assures that. The leaves stems and flowers are covered in stinging hairs. The late Roy Elliott decapitated it and "the entire plant (was) carried at arms-length to the dustbin." Perhaps today's alpine-gardeners are more long-suffering in the interests of garden-plant conservation or maybe they are prepared to don gloves before approaching this. If we could collect seed without being stung, you can grow it and escape! We think it so spectacular and amazing that it is worth the risk.) (50+ seeds) D

## CALANDRINIA

As with most of the larger South Andean genera, names have been much confused and misapplied both in botanical and horticultural literature. For some years Donna Ford (currently of the Missouri Botanical Garden but shortly moving, as herbarium curator, to Northeast Missouri State University) has been working on this genus, investigat--ing it both in the wild and in herbaria. Fortunately, we were in touch with her before we left and had agreed to collect dried specimens. We saw this as an excellent opportunity to make a comprehensive seed collection of this genus at its higher elevations available for distribution under the names supplied by her. The first set of herb--arium specimens, taken back to the USA by John Andrews, reached her and she kindly supplied determinations with speed. The second set from Chile, however, seem to have caught her between appointments and we have no names yet.

Calandrinia is close to its fellow member of the Portulacaceae, the small genus Lewisia. It differs most obviously in its seed capsule, opening by apical valves rather than the circumscissile capsule of Lewisia. There are also many more of them, perhaps in excess of 100 species. Many of these are annuals but there are also many perennial high altitude species in the Andes which exhibit considerable diversity. Although most of them remain unfamiliar in cultivation, it may be of help to gardeners regarding their similarities and relationships if the sections of the genus with which we are concerned here are noted - these are given in brackets after each specific name. Sect. Acaules : dwarf, stemless perennials with stout taproots and dense, basal rosettes of narrow leaves ; flowers carried singly on a stem - the most "Lewisia-like". Sect. Dianthoideae : dwarf, sometimes woody-based perennials with narrow-leaved rosettes and inflorescences of up to 5 flowers on branching stems. Sect. Andinae : most distinct with its large, purple-veined calyx ; a small section, only one listed here. Sect. Hirsutae : a most distinct but confusing group with very hairy foliage including many dwarf, often cushion-forming, alpine perennials. As far as cultivation is concerned, we can only at present suggest maximum sunlight, maximum drainage, minimum nutrition and minimum water, except in spring, to keep these perennial and in character.

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12387 CALANDRINIA ANDICOLA Arg., Mendoza, Malargue, pass between Valle de las Lenas & Valle Hermoso. 2350 m. Open stony areas along ridge-top. 29.1.91 (Sect. Dianthoideae. Mainly distributed on the Argentinian side of the Andes, N & S of Mendoza Prov. Woody based with small, narrow leaves and stems to 10 cm., usually less and decumbent, with several large flowers of brilliant pure-magenta silk. Sumptuous.) (15+ seeds) E

12439 C. CAESPITOSA Arg., Neuquen, Lacar, Cerro Chapelco above San Martin de los Andes. 1900 m. Among igneous rocks on exposed, stony slopes. 2.2.91 (Sect. Acaules. Considered to be one of the finest forms of this high-alpine, extremely widely distributed from Coquimbo Prov., Chile, to Tierra del Fuego - and naturally very variable. Rolf Fiedler describing it here (as "C. portulacoides") states it "forms low armeria-like tufts of slightly succulent narrow leaves and has big yellowish-orange flowers up to 5 cm. across." Others describe it as "yellow suffused orange" and "deep gold". We grew a smaller-flowered, scarlet and yellow version of this species from B.C. & W. seed (as C. rupestris) for several years without much trouble and we see no reason why this should not prove growable with careful alpine-house cultivation.) (15+ seeds) F

12416 C. COLCHAGUENSIS Arg., Neuquen, Norquin, S of Copahue. 2000 m. Open, level, stony alpine-steppe, among volcanic debris. 1.2.91 (Sect. Acaules. The most southern of trio of rather similar species growing and flowering in melt-water and perhaps the loveliest. This extends from Neuquen to Chubut, just entering Chile at Colchagua. This makes closely mounded rosettes of darkest green, strap-shaped leaves from which a succession of flowers in lilac and rose appear in spring. John Watson devotes a whole page to his encounter with this on the Chile-Argentina border in 1972 : "satiny cool pure pink...from a prominent calyx of two flattened mahogany sepals...a paragon to delight with quiet perfection...the fairest of all we saw in the Andes." Perhaps it is better that we had insufficient seed of related C. affinis) (30+ seeds) E

12415 C. ? COLCHAGUENSIS Arg., Neuquen, Norquin, S of Copahue. 2000 m. Habitat as above. 1.2.91 (Identified by Donna Ford from non-flowering material as C. colchaguensis and growing adjacent to it but both John Andrews and ourselves felt this was distinct. As might be obvious from our lists, we incline towards 'lumping' rather than 'splitting' but we had no trouble keeping seed from the two forms separate, they grew in slightly different habitats and there were no intergrades. This has a similar habit to 12416 but with much narrower, shorter foliage. The related species are C. affinis and C. graminifolia.) (30+ seeds) E

12377 C. GAYANA Arg., Mendoza, Malargue, Valle de las Lenas. 2700 m. Open stony areas & slopes. 29.1.91 (Section Dianthoideae. Caespitose with linear leaves, greyish and glabrous, and 10 cm. stems carrying up to 10 flowers of intense rose with glandular bracts. Not so spectacular as some but well worth trying) (30+ seeds) C

12330 C. GRANDIFLORA Chile, VII, Curico, Rio Teno valley ESE of Canton. 750 m. Crevices on vertical cliffs. 24.1.91 (Tales of a giant Lewisia in Chile probably relate to this! An extraordinary plant, unlike any other here. Succulent, grey, Echeveria-like rosettes cling tightly to the rock and produce radiating stems 20 cm. or more long carrying many flowers of violet-pink, reputedly of vast size. This is quite a high, inland locality for this and it should be hardy in an alpine-house in the U.K.) (20+ seeds) E

12340 C. PICTA Chile, Reg. Metro, Lagunillas, ENE of San Jose de Maipo. 2200 m. Steep, open, stony slopes and in talus. 25.1.91 (Sect. Andinae. A distinct and splendid plant. Succulent, spatulate leaves in loose rosettes and decumbent 10 cm. stems carrying large, silky-petalled flowers of intense violet-rose. These appear above enlarged bracts, mottled exotically with purple-brown, which have enclosed the buds, looking like tiny birds' eggs. A rather uncommon plant which we very much hope can be cultivated.) (15+ seeds) F

12476 C. SETOSA Chile, Reg. Metro., NE of Valle Nevado (E of Farellones). 3100 m. Loose volcanic ash slopes. 12.2.91 (Sect. Hirsutae. A tiny high-alpine, not unlike the next but prostrate, creeping through the loose ash, with small, hairy, grey-white rosettes and almost stemless magenta flowers.) (30+ seeds) E

12342 C. SERICEA Chile, Reg. Metro., Lagunillas, ENE of San Jose de Maipo. 2200 m. Steep, open, stony slopes. 25.1.91 (Tight hummocks or pads of silvery-grey, downy foliage produce a generous succession of brilliant magenta flowers on short stems. Possibly the finest of its section : Hirsutae.) (30+ seeds) E

12311 C. SPLENDENS Chile, Reg. Metro., above Rio Maipo valley, N of Banos Morales. 2500 m. Open, stony areas. 22.1.91 (Sect. Dianthoideae. Diffuse, woody stems with little, linear, glaucous leaves, not unlike Penstemon pinifolius in its basal growth, send up 10 cm., wiry stems with 2-4 large flowers, over 3 cm. across of a glorious silky magenta - splendid, indeed! Magenta, in a vast range of subtle tone differences and nuances, is the unashamed speciality of Calandrinias. Ignore the influence of those ignorant and bigoted gardening-writers who indulge in the cliche of deploring this colour - it's marvellous!) (15+ seeds) E

12310 C. UMBELLATA Chile, Reg. Metro., above Rio Maipo valley, N of Banos Morales. 2500 m. Open, gravelly areas. 22.1.91 (Sect. Hirsutae. This can be taken as the 'basic' member of its section with hairy, grey leaves and 10-15 cm. stems of flowers in rather a deep ruby-magenta. We cannot say if the name has been correctly applied to plants already in cultivation as this. It is certainly perennial here.) (50+ seeds) B

12372 C. UMBELLATA Arg., Mendoza, Malargue, Valle de las Lenas. 2700 m. Open, level, stony areas. 29.1.91 (Dwarf, alpine perennial - the standard silky grey leaves and magenta flowers.) (30+ seeds) B

We do not yet have determinations on the specimens collected in south-central Chile during late February into March and feel it is better to list these without specific names until we can supply the names given to us by Donna Ford. This we shall do in our next list ; the check-list which will be sent with the seeds will also be amended accordingly when it is revised in December, 1991, in time to accompany orders from our winter list. Incidentally, please do not judge the desirability of a species by the number of seeds in a packet - the species vary greatly in the size of seeds and the number they produce!

12535 CALANDRINIA SP. Chile, VIII, Nuble, SW of Termas de Chillan. 1350 m. Openings in woodland ; loose, gravelly soil. 20.2.91 (Sect. Hirsutae. Grey, hairy leaves. Magenta flowers.) (30+ seeds) B

12548 CALANDRINIA SP. Chile, VIII, Nuble, NE of Termas de Chillan. 2000 m. Loose, N & NE facing ash slopes. 21.2.91 (Sect. Dianthoideae. Not seen in flower - not we think the same as 12662.) (30+ seeds) C

12570 CALANDRINIA SP. Chile, VIII, Bio Bio, SE of Antuco. 700 m. Gravelly openings among scrub. 24.2.91 (Sect. Hirsutae. Hairy, grey leaves and magenta flowers on radiating stems.) (50+ seeds) B

12600 CALANDRINIA SP. Chile, IX, Cautin, Volcan Villarica, S of Pucon. 1500 m. Exposed slopes in loose, volcanic ash. 28.2.91 (Sect. Dianthoideae. Not seen in flower. Glabrous leaves. Glandular bracts. 5 cm.) (30+ seeds) C

12662 CALANDRINIA SP. Chile, VIII, Nuble, SW of Termas de Chillan. 1300 m. Open site in hard-packed gravelly soil. 11.3.91 (Sect. Dianthoideae. Rather distinct, a few cm. high with bright pink flowers.) (30+ seeds) C

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## CALCEOLARIA

After a surfeit of Calandrinia names, we enter a period of starvation. This is largely due to the fact that we did not see most of the following in flower and were unable to collect herbarium material in a state where identification could be achieved with certainty. The genus abounds in a diversity of forms and habitats in the southern Andes but, once the novelty has faded, many seem to fall short of possessing the potential of excellent plants worthy of cultivation. We felt all the following might be well worthwhile for various reasons and they cover a fairly broad, representative range from tall herbaceous plants, shrubby plants to high altitude, saxatile species. In the last respect, it is unlikely that alpine-plant enthusiasts will find anything quite so desirable as the members of the C. darwinii (C. uniflora) group among the unknown southern Andeans. Nevertheless, there are many fine dwarf alpines. We collected several in quantities too small to list and a collection of a desirable dwarf shrubby one from vertical cliffs in Mendoza Prov., Argentina, contained no fertile seeds ; we offer the collections 12378 and 12545 as compensations. Assume all unnamed ones are yellow until proved otherwise!

12488 CALCEOLARIA ARACHNOIDEA Chile, Reg. Metro., NE of Valle Nevado (E of Farellones). 3100 m. Among igneous rocks on steep slopes. 12.2.91 (Dark, black-maroon bubbles on 20 cm. stems above tight basal rosettes of white-felted leaves. Easy enough in cultivation if protected from too much wetness.) (100+ seeds) B

12551 CALCEOLARIA TENELLA Chile, VIII, Nuble, SSW of Termas de Chillan. 1600 m. In moss in deep shade under overhanging cliff. 21.2.91 (One of tiniest and loveliest - prostrate mats of minute, round leaves and little, yellow, red-speckled pouches on thready, 3 cm. stems. Delightful in a pan.) (100+ seeds) C

12378 CALCEOLARIA SP. Arg., Mendoza, Malargue, Valle de las Lenas. 2700 m. Igneous rock fissures on and at base of cliffs. 29.1.91 (A promising, compact and floriferous saxatile, alpine species.) (100+ seeds) D

12393 CALCEOLARIA SP. Arg., Neuquen, Norquin, E of Caviahue. 2100 m. Stony slopes, among igneous rocks. 31.1.91 (A 50 cm. high, summer-dormant plant with stout basal rosettes. Worth trying in a bulb-frame?) (100+ seeds) C

12545 CALCEOLARIA SP. Chile, VIII, Nuble, NE of Termas de Chillan. 2100 m. SE-facing fissures on igneous rocks along exposed ridge-top. 21.2.91 (Very compact basal foliage running along the crevices. At least two very fine alpine taxa are reported from this area, though we did not see this in flower. A few.) (100+ seeds) E

12591 CALCEOLARIA SP. Chile, IX, Cordillera de Nahuelbuta, W of Vegas Blancas. 1200 m. Deciduous woodland. (A 60 cm. high shade-lover with many fine, wiry, branching stems - a delicate, airy-looking plant which should be hardy in the U.K. and worth trying in a shady spot in humus-rich soil.) (100+ seeds) C

12660 CALCEOLARIA SP. Chile, VIII, Nuble, SW of Termas de Chillan. 1400 m. Among rocks, above stream, in sun. 11.3.91 (A dwarf shrub, 50-60 cm. high, rather like C. integrifolia but with thinner-textured, toothed, pointed foliage.This had had abundant flowers and, from this locality, should be very hardy.) (100+ seeds) C

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12363 CASSIA ARNOTTIANA (var. arnottiana) Arg., Mendoza, Malargue, ESE of Los Molles. 2000 m. Open, stony areas in valley bottom. 29.1.91 (Out of hundreds of species in the huge genus Cassia, widespread through the tropics, not one is established as a reliable hardy plant in the colder gardens of the world. We hope this may prove the exception. Four species penetrate far south into Argentinian Patagonia. All are local plants and this achieves the highest altitude of any - up to 2800 m. The climate here is bleak - we arrived here in driving sleet on what would be 29 July in the northern hemisphere. This is a dwarf shrub, only 15-50 cm. high, with upright stems clothed with leathery, grey-green, pinnate leaves and bearing terminal racemes of up to 5, large flowers of brilliant orange-yellow. Seed was collected of this by Harold Comber around Zapala in 1925, under his number 89, and he records that it germinated. Its fate is unknown!) (10 seeds) E

12332 CHEILANTHES SP. Chile, VII, Curico, Rio Teno valley ESE of Canton. 750 m. Crevices on vertical cliffs. 24.1.91 (A neat, more or less summer-dormant fern, probably best attempted in the alpine-house. Spores) D

12521 CRUCKSHANKSIA HYMENODON Chile, Reg. Metro., Lagunillas (ENE of San Jose de Maipo). 2300 m. Exposed, stony area on steep, NW-facing slope. 18.2.91 (This may well rival Cajophora coronata as 'the world's most incredible high-alpine' but only when in flower. In habit it is pleasantly unobtrusive, like a choice, little Alyssum with rather fleshy, grey leaves on prostrate stems spreading among the stones, but when in flower it puts on a display unparalleled in extrovert exotic flamboyance. Each head of long-tubed flowers in bright orange-yellow is surrounded by a flaring skirt of violet-pink sepals in a colour combination so daring as only to be attempted by the designer for an early Hollywood musical. Though there have been seed collections in the past, this has not yet exploded on to the show-bench. It would make a stunning pan-plant - definitely needing full sun and optimum drainage in wetter climates. We have a superb seed-collection of this both in quality and quantity - some now stored in our 'seed-bank' - which may ensure this.)(15+ seeds) F

12612 DESFONTAINEA SPINOSA Chile, X, Llanquihue, N of Ensenada. 1200 m. Openings in tree-line Nothofagus forest. 3.3.91 (A marvellous shrub, possibly the only member of the small family Potaliaceae grown in temperate gardens, with glossy, evergreen, holly-like foliage and pendant, tubular, waxy bells of orange-scarlet, tipped with yellow. Always a plant of shade and high humidity, up to 2 m. high, in the wild.) (20+ seeds) D

12374 DRABA GILLIESII Arg., Mendoza, Malargue, Valle de las Lenas. 2700 m. Among igneous rocks. 29.1.91 (A quite 'conventional' Draba, as is the next, - not one of the 'way-out' equatorial Andeans. Tufts of grey-green leaves and heads of white flowers on 5 cm. stems. Widespread up to 3600 m. in Mendoza Province.)(30+ seeds) C

12412 DRABA SP. Arg., Neuquen, Norquin, S of Copahue. 2000 m. Open, level, stony steppe ; among volcanic debris. 1.2.91 (With its glabrous siliqua and irregularly 3-lobed leaves, this does not key-out in 'Flora Patagon--ica'. Rather neat woody-based hummocks and flower stems of only 3 cm. - colour unknown.) (30+ seeds) C

12639 DRIMYS WINTERI var. ANDINA Chile, X, Osorno, Antillanca. 750 m. In shade of Nothofagus forest near tree--line. 5.3.91 (A most distinct, dwarf race of this wide-ranging species, tree-like over most of its distrib--ution. This forms thickets about 60 cm. high with evergreen leaves and umbels of white flowers - altogether vaguely like a dwarf Choisya ternata. A seedling from Comber's 1926 collection from adjacent Argentina had reached about 1.5 m. by 4 m. across after about 40 years at Nymans (Sussex, U.K.) (10+ seeds) E

12606 EMBOTHRIUM COCCINEUM Chile, X, Llanquihue, W of Ensenada. 200 m. In scrub and at margins of woodland. 1.3.91 (The famous Chilean Fire Bush, more or less evergreen, can reach about 10 m. high in the wild but is usually much less. Its dense, racemes of tubular, orange-scarlet flowers are unrivalled. Lobb's intro--duction in the 1850's was probably coastal.This should be reasonably hardy.) (20+ seeds) C

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12620 EMBOTHRIUM COCCINEUM Chile, Llanquihue, N of Ensenada. 1000 m. Exposed slopes in volcanic detritus. 3.3.91 (From depauperate plants which had neither flowered nor set seed well! It is probably no hardier from this subalpine locality as it survives here because of the deep snow-cover in winter. A few only.) (15+ seeds) E

12577 FRANCOA SONCHIFOLIA Chile, VIII, Bio Bio, SE of Antuco. 500 m. Steep side of wet gulley. 24.2.91 (This fairly widespread but always local species has developed much regional variation in Chile, resulting in many names. It would seem likely that when these are revised all will be placed under one species ; we do not make any attempt to suggest an infraspecific name for this at present. Although long associated with Victorian conservatories, we have always found this beautiful, herbaceous member of the Saxifragaceae hardy in various parts of the U.K. over the past 25 years. This collection has lobed, almost hairless leaves and 60 cm. high wands of pink flowers. Usually a plant of semi-shaded cliffs or rocky slopes.) (100+ seeds) B

12611 FUCHSIA MAGELLANICA Chile, X, Llanquihue, N of Ensenada. 1200 m. Openings in tree-line Nothofagus forest. 3.3.91 (A marvellous shrub with its profusion of hanging, bright red and purple flowers - in this locality from 1-2 m. high. There is so much minor local variation we could see little value in assigning variants to infraspecific taxa. Usually a plant of moist places in the wild, this enjoys the cooler more humid summers of the West in the U.K. but is basally extremely hardy, regenerating if cut-back.) (50+ seeds) B

GAULTHERIA Following the opinions of Stevens (1969) and of Middleton & Wilcock (1990), the latter based on wide research, it seems almost certain that the genus Pernettya should not be separated from Gaultheria. Although, as readers of our seed-list will be aware, we usually adopt a very conservative approach to naming in this case, we believe the merger will be universally adopted and we list Pernettya collections here.

12616 GAULTHERIA MYRSINOIDES - LILAC-PINK BERRIES Chile, X, Volcan Osorno, N of Ensenada. 1300 m. Open slopes in volcanic ash and debris. 3.3.91 (An immensely variable species spread from Central America down the whole length of the Andes, cultivated plants of which are grown as Pernettya prostrata, P. pentlandii, P. ciliata etc. In this part of Chile, the situation is even more confused, perhaps through introgression by G. pumila. This and the following are prostrate, evergreen shrubs, rising to 10-15 cm. from alpine habitats.) (50+) C

12617 GAULTHERIA MYRSINOIDES - ROSE-RED BERRIES Chile, X, Volcan Osorno. 1300 m. Habitat as above. (50+ seeds) C

12615 GAULTHERIA MYRSINOIDES - WHITE BERRIES Chile, X, Volcan Osorno. 1300 m. Habitat as above. (50+ seeds) C

12422 GAULTHERIA PUMILA var. LEUCOCARPA Argentina, Neuquen, Norquin, lower slopes of Volcan Copahue. 2000 m. Among rocks on open, stony slopes. 1.2.91 (= Pernettya leucocarpa. A tiny, procumbent, evergreen shrub, about 3 cm. high with small white flowers followed by white berries. A delight in a trough.) (50+ seeds) D

12554 GUNNERA CHILENSIS Chile, VIII, Nuble, SSW of Termas de Chillan. 1600 m. Wet slopes and streamsides in openings in Nothofagus woodland. 21.2.91 (A massive and spectacular foliage-plant rising to almost 2 m. in height with enormous, lobed leaves on prickly stalks. Somewhat smaller than the Brazilian G. manicata and almost certainly considerably hardier, it often grows at high altitudes where there is moisture.) (100 seeds) C

12610 GUNNERA ? MAGELLANICA Chile, X, Llanquihue, N of Ensenada. 1200 m. Margin of Nothofagus woodland at tree--line. 3.3.91 (At the precise opposite end of the size-scale. A little creeping plant a few cm. high with rounded dark-green leaves and strawberry-like, scarlet fruiting heads. Moist but not wet here.) (15+ seeds) C

HIPPEASTRUM Please see comments under Rhodophiala and Rhodolirion.

12296 LATHYRUS ? MULTICEPS Chile, Reg. Metro., Lagunillas (ENE of San Jose de Maipo). 2200 m. Loose talus on steep slope. 21.1.91 (At about 20 cm. high, this is too large and leafy for the rock-garden but, like a lot of the plants we have tried to collect, with possibilities as a hardy, perennial garden-plant. Blue, lilac-tinged flowers on clumps of stems running through the scree. Full sun and good drainage.) (8 seeds) C

12473 LEUCERIA SP. Chile, Reg. Metro., W of Farellones. 2900 m. Among rocks in steep-sided gulley. 11.2.91 (Although there are some excellent small alpines in this genus of Andean Compositae, there are rather more large herbaceous perennials worth considering. This is about 70 cm. high with coarsely cut basal leaves and branching stems with many small, soft-pink heads, somewhat like very neat, miniature Catananche heads. These tall, high altitude plants have usually very small, local populations and Dr. Marticorena is cautious over assigning names at present. This and the following might be placed near L. gilliesii. Both are well worth trying in open border conditions - temperature hardiness is not in question.) (30+ seeds) D

12491 LEUCERIA SP. Chile, Reg. Metro., SW of Valle Nevado. 2900 m. Talus on steep slope. 12.2.91 (Possibly the same species but had a slightly different 'look' about it. Lilac-pink heads. 60-100 cm.) (20+ seeds) D

12608 LIBERTIA CHILENSIS Chile, X, Llanquihue, W of Ensenada. 200 m. At base of cliffs in stony soil. 1.3.91 (A 50 cm. high member of the Iridaceae, very much along the lines of the New Zealand members of this genus. Clumps of iris-like basal foliage and rigid stems, up which the white flowers cluster.) (20+ seeds) C

12436 LOASA NANA Arg., Neuquen, Lacar, Cerro Chapelco above San Martin de los Andes. 1800 m. Among igneous rocks on exposed slopes. 2.2.91 (One of the finest, dwarf alpine members of this diverse genus - and, unlike Cajophora coronata, it reputedly does not have stinging hairs. Congested mats of dissected, bluish grey--green leaves provide a beautiful background for the complex symmetry of the large, starry flowers, in lemon-yellow or orange-yellow with white centres. Beautifully photographed, as always, by Robert Rolfe in Bull.Alp.Gard.Soc. No. 229, p. 244 (Sept., 1987) - for L. acanthifolia (p. 249) see Section III.) (30+) E

12256 LOASA SIGMOIDEA Chile, Reg. Metro., above La Parva (NE of Santiago). 2900 m. Among stones on open slope. 20.1.91 (Vaguely similar and like L. nana reputedly non-stinging but with the orange and yellow flowers on flopping, prostrate stems of about 20 cm. Both should be growable in lean conditions.) (20+ seeds) D

12527 LOBELIA TUPA Chile, VI, Cachapoal, W of Coya. 900 m. Openings among scrub in sandy soil. 19.2.91 (One of the most regal of Chilean endemics, its flower spires tower to about 2.5 m. in the wild but seldom exceed 2 m. in the U.K. where it has always been considered to be of border-line hardiness. This is not surprising as almost all material is likely to have been introduced from coastal areas, where its main distribution lies. This is the only locality we found it in which was to the E of the central valley. Here it is likely to be in one of its coldest habitats up in the Andean foothills. This collection is from scarlet-flowered plants, rather brighter in tone than the more crimson hue we have seen in cultivated stock.) (100+ seeds) D

12531 LOBELIA TUPA Chile, Cachapoal, Rio Cachapoal valley opposite Termas de Cauquenes. 800 m. Steep, open bank at woodland margin. 19.2.91 (From a plant with flowers of a dusky, reddish orange. Otherwise with the same pale-green, downy foliage and giant spires of hundreds of hooded, tubular flowers.) (100+ seeds) D

12628 LUZURIAGA RADICANS Chile, X, Llanquihue, Rio Petrohue valley NW of Ralun. 150 m. On Nothofagus trunks in dense, humid forest. 4.3.91 (A member of the Philesiaceae which creeps or climbs to 2-3 m. with pendant white flowers and orange-red berries. Marginally hardy and best in shade under glass.) (10 seeds) C

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12533 MAIHUENIA POEPPIGII Chile, VIII, Nuble, SE of Recinto. 1000 m. Open, level site in volcanic ash. 20.2.91 (A member of the Cactaceae which has to be 'socially acceptable' with rock gardeners, even if only because it is one of the few cacti with leaves. Forms wide mats, 1 m. or more across but only a few cm. high, of branching stems with tiny, cylindrical leaves among white spines. Gorgeous, large, stemless flowers of soft lemon-yellow. We grew this for many years as an alpine-house plant but it is probably better planted-out with some protection from winter wetness - it will survive much lower temperatures than are ever likely to occur in the U.K. or in most areas where 'alpines' are grown and grows slowly and steadily.) (20+ seeds) C

12495 MALESHERBIA LINEARIFOLIA Chile, Reg. Metro., W of Farellones. 2000 m. Open, stony slopes. 13.3.91 (One of the most exciting among the taller plants we saw. The family Malesherbiaceae, with only the one genus, is hardly familiar to gardeners. To say it is related to Turneraceae and the more familiar Passifloraceae does not help a lot! If you keep in mind that this is 'different' to anything familiar in cultivation, it can be summed up as a woody-based, herbaceous perennial, about 60 cm. high, with stems and leaves covered in glandular hairs and panicles of flowers, about 2 cm. across, generously produced over a long period. These are in rich, dusky blue-violets to red-violets, somewhat Delphinium-like, though they are regular with five petals, and are inserted in the coloured calyx to give a 'hose-in-hose' effect, rather like a gentian stuck within another gentian - now you know! Temperature hardiness is not in doubt - it ascends to exposed alpine ridges but is really happiest at slightly lower elevations - but what else it might want we do not know. Give this full sun in a well-drained place and hope - we shall try it even in wet Wales.) (30+ seeds) D

12640 MAYTENUS ? DISTICHA Chile, X, Osorno, Antillanca. 750 m. In shade of Nothofagus forest near tree-line. 5.3.91 (A dwarf, evergreen shrub, about 50 cm. high, of the Celastraceae, which displays decorative seeds enclosed in fleshy orange arils, like Celastrus and Euonymus. The allied M. chubutensis is still in cultivation from Comber's 1926 collection in Argentina. Should be perfectly hardy and easy.) (10+ seeds) D

12484 MELOSPERMA ANDICOLA Chile, Reg. Metro., NE of Valle Nevado (E of Farellones). 3200 m. Exposed, stony slope on summit ridge. 12.2.91 (A distinct high-alpine member of the Scrophulariaceae with prostrate, radiating stems clothed in opposite, fleshy, blue-grey leaves from the axils of which bell-shaped, lilac flowers, with darker veining and throats, appear successively. Not spectacular but quietly attractive and could make a good pan-plant if kept in character - may be best in full sun outside in summer in the U.K.) (15+ seeds) E

12627 MITRARIA COCCINEA Chile, X, Llanquihue, Rio Petrohue valley NW of Ralun. 150 m. On Nothofagus trunks in dense, humid forest. 4.3.91 (One of a trio of gorgeous gesneriads from the Chilean, temperate rain-forests, comprising the Mitrarieae - the other two, Asteranthera and Sarmienta, were not collected in sufficient quantity to list. I grew them for many years in Scotland with the protection of a shaded cold-frame - in the U.K. they are only possible outside in the moist West. This creeps over rocks or climbs up tree-trunks to a height of several metres until it reaches a spot where sunlight breaks through and there produces a clump of flowering branches, clothed in glossy, toothed, evergreen leaves with pendant, tubular flowers of brilliant scarlet. In a pot in cultivation it can be kept as this 20 cm. high shrub.) (50+ seeds) D

## MUTISIA

Seed collections from this beautiful genus of climbing daisies, which includes some of the few climbing Compositae, were one of our main objects. It was not an easy task. Writing of his collecting in 1971-72, John Watson recounts that "...head after head of seeds had been eaten, fouled and destroyed by bugs, and despite exhaustive examination of everything we could find, we ended up with about 4 or 5 potentially viable yet still dubious seeds. This was the story of so many mutisias..." We devoted almost entire days to the collection of M. decurrens (12646) and M. subulata (12668). On the other hand, it seemed to take no time at all to collect an ample amount of M. spinosa (12451) in Argentina! Good, mature seed varies from black in M. spinosa to golden-brown in several to cream in little M. sinuata but we can tell you that all the following have now germinated with us, as well as one or two others, like M. oligodon and M. illicifolia, of which there was only enough to sow ourselves. They have germinated irregularly, starting within a few weeks, and what was interesting was that the first to germinate were those we had thought might be immature and almost did not list (M. retrorsa?, 12356, and M. subulata, 12300). The 'best' seed, M. spinosa (12451), took the longest time to germinate. We have sown ours where we want them to grow. They reputedly dislike being moved and it might be better to sow seeds individually in small pots. The only one we have grown before was M. spinosa from British seed (as M. retusa) and we had no difficulty transplanting it, though it did not like our alkaline water in Dorset. With almost all the following, temperature-hardiness will not be the problem ; in the U.K. wetness may be and we guess they may be better suited to the climate of Kent than that of Cornwall, in spite of older horticultural accounts. Good drainage seems to us the essential. In the wild, they grow like clematis, climbing through and over other shrubs with their heads in the sun and feet in the shade. The names follow Cabrera's 1965 revision of the genus - most of the hardiest species from the South are listed.

12646 MUTISIA DECURRENS Chile, VIII, Nuble, SW of Termas de Chillan. 1500 m. Openings in Nothofagus forest. 9.3.91 (More than any other this deserves to be called a 'climbing gazania' with its large flower-heads, about 12 cm. across, like single dahlias with about 15 ray-florets in deep, glowing orange. Distinct, narrow leaves with forked apical tendrils. Climbs to about 3 m. with a preference for growing right in thickets of the bamboo, Chusquea. In particularly fine form in this area.) (10+ seeds) E

12356 MUTISIA ? RETRORSA Arg., Mendoza, Lujan, Cordon del Plata W of Portrellillos. 2000 m. Among scrub in valley-bottom river-gravels. 27.1.91 (Flower-heads not unlike the preceding but in rather softer, yellower orange. Leaves do not match M. retrorsa precisely - they are only barely toothed and the apical tendril is not bifurcate - but are nearest to this. From a very cold, dry area. A few early seeds only.) (10+ seeds) F

12293 MUTISIA SINUATA Chile, Reg. Metro., Lagunillas (ENE of San Jose de Maipo). 2200 m. Open, stony slopes. 21.1.91 (A little alpine species - the smallest flowered and least spectacular of those listed. Not a climber but with prostrate stems, to 15 cm. Cream daisies sometimes tinged pink or apricot.) (10+ seeds) E

12451 MUTISIA SPINOSA Arg., Neuquen, Minas, E of Lago Lolog. 1100 m. Among scrub in sandy soil. 3.2.91 (So far the easiest and most permanent species tried in U.K. gardens. Climbing to about 6 m. with entire to coarse -ly toothed, evergreen leaves and profuse, large pink flower-heads. Norman Hadden used to have a fence in his Porlock (Somerset, U.K.) garden draped with what he called M. oligodon X M. retusa (M. spinosa = M. retusa var. glaberrima). We suspect they were all M. spinosa with its very variable foliage.) (20+ seeds) D

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12448 MUTISIA SPINOSA Arg., Neuquen, Lacar, SE of San Martin de los Andes. 760 m. Among scrub and at woodland margins. 2.2.91 (Not much different to 12451 - both equally lovely in their pink daisies.) (20+ seeds) D

12668 MUTISIA SUBULATA Chile, VI, Cachapoal, ESE of Machali. 1000 m. Among scrub on open slopes in gravelly soil. 13.3.91 (Most of the Mutisia spp. are distinct in their foliage but none more than this with its very fine, linear leaves clothing the thin, zig-zag stems, which can climb to about 3 m. The flowers are about 8 cm. across and of brilliant scarlet. Barely tried in cultivation.) (10+ seeds) E

12300 MUTISIA SUBULATA Chile, Reg. Metropolitana, Rio Maipo valley below Refugio Lo Valdes. 2400 m. Open site in gravelly soil, scrambling over scrub to 2 m. 22.1.91 (This was the highest locality we saw this in its climbing form. Above this it tends to produce a dwarfed alpine version only a few cm. high (distinguished as M. s. f. rosmarinifolia) but the variation, here at any rate, appears to be continuous and we felt it would be misleading to keep the dwarfer ones separate. All have the same huge, scarlet daisies.)(10+ seeds) F

12561 MUTISIA SUBULATA Chile, VIII, Nuble, Rio Itate valley E of Quillon. 300 m. Among scrub on ridges of old river-sands and gravels. 23.2.91 (The lowest altitude collection here and maybe only suitable for a cold greenhouse in the U.K. Foliage of this was typical M. subulata but the few late flowers seen were not the usual scarlet but a deep rose-pink - the herbarium specimens have dried black like the scarlets)(10+ seeds) D

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12462 NASSAUVIA PULCHERRIMA Arg., Rio Negro, Bariloche, Cerro Catedral. 1850 m. Open, stony slopes, usually in loose talus. 4.2.91 (We seemed ill-fated when it came to collecting sufficient seed to list from the members of this Andean genus of the Compositae. While we saw a considerable range, we ended up with only small pinches of seed. Lovers of the bizarre among alpine-plants have, however, already had the chance to try those most likely to appeal to them. Species such as N. revoluta, N. argentea and N. lagascae are the exceptions among a genus of mostly spiny and rather dreary plants! This has its merits mainly in the glossy green, spine-edged leaves, imbricate in sculptured fashion up the erect stems of 10-15 cm. height below the dense globose head of white flowers. A narrow endemic of the Nahuel Huapi lake region)(20+ seeds) D

NASTANTHUS AGGLOMERATUS GROUP The high-alpine members of the Calyceraceae, a South American family close to the Compositae, produce some of the weirdest of all alpine-plants. These richly deserve the attention of all wishing to bring a sense of humour to the show-bench. There are a great many names and we exercise the caution advocated by Dr. Marticorena - the latter of the following certainly comes into this group, the former may not. Both have attractive, ground-hugging rosettes of toothed, glossy green leaves. As far as the flowers go, it all depends on whether you prefer cauliflower to sprouting broccoli.

12272 NASTANTHUS SP. Chile, Reg. Metro., NE of Valle Nevado (E of Farellones). 3100 m. Loose, volcanic ash slope. 20.1.91 (Round green-white heads on stems of about 5 cm. Rather like the plant illustrated in Clay ('The Present Day Rock Garden') as "Acarpha scapigera" - these have been moved between Acicarpha, Boopis, etc. - photographed much further South by Harold Comber in Argentina.) (20+ seeds) C

12485 NASTANTHUS SP. Chile, Reg. Metro., NE of Valle Nevado. 3200 m. Exposed stony slope below summit ridge. 12.2.91 (A tight and tidy, stemless creamy cauliflower-head sits in the centre of the dark leaf rosette - about 10 cm. across. Excellent for an alpine-house pan or a greengrocers mini-market.) (20+ seeds) C

12494 OENOTHERA ACAULIS Chile, Reg. Metro., Farellones. 2300 m. Open, stony slopes. 13.2.91 (This has been confused with the North American O. caespitosa - it is just as splendid and similar in its great white, sometimes pink-tinted, flowers held on long-tubes but the basal leaves are greyish and deeply dissected. It can grow at quite low elevations but this is high locality whence it should be hardy.) (15+ seeds) C

12360 OPUNTIA SP. Arg., Mendoza, NNE of El Sosneado. 1700 m. Exposed grassland in sandy soil. 28.1.91 (A very compact member of the Cactaceae with a huddle of stems. Not seen in flower.) (10+ seeds) C

12458 OREOPOLUS GLACIALIS Arg., Rio Negro, Bariloche, Cerro Catedral. 1850 m. Exposed stony slopes and summit ridges. 4.2.91 (One of the finest alpine-plants of the southern Andes with a wide geographical range, from the mountains behind Santiago down to Tierra de Fuego, and corresponding variation. The small genus is separated from Cruckshanksia (q.v.) by its lack of petaloid sepals and a different seed-capsule. In this, the long-tubed flowers, typical of its family, Rubiaceae, are bright yellow and rise straight from the close cushions of fleshy, greyish rosettes. A photograph of this in this locality by Robert Rolfe is in Bull.Alp.Gard.Soc. No. 229 (Sept. 1987). Although it was grown in a trough in Berwickshire by Alex Duguid from a Ruth Tweedie gathering well over 30 years ago it is only now just feeling its way into cultivation from more recent collections. In a normal season, we should have had an ample seed collection. As it was, we have only a little from an exposed ridge-top presumably where plants were free from snow early(10 seeds) F

12650 OURISIA MICROPHYLLA Chile, VIII, Nuble, SSW of Termas de Chillan. 1600 m. Shaded, apparently dryish, crevices on igneous cliffs. 10.3.91 (If the preceding is one of the best alpines, this is surely the finest saxatile plant of the area. First introduced from Argentina by Harold Comber with two collections in 1925-26, it was lost until re-introduced by Beckett, Cheese & Watson in 1972. It has remained in cultiv--ation since, even if at times somewhat tenuously, and there have been a few further collections. We have never been sure precisely what it wants in gardens! In the wild, it grows in the exact equivalent of 'dionysia-conditions' but it can react with alarming enthusiasm to cultivation in a high nutrient, peat--based compost. A compromise, avoiding over-watering and over-feeding, might be best and might reduce the likelihood of sudden collapse or die-back of the shoots. Well-grown, this is exquisite forming mounds like a thready-stemmed, tiny-leaved version of Cassiope lycopodioides with profuse, soft-pink, primula-like flowers over a long period. Too tiny and delicate to attempt outside a pan or trough.) (100+ seeds) D

12440 OURISIA SP. Arg., Neuquen, Lacar, Cerro Chapelco above San Martin de los Andes. 1900 m. Among igneous rocks on exposed slopes. 2.2.91 (Neat rosettes of dark, glandular leaves. Not seen in flower but possibly the plant attributed to "O. fragrans" by Rolf Fiedler, who described the flowers as like "a dwarf creamy-white Primula 4-7 cm. high" maturing "to a light mauve before fading" - seems promising!) (50+ seeds) F

12435 OXALIS ADENOPHYLLA Arg., Neuquen, Lacar, Cerro Chapelco above San Martin de los Andes. 1800 m. Steep, exposed slopes, usually among rocks or in loose talus. 2.2.91 (A magnificent alpine of established garden value and growability, which is by all accounts particularly outstanding here in the variability of its colour from pale to intense rose-pink and even the occasional white. The beautifully cut, blue-grey leaves too vary considerably here, always providing a fitting background to the sumptuous flowers. No further species from the southern Andes are likely to rival this, O. enneaphylla and O. laciniata.) (20+ seeds) D

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12490 OXALIS SP. Chile, Reg. Metro., SW of Valle Nevado (E of Farellones). 2900 m. Among igneous rocks on steep open slopes. 12.2.91 (A brilliant and attractive little plant with small, slightly fleshy, bluish grey clover-leaves and profuse rosy-carmine flowers. It can be as tight and brilliant as Saxifraga oppositifolia in exposed places at high altitudes but is usually about 5 cm. high. Dr. Marticorena is somewhat against throwing around Oxalis names at present - "O. geminata" has been applied to similar plants.) (20+ seeds) D

12522 PACHYLAENA ATRIPLICIFOLIA Chile, Reg. Metro., Lagunillas (ENE of San Jose de Maipo). 2300 m. Exposed, stony area on steep, NW-facing slope. 18.2.91 (A fascinating and distinct rhizomatous perennial member of the Compositae endemic to the high central mountains of the Chilean-Argentinian borders. Flat rosettes of big, smooth, bronze-tinted leaves with a white 'bloom' bear a cluster of almost stemless heads in the centres - in this case, in pastel-apricot shades. A really strikingly 'different' alpine-plant.)(10+ seeds) E

12510 PHYLA NODIFLORA Chile, Reg. Metro., below Lagunillas (ENE of San Jose de Maipo). 1800 m. Open stony areas. 18.2.91 (A prostrate, greyish-leaved shrublet with heads of tiny lilac, orange-eyed flowers, rather like a minute version of its fellow member of the Verbenaceae, Lantana. This has been included in the genus Lippia and from this altitude should be reasonably hardy - quietly attractive but not spectacular.) (30+ seeds) B

12441 POLYSTICHUM SP. Arg., Neuquen, Lacar, Cerro Chapelco above San Martin de los Andes. 1900 m. Among igneous rocks on exposed slopes. 2.2.91 (A choice alpine fern. Erect fronds about 10 cm. high. Rather local.) D

PUYA We had some hopes of making seed-collections from such endemic Chilean genera of the Bromeliaceae as Fascicularia and Ochagavia, very few of which are known in cultivation, but, though we saw a good number of colonies, we drew a complete blank on locating fruiting specimens among accessible plants. It was almost as bad with Puya in the 1990-91 season. Among the hundreds of the low altitude, yellow P. chilensis we saw, we could not find a single accessible fruiting inflorescence. The stems from former years remain for decades and do not make the job easier. Nevertheless, there are a few of this splendid genus here. None is likely to withstand the combined cold and wetness of most of the U.K. - a dry, sunny site in the West or South-west might just be possible. With protection or in more Mediterranean climates, they should give no trouble and all the following should take several degrees of frost. Their handsome rosettes of spiny leaves and spectacular inflorescences of beautiful and extraordinary flowers are worth every effort.

12334 PUYA CAERULEA Chile, VII, Curico, Rio Teno valley ESE of Canton. 750 m. Among rocks on steep slopes. 24.1.91 (Rosettes of spiny leaves about 60 cm. long produce red-stemmed inflorescences (this has been named P. rubricaulis) with dense panicles of tubular flowers in deep, rich blue. About 2 m. high.) (50+ seeds) D

12674 PUYA ? VENUSTA Chile, Reg. Metropolitana, SE of San Jose de Maipo. 1000 m. Ledges on cliffs of igneous rock. 14.3.91 (Not seen in flower - its identity guessed from the remains of a few flowers caught in a spider's web. When confirming the identity of the preceding Dr. Marticorena enthused about this rose-pink species ; we hope this is it. Not many seeds - about 90% are eaten before they mature.) (50+ seeds) E

12669 PUYA SP. Chile, VI, ESE of Machali. 1000 m. Steep, open, rocky slope. 13.3.91 (Not seen in flower and we are not guessing! It is not yellow P. chilensis and possibly not P. caerulea. About 2 m.) (50+ seeds) D

12411 RANUNCULUS PEDUNCULARIS Arg., Neuquen, Norquin, S of Copahue. 2000 m. Among volcanic debris on open, stony steppe. 1.2.91 (About 30 cm. high and might be worth trying as a border-plant - not for the alpine connoisseur. Deeply divided foliage and bright yellow buttercups with about 15 petals.) (20+ seeds) B

12444 RANUNCULUS SEMIVERTICILLATUS Arg., Neuquen, Lacar, Cerro Chapelco above San Martin de los Andes. 1900 m. Open slopes in loose, igneous talus. 2.2.91 (This is definitely for the connoisseur of alpine-plants - the only southern Andean Ranunculus he or she need consider, one of the finest alpines of these mountains or, indeed, of any of the world's mountains. Dissected, blue-grey leaves recall those of Dicentra peregrina but are even more finely cut. Just above these the large, white, purple-backed flowers open on 10 cm. stems which elongate in fruit. It has been grown and flowered but, as with so many alpines, the great challenge is to grow it in character and to perfection. Those who achieve this will be well rewarded.) (10 seeds) F

12461 RANUNCULUS SEMIVERTICILLATUS Arg., Rio Negro, Bariloche, Cerro Catedral. 1850 m. In loose talus on open slopes. 4.2.91 (Possibly very much the same as 12444 ; it does not vary much over its range.) (10 seeds) F

## RHODOLIRION & RHODOPHIALA

No group of plants in Chile provides a better example of the problems involved in naming material than the Chilean "Hippeastrum species". Far from difficulties at specific level, there are great problems at generic level. The 1986 volume of 'The European Garden Flora', while claiming to attempt "to provide a scientifically accurate and up-to-date means" of identification "based on original taxonomic studies" considers that "a broad concept of Hippeastrum seems appropriate" and puts us back where we were about 150 years ago. Fortunately, for some time there have been serious "original taxonomic studies" undertaken at the Institut für Systematische Botanik der Universität München and we are extremely grateful to Prof. Dr. J. Grau for his assistance and for giving an indication of what his conclusions might be. The subject is large and very complicated. Adriana Hoffmann's survey of Chilean 'bulbs' ('Herbertia' Vol. 45 (1989)) lists between 30 and 40 taxa which have at some time been included in Hippeastrum ; even allowing for the concepts of a 'splitter' such as Philippi, there is much to consider. "Using cytology combin-ed with the cultivation and a careful morphological analysis" Prof. Grau indicates (provisional and not yet published) conclusions which we can paraphrase as follows : the majority (all with a clearly trifid stigma, mostly flowering in summer or autumn) and possibly almost all our collections should be named Rhodophiala. The spring-flowering group with capitate stigmas should be named Phycella, including in this Famatina. Also with capitate stigmas but constituting probably monotypic genera would be Rhodolirion and, possibly,Traubia. While this work is proceeding and by no means completed, we can at least provide what are likely to become generally acceptable generic names. We have used the nomenclature of 'Flora Patagonica' for the Argentinian species, which were placed under Rhodophiala in that work, with the exception of R. rhodolirion. This is not to imply that these specific names might be adopted by Prof. Grau when his investigations are complete but it at least gives some current authority to them. Unfortunately, only a few species were seen in flower as well as in seed so that several must remain nameless for the present. A few fairly certain possibilities are suggested as to identities.

Cultivation of these species should not be influenced by the fact that these are often summer-flowering. As we have stressed with Alstroemeria, these are winter growing or, in the case of high altitude plants dependant on snow-melt, spring-growing. Flowering comes at the end of their growing season and often foliage has already died. Treatment should parallel such northern hemisphere groups as Calochortus or the Oncocylus & Regelia Irises.

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12480 RHODOLIRION MONTANUM Chile, Reg. Metro., NE of Valle Nevado (E of Farellones). 3100 m. Among igneous rocks in loose volcanic ash. 12.2.91 (There are very few high-alpine bulbs in the world. Only a handful of northern hemisphere species attain equivalent elevations to this - one or two in the High Atlas and a few SW Asian snow-melt Crocus, Colchicum and Fritillaria spp. Among these it would be difficult to find anything to rival the sumptuous spectacle of this in flower. In this area, the huge trumpets on 10 cm. stems, are pure-white with a variable and intricate pattern of crimson spots or dashes running along the veins back into the yellow-green throat. The growth cycle is precisely that of the cold-climate forms of Lewisia rediviva ; foliage has already died back as the flowers appear. As with all truly alpine bulbs, we should recommend some water in autumn, just moist over winter, copious water in spring and a cool, dryish rest in summer. Though the habitat appears dry in summer, the soil temperature will still be low and its strong, permanent roots can probably still reach moisture. 'Baking' may be fatal.) (10+ seeds) E

See also our collections 12288 and 12305, under Rhodophiala, which may belong to this in its pink form.

12584 RHODOPHIALA ? ADVENA Chile, VIII, Bio Bio, S of Canteras (E of Los Angeles . 400 m. Open level site in sandy soil. 24.2.91 (Flower remains reddish to yellow-red. About 30 cm. high in fruit, up to 5 flowers per stem. Low altitude but quitefar south and should be suitable for the bulb-frame or an unheated greenhouse in the U.K. A normal Mediterranean-type growth cycle would be expected in this area.) (15+ seeds) D

12432 RHODOPHIALA ANDICOLA Arg., Neuquen, Lacar, Cerro Chapelco above San Martin de los Andes. 1800 m. Among igneous rocks on exposed, stony slopes. 2.2.91 (Luminous, violet-pink, dark-throated, upward-facing flowers - well illustrated by Rolf Fiedler in the report of 'Alpines '81' (opp. p. 240) - rival Rhodolirion in high -altitude spectacle. Like Rhodolirion, this has a trilobate capitate stigma and we are not yet sure how it fits into Prof. Grau's scheme of things. Both these alpines should need the same cultivation.) (10+ seeds) E

12419 RHODOPHIALA ARAUCANA Arg., Neuquen, Norquin, lower slopes of Volcan Copahue. 2000 m. Among rocks on open stony slopes. 1.2.91 (A rather obscure and seldom-collected species, apparently limited to this area. Nearest to R. elwesii but varying from reddish to yellow with shorter anthers. Leaves often slightly twisted and falcate. Suggested cultivation as for the other high-altitude collections.) (10+ seeds) F

12450 RHODOPHIALA ELWESII Arg., Neuquen, Minas, E of Lago Lolog. 1100 m. Among low scrub in open areas in sandy soil. 3.2.91 (An extremely beautiful plant, about 30 cm. high, with several large, upward-facing flowers of soft-yellow with wine-coloured throats. As species in this area include Mutisia spinosa, Berberis darwinii and B. linearifolia, we see no reason why this should not be attempted in a well-drained, sunny place outside in the U.K. ; it should be easily grown planted out in a bulb-frame.) (15+ seeds) D

12597 RHODOPHIALA ? PRATENSIS Chile, IX, Malleco, Cordillera de Nahuelbuta, W of Vegas Blancas. 1200 m. Openings among scrub. 26.2.91 (We saw a few flowers of what we take to be the same species flowering among tussock- -grass in openings in the Araucaria cloud-forest of the adjacent national park at 1400 m. - an elegant, pale scarlet-flowered species, about 20 cm. high, which Prof. Grau suggests may be the "often wrongly inter -preted R. pratensis." Dr. Hoffmann's check-list gives the distribution of this as the "Atacama desert coast" - you can see the problems! Should take a few degrees of frost in the wild.) (15+ seeds) E

12288 RHODOPHIALA SP. Chile, Reg. Metro., Lagunillas, ENE of San Jose de Maipo. 2200 m. Exposed, dryish slopes. 21.1.91 (This and the following may be the intense pink, crimson-lined form of Rhodolirion.) (10+ seeds) E

12305 RHODOPHIALA SP. Chile, Reg. Metro., Rio Maipo valley above Banos Morales. 2500 m. Open, stony slopes. 22.1.91 (Possibly Rhodolirion montanum, though there are other species in this area.) (10+ seeds) E

12565 RHODOPHIALA SP. Chile, VIII, Nuble, Rio Itate valley E of Quillon. 300 m. Among scrub on ridges of old river sands and gravels. 23.2.91 (The few seen were single-flowered and the old flowers were yellow. Not likely to be very frost-tolerant from this altitude - bulb-frame or cold greenhouse in the UK.) (10+ seeds) E

12657 RHODOPHIALA SP. Chile, Nuble, SW of Termas de Chillan. 1400 m. Among volcanic rocks on steep, open slope with Puyas. 11.3.91 (Not seen in flower. About 15 cm. high in fruit. Should be frost tolerant.) (10+ seeds) E

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12349 SAXIFRAGA ? MAGELLANICA Arg., Mendoza, Lujan, above Vallecitos, W of Portrellillos. 2800 m. Shaded fiss- -ures on igneous cliffs. 27.1.91 (An unassuming little white mossy saxifrage but of great interest to the specialist as one of the characteristic northern hemisphere genera extending to the Andes.) (100+ seeds) C

SCHIZANTHUS This small genus of the Solanaceae, with 12 or so species, is virtually confined to Chile, where almost all are low altitude annuals. Two species, however, climb high into the Andes, where they provide amazingly improbable and spectacular displays, unrivalled in any of the world's mountain ranges. While we have no doubt both these are perennial, we are equally sure they are short-lived plants, like the Turkish Glauciums. Both have much-cut, glandular foliage and branching stems to about 50 cm. carrying successions of 'upside down' butterfly-flowers over a long period. They richly deserve the efforts of all adventurous gardeners - in pots to shake-up the summer show-bench (there is no argument about the fact that these are alpine!) or in a sunny, well-drained site or scree-bed outside. In the wild, these are at their best growing in semi-stable stone-slides along steep-sided gulleys, where they can form large stands.

12365 SCHIZANTHUS GRAHAMII Arg., Mendoza, Malargue, Valle de las Lenas. 2200 m. Steep, stony slopes. 29.1.91 (A species of many aliases, including S. gilliesii, which infiltrates the border into Argentina here in the most barbaric colour forms - shocking-pink of appalling intensity with an upstanding upper lip of luminous orange-yellow. Unspeakably bad taste! Seed selected from the most violent assemblies.) (30+ seeds) C

12284 SCHIZANTHUS ? GRAHAMII Chile, Reg. Metro., Lagunillas (ENE of San Jose de Maipo). 2300 m. Igneous talus on steep slope. 21.1.91 (Comparatively quiet and demure compared to the preceding. Quite large flowers with fringed lower lips in colours which can simply be called pink and yellow.) (30+ seeds) B

12492 SCHIZANTHUS HOOKERI Chile, Reg. Metro., SW of Valle Nevado (E of Farellones). 2900 m. Rock-slides on steep slopes. 12.2.91 (We have seen this mentioned as inferior to S. grahamii. In fine form in this locality it may be different but is little less spectacular. Large lilac flowers with attentuated, flame-shaped upper lips of rich yellow grading into white, topped and tailed with the basic lilac, on long tubes.) (30+ seeds) B

12431 SENECIO ARGYREUS Arg., Neuquen, Lacar, Cerro Chapelco above San Martin de los Andes. 1800 m. Exposed, stony slopes. 2.2.91 (A neat, upright, shrubby species, about 30 cm. high. We grew this for many years from a collection made by Ruth Tweedie in the 1950's and it was a fine and trouble-free foliage-plant. Unlike most south Andeans in this genus, the flowers are actually rather fine with well-developed ray- florets in soft yellow but I cannot remember them appearing in cultivation. Well worth growing for the narrow foliage and stems densely clothed in white felt and might be tried in a dry, sunny site outside.) C

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12379 SENECIO GILLIESII (var. gilliesii) Arg., Mendoza, Malargue, Valle de las Lenas. 2700 m. Open, level, gravelly areas. 29.1.91 (More or less an alpine version of S. candicans, which grows down at sea-level in Tierra del Fuego and which we grew for many years, again from a Ruth Tweedie collection. Although growable outside, this was for a time much-esteemed as an alpine-house foliage-plant - S. gilliesii at only half the size would be much better suited for this. Tufts of upright, coarsely toothed spatulate leaves, about 12 cm. high, clothed on both surfaces with dense, white tomentum. As with S. candicans, or indeed the European S. leucophyllus, the heads of discoid flowers have no added attraction. D

12289 SISYRINCHIUM FILIFOLIUM subsp. JUNCEUM Chile, Reg. Metro., Lagunillas (ENE of San Jose de Maipo). 2200 m. Exposed, dryish slopes. 21.1.91 (A pretty summer-dormant species, about 20 cm. high with a few linear leaves and up to 8 pendant bells, which can vary from pink to white, often with purple veins. This has a wide range from S Peru and Bolivia southwards and varies considerably.) (20+ seeds) B

12421 SISYRINCHIUM ? FILIFOLIUM subsp. JUNCEUM Arg., Neuquen, Norquin, lower slopes of Volcan Copahue. 2000 m. Among rocks on open, stony slopes. 1.2.91 (Almost certainly this variable plant. A few only.) (20+ seeds) C

12508 SOLANUM LIGUSTINUM Chile, Reg. Metro., ENE of San Jose de Maipo. 1800 m. Open areas among scrub. 18.2.91 (Rather like a smaller, stiffer version of S. crispum with glossy, leathery, entire leaves and violet potato-flowers with yellow anthers followed by black fruits. Should be hardy in the U.K.) (30+ seeds) B

12502 SOLANUM PINNATUM Chile, IV, Choapa, N of Los Vilos. 30 m. Open site among scrub. 14.2.91 (A strong-growing scandent shrub, climbing over its neighbours with deeply cut foliage and large heads of a multitude of small purple and yellow flowers followed by tiny, crimson fruits. Unlikely to tolerate any frost but might prove worth growing outside in summer in cold areas - annual growth likely to be extensive.) (30+ seeds) B

12323 SOLENOMELUS PEDUNCULATUS Chile, VI, Rio Cachapoal valley W of Pangal. 950 m. Openings among scrub in sandy soil. 23.1.91 (Both this and the following, the only members of this genus, have been included in Sisyrinchium but are distinct in a number of features. This is by far the showier of the two and a very fine, summer-dormant, rhizomatous plant, which should be growable either in a pot under glass or in a bulb-frame in cold climates. Tapered, grassy foliage and big, rounded, rich-yellow flowers appearing from prominent spathe-bracts on 20 cm. stems. Collected at quite a high altitude for the species.) (20+ seeds) C

12307 SOLENOMELUS SISYRINCHIUM Chile, Reg. Metro., above Banos Morales. 2500 m. Open stony slopes. 22.1.91 (Altogether rather like Aphyllanthes with tufts of rush-like foliage, about 20 cm. high. Neat, tidy and almost certainly hardy but the flowers are fragile and short-lived. Reputedly blue-violet.) (20+ seeds) C

12382 TRISTAGMA NIVALE Arg., Mendoza, Malargue, Valle de las Lenas. 2800 m. Loose talus on exposed slopes. 29.1.91 (A fascinating high-alpine member of the Alliaceae with some affinities to Brodiaea. Distinctively curled, fleshy leaves coil on the scree and a 15 cm. stem carries tubular flowers with narrow, reflexed lobes. With a range from central Chile to Tierra del Fuego, it varies both in form and colour. We grew a green and black form from much further south for some years and it can vary to both shades. Flower remains here seemed all purple-black. Best where it can be appreciated at eye-level!) (15+ seeds) E

12437 TRISTAGMA ? NIVALE Arg., Neuquen, Lacar, Cerro Chapelco above San Martin de los Andes. 1800 m. Among loose igneous rocks on exposed slopes. 2.2.91 (Possibly the same species but there are other Tristagmas - not possible to suggest the colour. Both these die back to long-necked bulbs after flowering.) (15+ seeds) E

## TROPAEOLUM

The only genus of the family, Tropaeolaceae, these parallel Alstroemeria both in their adaptation to local Chilean conditions and in their requirements in cultivation. As with Alstroemeria, we were too late in the field to make seed-collections from the lower altitude, tuberous-rooted species and, similarly, only a very few species have climbed to the highest altitudes. The following are all high altitude or cold-climate plants. Among them, T. polyphyllum is recorded up to 4000 m. - a plant of the high, mobile stone-slides, frequently accompanied by either Alstroemeria spathulata or A. umbellata. These are all adapted to utilise the considerable depth of loose talus to insulate their dormant tubers from extreme cold : their rounded seeds roll down between the stones and during the first season the seedlings will penetrate to a surprising depth to form their first tubers. When growing them from seed in pots, it is essential to plunge the pots under glass to protect them from freezing. We have in the past lost many T. polyphyllum in small pots due to freezing in winter. When fully established, the plant is adapted to withstand one of the most severe climates on earth and one particularly inimical to plant-growth. Ideally these might be sown where they are to grow in a raised scree-bed in full sun ; a bulb-frame might be successful though we suspect young tubers would be as sensitive to too much heat and drought as they are to frost. All they need is to achieve a depth where there is even moisture and a cool even temperature ; we know they can go to at least 1 m. down to do so! Whether they can be grown successfully in containers, we cannot say - we have not tried.

12452 TROPAEOLUM INCISUM Arg., Neuquen, Minas, NE of Lago Lolog to Lago Curruhue Chico. 1200 m. Steep slopes, banks and open, level areas in gravelly sand. 3.2.91 (A very beautiful plant which has not yet been established in gardens. Similar in habit and general aspect to T. polyphyllum but with more finely cut, frilled blue-grey foliage and more open flowers, here, in a wide range of orange and apricot shades with darker veins and red calyces. This area has a comparatively temperate climate with some summer rain and, in theory this species should be better suited to British gardens than the well-established T. polyphyllum.)(5 seeds) E

12367 TROPAEOLUM INCISUM Arg., Mendoza, Malargue, Valle de las Lenas. 2300 m. Steep slopes and banks in sandy soil. 29.1.91 (Here in a butter-yellow form, usually with an apricot-veined calyx.) (5 seeds) E

12313 TROPAEOLUM POLYPHYLLUM Chile, Reg. Metro., above Rio Maipo valley N of Banos Morales. 2500 m. Loose, coarse, igneous scree on steep slopes. 22.1.91 (Trails of deeply cut, blue-grey leaves, up to 1 m. long with a profusion of brilliant yellow flowers in early summer. One of the most sought-after garden-plants in the U.K. - very seldom available,as it is such a difficult proposition to manage commercially, and notoriously difficult to establish. When settled it is trouble-free and embarassingly vigorous!) (8 seeds) D

12337 TROPAEOLUM SESSILIFOLIUM Chile, Reg. Metro., Lagunillas (ENE of San Jose de Maipo). 2200 m. Along snow-melt gulleys (now dry) and in consolidated sandy soils. 25.1.91 (The smallest here and might just be possible in a deep pot. A deep-seated tuber sends up erect or flopping, branching stems to about 20 cm. with tiny leaves. Already dormant when seen by us but reputedly variable from white to pale lavender-pink veined with grey and with orange centres - by all accounts the rock-garden species.) (10 seeds) E

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# VIOLA

Few groups of plants not currently widely grown excite the alpine-plant enthusiast as much as the rosulate Violas of the southern Andes. Collections of seeds from them, however, were by no means high on our list of priorities. Although little was reported as resulting from the B.C. & W. 1971-72 collections or, indeed, subsequent ones by Anderson and Fiedler, a few plants are now being established from more recently collected material. We felt it appropriate at present to sit back and wait to see how everyone progressed with seeds they already have ; we have made no attempt to emulate the highly selective range of alpine plants, in particular these violets, collected by David & Anke Wraight a few years ago. Moreover, our companion in Argentina, John Andrews, was particularly interested in collecting these and secured sufficient seed from about 6 more than we have listed here for his own use and for a limited distribution to some other specialists. Add to this,material collected by the A.G.S. trip and you can see why we feel that enthusiasts in the U.K. at any rate are going to have plenty to experiment with. For those who have not had the opportunity to attempt these and for those who wish to try again or to try seed from different areas, the following six collections should provide something to play with. These are fascinating plants, exquisitely formed, but we do not see them as 'the new Dionysias' for the specialist grower. The challenge of growing them well is much greater and the reward much less. Unless they are grown 'in character' they are not going to be worth growing. Achieving this with those which are adapted to having their bases continually covered with loose stones or volcanic ash is going to be difficult. One comfort is that the roots do not go down forever. We were able to secure two specimens to press which were almost complete - they fitted on a standard 25 x 40 cm. sheet of herbarium paper - roots did not penetrate much more than 20 cm. down. We should guess that they might be best suited in the U.K. if grown in full sun in a scree-bed or sand-bed with a pane of glass overhead to keep excess moisture off in winter (and possibly also in summer!). If attempted in pots, they will be better in sun outside in summer ; we guess they will be impossible to keep 'in character' over-coddled under glass throughout the year - as much sunlight and fresh air as possible with minimal watering and nutrients would be our recipe. Remember that these are extremely photogenic plants. We suspect much of the aura surrounding them is derived from Harold Comber's fine photographs of them in the 1920's and the more recent ones by Robert Rolfe and others.

With the 1988 publication of Vol.5 of 'Flora Patagonica' including Violaceae, it might be thought that naming these violets is now a simple matter. This may be the case but reading this most up-to-date account leaves us with the impression the 'the whole worl's in a terrible state o' chassis.' The majority of names familiar in British horticultural literature appear to be either misapplied or reduced to synonymy. Knowing that a certain degree of animosity can at times exist between Chile and Argentina, we viewed with particular horror the prospect of another differing account appearing in the 'Flora Chilensis'. It was with considerable relief that we listened to Dr. Martcorena telling us that "There is a very good man in Buenos Aires working on these - all our sheets are with him at the moment." So, at least, the same botanist will deal with the violets on both sides of the frontier. The problem is not quite so simple, however. All the type specimens and most of the isotypes are in Europe. Time and again Ricardo Rossow must make the remark "Pese a no haber podido estudiar el tipo de ..." (V. coronifera ; V. comberi ; V. dasyphylla ; V. squamulosa ; etc.). It is necessary that Rossow reviews this group as a whole, including not only the Chileans but those from Mendoza Province, and it is essential that he examines type-material in European herbaria. Funds for this sort of work are nowhere easy to acquire, especially in a country such as Argentina, and it would be a splendid gesture if a horticultural group such as the A.G.S. were to be of some assistance, perhaps from the profits of A.G.S. Expeditions Ltd. - after all, the only group of people likely to derive any benefit from an efficient system of names for this group of plants is likely to be alpine-gardeners. As Rossow has certainly not completed his work on these and we feel he might well have to refine or alter some ideas, we think it prudent for the time being not to assign possible names. Indeed, we do not know how much credence to place on Rossow's account nor could we attempt to use it properly in the field : his main diagnostic criteria of spur-length, petal hairs and particularly style-characteristics are not obvious in fruiting material. We can give you a crude paraphrase of the situation, as represented by Rossow : there are two main groups of rosette-forming Viola spp. - those with leathery leaves with a cartilaginous or membranous leaf margin and those with a hairy leaf-margin. The former are the ones likely to interest the alpine-grower most. In Argentinian Patagonia, Rossow gives the following (with synonyms, everyone attributable to Becker, in brackets) : V. auricolor, V. columnaris (= V. petraea), V. coronifera (white not yellow incidentally), V. cotyledon (= V. comberi), V. dasyphylla (= V. cotyledon subsp. lologensis). The hairy ones tend to be short-lived perennials or annuals, less likely to excite the devotion of growers ; in Patagonia, these are V. pseudovulcanica, V. pusilla, V. tectiflora and V. vulcanica. Odd man out is the distinct V. sacculus (= V. patagonica, V. auritella, V. squamulosa) with fleshy red-edged leaves, illustrated in Bull.Alp.Gard.Soc. No. 229, p. 250, captioned "Viola sp. aff. volcanica" - if Rossow is anything to go by, it is hard to imagine anything less "aff. vulcanica". As we are not in the business of distributing names like confetti in a hurricane, we think it best to keep silent for the moment.

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Rosulate Violas with leathery leaves with cartilaginous margins :

12405 VIOLA SP. Arg., Neuquen, Norquin, between Caviahue and Copahue. 2000 m. Among igneous rocks on loose, stony slopes. 31.1.91 (Flowers appear to be lilac-blue to cream.) (10+ seeds) F

12381 VIOLA SP. Arg., Mendoza, Malargue, Valle de las Lenas. 2800 m. Loose talus on exposed slopes. 29.1.91 (Sticky rosettes ; black-violet flowers with yellow central markings ; unlike any other here.) (8 seeds) F

12434 VIOLA SP. Arg., Neuquen, Lacar, Cerro Chapelco above San Martin de los Andes. 1800 m. Among igneous rocks on exposed, stony slopes.2.2.91 (Possibly V. dasyphylla of Rossow's account - white to lilac.) (10+ seeds) F

12547 VIOLA SP. Chile, VIII, Nuble, NE of Termas de Chillan. 2000 m. Loose, volcanic ash on N & NE facing slopes 21.2.91 (Reputedly large-flowered here and variable from white through pink, violet to purple.) (10+ seeds) F

Rosulate Violas with thinner, hairy-edged leaves :

12499 VIOLA SP. Chile, Reg. Metro., W of Farellones. 2000 m. Loose, sandy soil on steep, open slope. 13.2.91 (Hummocks of little rosettes with tiny, crenate leaves ; does not look very long-lived.) (15+ seeds) E

12260 VIOLA PHILIPPII Chile, Reg. Metro., above La Parva. 2900 m. Open, stony slopes ; also in loose volcanic ash 20.1.91 (No idea if this name is correctly applied but everyone else seems to have used it! Distinct from the above (which really is probably "aff. vulcanica") - mounds of little brownish rosettes ringed with tiny pale pink, yellow-eyed flowers. Unobtrusive but rather charming. Perennial but not immortal.) (10+ seeds) E

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12605 VIOLA ? MAGELLANICA Chile, IX, Cautin, S of Pucon. 1200 m. Among stones in sparse Nothofagus forest. 28.2.91 (An excellent 'normal' violet, stoloniferous with good yellow flowers. About 8 cm. high)(20+ seeds) C

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## ALSTROEMERIA

We are not in the habit of listing seeds collected by anyone else unless we believe the source to be knowledgeable, reliable and usually personally known to ourselves. In that way we hope to maintain a reputation for distributing correctly named, properly annotated material. Most of the following Alstroemeria collections, which we are told were made in Chile in the 1990-91 season, reached us somewhat circuitously. They were all named in accordance with Bayer's 1987 monograph, (which was impressive!), most were accompanied by colour prints of the species photographed in the wild and they had some field data, even if this was somewhat laconic or cryptic. They represent a considerable amount of time and travelling and deserve a wide distribution ; if the collector wishes to remain anonymous, it is his or her concern. While we have made an exception to our usual rule, we have spent much time checking the photographs against the descriptions and illustrations of the plants (we are sorry they were not dried specimens!) and have authenticated the localities, where we could. We offer them with our comments and supposed emendations, which are few. For some comments on the genus as a whole please see the remarks prefacing our own collections.

ALSTROEMERIA AUREA Chile, X, Valdivia, Isla del Lago Ranco (S of Futrono). (No photograph ; an odd locality but almost certainly from the 'standard' bright yellow form widespread throughout the lake district.) (20+ seeds) B

A. DILUTA (subsp. diluta) Chile, VII, Talca, near San Rafael (ca. 300 m.). (An intriguing little species, 10-25 cm. high, only described in 1986 and only known from the area around the type-locality between Talca and Curico. Possibly closest to A. pulchra but distinct in several characters. Segments are white to pink with attenuated, darker tips, the two upper, inner ones very heavily marked with dull red streaks, sometimes fusing.) (10+ seeds) E

A. DILUTA subsp. CHRYSANTHA Chile, IV, Limari, Mantos de Hornillos (between Coquimbo & Los Vilos). (The only collection not identified by the collector but the photograph is clearly of this taxon, the only northern race combining a yellow ground colour with red-streaked upper segments. Also described in 1986, this is endemic to the coastal cordillera of the Coquimbo Region between 60 m. and 400 m. Though photographed in a deep yellow form it can vary to yellowish pinks and pale oranges. Otherwise similar in height and habit to the type-race.) (10+ seeds) E

A. ? EXSERENS We have not traced the locality ("cerros La Colla") nor is the photograph adequate for satisfactory identification - leaves are not visible nor can we guess the size of the flowers, among the largest in the genus. The species is distributed at middle altitudes (1500-2000 m.) of the main Andean cordillera in Regions VI and VII. The umbels of large, pale pink to lilac flowers are carried on stems of up to 30 cm. (10+ seeds) D

A. ? GARAVENTAE Chile, V, Quillota, Cerro La Campana. (While the photograph is almost certainly of this most distinct species, we only question the name as the locality is a little to the north of the only two recorded collections. Again, first described in 1986 and only recorded from the type locality, the Cerro Vizcacha, at about 2000 m. on the top of the coast range, W of Santiago. It has some affinities with the high Andean A. spathulata. The large flowers carried on stems of up to 20 cm. are all of one colour - white in the photograph but it can vary to red - speckled all over with crimson streaks on opening. A very little-known species.) (8 seeds) E

A. HOOKERI (subsp. hookeri) Locality (llanos de Esquadron) not traced but the photograph is certainly of this. The species is a complex group of low altitude plants, widespread in central Chile from sea-level to about 500 m., divided by Bayer into four subspecies. The type subspecies is the most southern, in Regions VII and VIII. These are dwarf, narrow-leaved plants with umbels of pink, green-tipped flowers on stems up to 20 cm. high. We have not found those we have grown hardy in the U.K. but they are easily grown and remain dwarf under glass.) (15+ seeds) C

A. HOOKERI subsp. CUMMINGIANA Chile, Reg. Metro., Angostura de Paine (between Santiago & Rancagua) (No photograph but there have been other collections from here. Apart from the differently proportioned flowers, the upper, inner segments are only very sparsely speckled with red-brown. The most southern site for this subsp.) (10+ seeds) D

A. HOOKERI subsp. MACULATA Chile, IV, Limari, Mantos de Hornillos (between Coquimbo & Los Vilos). (Distinct in the heavy ruby-red markings on all three inner segments. Limited to a few areas on the Coquimbo coast.) (8 seeds) D

A. LEPORINA Chile, IV, Elqui, E of Andacollo. (No photograph but the locality is only a little to the west of Tololo where most recent collections have been made. Described in 1982 because Philippi's 1857 name, A. hirtella, is invalid, this is distributed between 1000 and 2000 m. in the mountains of the southern Atacama and northern Coquimbo Regions. One of the most spectacular and distinct species with large flowers, of which four of the seg--ments are unmarked pink, deepening towards the edges but the two upper, inner ones are expanded, rising like a pair of rabbit-ears, with a broad, vivid yellow band separating the white base from a brilliant pink tip and virtually unspotted. The area is cold in winter but hot and dry in summer - a bulb-frame in the U.K.? (10+ seeds) E

A. LIGTU is a widespread species at low and middle altitudes south from the Santiago and Valparaiso areas down to Bio Bio (Region VIII). It is divided by Bayer into three subspecies, two of which, the type and A.l. ssp. simsii intergrade in the central valley. It is doubtful if authentic material of any of the subspecies now exists in general cultivation, where the A. ligtu hybrids, under a variety of names, have possibly involved all three.

A. LIGTU (subsp. ligtu) Locality (llanos de Esquadron) not traced. The photograph is of a very striking, deep, luminous pink clone with the upper, inner segments heavily streaked with red on an orange-yellow ground. This type race is more southern and western, commonest near the coast and coast ranges from sea-level to 1000 m. The ground colour can vary from white and pale yellow through pink to red. Dwarfer and more slender than the others. (15+) C

A. LIGTU subsp. INCARNATA Chile, VII, Cerro de los Cipreses (Rio Teno valley E of Curico, ca. 1500 m.). (Very restricted in the wild - almost all the few collections are from this area. Always with a pink ground-colour and distinct in the somewhat blurred, brown-red pencilling on the rather short, broad upper segments.) (10+ seeds) D

A. LIGTU subsp. SIMSII Locality (cerros La Colla) not traced but the photograph is unmistakeable. This is the plant long known and grown as A. haemantha, a misapplied name, responsible for the oranges in the A. ligtu hybrids Distributed from about 250 m. near the coast to about 2000 m. in the foothills east of the central valley. This is a larger plant than the other two, which are about 30 cm. in the wild (about 60 cm. in cultivation), and reaches 160 cm. in nature (expect over 2 m. in gardens) with large umbels of up to 50 flowers. Basically bright orange-red to tomato-red with the expanded, prominent upper, inner segments streaked red-brown on golden yellow. (15+ seeds) D

A. LIGTU HYBRIDS These are the plants widely grown in British gardens, thriving from Cornwall to Aberdeen, by all accounts derived from A.l. subsp. simsii (collected by Clarence Elliott in 1927 as A. haemantha) deliberately crossed with a pink flowered plant collected by Comber under 378 in Argentina in 1926. Called at the time "A. l. angustifolia" (A. angustifolia appears to be a distinct species nearer to A. hookeri) but now determined by Bayer as A.l. subsp. incarnata, this is rather a puzzle as it grows so much further south than any other in the group. If you don't grow any Alstroemeria, start with these! Every shade of pink, orange, flame and biscuit. (20+ seeds) B

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ALSTROEMERIA MAGNIFICA group. The two subspecies of A. magnifica together with A. magenta and perhaps involving A. pulchra in the south form a group of overlapping and intergrading taxa extending from the Valparaiso area mainly along the coast to N of Coquimbo. These are the most flamboyant members of the genus and have contributed their size, violet and lilac colours and flat-faced flowers to the Goemans 'Parigo' hybrids of which selected micropropagated clones are grown in large numbers for the cut-flower trade. The wild species remain almost unknown to specialist gardeners. They are unlikely to be satisfactory outside in the U.K. but are easily grown under glass provided their roots are kept frost-free in winter. We have grown A. magenta from the 1971-72 B.C. & W. collection (as A. sierrae) for almost 20 years. This year, repotted and in fresh surroundings, it has flowered continually for about three months - few plants repay the space and time needed to grow them with so much beauty.

A. MAGENTA Chile, IV, Limari, Mantos de Hornillos (between Coqimbo & Los Vilos). (Huge flowers basically lilac, varying in intensity, with all three inner segments heavily streaked with red-violet, the two upper ones with yellow and white or palest lilac zones. Stems of about 30 cm. in the wild ; more in cultivation. (10 seeds) D

A. MAGENTA Locality ("Quebrada de Juan Soldado") not traced. Identified by the collector as A. magnifica subsp. magnifica but the photograph clearly shows the heavily veined lower, inner segment of A. magenta. (10 seeds) D

A. MAGNIFICA subsp. MAXIMA Chile, IV, Choapa, Pichidangui. (Pale lilac with unmarked lower segments. According to Bayer there are intergrades with A. magenta in this area but the photograph is of this subsp.) (8 seeds) D

A. ? MODESTA Chile, IV, Elqui, Minerales El Tofo (N of La Serena) (A seldom-collected, smaller-flowered species, which looks rather showier in the photograph than it should! These northern species are still not well known in their variation and Bayer appears to have ignored them in field-work and cultivation experiments.) (8 seeds) E

A. PALLIDA Locality not traced but the species only grows in the high mountains of V and Reg. Metro., 1500 - 2800 m. See the notes on our collection numbers 12497 and 12524 for some information on this. (20+ seeds) D

A. PELEGRINA Chile, V, Petorca, Pichicuy. (Type species of the genus and long-cultivated. A plant of coastal rocks and cliffs and definitely tender in the U.K. though often mentioned as growable in "warm borders". Very large and very beautiful pink or lilac flowers, more intensely coloured in the middle of the segments, with the upper, inner segments streaked with purple on and above a yellow zone. About 30 cm. in cultivation.) (10+ seeds) D

A. POLYPHYLLA Chile, III, Huasco, Alto del Carmen (SE of Vallenar, ca. 800 m.). (A most distinct and seldom-collected plant endemic to the Atacama Region. It may represent a northern, desert extension of the high-alpine A. spathulata and A. umbellata group. Broad, pointed, glaucous leaves recalling Euphorbia rigida with lilac-pink flowers, speckled with wine-red (on all segments in the photograph). About 20 cm. high in nature.) (5 seeds) F

A. PRESLIANA subsp. AUSTRALIS Locality not traced - "bosques (woodlands) de Attasalco" - and no photograph. See our collection under number 12590 for more details. As there are only two spp. in Araucania, probably true. (20+) E

A. PULCHRA Cultivated seed from B.C. & W. 4762, parent plant from wild seed. Oddly this was not among the wild collections we are listing, though it is quite widespread in the Valparaiso and Santiago region, up to 1000 m. Hardy here so far and about 50 cm. high with a succession of white flowers (palest lilac under glass) with dark maroon tips to the segments, the upper inner ones streaked with crimson on a bright yellow ground.) (15+ seeds) C

A. ? SPATHULATA Locality not traced but the photographs are certainly not of this distinct species - in fact they appear to be the same thing as our unidentified collections, 12513 and 12470, which we initially took to be this when we saw its fleshy foliage. A very beautiful, dwarf, pink-flowered plant but not A. spathulata! (10+ seeds) E

A. VERSICOLOR Chile, VII, Cerro de los Cipreses (Ric Teno Valley, E of Curico, ca. 1500 m.). (This is a delight, which we grew for many years from a B.C. & W. collection (as A. xanthina). From 6-40 cm. high in the wild, it was much the same height under glass but with a range of 250 m. to 1700 m. would be worth attempting in a well-drained site outside in the U.K. or in a bulb-frame. Flowers unlike any other - pale yellow to brownish yellow, evenly speckled on all the segments with purple dots. We saw this in flower in January in the Rio Cachapoal valley (there is also a Los Cipreses near here) at about 950 m. (12322) but no seed had set when we returned.) (10+ seeds) E

A. WERDERMANNII Chile, III, Huasco, Carrizal Bajo. (Described in 1986 and only known from the 1923 type specimen though it has been photographed once or twice since then, this strange endemic of the Atacama coastal sands will certainly need frost-free conditions and is unlikely to be easily grown. About 12 cm. high with small, fleshy, glaucous leaves and red-purple flowers, with narrow, reflexing segments, heavily blotched on the upper, inner ones with dark brown-violet. There are only a few seeds of these obscure northern species available.) (5 seeds) F

A. ZOELLNERI Chile, V, Quillota, Cerro La Campana (ca. 1400 - 1700 m.). (Almost as obscure and limited in its distribution as the preceding, though it grows between Santiago and Valparaiso. Described in 1986 and only known from openings in Nothofagus obliqua woodland on the summit of the coast range NW of Santiago. About 40 cm. high with lilac-pink flowers. Strongly reflexed upper segments but the lower inner one projecting below the much exserted brown anthers on long, lilac filaments. This should be growable and reasonably frost-tolerant.) (5 seeds) F

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CALYDOREA PALLENS - VIOLET FORM A large-flowered, vigorous, pale violet form with purple markings, from Cordoba Province, Argentina. This and the following are from Alberto Castillo, who runs the private Ezeiza Botanical Garden, internationally noted for its collection of geophytic plants. A beautiful, dwarf, iridaceous bulb from alkaline soils in full sun with a dry, winter dormancy in nature - flowers in midsummer. (15+ seeds) D

CALYDOREA PALLENS - GREY-WHITE FORM From Jujuy Province, Argentina. (10+ seeds) D

CYPELLA HERBERTII Collected by A. Castillo in March, 1991, from wild plants in Buenos Aires Province, Argentina - a summer-dormant marshland species, flowering in spring and in autumn. Much branched stems to 50 cm. high with orange-yellow, Tigridia-like flowers, striped and spotted with purple. Marginally hardy in the U.K. but easy and rewarding under glass with minimal frost protection - this should be much more widely known and grown.)(30+ seeds) B

HABRANTHUS TUBISPATHUS ROSEUS Collected by A. Castillo, March, 1991, from wild plants in Ezeiza, Buenos Aires Province, Argentina. Summer-dormant and there is no reason why this should not be as hardy and easily grown as the form commonly grown in the U.K. as H. andersonii - a beautiful, dwarf amaryllid about 15 cm. high.)(20+ seeds) C

HERBERTIA LAHUE subsp. AMOENA Collected from wild plants by A. Castillo, in December, 1990, at Ezeiza, Buenos Aires Province, Argentina - summer-dormant from alkaline soil in full sun. An exquisite little corm, like a tiny violet Tigridia, 6-10 cm. high. We grew the Chilean race for many years as an alpine-house pan-plant but it is safest kept frost-free. Flowers short-lived but open successively over a very long period.) (30+ seeds) B

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## SECTION I : SEEDS OF SUMMER-DORMANT SPECIES COLLECTED IN NORTH AMERICA BY JIM & JENNY ARCHIBALD

There was so much interest in the listing of North American bulbs, corms and tubers from our 1989 collections when we repeated them in 1990 that we are doing so again this season. Germination continues to be truly excellent. We sowed a considerable number ourselves in November, 1990, and all came up like cress - or perhaps onions would be more appropriate. If sown in summer or autumn, germination will occur quite quickly, as soon as a sufficient time at a lower temperature has lapsed (see our comments about Alstroemeria germination) and, while the longer growing-season should result in better quality first-year bulbs, they will definitely need overwintering under glass, ideally frost-free, in colder climates. Delaying sowing until mid-winter might mean a more easily handled spring germination but a much shorter growing-season. Some species from colder areas will definitely need a long cold period before germinating with a temperature rise. These are in a minority but include several Erythronium spp. and a few Calochortus, such as C. coeruleus. Many of our 1989 collections are now finished, so please do not ask for bulbs not listed here - we have no seed left of species like Fritillaria recurva, F. striata, F. glauca, etc. All seed listed here has been stored in dry refrigerated conditions and germination remains excellent. A numerical check-list will be sent with the seeds for identification of the numbered packets. Abbreviations refer to the names of other collectors in 1989 : W.R. : Wayne Roderick (Orinda, California) ; J.A. : John Andrews (Berkeley)

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11547 ALLIUM ACUMINATUM Idaho, Custer Co., Sawtooth Valley. 1980 m. Stony clay among Artemisia. 6.8.89 (Bright purple-pink, starry flowers in umbels. 15 cm. A delightful and growable little plant.) (15+ seeds) B

11820 ALLIUM CRATERICOLA California, Napa Co., Palisades, SE of Mt. St. Helena. 900 m. J.A. coll. 26.5.89 (One flat, falcate leaf and an almost stemless, purple flower-head. Volcanic or serpentine talus.) (15+ seeds) D

11766 ALLIUM DICHLAMYDEUM California, Sonoma Co., Stewarts Point. Coastal rocks. W.R. coll. 18.7.89 (Bright cerise form of this splendid, low-altitude species. 20-30 cm. Maybe the best larger one.) (15+ seeds) C

11626 ALLIUM FALCIFOLIUM California, Humboldt Co., SSW of Willow Creek. 1490 m. Serpentine talus. 20.8.89 (Heads of red-purple flowers on 6 cm. stems between two, thick, falcate leaves.) (15+ seeds) C

11821 ALLIUM HOFFMANII California, Trinity Co., Red Lassic, N of Zenia. 1660 m. Serpentine talus. J.A. coll. 15.7.89 (Narrow serpentine endemic. Pale pink 'tumbleweed' umbel. A single, flat, fleshy leaf.) (15+ seeds) E

11134 ALLIUM PLATYCAULE California, Modoc Co., Warner Mts. E of Davis Creek. 1750 m. Open gravel-patches. 20.6.89 (Deep rose heads on short, flattened stems between two, thick, falcate leaves. 5-10 cm.)(15+ seeds) D

11171 BLOOMERIA CROCEA var. AUREA California, San Luis Obispo Co., NE of San Luis Obispo. 150 m. Ledges on serpentine cliffs. 26.6.89 (Choice Brodiaea relative. Umbels of starry, yellow flowers. 20 cm.) (20+ seeds) C

10997 CALOCHORTUS ALBUS California, Tuolumne Co., NE of Columbia. 760 m. Scrub-covered slopes. 16.6.89 (Pendant, white flowers on branching, 20-30 cm. stems. One of the easiest to grow in the U.K.) (20+ seeds) B

11168 CALOCHORTUS ALBUS var. RUBELLUS California, San Luis Obispo Co., W of Templeton. 300 m. Steep, shaded, stony banks. 25.6.89 (A rich, deep carmine-pink in this locality according to Wayne Roderick.) (20+ seeds) D

10965 CALOCHORTUS AMABILIS California, Solano Co., NW of Vacaville. 300 m. Openings among scrub. 15.6.89 (Like the above two, in Subsect. Pulchelli and quite easy. Nodding, globular, clear-yellow flowers.) (20+ seeds) B

11681 CALOCHORTUS CLAVATUS California, San Luis Obispo Co., NE of San Luis Obispo. 150 m. Steep, stony slopes. 26.8.89 (Sumptuous, erect, golden-yellow bowls with brown anthers and internal markings.) (15+ seeds) C

11824 CALOCHORTUS COERULEUS var. FIMBRIATUS California, Trinity Co., above Zenia. 1630 m. Coniferous woodland. J.A. coll. 15.7.89 (Tiny serpentine endemic. Furry, white, purple-stained cups on thready stems)(15+ seeds) E

11548 CALOCHORTUS EURYCARPUS Idaho, Custer Co., Sawtooth Valley. 1980 m. Stony clay among Artemisia. 6.8.89 (White or pink 'tulips', striped green and blotched maroon, on wiry, 30-50 cm. stems.) (20+ seeds) C

11443 CALOCHORTUS GUNNISONII Wyoming, Converse Co., SW of Glendo. 1980 m. Open grassland. 22.7.89 (White with intricate purple markings and golden basal hairs. Like the preceding, from an extreme climate.) (15+ seeds) C

11646 CALOCHORTUS HOWELLII Oregon, Josephine Co., SW of O'Brien. 500 m. Open, stony slopes. 21.8.89 (Extremely local. White, hairy petals with a diffuse smoky-brown stain above the gland and golden hairs.) (10+ seeds) E

11695 CALOCHORTUS INVENUSTUS California, Ventura Co., Mt. Pinos. 2680 m. Granite grit in exposed summit area. 27.8.89 (Erect, pale-lavender flowers, basally stained deep purple on 15 cm. stems.) (20+ seeds) C

11691 CALOCHORTUS KENNEDYI California, Ventura Co., Lockwood Valley. 1370 m. Open, clay meadows. 27.7.89 (The incomparable western race of this mythical species - solid vermilion-scarlet with black anthers)(20+ seeds) C

11267 CALOCHORTUS LEICHTLINII California, Plumas Co., NNW of Quincy. 980 m. Dryish, gravelly slopes among Pinus. 30.6.89 (Montane steppe species. White flowers with dark spots above the glands.) (15+ seeds) D

10988 CALOCHORTUS LUTEUS California, Tuolumne Co., near Chinese Camp. 380 m. Open, level grassland. 16.6.89 (Sierra Nevadan foothill race of this great golden Mariposa. Can vary from yellow to cream.) (20+ seeds) B

11771 CALOCHORTUS LUTEUS California, Lake Co., near Clearlake. 420 m. Gritty clay. W.R. coll. 30.6.89 (Coast Range foothill race. Clear yellow, tinged green, with fine, brown, basal markings.) (15+ seeds) B

11540 CALOCHORTUS MACROCARPUS Idaho, Butte Co., W of Craters of the Moon. 1520 m. Among volcanic debris on E & SE facing slopes. 5.8.89 (Most distinct with huge, purple, green-striped flowers. 50 cm.) (15+ seeds) D

11264 CALOCHORTUS NUDUS California, Plumas Co., NNW of Quincy. 1000 m. Margins of moist meadow among conifers. 30.6.89 (Dainty, 15 cm. high, moist grower. Erect, lavender flowers marked purple inside.) (15+ seeds) D

10885 CALOCHORTUS NUTTALLII Utah, Uintah Co., E of Tridell. 1700 m. Gravelly ridges with sparse Juniperus. 8.6.89 (Almost certainly the very local, sugar-pink race of this beautiful eastern Mariposa.) (20+ seeds) D

11682 CALOCHORTUS OBISPOENSIS California, San Luis Obispo Co., NE of S.L. Obispo. 150 m. Serpentine outcrops. 26.8.89 (Only one of Sect. Cyclobothra listed. Bizarre, hairy, yellow and purple flowers. 40 cm)(15+ seeds) D

11683 CALOCHORTUS SIMULANS Locality as above. 170 m. Open clay slopes among grasses. 26.8.89 (Obscure, lilac-flowered Mariposa. Almost certainly the first time seed has been collected of this.) (20+ seeds) E

11690 CALOCHORTUS SPLENDENS California, Ventura Co., Lockwood Valley. 1370 m. Open meadows in clay with grasses and rushes. 27.8.89 (Elegant Mariposa, in Subsect. Venusti. In this form with wide-open flowers of pure, soft lavender with long wispy, white basal hairs and dark anthers, on 30-50 cm. stems.) (20+ seeds) C

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11772 CALOCHORTUS SUPERBUS California, Butte Co., Table Mt. N of Oroville. 150 m. W.R. Coll. 14.7.89 (Usually white (can be cream or pale lavender) with purple basal markings in a yellow zone.) (20+ seeds) B

10998 CALOCHORTUS VENUSTUS California, Tuolumne Co., NE of Columbia. 600-740 m. Steep, stony slopes. 16.6.89 (Mainly white here with golden bases and intricate, red-brown basal markings. Spectacular.) (20+ seeds) B

11703 CALOCHORTUS VENUSTUS California, Kern Co., above Cuddy Valley. 2120 m. Openings among Pinus. 27.8.89 (Double-spot form with pale blood-red thumb-print on each white or lilac-pink petal ) (15+ seeds) D

11693 CALOCHORTUS VENUSTUS California, Kern Co., Cuddy Valley. 1840 m. Openings among Pinus. 27.8.89 (Unique - as far as we know - colony with flowers in subtle, soft scarlet - pure class!) (15+ seeds) E

11593 CALOCHORTUS VESTAE California, Mendocino Co., E of Willits. 1240 m. Open clay slope. 19.8.89 (North Coast Range relative of C. venustus. Usually white (occasionally pink) exquisitely purple-marked.) (20+ seeds) C

11622 DICHELOSTEMMA IDA-MAIA California, Humboldt Co., SSW of Willow Creek. 650 m. Steep, grassy banks. 20.8.89 (Umbels of pendant, tubular flowers in glowing red from buds tipped bright green. Up to 1 m.) (20+ seeds) D

10969 DICHELOSTEMMA VOLUBILE California, Solano Co., NW of Vacaville. 300 m. Among scrub on open slope. 15.6.89 (Climbing stems twine to 2 m. Compact umbels of rose-pink flowers with white staminodes.) (20+ seeds) C

11778 DODECATHEON CLEVELANDII California, Santa Clara Co., E of San Jose. 370 m. W.R. coll. 29.5.89 (Magenta-pink flowers with yellow noses. This and the following are summer-dormant, dry-climate species.) (30+ seeds) C

11133 DODECATHEON CONJUGENS California, Modoc Co., Warner Mts., E of Davis Creek. 1750 m. Gravelly clay slopes. 20.6.89 (A more northern species from colder, steppe conditions, reliant on snow-melt. Pink.) (30+ seeds) C

11018 ERYTHRONIUM CALIFORNICUM California, Trinity Co., NNE of Weaverville. 960 m. Stony openings among conifers 18.6.89 (Local race with striking purple anthers, not generally known in cultivation - sorry no seed now left of the widespread, normal form with white anthers. Leaves beautifully mottled with brown.) (20+ seeds) E

11065 ERYTHRONIUM CITRINUM California, Del Norte Co., NNE of Gasquet. 400-450 m. Steep slopes among dense scrub of Rhododendron, etc. 19.6.89 (Creamy white with a greenish base. Mottled leaves.) (20+ seeds) D

11394 ERYTHRONIUM GRANDIFLORUM Colorado, Montrose Co., Uncompahgre Plateau, Columbine Pass. 2900 m. Openings in mixed woodland. 15.7.89 (An outstanding plant with plain green leaves and yellow flowers.) (20+ seeds) C

11678 ERYTHRONIUM HELENAE California, Lake Co., SE of Middletown. 450 m. Stony slope among Arctostaphylos. 23.8.89 (Beautiful, local, serpentine endemic. Creamy flowers with yellow anthers.) (20+ seeds) D

11116 ERYTHRONIUM HENDERSONII Oregon, Jackson Co., N of Medford. 400 m. Openings among scrub. 20.6.89 (Very fine robust species. Mottled leaves and lavender-pink flowers with dark violet centres.) (20+ seeds) C

11099 ERYTHRONIUM HOWELLII Oregon, Josephine Co., E of Takilma. 670 m. Open, stony slopes among conifers. 19.6.89 (Local plant with white flowers, flushing pink as they age. Mottled leaves.) (20+ seeds) D

11783 ERYTHRONIUM MULTISCAPOIDEUM California, Butte Co., near Magalia. 760 m. On serpentine under Cupressus. W.R. coll. 27.5.89 (Heavily mottled foliage and white flowers. Stoloniferous corms.) (20+ seeds) D

10996 ERYTHRONIUM TUOLUMNENSE California, Tuolumne Co., NE of Columbia. 760 m. Steep, scrub-covered slopes. 16.6.89 (Very local but easily grown in U.K. gardens. Plain, bright green leaves. Yellow.) (20+ seeds) C

10500 FRITILLARIA AGRESTIS California, Alameda Co., E of Livermore. 170 m. Heavy clay in open grassland. 15.5.89 (Up to 8 greenish cream and purplish brown bells. 50 cm. An adobe-clay plant.) (20+ seeds) C

10964 FRITILLARIA LANCEOLATA (F. affinis) California, Solano Co., NW of Vacaville. 300 m. Openings among scrub. 15.6.89 (Wide, nodding bells mottled purple-brown and yellow on slender 50 cm. stems.) (20+ seeds) B

11786 FRITILLARIA LILIACEA California, Marin Co., near Nicasio. 15 m. Low, grassy coastal hills. W.R. coll. 26.5.89 (Up to 5, pendant, creamy white bells. 30 cm. Not difficult under glass in U.K.) (20+ seeds) C

10990 FRITILLARIA MICRANTHA California, Mariposa Co., above Coulterville. 610 m. Grassy slopes among Pinus. 16.6.89 (Robust, 50 cm. high plant with up to 10, nodding, purplish bells.) (20+ seeds) D

11147 FRITILLARIA PHAEANTHERA California, Shasta Co., E of Redding. c. 1000 m. Openings in scrub among Pinus. 20.6.89 (Variable, dubious species. Possibly a recent hybrid - F. recurva x F. micrantha ?) (20+ seeds) D

11787 FRITILLARIA PLURIFLORA California, Lake Co., E of Indian Valley. 600 m. Open areas in heavy clay. W.R. coll. 19.5.89 (Up to 7 conical bells in rich, unmarked pink. Exquisite but difficult to grow.) (20+ seeds) C

11542 FRITILLARIA PUDICA Idaho, Butte Co., NE of Carey. 1520 m. Stony E & SE facing slopes. 5.8.89 (Nodding, clear yellow bells. A montane steppe species from areas with a continental climate.) (20+ seeds) C

11830 FRITILLARIA RECURVA X F. LANCEOLATA California, Colusa Co., W of Lodoga. 410 m. J.A. coll. 24.6.89 (Fully variable between the parents in form, height and colour - many shades of reds and browns.) (15+ seeds) D

11250 FRITILLARIA SP. California, Plumas Co., N of Seneca. 1070 m. Stony clay in clearing in coniferous woodland. 29.6.89 (Rather a mystery - possibly F. atropurpurea but W.R. has seen F. recurva in the area.) (20+ seeds) D

11505 LEWISIA REDIVIVA Wyoming, Fremont Co., Wind River Mts., above Fiddlers Lake. 3000 m. Granite grit. 29.7.89 (Huge, diaphanous, glowing pink water-lily flowers. Best grown with standard, cold-climate bulb treatment - water in autumn, just moist over winter, dry but not baked in summer. Germinated well here in 1990.)(20+) D

11175 PAEONIA CALIFORNICA California, San Luis Obispo Co., NE of San Luis Obispo. 150 m. Among scrub on steep slopes. 26.6.89 (Local, little-known relative of P. brownii with larger black-red petals with pink margins. Typical Mediterranean-climate growth-cycle. Germinated almost 100% with us last winter.) (10 seeds) E

11132 SISYRINCHIUM DOUGLASII California, Modoc Co., Warner Mts., E of Davis Creek. 1750 m. Gravelly clay among Artemisia. 20.6.89 (Exquisite, satin-violet bells in early spring. Unrivalled in the genus(30+ seeds) C

11437 TRADESCANTIA OCCIDENTALIS Wyoming, Platte Co., SW of Wheatland. 1830 m. Open slopes in stony clay. 21.7.89 (30 cm., summer-dormant herbaceous perennial. Violet-blue to magenta. Glaucous leaves.) (10+ seeds) C

11804 TRITELEIA ELEGANS California, Shasta Co., S of Shingletown. 1070 m. W.R. coll. 14.7.89 (Handsome, blue--purple flowers on 30 cm. stems. From heavy soils in and around the Central Valley.) (20+ seeds) B

10981 TRITELEIA HYACINTHINA California, Tuolumne Co., W of Chinese Camp. 360 m. Open grassy slopes. 16.6.89 (Striking white umbels on 50 cm. stems. A good grower in the open garden in the U.K.) (20+ seeds) B

10515 VIOLA BECKWITHII California, Sierra Co., N of Sattley. 1520 m. Sandy soil among Artemisia. 13.5.89 (Two-toned, red-purple and pale-lilac flowers. Summer-dormant steppe-plant for the alpine-expert.) (10 seeds) E

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| PRICE CODE A : | $1.50 | £1.00 | DM3, - | FF10. - | PRICE CODE D : | $4.00 | £2.50 | DM 7,50 | FF25. - |
| B : | $2.50 | £1.50 | DM4,50 | FF15. - | E : | $5.50 | £3.50 | DM10, - | FF35. - |
| C : | $3.50 | £2.00 | DM6, - | FF20. - | F : | $7.00 | £4.50 | DM13, - | FF45. - |

We deviate slightly from our pattern of concentrating on summer-dormant material in this list to bring you some seeds collected by John Andrews (Berkeley, California) as soon as possible after collection. Our next list, which will concentrate on alpine and herbaceous species, will we hope include more of John's 1991 collections. This year he has used the little spare time he has to visit sites in the Great Basin and Colorado Plateau of Utah, so there are no 1991 collections of the more western 'bulbs'. His aim, as ever, is to make small, highly selective collections of species which are not in cultivation or which have never been widely or seriously attempted. His seed is primarily distributed to a small number of skilled growers ; if there is sufficient for a wider distribution, we shall list it and hope to increase the possibility of these species being established somewhere in the world by some competent gardener. Many of these plants are unlikely to be collected by John, or indeed anyone else, in the forseeable future - a point we stress not so much to emphasise the fact that these are 'one-of' collections but to impress on growers the responsibility they have in attempting these. Many of these plants are likely to be demanding to cultivate so please do not attempt them unless you think you may be able to supply their needs. John is a responsible and dedic--ated collector of integrity, who has put considerable time and effort into making comparatively few important collections ; please treat this material with the respect it deserves. All seed not distributed will be carefully stored both by John and ourselves and will appear in future lists but in many cases collections are very limited.

ARCTOMECON HUMILIS Utah, Washington Co., S of St. George. 930 m. Eroded gypsum hills. 4.5.91 (In 1937, Roy Hay wrote of this small genus : "...there is no more lovely member of the Poppy tribe. It is astonishing that they have never been introduced..." In 1942, Dwight Ripley, of the legendary Ripley & Barneby team, wrote that he had "dispatched some seeds of this to my friend Mr. Walter Ingwersen..." We know of no subsequent attempt to introduce this incredible species, relocated by Ripley & Barneby in 1942, almost 100 years after Parry's discovery of it in 1847. Described by Ripley as "one of the most startlingly beautiful plants in all Utah" with "bristly rosettes of narrow, bright-blue leaves" producing huge, white poppies on erect, branching stems, 10-25 cm. tall. John describes it as producing low, rounded, bushy plants with 50-70 flowers. It should be attempted in a deep pot in the alpine--house or even better in a bed under glass or the bulb-frame but especially by those in parts of the world with a similar warm, dry climate with winter rain only. The area around St. George has much milder winters than the rest of Utah and consequently has become an expanding centre of development for retirement housing - not only are the few remaining habitats of this species in imminent danger of being disrupted or destroyed by this building, they are increasingly popular with an increasingly affluent local population as suitable sites to indulge in 'recreational' activities with dirt-bikes and other 'off-the-road' vehicles. Hills apparently "too bare to support any kind of vegetation" are usually considered 'no use' for anything other than this or perhaps as sites for landfill garbage-dumping. Perhaps one day there will be enough educated and skilled gardeners in Utah to ensure this is established in cultivation there ; until then we can hope to learn more about growing this.) (20+ seeds) F

ASTRAGALUS COCCINEUS California, Inyo Co., White Mts. near Toll House Springs. 1980 m. Loose stony, clay slopes. 23.6.90 (Sect. Argophylli, Subsect. Coccinei. Unsurpassed in the brilliance of its elongated, glowing scarlet flowers set against the tufts of woolly, white foliage and followed by amazing, horned, white-velvet pods. It has been grown with reasonable success at Goteborg Botanical Garden in Sweden but remains a true challenge.)(8+ seeds) F

ASTRAGALUS LOANUS Utah, Sevier Co., E of Glenwood, King's Meadow Canyon. 1960 m. Igneous gravels. 29.6.91 (Sect. Argophylli, Subsect. Newberryani. An extremely compact species, close to both A. newberryi and A. musiniensis, which we listed in 1989, narrowly endemic to this area. Tufts of silky, silver foliage and white, lavender-tipped flowers followed by big, rounded, beaked pods, tinted red-purple and with long, shiny hairs.) (10 seeds) F

ASTRAGALUS UNCIALIS Utah, Millard Co., N of Sevier Lake. 1460 m. Stony 'wash' leading into Sevier Lake (dry). 29.6.91 (Sect. Argophylli, Subsect. Newberryani. Long thought to be limited to a small area near Currant, Nevada, where we saw it in 1987, it is now known the main population is here. Described by Rupert Barneby as "one of the most ornamental dwarf astragali" with "silvery 3-5-foliolate leaves" and "narrow, long, and showy purple flowers which seem quite disproportionately large for the plant's diminutive stature.") (10 seeds) F

CALOCHORTUS BRUNEAUNIS Nevada, Humboldt Co., Paradise Valley above Solid Silver Creek in Santa Rosa Range. 1530 m. 9.9.89 (This and the following two belong to Sect. Mariposa, Subsect. Nuttaliani. A plant of Artemisia--steppe on the NW edge of the Great Basin. White flowers, striped green with purple blotches.) (20+ seeds) D

CALOCHORTUS EXCAVATUS California, Inyo Co., Gerkin (Owens Valley, S of Bishop). 1350 m. Among grasses and scrub. 23.6.90 (A little-known, local species, whose predilection for dampish sites may be its undoing, as the rape of the Owens Valley water to appease the insatiable needs of Los Angeles will surely lead to a steady lowering of the water-table and possible elimination of its few habitats. We hope it may prove growable. A distinct plant with widely bell-shaped, erect, pale lavender flowers with red-brown anthers on 30 cm. stems.) (15+ seeds) F

CALOCHORTUS PANAMINTENSIS California, Inyo Co., Panamint Mts., Wild Rose Canyon, below Charcoal Kilns. 1850 m. Along banks of 'wash' in Artemisia scrub. 24.6.90 (As obscure and local as the preceding but more numerous within its limited habitat high above Death Valley. A robust species, up to 60 cm. high, distinct in its unspotted petals and bluish anthers. Will need steppe-plant conditions - cold and dryish during winter.) (20+ seeds) E

ERIOGONUM CAESPITOSUM California, Mono Co., White Mts. 2300 m. Open, stony, limestone slopes. 23.6.90 (One of the most desirable dwarf species, which we have grown without great trouble in an alpine-house in the U.K. Compact mats of little, spatulate, white-felted leaves and clustered, yellow heads flushing to red.) (Cleaned seed - 15+) D

ERIOGONUM SHOCKLEYI Nevada, Nye Co., Grant Range S of Currant. 1660 m. 30.6.91 (One of the pulvinate-caespitose species of Sect. Capitata. Mounds of tiny, white-felted leaves and almost stemless clusters of flowers in white to cream, maturing to apricot and rusty-red tones. Uncleaned seed but John assures us that he has dissected it out and that there should be plenty in the collection - unfortunately this is unwilling to let go readily.) E

LEPIDIUM NANUM Nevada, White Pine Co., W of Little Antelope Summit. 2050 m. Low Limestone ridge-tops. 22.7.90 (The classic Great Basin endemic, whose aura has been nurtured by the writings of Roy Davidson and Dwight Ripley. The latter writes of it in 1944 : "...its hummocks look like those of some extra-tight Dionysia, of a peculiarly intense shade of sap-green, and when in flower they are almost concealed by the profusion of its small, parchment -coloured corollas...this is the Draba to end all Drabas..." A challenge to grow in true character.) (20+ seeds) F

MAURANDYA PETROPHILA California/Nevada, Grapevine Mts., above Titus Canyon. 1100 m. Fissures and under overhangs on N & NE-facing limestone cliffs. 22.6.91 ("...the undisputed queen of all Antirrhineae", "the most extreme deve--lopment of the genus" writes Dwight Ripley in 1942 of this saxatile relic only discovered in 1932 - it "sits tight in its cave or precipice, a dome of convex prickly leaves" from which the flowers "peer from the stiff rosettes like sumptuous primroses - primroses just opening with the flowers still a little crumpled, of a serene and candid yellow."Never before collected as far as we know, this should prove growable with Dionysia-treatment - the habitats are very similar - with perhaps less water and minimal nutrients to keep it compact.) (8 seeds) F

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OXYTROPIS OREOPHILA var. JUNIPERINA Nevada, Eureka Co., W of Eureka. 1870 m. Eroded banks of calcareous clay. 29.6.91 (John's 1990 coll. of this was rapidly depleted - he has been fortunate to secure a more substantial amount of seed this season so we hope there will be ample for all who were disappointed last year. This pulvinate species is summed up by Dwight Ripley as "one of the smallest of its race, densely caespitose and clothed all over in shaggy silver hair, each plant covered with hundreds of violet pea-flowers...") (8 seeds) F

PRIMULA DOMENSIS Utah, Millard Co., House Range, Notch Peak above Sawtooth Canyon. 2450 m. Ledges on and at base of vertical limestone cliffs in part-shade. 18.8.90 (Very recently discovered member of the P. cusickiana group, closest to P. maguirei, differing in its larger calyces, shorter corolla tubes and flowers, in rose to lavender, almost twice as much across. Like the others, this tends to become dormant in late summer.) (12+ seeds) F

PRIMULA NEVADENSIS Nevada, White Pine Co., Snake Range, Mt. Washington. 3125 m. N-facing, vertical limestone cliffs & also under Pinus longaeva in limestone scree. 19.8.90 (Nearest neighbour geographically to the preceding but not close to it morphologically - essentially an alpine-plant, up to 9 cm. tall with an umbel of 2 or 3 large violet-purple, yellow-eyed flowers, more robust than its alpine allies, P. angustifolia & P. capillaris. Probably best plunged outside in summer in the U.K. or even tried in a trough - it is neither hot nor dry here.)(20+ seeds) F

RANUNCULUS ESCHSCHOLTZII var. OXYNOTUS Nevada, Washoe Co., Rose Knob Ridge SW of Mt. Rose. 3180 m. 10.7.90 (Summer-dormant, snow-melt alpine with little, rounded, lobed leaves & bright-yellow flowers. 10 cm.) (20+ seeds) D

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## 1990-1991 CULTIVATED SEED FROM NORTH AMERICAN BULBS AND CORMS

We include a few species here rather than in Section III, to keep all the North American material together. While some are derived from wild material, they have been cultivated for some time and we feel full field data is not altogether relevant in most cases. Most are from Dr. Paul Christian (Clwyd, U.K.) ; other sources are indicated.

CALOCHORTUS AMABILIS 1990 seed of a very vigorous strain of this bright-yellow species, developed by Paul Christian from Sonoma, Colusa, Solano, Napa & Lake Cos. material! Even sows itself with him. (20+ seeds) B

BRODIAEA TERRESTRIS (= B. coronaria var. macropoda) Almost stemless with the flowers held up on pedicels to 20 cm long - an excellent little plant with large violet-blue flowers. Good in a pot or bulb-frame. (15+ seeds) B

ERYTHRONIUM ELEGANS From material coll. Oregon, Tillamook Co., Mt. Hebo, grown at Goteborg, Sweden. (10 seeds) E

REVOLUTUM From the strain which sows itself in Peter Chappell's Hampshire garden. Possibly the best of the N Americans for general garden-use in the U.K. Beautifully mottled leaves and rose-pink flowers. (20+ seeds) C

REVOLUTUM var. JOHNSONII Not sustainable botanically - race with soft-pink flowers, faintly marbled leaves(15) D

'WHITE BEAUTY' Supposedly sterile hybrid or form of E. oregonum - seedlings will be interesting. (15+ seeds) D

FRITILLARIA ATROPURPUREA Purple-brown mottled yellow & white. Has a more inland range than the next. (15+ seeds) C

LANCEOLATA (= F. affinis) From several sources - usually one of the easier species to cultivate. (15+ seeds) B

PURDYI A few 1991 seeds of this white and purple species. Our 1989 coll. seed is long gone! (15+ seeds) E

TRITELEIA IXIOIDES Golden yellow flowers with dark midveins on the segments. From stock originally coll. by Wayne Roderick as a "good form with large flowers". About 30 cm. high. (20+ seeds) B

IXIOIDES var. SCABRA Inland race, more variable in its yellow tones, with deflexed segments. (15+ seeds) B

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SECTION III continued from last page : SEED FROM CULTIVATED PLANTS & OTHER AREAS

NARCISSUS Most here are from John Blanchard (JWB) (Dorset, U.K.). Names as in his 1990 monograph on this genus.

BULBOCODIUM var. GRAELLSII From a 1983 JWB coll. - Spain, Sierra de Guadarrama. A distinct, dwarf, green--tinged, white race, surprisingly little known in cultivation. No trouble in frame or alpine-house. (15+ seeds) D

BULBOCODIUM var. NIVALIS JWB 90-21 - Portugal, Serra da Estrela. Dwarf, yellow, snow-melt race. (10+ seeds) C

CORDUBENSIS Sect. Jonquillae. Deep yellow endemic of S Spain, near N. fernandesii. Good grower. (10+ seeds) C

CUPULARIS Sect. Tazzetae. From a T. Norman coll. - Sardinia, c. 800 m. Glaucous leaves. Yellow. (10+ seeds) C

FERNANDESII Sect. Jonquillae. From several wild sources - seed will be sent with relevant data. (10+ seeds) C

HISPANICUS var. BUJEI Sect. Pseudonarcissus. JWB 87-13 - Spain, Sierra de Cabra, in oak scrub. (10+ seeds) E

PANIZZIANUS Sect. Tazettae. Dwarf, pure-white. From several wild colls. - sent with data. (10+ seeds) C

ROMIEUXII ? subsp. ALBIDUS JWB 88-13 - Morocco, Rif Mts. Pure-white with projecting anthers. (10+ seeds) D

ROMIEUXII subsp. ROMIEUXII var. RIFANUS JWB 89-28 - Morocco, Rif Mts., 1800 m. Violet-brown spathe (10+ seeds) D

RUPICOLA - LATE FORM From a JWB coll. - Spain, Sierra de Guadarrama. Yellow. Sect. Jonquillae. (10+ seeds) C

SEROTINUS Sect. Serotini. Autumn-flowering white with orange-brown corona. 10 cm. Coll. S Greece by P. & P. Watt and grown in Japan by Don Elick. Widespread in the wild but seldom available as seed or bulbs (10+ seeds) D

RHODODENDRON CAMTSCHATICUM ALBUM Original material from Alaska, coll. Aline Strutz ; stock isolated. (50+ seeds) E

ROMULEA BULBOCODIUM - KNIGHTSHAYES FORM Violet, gold-centred 'crocuses' - hardy in S England. (30+ seeds) B

MACOWANII var. ALTICOLA Beautiful, very hardy, yellow species from extremely high altitudes. (15+ seeds) B

SALVIA HIANS Hardy Himalayan with violet-blue flowers. 60 cm. One of the best for general planting. (20+ seeds) B

TULIPA CRETICA Dwarf, 10 cm. high, with purple-pink flowers. Usually not stoloniferous. (10+ seeds) C

SCARDICA Strindberg & Zetterlund 88-60 - Jugoslavia, Makedonija, Konecka Planina, E of Pepeliste. 550 m. In oak scrub. Late-flowering, dwarf sp. Scarlet flowers and small undulate leaves. Distinct from T. boeotica. (8) D

SPRENGERI Latest of all tulips. Elegant orange-scarlet flowers. Best outside in light shade in U.K.(20+ seeds) B

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| PRICE CODE D | : | $4.00 | ; | £2.50 | ; | DM 7,50 | ; | FF25. - | | |
| E | : | $5.50 | ; | £3.50 | ; | DM10, - | ; | FF35. - | | |
| F | : | $7.00 | ; | £4.50 | ; | DM13, - | ; | FF45. - | | |

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

The emphasis in this list is almost exclusively on summer-dormant species which will be best sown before November by northern hemisphere growers. With no 1991 wild collections by ourselves from this area, seeds listed here fall into three categories : seed from cultivated plants of known wild origin ; 1991 collections by others ; wild collections made by ourselves during 1990 and earlier, which have been stored under dry, refrigerated conditions.

CULTIVATED MATERIAL is only listed in this section if it is derived from plants of known wild origin, accompanied by a reasonable amount of field data. Even with first generation seed from cultivated wild material, a certain amount of selection has occurred (i.e. the 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 collection numbers become increasingly irrelevant. Such cultivated seed will be found in Section III. Unless otherwise mentioned, seed has been collected in 1991. In all cases where the original collection has not been made by ourselves or grown by ourselves, we specify the collector or the cultivator (ex hort. : from the garden of ...).

COLLECTED MATERIAL is mainly from our own collections. We are grateful to Professor P. and Dr. P. Watt for some additional wild collections made in S Greece during late spring 1991. Collections made prior to 1991 have been stored in silica gel at about 0°C, to ensure that little, if any deterioration of viability will occur. Not infrequently germination, especially among dry-climate species, is actually improved by such storage.

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

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

ABBREVIATIONS - Coll. : collected/collected by/collection ; Da. : Dag/Daglari (Turkish for mountain or mountains).

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

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161.902 ANEMONE PAVONINA Greece, Lakonia, Oros Taigetos. Coll. P.& P. Watt, 1991 (This and the next coll. were made at the highest elevations for the species and should produce some particularly hardy plants - even low altitude material proves hardy in well-drained, sunny sites in several gardens we know in S England. Bright scarlet flowers (usually white-centred in the Peloponnese - var. ocellata) provide the most memorable spectacle of springtime in Greece. Usually germinates and grows on very easily.) (20+ seeds) B

161.903 ANEMONE PAVONINA Greece, Argolida, Parnon. 1000 m. and above. Coll. P. & P. Watt, 1991 (20+ seeds) B

170.002 APHYLLANTHES MONSPELIENSIS Spain, Huesca, Rio Gallego valley W of Anzanigo. 600 m. Steep, limestone slope. 28.6.90 (Tufts of dark, rush-like, leafless stems, about 30 cm. high, bear a succession of clear-blue flowers in late spring. Strongly resents disturbance but easy in a hot, dry site.) (15+ seeds) D

* 194.751 ARUM ALPINUM Greece, Evia, Oros Dirfis. 1200 m. N & W facing limestone slopes. Ex hort. M. Tucker, 1991. (1991 seed from a coll. we made in 1984 - the little Arum of the higher Greek mountains.) (8 seeds) C

* 195.301 ARUM DIOSCORIDIS var. LUSCHANII Turkey, Hatay, S of Antakya. Coll. & ex hort N. Stevens, 1990 (From the hills near the Syrian border and with short, dark spathes. Distinct from our own earlier coll.) (8 seeds) C

* 195.352 ARUM DIOSCORIDIS var. SPECTABILE Turkey, Antalya, S of Akseki. 800 m. Humus-filled, limestone pockets. ex hort. M. Tucker, 1991 (Hand-pollinated from a tiny tuber coll. 1984, described by Mike as "superb and striking" with "very large spathes appearing almost black". Best in a bulb-frame in the U.K.) (8 seeds) D

* 195.353 ARUM DIOSCORIDIS var. SPECTABILE Turkey, Mersin, NNE of Gulnar to Mut. 1200 m. Among limestone boulders. Ex hort. M. Tucker, 1991, from our 1985 seed coll. (Distinct from the above in that the confluent maroon -black blotches do not reach to the edge of the spathes. Black violet spadices. Peter Boyce is placing var. spectabile under var. dioscoridis but it remains the most spectacular race.) (8 seeds) D

* 196.500 ARUM NIGRUM Jugoslavia, Bosna i Hercegovina, above Dubrovnik to Trebinje. 500 m. Holes and crevices on limestone. Ex hort. M. Tucker, 1991, from a B. Mathew coll. (One of the best of the hardier species. Broad, upright maroon-black spathes in spring on short stems. Dark, unmarked leaves. 20-30 cm.) (8 seeds) C

204.700 ASPHODELINE BREVICAULIS Turkey, Adana, Nur Da. above Hasanbeyli. 1100 m. Shale slopes among deciduous Quercus. 15.7.88 (Elegantly branching stems, 20-50 cm. high, with widely spaced, pale-yellow, starry flowers, apricot-orange in bud and on the reverse. Reasonably hardy in a hot, dry site.) (10+ seeds) D

227.770 BELLEVALIA FORNICULATA Turkey, Agri, Sac Gecidi W of Eleskirt. 2300 m. Hay meadow with Gladiolus, etc. 21.7.88 (Beautiful, turquoise blue species, locally abundant only in the Erzurum area.) (20+ seeds) C

228.130 BELLEVALIA RIXII Turkey, Van, above Cuh Gecidi. 2800 m. Loose, unstable scree on open slopes. 20.7.88 (Dwarf with falcate leaves and 5 cm. stems of purple-brown flowers with violet anthers from blue-violet buds. Only recently discovered and described in 1980. Worthy of a pan in the alpine-house.) (8+ seeds) E

* 232.100 BIARUM CARRATRACENSE Spain, Jaen, Sierra de Cazorla, Guadalquivir gorge at Puente de las Herrieras. 900 m. Among limestone boulders in terra rossa. Ex hort. M. Tucker from our 1984 coll. (One of the finest of this intriguing genus of dwarf aroids - purple-black velvet spathes. Hardy in a bulb-frame.) (5 seeds) D

240.000 BRIMEURA AMETHYSTINA France, Hautes-Pyrenees, Vallee d'Ossoue. 1500 m. S & W facing slopes in stony clay over limestone. 30.6.90 (A delightful, growable, little bulb surprisingly seldom seen in cultivation. Like a miniature, bright sky-blue bluebell, 15 cm. high. Essentially endemic to the Pyrenees.)(20+ seeds) B

311.402 COLCHICUM AUTUMNALE Jugoslavia, Slovenija, N of Postojna. 600 m. Openings in deciduous woodland on lime--stone. 28.5.90 (Lilac-pink flowers in autumn. A very robust, large-leaved form here.) (20+ seeds) B

311.703 COLCHICUM BIVONAE Greece, Kavala, Pangeon above Eleftheroupoli. 1000 m. Opening in deciduous woodland. 7.6.90 (Large, goblet-shaped flowers, strongly-chequered and rosy purple in this form, which does very well with us planted outside here in Wales. Tidy, upright leaves appear in spring.) (15+ seeds) C

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| C : | $3.50 | £2.00 | DM6, - | FF20. - | F : | $7.00 | £4.50 | DM13, - | FF45. - |

314.000 COLCHICUM DOERFLERI Jugoslavia, Makedonija, Galicica Planina above Trpjeca. 1600 m. Open, stony, lime--stone slopes. 5.6.90 (A lovely, dwarf, spring-flowering plant, sometimes included under C. hungaricum but horticulturally distinct. Here its lilac-pink flowers edge the melting snow-patches.) (15+ seeds) D

314.60 COLCHICUM HUNGARICUM Jugoslavia, Hrvatska, Velebit Planina, Mali Halan S side. 800 m. Exposed, gravelly areas on limestone. 30.5.90 (An attractive little species with several flowers appearing between the narrow leaves in early spring - coast range forms are usually white with purple-black anthers)(15+ seeds) D

314.751 COLCHICUM KOTSCHYI Turkey, Van, Kavussahap Da. 2300 m. Open stony slopes in steppe vegetation. 17.7.88 (A dwarf, early autumn-flowering species - always white-flowered here - seldom seen.) (15+ seeds) C

315.901 COLCHICUM MONTANUM (Merendera montana, M. pyrenaica) Spain, Granada, Sierra Nevada below Penones de San Francisco. 2300 m. Depression on NW-facing slope in turf. 25.6.90 (Clusters of bright rose-pink flowers, usually with white centres, in autumn. An excellent dwarf plant growable in the open garden.) (20+ seeds) B

317.800 COLCHICUM SPECIOSUM Turkey, Gumushane, Zigana Da. 1900 m. Margin of Picea woods. 27.8.88 (Huge goblets in pale to deep pink or purple in autumn. Spectacular and an excellent garden-plant in the UK)(15+ seeds) B

318.000 COLCHICUM SZOVITSII Turkey, Trabzon, Zigana Da., 2100 m. Alpine tur on grazed slopes. 27.8.88 (Pale to deep pink flowers in early spring ; dwarf with narrow leaves. A good form but not too easy.) (15+ seeds) F

* 340.351 CROCUS ASUMANIAE Turkey, Antalya, N of Akseki. 1200 m. Limestone slopes with Quercus scrub and sparse Pinus. 1990 seed from Horton & Stevens 2243 ex hort. N. Stevens. (Autumn-flowering species, described in 1979, closest to the Greek C. cartwrightianus. Pale lilac or white flowers with striking scarlet style branches. This has proved a very satisfactory grower in bulb-frames in the U.K.) (15+ seeds) C

342.005 CROCUS CANCELLATUS subsp. MAZZIARICUS Greece, Viotia, Oros Parnassos, 1200 m. Stony clay slopes. A 1991 coll. by P. & P. Watt. (Autumn-flowering, lilac to white. Best in a bulb-frame in the U.K.) (15+ seeds) D

343.202 CROCUS CHRYSANTHUS Jugoslavia, Makedonija, Galicica Planina. 1600 m. Open, stony slopes on limestone. 12.6.90 (The pure wild species is rare in gardens. Golden, scented flowers in early spring.) (15+ seeds) C

343.600 CROCUS CVIJICII Greece, Imathia, Oros Vermio near Seli. 1500 m. N & W facing slopes in turf among sparse Pinus. 6.6.90 (A very local high-altitude species from the mountains where the Greek, Yugoslavian and Albanian borders meet. Scented flowers from chrome-yellow to orange-yellow in spring. While it resents over-drying or baking, this is not so critical as with moist growers like C. scharojanii.) (15+ seeds) F

* 345.200 CROCUS GOULIMYI Greece, Messinia, SSE of Agios Nikonas. 300 m. Humus-filled crevices among stones. 1991 seed from our 1985 coll. ex hort. M. Tucker et al. (Superb, long-tubed, lilac-blue goblets in autumn. Very local in nature but very easy to grow in cultivation in the U.K. if well-drained.) (15+ seeds) B

347.101 CROCUS KOTSCHYANUS subsp. SUWOROWIANUS Turkey, Rize, Ovit Dag. 3000 m. Dryish, stony ridges. 26.7.88 (Not at all well-known in cultivation but should be growable - it is the most widespread of the alpine species with elegant white flowers in autumn. Always prefers the drier slopes in the wild.) (15+ seeds) D

348.602 CROCUS NEVADENSIS Spain, Granada, Sierra Nevada, below Penones de San Francisco. 2300 m. In turf on NW facing slope. 25.6.90 (Reputedly difficult with pale lilac or white flowers in spring. We have also seen an odd stoloniferous member of the C. serotinus group here, so cannot assure seed 100%.) (15 seeds) D

348.804 CROCUS NIVEUS Greece, Lakonia, NW of Pirgos Dirou. Low limestone hills near sea-level. 1991 coll. by P. & P. Watt. (This collection is from a restricted colony seen in flower by Peter & Penny Watt in 1984 - predominantly with the outer segments blue and the inner ones white and with "massive" flowers. "Perhaps our favourite Crocus" they write - a strong statement from dedicated crocophiles.) (10 seeds) E

* 350.401 CROCUS PULCHELLUS Turkey, Bursa, Ulu Da. 1500 m. Damp turf. (Lilac-blue, autumn-flowering species, ex hort. M. Jope from Mathew & Tomlinson 4584, coll. 18.6.65 as a possibly mixed gathering.) (10+ seeds) B

* 352.550 CROCUS SIEBERI subsp. SUBLIMIS Greece, Evia, Oros Dirfis. 1000 m. Open, stony slopes. 1991 seed coll. & ex hort. D. & P. Hoskins. (Rich lilac-purple flowers with yellow throats in spring.) (15+ seeds) C

354.002 CROCUS VELUCHENSIS Jugoslavia, Kosovo, S of Urosevacs. 800 m. Leaf-soil over clay in dense Fagus woods. 4.6.90 (A particularly fine form of this variable Balkan species. Large, luminous, lilac-blue flowers with deep purple tips in spring. For cool, humus-rich soil - it grows with Erythronium, etc.) (15+ seeds) D

* 358.000 CYCLAMEN AFRICANUM Algeria, Kabylie, E of Azazga. 850 m. In humus under deciduous Quercus. A few 1990 seeds left from our 1966 coll. (Large-leaved, autumn-flowering, best grown frost-free in U.K.)(10+ seeds) E

* 358.500 CYCLAMEN BALEARICUM Spain, Islas Baleares, Mallorca, N of Andratx. 350 m. Among Quercus in humus. Coll. & ex hort. D. & P. Hoskins, 1991 (A charming, reduced version of C. repandum with delicately pencilled white flowers in spring. Distinct, mottled, grey-green leaves. Grow frost-free and shaded.) (20+ seeds) C

* 359.000 CYCLAMEN CILICIUM Turkey, Antalya, N of Akseki. 1500 m. Stony humus under Abies on limestone. 1991 seed from our 1985 coll. (Reliable, autumn-flowering pink with rounded, well-marked foliage.) (15+ seeds) B

* 359.003 CYCLAMEN CILICIUM Turkey, Konya, NW of Bozkir. 1100 m. Base of N-facing limestone cliffs. 1991 seed from our 1985 coll. (An extremely hardy species, best in a sunny, well-drained site in U.K.) (15+ seeds) B

* 363.003 CYCLAMEN GRAECUM Greece, Lakonia, Agios Nikolaos, NW of Githio. 500 m. Steep slopes under olives. 1991 seed from our 1984 coll. (Pink autumn-flowering species. Border-line hardiness and best kept dryish under glass in the U.K. The population here has extremely fine and variable foliage.) (15+ seeds) D

* 363.006 CYCLAMEN GRAECUM Greece, Argolida, Poros near Askeli. Olive groves at sea-level. Coll. & ex hort. M. Jope (MJ 86-3) (All forms of C. graecum have superb leaves and Melvyn Jope selects them.) (15+ seeds) D

* 364.003 CYCLAMEN HEDERIFOLIUM Greece, Evia, above Metohi W of Karistos. 200 m. N & W facing sides of gulley. 1991 seed ex hort. D. Hoskins (Form with large flowers and leaves like C. africanum) (20+ seeds) B

* 367.500 CYCLAMEN PURPURASCENS Italy, Friuli-Venezia Giulia, NW of Trieste. 100 m. Openings among scrub. 1991 seed from our 1966 coll. ex hort. D. Hoskins (Carmine, summer-flowering species with well-marked leaves here. Easier than the Alpine woodland forms ; we grew this well outside in Dorset in sun.) (15+ seeds) C

* 368.003 CYCLAMEN REPANDUM subsp. PELOPONNESIACUM Greece, Lakonia, Oros Taigetos above Paleopanagia. 1400 m. In humus under Platanus, Abies, Pinus. 1991 seed ex hort. D. Hoskins from our 1984 coll. (Although all records state this only grows to 800 m., we have found it up to 1500 m., flowering to mid-June. A lovely pale-pink race with extremely variable foliage - many but by no means all with the white speckling consid--ered diagnostic. This has proved hardy here but grows best in shade under glass.) (10+ seeds) E

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470.001 ERYTHRONIUM DENS-CANIS Greece, Drama, Falakron, above Agio Pnevma to Hionotripa. 1800 m. Depressions on open, grassy slopes. 9.6.90 (Nodding, deep pink flowers between two, thick-textured blue-green leaves, marbled with red-brown. A montane population of this unrivalled Eurasian species.) (20+ seeds) C

490.800 FRITILLARIA ALFREDAE subsp. GLAUCOVIRIDIS Turkey, Adana, above Hasanbeyli. 1100 m. Open, stony areas on W-facing slopes. 15.7.88 (Yellow-green bells with a glaucous sheen. Not difficult in a frame.)(20+ seeds) D

* 492.100 FRITILLARIA BITHYNICA Greece, Samos, Ambelos. 300 m. At edge of pine-woods and under Castanea. 1991 seed ex hort. D. & P. Hoskins from their 1990 coll. (Glaucous yellow-green bells, yellow inside. Best-known from mainland W Turkey, the island plants from Samos and Khios are little collected.) (15+ seeds) D

* 493.000 FRITILLARIA CONICA Greece, Messinia, S of Pilos. 200 m. Margin of Quercus scrub on limestone slope. 1991 seed ex hort. M. Tucker from our 1985 coll. (Among the E Mediterranean species with yellow bells, this is fairly robust, up to 25 cm., with quite large flowers. Usually does well under glass in U.K.) (15+ seeds) D

493.500 FRITILLARIA CRASSIFOLIA subsp. KURDICA Turkey, Van, Ispiriz Da. NNW of Baskale. 2800 m. Open stony slope 20.7.88 (Globular bells in yellow-green to red-brown, variously chequered and striped.) (20+ seeds) D

494.000 FRITILLARIA DAVISII Greece, Lakonia, around Spilea Dirou, S of Areopoli. Low, limestone hills near sea-level. 1991 coll. by P. & P. Watt. (Low altitude relative of F. graeca confined to the Mani peninsula. Shining green foliage and purple bells without green central stripes on the outer segments.) (15+ seeds) D

* 494.800 FRITILLARIA EHRHARTII Greece, Evia, above Metohi, W of Karistos. 200 m. N & W facing sides of gulley in light shade of Quercus, Erica, etc. 1991 seed ex hort. D. Hoskins et al. from our own & Hoskins colls. (An attractive, local species with bloomy grape-black bells, ruby against the light.) (20+ seeds) D

* 499.700 FRITILLARIA MESSANENSIS subsp. GRACILIS Jugoslavia, Bosna i Hercegovina, W of Trebinje. 500 m. Among Quercus scrub on limestone. 1991 seed ex hort. M. Tucker from our 1984 coll. (Untesselated chestnut-brown, gold-edged bells. A good grower in cultivation and worth trying in the open garden.) (20+ seeds) C

500.300 FRITILLARIA MONTANA Jugoslavia, Makedonija, Galicica Planina above Trpjeca. 1600 m. Exposed, dry, lime-stone slopes. 12.6.90 (A fairly dwarf form of this widespread plant of the S European limestones. Brown purple, tesselated bells. Unusual here in that the bulbs can be stoloniferous.) (20+ seeds) D

* 500.303 FRITILLARIA MONTANA France, Alpes-Maritimes, NW of Gourdon to Caussols. c. 1000 m. Among grasses on N-facing, limestone slope with scattered Juniperus. 1991 seed ex hort. P. Christian from his 1979 coll., PJC 282 (A French population which has been described as F. caussolensis. Heavily chequered red-brown or wine and a good grower. It can, incidentally, produce both winged and unwinged capsules.) (20+ seeds) C

FRITILLARIA THESSALA & the F. graeca group. The publication of the second volume of 'Mountain Flora of Greece' (ed. Arne Strid & Kit Tan) in 1991 includes a treatment of this complex somewhat differing from that by Rix usually accepted at present. Kamari splits what Rix regards as F. graeca into three species, incorporating six taxa : those with glaucous leaves and linear nectaries constitute F. graeca (with var. graeca and var. guiccardii) ; green-leaved plants with ovate nectaries are distributed between a new species, F. mutabilis, and F. thessala (with subsp. thessala, subsp. reiseri and subsp. ionica). Whatever the merits or otherwise of splitting the second group so much, we feel the broad concept is of some assistance to gardeners and we shall adopt such names as are relevant in future lists.

* 503.60 FRITILLARIA THESSALA (subsp. thessala) Greece, Ioanina, Peristeri above Metsovon. 1980 m. Steep, N facing grassy slope. 1991 seed ex hort. M. Tucker from our 1964 coll. (Purple-brown and green flowers, tesselat-ed all over. Populations in the N Pindos tend to intergrade with F. t. subsp. ionica.) (15+ seeds) C

* 503.602 FRITILLARIA THESSALA (subsp. thessala) Greece, Ioanina, Smolikas above Agios Parashevi. 1500 m. Open pasture on limestone. 1991 seed ex hort. P. Christian from Christian & Hoog 880. (Flowers well chequered with red-purple in this form. The species as a whole is robust with 2 or more flowers.) (20+ seeds) C

* 503.700 FRITILLARIA THESSALA subsp. IONICA Greece, Kerkira, Pantokrator. 1991 seed ex hort. D. Hoskins from a coll. by E. Sewell. (Usually single-flowered with broader foliage and green bells only obscurely tessel-ated at the edges. We are applying this name only to the more homogeneous island population on Corfu, though Kamari applies the name to plants extending right down to the southern Pindos.) (15+ seeds) D

503.800 FRITILLARIA TUBIFORMIS France, Haute-Alpes, Pic de Gleize, NNW of Gap. 1800 m. Steep, SE facing slopes among grasses. 11.8.88 (Fat, chequered, brown-purple bells on relatively short stems. A superb plant seldom offered. Seed from these hot, dry limestone slopes should grow well in the bulb-frame.)(20+ seeds) D

531.902 GLADIOLUS ANTAKIENSIS Turkey, Hakkari, Zap gorge near Bagisli. 1500 m. Stony clay slopes among sparse oak scrub. 19.7.88 (Not seen in flower here. Elsewhere in Hakkari there are rose-pinks with white-marked lower segments ; near Mardin, lavender-blues. A dry-grower maybe best in the bulb-frame.) (20+ seeds) D

532.604 GLADIOLUS KOTSCHYANUS Turkey, Hakkari, W of Yuksekova. 1400 m. Wet hay meadows. 19.7.88 (Delicate shades of pale mauve and lavender-blue. This is a very cold area - should be hardy almost anywhere.) (20+ seeds) C

* 560.620 HELLEBORUS CYCLOPHYLLUS Greece, Evia, Oros Dirfis. 1200 m. N & W facing limestone slopes. 1991 seed from material coll. 1985 ex hort. D. Hoskins (A 'classic' island population of the green-flowered hellebore of the Greek mountains. Members of Section Helleborastrum will cross indiscriminately in gardens. Though Dave Hoskins does not grow a large collection and cross-pollination is less likely in this case than with most garden seed of species, this must be kept in mind. No assurances as to authenticity.) (15+ seeds) C

* 561.400 HELLEBORUS LIVIDUS Spain, Islas Baleares, Mallorca, NE of Andratx. 100 m. In limestone talus among Rosa scrub at base of cliffs. 1991 seed ex hort. D. Hoskins from material coll. 1973. (From a plant in a shel-tered site outside in a Hampshire garden - not hand-pollinated under glass but unlikely to have crossed to any extent with H. argutifolius. A very beautiful, rather tender species best treated like the C. rep-andum group of cyclamen - shaded and frost-free. Untoothed, silver-veined, purple-backed leaves and cream-green flowers flushed with pink in mid-winter. About 30 cm. high. Can germinate in autumn.) (20+) D

While the above are from 1991 cultivated seeds, as are all those in Section III, and we have no 1991 wild-collected seed, we still have some seed left from many of the species we collected in S Europe in 1990. This has been kept in dry, refrigerated conditions and we see no reason why some germination should not be expected in the 1991-92 winter. We consider that it would be essential to sow this seed by November, 1991. With the present political developments in Yugoslavia, it is extremely unlikely many of these collections could be repeated for some time to come.

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HELLEBORUS NOMENCLATURE The following names are those used by Brian Mathew in his 1989 monograph 'Hellebores'. This is a beautiful and authoritative work indispensible to enthusiasts. We have not, however, found it possible to apply his concepts of species in Sect. Helleborastrum (to which almost all the following belong) to wild plants. Names are assigned here on the basis of geographical distribution, rather than diagnostic characteristics, which in our experience can usually only be applied to selected members of extremely variable colonies.

560.625 HELLEBORUS CYCLOPHYLLUS Greece, Drama, above Volokas to Falakron. 1400 m. Stony grazed turf on open slopes. 9.6.90 (Approaching H. orientalis territory. Creamy green. Downy undersides to leaves)(20+ seeds) D

560.626 H. CYCLOPHYLLUS Greece, Trikala, Katara above Metsovon. 1700 m. Open slopes and woodland margins. 11.6.90 (Very variable in flower size and leaves - 8-25 leaf divisions. Yellow-green.) (20+ seeds) D

561.002 H. FOETIDUS Spain, Jaen, Sierra de Cazorla, Prado Redondo. 1300 m. Among Pinus on steep limestone slope. 23.6.90 (Excellent, robust form of this distinct, widespread species.) (20+ seeds) B

561.701 H. MULTIFIDUS subsp. ISTRIACUS Jugoslavia, Slovenija, NW of Postojna. 600 m. Openings in deciduous wood-land. 28.5.90 (Probably intergrading with H. odorus. 10-25 leaf divisions.) (15+ seeds) D

561.702 H. MULTIFIDUS subsp. ISTRIACUS Jugoslavia, Hrvatska, E of Vratnik. 700 m. Open, grassy slopes. 28.5.90 (Very variable, 8-60 leaf divisions, sometimes with glaucous, purple-rimmed flowers.) (15+ seeds) D

562.001 H. ODORUS Jugoslavia, Crna Gora, between Zaton & Bioca. 1000 m. Stony slopes with sparse scrub. 3.6.90 (Seemed to have been a very creamy yellow-green. 10-15 leaf segments.) (20+ seeds) D

562.004 H. ODORUS Jugoslavia, Bosna i Hercegovina, above Borike, between Visegrad & Rogatica. c. 1000 m. Stony turf over limestone. 14.6.90 (Very variable yellow-greens from a cold area. 9-16 leaf divisions.) (20+) D

562.800 H. TORQUATUS Jugoslavia, Bosna i Hercegovina, NW of Vrtoce (SE of Bihac). 400 m. Open, grassy slopes on limestone. 15.6.90 (Leaves cut into 40-80 segments. Almost all here have some trace of purple, even if only a tinge or veining. Some are superlative. Maybe of different origin to southern "H. torquatus")(15+) E

562.802 H. TORQUATUS Jugoslavia, Crna Gora, N of Kolasin. 1100 m. Open areas of stony, grazed grassland. 3.6.90 (Very variable in purples, browns and greens. Typical of "H. torquatus" in Montenegro.)(15+ seeds) E

563.200 H. VIRIDIS (subsp. viridis) Italy, Piemonte, Colle di Tenda above Limone Piemonte. 1200 m. Edge of wood-land and sloping meadow. 18.6.90 (Large yellow-green. 12-20 leaf divisions. A few left.) (10+ seeds) D

563.251 H. VIRIDIS subsp. OCCIDENTALIS France, Hautes-Pyrenees, E of Bareges. 1500 m. Among grasses on steep, grazed slope. 30.6.90 (Very variable in flower size and foliage - around 15 leaf divisions.) (15+ seeds) C

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* 583.900 IRIS ATTICA Greece, Viotia, Oros Parnassos. 1200 m. Turfy pockets on limestone. 1991 cultivated seed from from our 1985 coll. (White, yellow and red-purple. Dwarf with falcate leaves.) (10 seeds) C

589.800 IRIS ILLYRICA Jugoslavia, Hrvatska, E of Senj. 100 m. Stony limestone slope with Juniperus. 28.5.90 (Like I. pallida in its seeds & spathes and I. cengialtii in its rich violet-purple flowers (15+ seeds) C

599.803 IRIS TAOCHIA Turkey, Erzurum, N of Tortum. 1600 m. Open, stony, igneous slopes. 22.7.88 (40 cm. high bearded iris in pale to deep yellow or red-purple shades. Hot, dry site or bulb-frame.) (10 seeds) D

* 632.600 LILIUM CANDIDUM Greece, Lakonia, Oros Taigetos, foothills W of Sparti. 500 m. Steep limestone slopes. A few 1990 seeds ex hort. D. Hoskins from plants raised from seed we collected 7.11.83 (Lilies will be list-ed in our winter list but we offer this now as it is best sown early and usually germinate in autumn An opportunity to raise fertile, virus-free stock of this superlative, 1 m. high, white lily.)(15+ seeds) D

* 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. 1991 seed from our 1982 coll. (Broad, prostrate, glossy leaves with bright yellow hoop-petticoat flowers, very variable in size and shape. A very hardy plant.) (15+ seeds) C

696.250 NARCISSUS BULBOCODIUM var. NIVALIS (auct. non Maire) Spain, Avila, Sierra de Gredos, NE of Pico Almanzor 1800 m. Among grasses on steep, open slopes. 27.6.90 (Snow-melt hoop-petticoat referred to this taxon by various authors (e.g. Polunin & Smythies in 'Flowers of SW Europe'). Upright, narrow leaves.) (20+ seeds) C

* 699.200 NARCISSUS BULBOCODIUM var. PALLIDUS Morocco, High Atlas, Tizi Gourane above Amizmiz. 1800 m. Schist fissures and detritus. 1991 seed ex D. Hoskins from our 1982 coll. (Primrose. Dry in summer.) (15+ seeds) D

702.500 NARCISSUS OBVALLARIS U.K., Wales, Dyfed, below Ffostrasol. 150 m. Open grassland, banks and deciduous woodland. 15.6.91 (Our local trumpet daffodil with outward-facing flowers, usually concolorous.) (15+) B

703.200 NARCISSUS POETICUS (subsp. poeticus) Spain, Lerida, S of Puerto de Viella. 2000 m. Among grass on W - facing slope. 1.7.90 (White flowers with small yellow coronas rimmed with red.) (20+ seeds) B

* 705.600 NARCISSUS RUPICOLA subsp. MARVIERI Morocco, Middle Atlas, Tizi-n-Ait Ouirra S of Ksar-el-Ksiba. 1700 m. N-facing slope in Cedrus-Quercus association. 1991 seed ex hort. M. Tucker from our 1982 coll. (A soft yellow jonquil of Sect. Apodanthae. A local plant in nature and always on limestone.) (10 seeds) D

809.500 RANUNCULUS ABNORMIS Spain, Avila, Sierra de Gredos, NE of Pico Almanzor. 1800 m. Among rocks in snow-melt gulleys (now dry). 27.6.90 (Beautiful, tuberous-rooted species with varnished, lemon-gold butter-cups with up to 10 'petals'. Grassy foliage. Has germinated well - choice but not difficult.)(20+ seeds) E

810.000 RANUNCULUS ACETOSELLIFOLIUS Spain, Granada, Sierra Nevada, below Pico del Veleta. 2800 m. Snow-melt gulleys on exposed schist slopes. 25.6.90 (A distinct, high-alpine endemic of the Sierra Nevada. Greyish arrow-shaped leaves and big, pure-white, short-stemmed buttercups. Not so easy to germinate - it may need freezing - and a very demanding plant to grow. When dormant, do not expose it to great heat.) (20+ seeds) E

874.800 SCILLA LITARDIERI Jugoslavia, Bosna i Hercegovina, above Dubrovnik to Trebinje. 500 m. Fragmented lime-stone. 1.6.90 (Heads of starry, pale-blue flowers on 20 cm. stems. Though restricted in the wild to a few places along the Adriatic coast of Yugoslavia, it is a hardy garden-plant for full sun.) (20+ seeds) B

878.000 SCILLA VERNA Spain, Avila, Sierra de Gredos, SW of Hoyos de Espino. 1700 m. Moist turf on open slopes. 27.6.90 (A small, mountain form, a few cm. high, of this pretty plant, seldom seen in gardens. Dense racemes of pale-blue flowers. Dwarf enough for a trough and well worth growing in one.) (30+ seeds) B

950.700 THALICTRUM TUBEROSUM Spain, Huesca, Rio Gallego valley W of Anzanigo. 600 m. Steep stony banks. 28.6.90 (One of the few members of this genus with well-developed perianth segments - large, ivory-coloured flowers on branching stems over a long period in late spring. 20-30 cm. high. Retires to dahlia-like tubers in summer. Seed has been kept refrigerated and we hope will still prove viable.) (15+ seeds) E

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ABUTILON VITIFOLIUM Splendid Chilean shrub. Downy, grey leaves and massed lavender 'hollyhocks'. (30+ seeds) B

ALLIUM CHRISTOPHII (= A. albopilosum) Huge, round heads of pale violet stars on 40 cm. stems. (15+ seeds) A

ERUBESCENS Silvery lilac heads. 80 cm. From a Paul Furse collection on the Caspian coast of Iran. (15+ seeds) B

KARATAVIENSE Dense, spherical heads of purple-pink. Beautiful blue-grey leaves. 20 cm. (15+ seeds) A

MACLEANII (= A. elatum) Dense, rounded umbels of bright violet-pink on tall stems. 1 m. or more. (15+ seeds) B

OBLIQUUM Round, pale yellow umbels. 60 cm. Like the others here from Central to SW Asia. (15+ seeds) B

ROSENBACHIANUM 'ALBUM' Rounded, loose umbels of white flowers with green ovaries. 1 m. or more (15+ seeds) B

ANEMONE RIVULARIS Lovely Himalayan meadow-plant for a cool site. White, blue-backed cups. 60 cm. (30+ seeds) B

ARISAEMA EXAPPENDICULATUM 'BROWN FORM' Large, divided leaves on chocolate-striped petioles. 60 cm. (8 seeds) C

FLAVUM Much-divided foliage and small, yellowish spathes. Fairly hardy in U.K. 1 m. (10 seeds) B

TORTUOSUM Extraordinary spathes. Vigorous clone of this Himalayan, hardy in Somerset, U.K. 1 m. (10 seeds) C

ARUM CONOPHALLOIDES (should be A. rupicola according to P. Boyce) From a Norman Stevens Turkish coll. (10 seeds) C

CYRENAICUM Tender, Libyan relative of A. palaestinum. Large spathes with purple interiors. (10 seeds) C

DIOSCORIDIS var. PHILISTAEUM Race endemic to W Syria. Green spathe, blotched maroon black. (8 seeds) D

ELONGATUM Striking type-race from N Iran & SW USSR. Short-stemmed, brown-purple spathes. (8 seeds) C

HYGROPHILUM Original material from Israel. Narrow, green, twisted spathes with purple spadices. (8 seeds) C

ORIENTALE One of the finest of all with huge, boat-shaped, brown-purple spathes. Quite hardy in U.K. (8 seeds) C

PURPUREOSPATHUM From the type coll., P.B. 51, Crete, Agia Roumeli in stony terra rossa, c. 30 m. on 5.4.87. Magnificent, shiny purple spathes, coloured on both surfaces. Hardy in a bulb-frame in the U.K. (8 seeds) E

ASTRANTIA MAJOR Long-flowering, herbaceous perennial. Seed from green-whites to pinks. 1 m. (20+ seeds) A

BABIANA STRICTA S African corms in shades of blue-violet to red-violet. Borderline hardiness in U.K. (20+ seeds) B

BERGENIA - RED HYBRIDS Mainly from our own clones, like 'Bartok' and 'Bizet', with excellent, weather-tolerant winter-foliage and bright carmine flowers, plus some from newer German hybrids, 'Abendglocken', etc. (50+ seeds) C

BERGENIA - WHITE HYBRIDS From the best of the white clones derived from Eric Smith's crosses with B. stracheyi 'Alba' - 'Brahms', 'Britten', etc. Very compact, tough, weather-resistant leaves & dense heads. (50+ seeds) C

CISTUS OSBECKIIFOLIUS Canary Is. species, tenderish in U.K. Densely silky leaves. Purple-pink flowers. (30+ seeds) B

CLEMATIS REHDERIANA Lovely, late-flowering climber with masses of fragrant, primrose-yellow bells. (20+ seeds) B

COLCHICUM SP. Coll. by P. & P. Watt : Greece, Lakonia, S of Monemvassia on bare, stony hills : "odd - looks like a large C. stevenii/C. peloponnesiacum but suspect will be a form of C. bivonae" write the Watts. (15+ seeds) D

CROCUS ADANENSIS From material coll. Turkey, Adana, above Haruniye, c. 750 m. Member of the C. biflorus group with lilac flowers with white throats, only known from this locality and described in 1975. (8 seeds) E

BIFLORUS subsp. PULCHRICOLOR Outstanding form of this rich violet-blue species, developed by Paul Christian well adapted to British gardens. Native to a very cold, wet area around Bolu & Ulu Da. in NW Turkey. (20+ seeds) C

PELISTERICUS From material introduced by Henrik Zetterlund : HZ 85-67, Jugoslavia, Makedonija, Karadzica Planina in peaty turf. Snow-melt high-alpine with deep violet flowers. Must not be dry in summer. (8 seeds) F

## CYCLAMEN

All seed here is fresh, summer 1991 collected. Sow as soon as possible after receipt. Soaking seed in warm water for about 24 hours before sowing appears to aid germination. Seed derived from wild material with field data is listed in Section II : CC. africanum, balearicum, cilicium, graecum, hederifolium, purpurascens, etc. For further information, Chris Grey-Wilson's monograph on this genus, published in 1988, is an unrivalled reference.

C. COUM - MIXED FORMS Reds, whites & pinks, both plain and marked foliage. Hardy, winter-flowering. (15+ seeds) C

C. COUM - PLAIN LEAVED, WHITE Dark, rounded, glossy foliage. White flowers with crimson 'noses'. (10 seeds) C

C. CYPRIUM Mostly from wild coll. by M. Koenen. Pure white with a pink 'nose' in autumn. Frost-free. (15+ seeds) C

C. HEDERIFOLIUM f. ALBUM Superlative white form of this hardy, autumn-flowering species. (15+ seeds) B

C. HEDERIFOLIUM 'APOLLO' A 'strain' or 'line' bred from the original plant at Wisley, selected by E.A. Bowles as the finest leaf he knew. Still unrivalled in the intricacy of its silver-grey zones and markings. (15+ seeds) D

C. HEDERIFOLIUM 'WHITE APOLLO' Developed by Dave Hoskins from a good white-flowered seedling of the preceding. Can be relied on to produce plenty whites with the superb, silver-patterned leaves of 'Apollo'. (15+ seeds) E

C. HEDERIFOLIUM 'HIGHFIELD' From D. Hoskins clone with rather distinct, glossy foliage. (15+ seeds) B

C. INTAMINATUM - PLAIN-LEAVED Dainty, little, hardy, white, autumn-flowering species. (20+ seeds) B

C. LIBANOTICUM The most sumptuous of spring-flowering ones - beautifully marked, shell-pink flowers. Originally from Charles Mountfort's stock. Just hardy with care but at its best in shade under glass in U.K.) (15+ seeds) C

C. PERSICUM Deep to pale pink with a red 'nose' in spring. From a great range of fine foliage-forms. (15+ seeds) C

C. PURPURASCENS - SILVER LEAVES Marvellous leaves, suffused almost entirely with silver. From one of the original plants given to us by Manfred Koenen in the late 1970's and found by him in one spot near Lake Garda. This seed is only from one of the original clones and seems to give a very high proportion of 'silvers'. (10 seeds) E

C. PURPURASCENS "FATRENSE" Plain-green leaved Czechoslovakian race. Can be quite distinct from a gardener's view-point. Not always easy to grow in U.K. and often does well in areas with a more severe climate. (15+ seeds) D

C. REPANDUM 'ALBUM' From a pure-white clone - almost all come white with D. Hoskins. (10 seeds) F

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DAPHNE MEZEREUM var. RUBRA From a good red-purple Dutch clone. Both these need selection from seed. (10 seeds) B

DAPHNE MEZEREUM 'BOWLES VARIETY' Vigorous upright white race with yellow fruits. Fresh 1991 seed of both. (10) B

DATURA METELOIDES Tender perennial with huge, hanging, white trumpets. 1 m. (15+ seeds) B

DIERAMA PULCHERRIMUM Consummately graceful, arching 2 m. stems of pink bells. Very hardy in the U.K. (15+ seeds) B

DIERAMA PULCHERRIMUM - FROM 'BLACKBIRD' Only a small percentage may be as deeply coloured as the parent. (15+) C

DIERAMA - FROM 'DWARF LILAC' Maybe nearer to D. pendulum. A proportion come true to form. (15+ seeds) C

DIERAMA - FROM 'WHITE FORM' We have not flowered seedlings of this clone in Bert Hopwood's garden. (10+ seeds) D

FRITILLARIA ACMOPETALA Elegant green & maroon bells. One of the easiest outside in the U.K. Full sun. (20+ seeds) B

BITHYNICA Glaucous leaves and bells with yellow interiors. See Section II for seed with data. (15+ seeds) C

CRASSIFOLIA (subsp. crassifolia) Seldom seen, dwarf type-race. Large, yellow-green & maroon bells. (15+ seeds) D

MELEAGRIS From a variety of white and purple-chequered forms. The elegant Snakeshead of wet fields. (30+ seeds) A

MICHAILOVSKYI Shiny mahogany-brown bells, broadly edged with bright yellow. Usually a good grower. (15+ seeds) C

OLGAE Brown-edged, pale lime-green bells. A little-known species for cool, moist conditions. (10 seeds) F

PONTICA Extremely vigorous form selected by Paul Christian - over 50 cm. high with up to 5 big, pale green, brown-tinted bells per stem. Grows wild in moist woodland - grow it outside in the U.K. (30+ seeds) B

TUNTASIA Black maroon bells with a grey bloom. Greek Cyclades endemic for bulb-frame treatment. (10 seeds) E

GAGEA ? MAURITANICA Free-flowering, little, bright-yellow bulb from Morocco coll. J. Blanchard : 88-04. (15 seeds) C

GILLENIA TRIFOLIATA Elegant hardy perennial - white flowers with red calyces on wiry stems. 1.5 m. (15+ seeds) C

GLADIOLUS MACULATUS subsp. MERIDIONALIS Salmon-flowered winter-grower from the Cape. Frost-free. (10+ seeds) C

## HELLEBORUS

The garden hybrids, which can be called H. x hybridus, rather than H. orientalis, which is only one of several species involved, cannot be relied to come true to colour and we have only kept them in colour groups to indicate what is more likely to materialise - no assurances can be given! Sow as soon as possible ; stand or plunge outside and protect from mice ; when germination occurs in winter, progress will be more rapid with some protection. Late sown seed will not germinate until the following winter. Seed is mainly from Will McLewin, who has now forsaken university life to grow hellebores (U.K. gardeners who want plants can contact him at Phedar Nursery, Bunkers Hill, Romiley, Stockport. SK6 3DS), supplemented with our own seed and some from other growers. Please order promptly.

From 'ANDROMEDA' (and similar) Parents are good, rounded, mid-purples without spots (15+ seeds) D

From 'DRACO' (and similar) Deep purple-pink with merged, solid basal zone of purple-black spots. (10 seeds) E

From 'ORION' (and similar - 'Aquila', etc.) Green-creams or whites with bronze nectaries and centres. (15+ seeds) C

From "GUTTATUS TYPES" Whites and green-whites with basal zone of crimson speckles. (10 seeds) D

From "TORQUATUS TYPES" Hybrids with more finely cut foliage, often deciduous. Mainly deep pink, purples. (10+) E

From "ZODIAC TYPES" Eric Smith's name for the pinks with basal zones of maroon-purple spots. (15+ seeds) C

From GREENS Including yellow-greens. (10+) D

From WHITES Some with light spotting. (15+ seeds) D

From PINKS Pale to medium, unspotted. (15+) D

From YELLOWS & CREAMS From 'Sirius', 'Primrose' (10+) D

From DARK PURPLES Mostly spotted. (15+) D

'SPECIAL MIXTURE' McLewin's best! (15+ seeds) D

From RED PURPLES Including wine-shades (15+) D

'STANDARD MIXTURE' If you have none, try these. (20+) B

HELLEBORUS ARGUTIFOLIUS (H. corsicus) Spiny, evergreen leaves & massed yellow green cups. Very hardy. (20+ seeds) B

FOETIDUS Beautifully cut, dark-green foliage and a multitude of green cups. A fine garden-plant. (20+ seeds) A

NIGER The incomparable 'Christmas Rose' with huge, white, pink-flushed flowers. (15+ seeds) C

HOSTA TARDIFLORA Coll. by Don Elick in Japan : Shiguoka-ken, Funagira, at c. 50 m., on 5.12.90. We thought this marvellous and distinct little species was unknown in the wild but Don knows his Japanese flora. (15+ seeds) D

IRIS CYCLOGLOSSA Extraordinary Juno, only known from moist streamside areas near Herat, SW Afghanistan, 1500 m. - Hedge, Wendelbo & Eckberg 7727. Up to 5, scented, violet-blue & white flowers. 40 cm. Quite easy. (8 seeds) E

MAGNIFICA The largest Juno and one of the easiest to grow. Up to 1 m. high with pale-blue flowers. (15+ seeds) C

STENOPHYLLA subsp. ALLISONII From J. Persson 87-12 : Turkey, Antalya, near Gundogmus. 1000 m. Distinct, disjunct race of this S Anatolian, violet-blue Juno, described in 1981, barely known in cultivation. (5 seeds) F

SUBBIFLORA Splendid Portuguese Bearded Iris. Pure-violet, 50 cm. Hot, dry site or bulb-frame. (15+ seeds) C

TROJANA Distinct, W Turkish Bearded Iris. Pale blue standards ; red-purple falls. 70 cm. (10+ seeds) C

LOASA ACANTHIFOLIA Eye-catching, orange-flowered perennial, over 1 m. high - it stings as well. (10+ seeds) C

LOBELIA BEQUAERTII Coll. Uganda, central Ruwenzori, near Bigo Swamp at over 3000 m. by Michael Wickenden in 1990. Our surprise that more than a handful of adventurous gardeners were anxious to try this made Michael dash to his refrigerator for some more seed and also come up with the next species. Patrick Synge, who collected here in the 1930's writes : "One rosette of L. bequaertii would be several feet across...shining purple...(with)... a stiff green obelisk-like spike, six feet high and nearly a foot in diameter...between the bracts the deep purple-blue flowers appeared." The ultimate alpine-plants - make way on the show-bench for them! (30+ seeds) E

WOLLASTONII Coll. Uganda, SW Ruwenzori, Batoda Plateau by Michael Wickenden in 1990. This is recorded up to over 4300 m. "12-15 ft. in height and the flower spike is 6-8 ft. The bracts are long and woolly, pendulous and densely covered with a greyish-blue pubescence. The flowers emerge...a glorious powder-blue..." (30+ seeds) E

MECONOPSIS BETONICIFOLIA The glorious Blue Poppy for all who, like us, garden in cool, moist areas. (100+ seeds) A

BETONICIFOLIA 'ALBA' Pure white counterpart, which generally comes fairly true from seed. 1.5 m. (100+ seeds) B

Section III overflow is on page 20 (Narcissus, Tulipa, etc.) with some late additions on page 2 (Cyclamen, etc.)

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