

ORDERING could not be easier. Prices quoted on each page are in US \$, £ sterling, DM and French Francs ; we shall accept your personal cheque in any of these currencies. In the case of cheques in US \$, these must be on a U.S. bank account (banking in the U.S.A. tends to rather insular and charges for negotiating cheques on foreign accounts are extremely high). We shall accept bank-notes in any of these currencies (please send registered mail.) If neither method suits you, a bank draft or International Money Order (in sterling for these, please) can be sent to us at Sherborne. If remitting by sterling cheque, it is a great help to both of us if you send an open cheque, limited to the total value of your order (it obviously cannot be made out for more than the limit, but it certainly can be made out for less, avoiding annoying credits or refunds ; moreover, you only pay 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. There is no charge for airmail on the seeds or on the seed-lists. Order as soon as you can - the sooner we have your order, the faster the seed can be with you. Remember that we do not pay-in your cheque until after your order has been despatched, so that it is in our interest, as well as yours, to complete orders quickly. Finally, we ask

PLEASE PRINT YOUR NAME & ADDRESS CLEARLY

PLEASE UNDERSTAND that there will be a delay of some weeks before you receive your seeds. The majority of orders come in during the first week or so after we send out a list. We receive orders very much more quickly than we can despatch them. You may think that because you ordered as soon as you received this list, we can send seed back as promptly. A great many other people also ordered that same day. Imagine what your local supermarket would be like if it only opened one day each week - there would be a queue stretching for miles. We send out our list only once each year. We have to derive our entire year's income from it ; we have to finance our collecting for the next year, as well as covering the cost of producing the list and mailing it. We have to handle a lot of orders! We have now the support for us to continue in our work but this means handling an increased number of seed-orders. We are well aware that too long a delay might discourage some of you from ordering and we shall be careful not to put ourselves in the position that we might lose some of you! We try not to list collections unless we feel that there will be enough seed to satisfy the demand, so there should not be much concern over this if you order reasonably promptly. Later orders may not receive all they want but they are more likely to be despatched quickly! If you feel that your order is too long in materialising, check with your bank to see if your cheque has been cashed ; we do not pay-in cheques until after an order is despatched. If it has been, let us know immediately - a very few items really do become lost or delayed - and you will find us very sympathetic to any such problems. These are very rare occurrences indeed!

WITH A LITTLE HELP FROM OUR FRIENDS, we have been able to bring you an extremely exciting list based on North American collections. As we mentioned last season, we must blame (or thank) Panayoti Kelaidis for persuading us to spend last season collecting material in the Rocky Mts. and the adjacent areas. Panayoti, the steppe-father of rock-gardening in the Rockies, is internationally renowned for actively promoting interest in this area and its plants. He successfully sold us the idea of collecting there ; it is now up to us to sell you the results. We are, on the whole, pleased with the list, which offers a broadly representative range of the plants of the region. Of course, we had a great deal help in arranging it all. Gwen & Panayoti Kelaidis provided an indispensable 'base-camp' for us in their basement and were unfailingly supportive and helpful throughout our time with them, in spite of the fact we landed ourselves on them initially, a few days before the birth of their first child (mother and daughter, Eleni, still 'doing well!'). Sandy & Bill Snyder became our guardian angels, helping with all the early problems of buying a vehicle and insuring it, all in record time. So many people helped in so many ways. Marty Jones and Andrew Pierce advised on the Mosquito Range ; without Stan Metsker we should never have found Elk Park on Pike's Peak ; Ellen Wilde took us on a whistle-stop tour of some of the best sites around Santa Fe. To these and many others we should all be grateful. Beyond the mountains, we were more on our own but fortunately the natives were friendly. The Navajo nation have not evolved freedom-fighters so we had no army checkpoints to discourage 'terrorist' activity. While everyone in Wyoming seems to drive a pickup truck with a gun-rack along the back of the cab, you soon learn they are going to be just as helpful in an emergency as any Turkish truck-driver - a little less overwhelming in their enthusiasm to offer unsolicited help perhaps, though one rancher at Whiskey Gap spent a great deal of time trying to locate Calochortus capsules for us! While there are no great nomadic tribes and the Plains Indians can no longer follow the herds of bison, the 'snow-birds' follow the sun - a gentle race of elderly people, often waiting in the mountain areas for their next social security check so that they can fill-up the tanks of their thirsty R.V. and move south-wards or, perhaps, they will just spend the money on sugar to keep their humming-bird feeders full. Many of the travellers we met were interested in the local flowers and what we were doing. Some just enjoyed them ; one pressed them ; Ella actually actively collected, filling the shower-room of their large motor-home with an assortment of Artemisias, Cacti and even a large Shepherdia, all with a generous amount of their native hillside attached. The shower was obviously not usable for its original purpose ; her husband, John, was remarkably indulgent! Yes, we met some fine people! Even if at times we also felt more remote than one can ever feel in Europe or Turkey - it's a big country!

WHO ARE THESE PEOPLE ? Who are these 'agents provocateurs' of the gardening-world - these crypto-taxonomists and closet-botanists determined to erode our labels? We were recently subjected to an oblique attack by these subversive elements lurking under our raised-beds - the anarchists of the alpine-plant world. In the Bulletin of the Alpine Garden Society, Vol. 54 No. 4 (December, 1986) p. 348, you will find some comments on a plant which received an Award of Merit under the name *Alkanna incana*. The writers infer that plants raised from our seed distributed as *A. aucheriana* "looks exactly like" *A. incana* (they don't actually say it is wrongly named - a bit sneaky, eh?). The result of the publication of this was that several people wrote to us saying "I see *A. aucheriana* should now be called *A. incana*". No it should not. Any confusion that exists is solely in the minds of the writers. We are certainly not so ignorant and foolish as to express any opinion on the plant which received the A.M. nor on material collected by anyone else. Our seed collection is supported by a herbarium sheet ; this is deposited in the herbarium at the R.B.G. Edinburgh and was accessible to the writers of the article. The collection was determined as *A. aucheriana* not only by ourselves but by the Flora of Turkey team, Dr. Kit Tan and Dr. Robert Mill, at the time working under Prof. Peter Davis. It corresponds with sheets determined by Dr. A. Huber-Morath, who wrote the account of the genus in the 'Flora of Turkey' ; he states "ripe nutlets are indispensable for determination". I see no mention of nutlets in the A.G.S. Bulletin. It is difficult enough to identify many plants from out-of-character, cultivated material ; to identify *Alkanna* without nutlets is impossible. Bring forth your nutlets - lay them squarely on the table and then we can talk about it. (A letter to the editor of the A.G.S. Bulletin asking for the opportunity to correct any mistaken impressions made by this article has not yet received a reply ; it was written over nine months ago.) (Between ourselves this article was b...s... ; we very much doubt if *A. incana*, a species from much further west than *A. aucheriana*, has ever been in cultivation ; but, on the other hand, we have not seen the A.M. plant.)

THE NAMES GAME Appearances count for a lot. The Alpine Garden Society Bulletin appears to be "authoritative" and wraps much of its presentation up in pseudo-botanical jargon. Simply because it is a first-class gardening publication - probably the best specialist gardening periodical in the world, in fact - does not turn it into an inviolable authority on plant-names. There is no such thing - nor will there ever be one! Its pretensions to achieve the impossible, however, were manifested a year or so ago by a bizarre publication (of which, fortunately, we have seen no more of late) listing columns of "old names" and their supposed equivalent "new names". The fact that some of the "new names" were, in fact, the old names (hence valid on priority grounds) seemed to have escaped them. The Names Game, like other games, does have rules. There are names which are valid and names which are not. In many cases, both the "old" and "new" names listed by the A.G.S. were valid. It is simply a matter of opinion which one you want to use. Choosing which valid name to use is entirely different from determining the correct identity of a plant (which is the case with the *Alkanna*). The choice of which valid name will be used in any publication, whether it is this list, the A.G.S. Bulletin or the '*Flora Europaea*', involves an editorial decision - making such a decision presupposes a knowledge both of the game and the players. In the same A.G.S. Bulletin as the *Alkanna* is dealt with, you will find (p. 356) that a plant grown from our seed received an A.M. under the name *Centaurea confiera*, when exhibited by Kew. We have listed this - and will continue to list this under the name, *Leuzea confiera*. The genus *Leuzea* DC. was proposed in 1805 by de Candolle for this taxon; over the past 192 years it has been generally accepted and is maintained in the '*Flora Europaea*' (the "Holy Writ" of the A.G.S. Bulletin). Since 1805, a number of other taxa have been placed under *Leuzea*, several of which do not appear to have ever been placed under *Centaurea*. Nevertheless, "Kew" decided it wanted to use the Linnaean name. There is nothing "wrong" in this - simply a matter of opinion. It must have been a traumatic experience for the A.G.S. editor clutching the "Holy Writ" in one hand and a communication from "Kew", that somewhat nebulous pillar of the botanical establishment, in the other. Dropping the "Holy Writ" to free his forelock-touching arm, he chose *Centaurea confiera*. We have to make these awesome decisions continually. When we list that splendid, saxatile member of the Saxifragaceae from Pike's Peak, do we use Engler's name, *Boykinia jamesii*, or Rafinesque's name, *Telesonix jamesii*? Then again, "Kew" might want to use the earliest one available - Torrey's name, *Saxifraga jamesii*. The A.G.S. Bulletin might follow them; lots of gardeners would rush to change their labels; and the cognoscenti would shuffle along the show-benches, pontificating that "Of course, we are supposed to call this ... now!" and "That's called ... nowadays!" They might feel obliged to change their labels (in fact, we suspect a lot of people enjoy this as an exercise in one-upmanship) - you do not. We try to use our common-sense and our knowledge of the players in this game, in suggesting an appropriate valid name. If there was a modern flora of the Rocky Mt. area, we should weigh-up the names in that against the names used in the new 'Utah Flora' and 'An Intermountain Flora' and we should try to edit them into an acceptable compromise, as we have done with '*Flora Europaea*' and the '*Flora of Turkey*' (they do not always agree, you know.). As far as *Boykinia jamesii* is concerned, we have three names available for the Pike's Peak taxon (there is Rydberg's *Therefon heucheriforme* for another race); we have decided to go along with Stanley Welsh in his 1987 'A Utah Flora' and use the name *Boykinia jamesii*. He is a first-class botanist with a sensible, rather conservative approach and thinking along the lines adopted by the editors of the '*Intermountain Flora*' as well as the major modern European editors. *Telesonix jamesii* is currently more fashionable in the U.S.A. This may be due to the influence of Professor W.A. Weber of the University of Colorado at Boulder.

WEBER AND THE ALTAI CONNECTION 1987 also saw the publication of Weber's '*Colorado Flora: Western Slope*'. This is an excellent piece of work in the format of a field-guide, based on keys. Weber is also a first-class botanist with a life-time's experience of the Colorado flora. Why do we not use his names - they are all valid names and his book is superbly researched. Do you want us to list *Hirculus platysepalus* subsp. *crandallii* (*Saxifraga flagellaris*)? What about *Tetranuris brevifolia* (= *Hymenoxys acaulis* var. *caespitosa*, we think) or *Seriphidium vaseyanum* subsp. *wyomingensis* (a taxon belonging to the *Artemisia tridentata* group)? Weber's line of thought is divergent from that of many mainstream botanists at present. He belongs to the group of botanists who argue for much narrower generic concepts. Other American botanists like Rydberg, Greene and Rafinesque thought along similar lines. So do many botanists in the U.S.S.R. Weber not only draws justifiable analogies between the flora of the Rocky Mts. and that of the Altai Mts. in the U.S.S.R. but projects his thinking along the same lines as the botanists who deal with this area. Who is to say which line of thought is "correct" - there are no rights and wrongs; only differing opinions. Weber's concepts may well be the ones adopted in the distant future. We ourselves simply adopt a conservative approach - we do try to look after your interests! Though we must confess that we have always had the suspicion that Soviet botanists felt obliged to keep publishing new names in order to justify their positions - "What! Only ten papers and twenty-five new genera published last year, Igor. You'll have to do better than that!"

A DIP INTO THE GREAT BASIN By far the best publication about the plants of the Rocky Mts. and adjacent areas, as far as gardeners are concerned, is, of course, the splendid '*Rocky Mountain Alpines*' published in 1986 for the International Conference in Boulder. This is obtainable, incidentally, from both the A.R.G.S. and the A.G.S.; it is a bargain and no-one interested in the plants of the area should be without it. Gwen Kelaidis did an excellent piece of work in editing the names used in this; which is not to say we have slavishly followed it! The colour illustrations are often superb and will provide a colour-catalogue of many of the Rocky Mt. species in this list of ours. Of course, we have collected seed from many species not mentioned in this publication; just as you will find many species in this book but not in our list. Of the true Rocky Mt. species of interest to gardeners, there are very few not included. When one travels beyond the mountains into the Colorado Plateau and the Great Basin, '*Rocky Mountain Alpines*' only offers an appetiser of what the area has to offer. Our own time in the Great Basin was very short indeed and was largely based on an abortive attempt collect seed of *Lepidium nanum*, which had failed to set any seed in 1987 in the one place we knew about. It was sufficient to persuade us that we must return and this we plan to do in 1989. We should need to go earlier in the season; the area is so vast and the plant-populations often so thin and vestigial that we must try to locate colonies in flower. There are some marvellous plants beyond the mountains. You will find a few of them mentioned and illustrated in '*Rocky Mountain Alpines*'; enough to whet anyone's appetite. There are many superlative Utah plants not mentioned at all (a few like *Primula specuicola*, *Linum kingii*, *Penstemon bracteatus* and *P. duchesnensis*, you will find in our list); practically nothing from Nevada is included. This is a key area for exciting material. There are many recently described species of great interest to the specialist grower and we have seen herbarium material of some incredible things. This Intermountain area has been the scene of intense botanical activity in recent years. The logistics of collecting seed from more than a few of these narrow endemics in any one season are complex - we cannot be in many places at the same time. However, no time should be lost in attempting the introduction of some of these plants to cultivation. The skills to grow them and maintain them are available, we are sure. After all, these equally narrow and specialised endemics from Iran and Afghanistan, the *Dionysia* spp., have been maintained in cultivation for over 20 years. We have learned a lot during that time. We try to make our activities complimentary to these developing skills and enthusiasms. We are trying to bring a degree of innovation, a sense of responsibility and professionalism to the long-established procedure of plant-introduction. It's for you to judge how successful we are in achieving this. Up till now your response has been more than favourable and encouraging to us. We are projecting our work into an indefinite future! God willing!

Unless otherwise mentioned, seeds in Section I have been collected in the United States of America by Jim & Jenny Archibald during 1987. One or two other wild collections have been contributed by others and a few are from cultivated material (as in Section II, * denotes cultivated seed). These are included to keep most North American material together. The collections have been arranged into alphabetical order so that members of each genus appear together. Consequently, field-numbers do not run in numerical order. We provide a separate check-list of the numbers in the order of collection to facilitate identification of the seed-packets. We should be grateful, however, if you order in the alphabetical order of the main list as seeds are now arranged in this way.

NOMENCLATURE : There are several 'difficult' genera. Please note our comments in the Newsletter and under individual species and genera (e.g. Phlox, Penstemon, etc.). Our broad approach is conservative and we usually retain specific level for a taxon where there is disagreement about its appropriate status. Some names may prove incorrect and in cases of considerable uncertainty the name is preceded by '?'. Considerable efforts are made to distribute correctly named material but as only a short time elapses between collection and distribution and often material collected in fruit is inadequate for full determination, it is clearly impossible to be fully accurate in all cases.

SEED-COUNTS are not given for some Compositae and genera like Eriogonum, where it is very likely that seed will be damaged by further cleaning and it is time-consuming to ascertain how many seeds are contained in each packet. Enough material should be expected to raise a reasonable number of plants.

SECTION I : SEEDS COLLECTED IN NORTH AMERICA, JUNE - SEPTEMBER, 1987, BY JIM & JENNY ARCHIBALD

- 9652 ACTAEA ALBA (A. pachypoda) New York, Delaware Co., Catskill Mts. above Downsville. 500 m. Steep slopes in mixed woodland. 24.9.87 (Splendid shade-lover with white, red-stemmed berries. Herbaceous. 1 m.) (8 seeds) C
- 9375 ACTAEA RUBRA Wyoming, Lincoln Co., Salt River Mts., SE of Alpine Junction. Undergrowth in mixed woodland above river. 2400 m. 5.8.87 (Usually red-berried but some whites (f. neglecta) occur here.) (8 seeds) B
- 9425 ALLIUM CERNUUM Wyoming, Albany Co., W of Centennial. 2800 m. Open, stony areas among Artemisia. 9.8.87 (An attractive, little summer-flowering species distinct in its heads of pendant, pink bells.) (15+ seeds) C
- 9140 ALLIUM ? GEYERI Wyoming, Albany Co., E of Centennial. 2700 m. Exposed steppe in sandy gravel. 17.7.87 (15+) C
- 9380 ALLIUM ? GEYERI Wyoming, Lincoln Co., Salt River Mts., SE of Alpine Junction. Undergrowth at edges of mixed woodland in sandy soil. 5.8.87 (A. geyeri is an early-flowering, bulbous species with umbels of flowers, which can be pink or white. Height varies from 15 - 50 cm. and these two collections represent the extremes : 9140 is very dwarf ; 9380 is tall.) (15+ seeds) C
- 9626 ANDROSACE CARINATA Colorado, Teller Co., Pike's Peak, above Elk Park. 4000 m. Open slopes in granite grit. 9.9.87 (This is a superb little plant, virtually unknown in cultivation. Fine heads of white, yellow-eyed flowers bluish to pink with age. While this taxon should be placed somewhere in the A. chamaejasme group (it is suggested it might be placed under the Alaskan A. c. subsp. lehmanniana), we suggest the use of this name, until the group is reviewed on a broad basis. A worthwhile and doubtless challenging plant.) (10+ seeds) E
- 9404 AQUILEGIA CAERULEA (var. caerulea) Wyoming, Albany Co., Medicine Bow Mts., Snowy Range. 3600 m. Stony slopes in coniferous forest zone. 8.8.87 (The incomparable blue and white Columbine of the Rockies.) (20+ seeds) B
- 9267 AQUILEGIA CAERULEA var. OCHROLEUCA Wyoming, Fremont Co., Wind River Mts., SW of Lander. 2500 m. Shady areas among Populus. 29.7.87 (This is the very beautiful, pale-flowered race which predominates towards the west - big, floppy columbines in white and creamy shades. Both races are easily grown.) (20+ seeds) B
- 9512 AQUILEGIA ELEGANTULA New Mexico, Bernalillo Co., Sandia Mts. above Albuquerque. 3600 m. Shady rock fissures in woodland. 20.8.87 (Appropriately named, a truly elegant, little plant, about 30 cm. high, endemic to the high, usually coniferous, woods of Utah and Colorado and here probably reaching its southern limit. Scarlet and yellow flowers with the sepals so reflexed as to make them cone-shaped. Long flowering-period.) (15+ seeds) C
- 9312 AQUILEGIA JONESII Wyoming, Sheridan Co., Big Horn Mts., ridge between Duncum Mt. & Sheep Mt. 3200 m. Unstable limestone scree on steep slopes. 1.8.87 (Supplemented with seed collected on Duncum Mt., where it grows on more stable, stony areas, by Marty Jones.) (The fabulous alpine Columbine, as shy-flowering in nature as it is in cultivation but worth every effort for its huge, lavender-blue flowers on tufts of much-dissected, overlapping, thick-textured, blue-grey foliage. Try limy gritty soil in full sun.) (15+ seeds) E
- 8925 AQUILEGIA MICRANTHA Utah, San Juan Co., Sunbonnet Rock above Bluff. 1550 m. Seepage lines on shady sandstone cliffs. 5.7.87 (A multitude of small flowers in pale blue, cream or white, on branching stems of about 50 cm. An endemic of the 'hanging gardens' (see Primula specuicola) of the Colorado River canyons.) (20+ seeds) D
- 9209 AQUILEGIA SAXIMONTANA Colorado, Teller Co., Pike's Peak, Elk Park. 3,700 m. Loose granite-grit at bases of boulders on steep slope. 25.7.87 (Short-spurred, blue and white flowers. An endemic of the Colorado Front Range but one of the most satisfactory and loveliest alpine Columbines in the garden.) (15+ seeds) C
- 9532 AQUILEGIA SCOPULORUM Utah, Garfield Co., Red Canyon, above Butch Cassidy Draw. 2600 m. Loose, unstable, limestone scree on steep slopes. 23.8.87 (Exquisite bluish foliage similar to A. jonesii but flowers are incredibly long-spurred. This is quite a tall form, about 20 cm. high, with wholly blue flowers.) (15+ seeds) E
- 8931 ARGEMONE CORYMBOSA Utah, San Juan Co., Valley of the Gods, N of Mexican Hat. 1500 m. Open sites in sandstone gravel. (Huge, crumpled white poppies with golden stamens. Perennial but, like the Turkish Glaucium spp., unlikely to be long-lived. Cut, spiny, greyish foliage. A stunning plant about 50 cm. high) (20+ seeds) B
- 9650 ARISAEMA TRIPHYLLUM var. ATORRUBENS New York, Delaware Co., Catskill Mts. above Downsville. 500 m. Steep wooded slopes. 24.9.87 (Aroid with beautifully striped spathes. Hardy and easily grown.) (10 seeds) C

PRICE CODE A : \$1.00 ; £0.80 ; DM2, - ; FF 7. -
 B : \$2.00 ; £1.50 ; DM4, - ; FF15. -
 C : \$3.00 ; £2.00 ; DM6, - ; FF20. -

PRICE CODE D : \$4.00 ; £2.50 ; DM 8, - ; FF25. -
 E : \$5.00 ; £3.50 ; DM10, - ; FF35. -
 F : \$6.00 ; £4.50 ; DM13, - ; FF45. -

- 9616 ARTEMISIA FRIGIDA Colorado, Park Co., S of Fairplay. 3000 m. Open, level areas in reddish clay. 6.9.87 (A particularly compact form of one of the dwarf species. Lovely soft, silver foliage.) B
- 8956 ASCLEPIAS CRYPTOCERAS Utah, Garfield Co., E of Torrey. 2000 m. Bare, clay banks. 8.7.87 (One of the few dwarf members of this genus. Big, bluish leaves on short, prostrate stems carrying heads of weird greenish yellow and rose-purple flowers. In an off-beat way, beautiful in flower and foliage.) (8 seeds) D
- 8801 ASTER ? SCOPULORUM Utah, Daggett Co., S of Manila. 2250 m. Eroded, stony clay slopes with diverse steppe-vegetation. 25.6.87 (This is a neat, little plant with heath-like foliage, about 10 cm. high. We were unable to identify it and it has not been fully determined. The name is an interim guess by Dr. E. Neese, an authority on the flora of this area (the Uinta Basin), where this has not yet been recorded. Worth trying.) C
- 9259 ASTRAGALUS ARETIOLIDES Wyoming, Fremont Co., SE of Lander above Sweetwater River. 2100 m. Steep, eroded, clay slopes. 28.7.87 (No-one who has seen this in flower could deny that this is truly one of the world's great cushion-plants - solid, silken mounds of snowy silver covered with stemless flowers in an intense carmine-purple. The tiny capsules contain only a single (if any) seed each and this collection represents much effort from us. It merits every effort from the grower also, though doubtless it will not be an easy plant to cultivate in character. Reports on Turkish Astragalus spp. indicate that seed can germinate very quickly. A few seeds from other 1987 collections of N. American Orophaca Astragalus spp., A. hyalinus and A. gilviflorus, made in numbers too small to list, have already germinated. Sowing might be best delayed until spring to avoid overwintering seedlings. Traditionally, Astragalus seed should be lightly scarified before sowing. This does not seem essential but scarification and soaking will do no harm. While A. aretioides might represent the ultimate development of the cushion-forming Orophaca Section, do not let it blind you to the other species, even although it comes first in the list!) (10 seeds) F
- 9062 ASTRAGALUS ? CALYCOSUS Nevada, Eureka Co., W of Eureka. 2100 m. Exposed, bare alkaline 'flats' with sparse Pinus. 12.7.87 (One of the consolation prizes for an 800 km. round-trip to collect *Lepidium nanum*, which had set no seed here in 1987! A tiny, little 'sweetie' with silver trifoliate leaves and almost stemless, delicately pencilled, pale lilac-pink flowers nestling in the cushioned tufts.) (10 seeds) F
- 8998 ASTRAGALUS CERAMICUS Utah, Garfield Co., NE of Ruby's Inn to Antimony. 2600 m. Gravelly banks in full sun. 9.7.87 (Prostrate, rush-like stems with purple to pink flowers, followed by bizarre, inflated, papery seed-capsules in yellowish parchment luridly blotched with crimson, more striking than the flowers.) (10 seeds) C
- 9124 ASTRAGALUS CRASSICARPUS Colorado, Jackson Co., Ginger Quill Ranch, N of C wdre. 2400 m. Stony banks among grass. 17.7.87 (A Great Plains plant, equally weird in fruit with its solid, red-flushed 'plums'.) (15 seeds) B
- 9276 ASTRAGALUS KENTROPHYTA var. IMPLEXUS Wyoming, Fremont Co., NE of Atlantic City, above Louis Lake. 2800 m. Open areas among Pinus, in granite grit. 29.7.87 (Prostrate stems form flat mats, rather than cushions, with distinctive, linear, spine-tipped leaflets. The multitude of tiny flowers can vary in colour but is usually pale to deep pink. This collection was not seen in flower.) (10 seeds) E
- 9615 ASTRAGALUS KENTROPHYTA var. IMPLEXUS Colorado, Park Co., S of Fairplay. 3000 m. Open, level areas in reddish clay. 6.9.87 (A richly coloured form with carmin-pink flowers on the greyish mats.) (10 seeds) E
- 8921 ASTRAGALUS ? NEWBERRYI New Mexico, San Juan Co., NW of Aztec. 1900 m. Eroded clay hills with sparse Pinus. 4.7.87 (Tight hummocks of silvery foliage. Not seen in flower (should be deep pink) but with the most beautiful pods we have ever seen, comparatively large and clothed in silver-white velvet.) (10 seeds) E
- 9178 ASTRAGALUS SPATULATUS Wyoming, Albany Co., NE of Laramie to Horse Creek. 2600 m. Exposed, level steppe with sparse *Artemisia* scrub. 22.7.87 (A most distinct, little, tightly tufted plant with silver, linear leaves and racemes of flowers on short, wiry stems. This is a particularly compact form here and Panayoti Kelaidis tells us that the colour is a particularly deep pink to purple. Ideal for a trough or pan.) (10 seeds) F
- 9235 ASTRAGALUS SPATULATUS Wyoming, Carbon Co., Shirley Mts., NW of Medicine Bow. 2600 m. Gravelly areas among sparse Pinus. 27.7.87 (Slightly longer stemmed, larger leaved, lilac-pink forms here.) (10 seeds) E
- 9163 ASTRAGALUS TRIDACTYLICUS Wyoming, Laramie Co., S of Cheyenne. 2100 m. Gravelly areas in exposed grassland. 22.7.87 (Pads of trifoliate leaves clothed in dense white pubescence; rich pink flowers. Exquisite)(10 seeds) F
- 8670 ASTRAGALUS SP. Wyoming, Carbon Co.. Muddy Gap. 2200 m. Shaley Limestone slopes. 22.6.87 (Growing adjacent to A. hyalinus and A. spatulatus, of which we thought it was a compact form (it may well be) with smaller, more silvery leaves and almost stemless pods. Nonetheless, it grew ecologically separated from these and the seed is utterly different to the small, black seeds of A. spatulatus. A very tight, silver cushion.)(10 seeds) F
- 8669 BALSAMORHIZA SAGITTATA Wyoming, Carbon Co., Whiskey Gap to Muddy Gap. 2200 m. Depressions in steppe with *Artemisia*. 21.6.87 (Splendid robust Composite with big, greyish, arrow-head leaves and magnificent, slightly nodding golden 'daisies'. At about 60 cm. high, a herbaceous perennial of great character.) (15+ seeds) C
- 9497 BERLANDIERA LYRATA New Mexico, San Miguel Co., S of Chapelle. 2300 m. Open areas in stony clay. 19.8.87 (Another distinctive 'daisy', about 50 cm. high with cut greyish leaves and yellowish ray flowers streaked with red beneath. We have not seen this in flower but are told it smells delightfully of chocolate.) B
- 9623 BOYKINIA JAMESII Colorado, Teller Co., Pike's Peak, near Elk Park. 4000 m. Crevices among granite boulders. (Telesonix jamesii, if you want. Welsh retains it under Boykinia in his 1987 'Utah Flora' and we are only too glad to follow him and avoid a name more appropriate to a multinational manufacturer of electronic equipment. One of several really special plants on the incomparable Pike's Peak. The species is quite wide-spread, though always very local but only here is this splendid race with extra-large petals to the cherry-carmin flowers. The mounded tufts of sticky, toothed, rounded leaves run along and up the granite crevices and were turning to brilliant orange and scarlet when we collected seed on 9.6.87. We had seen the luminous spikes of deep-pink on 25.7.87. Not at all difficult to grow in rich, gritty soil in light shade but not so easy to flower well. One method we have tried successfully is to grow it on until it is the size you want, let it become pot-bound and then liquid feed thereafter. Repotting means no flowers.) (50+ seeds) E
- 9489 CALLIRHOE INVOLUCRATA New Mexico, Sante Fe Co., SSE of Santa Fe. 2500 m. Open stony areas. 19.8.87 (Showy, red-purple 'mallows' on prostrate stems over a long period. Easy perennial in a hot, dry site.) (10 seeds) B

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- CALOCHORTUS. This genus, like most of the 'bulbs' of Western N. America has its main distribution to the W and SW of the areas we were concerned with in 1987. Only two species are widespread in these areas and these are generally plants of montane steppe. We suspect much of the reputation for difficulty in cultivation comes from treating the genus as a whole as if they are Mediterranean bulbs. Our species do not flower until late - we have seen *C. nuttallii* coming into flower in Wyoming at 2500 m. at the end of July, by which time, spring-flowering, summer-dormant species of the area, like *Lewisia rediviva* are already dormant. The mountain species will be best kept cool and dryish over winter and not watered generously until spring. The two unidentified species are lower altitude plants and may do some growing over winter. This is a genus of great beauty and diversity, overdue for the attention lavished on the allied *Fritillaria* spp.
- 9145 CALOCHORTUS GUNNISONII Colorado, Boulder Co., N of Boulder. 2000 m. Among grasses in rock detritus on steep shale ridge. 19.7.87 (Basically white flowers here, intricately purple-pencilled & hairy within.) (20+ seeds) C
- 9429 CALOCHORTUS GUNNISONII Wyoming, Albany Co., W of Centennial. 2800 m. Open stony areas among *Artemisia*. 9.8.87 (Especially large, pale lavender ground colour; 50 cm. stems. A breathtaking species.) (20+ seeds) D
- 9105 CALOCHORTUS NUTTALLII Utah, Daggett Co., S of Manila. 2250 m. Eroded, stony clay slopes. 15.7.87 (Creamy white with yellow and purple-brown V-markings inside. Usually earlier -flowering than the above.) (10 seeds) D
- 8855 CALOCHORTUS SP. Colorado, Mesa Co., East Creek Canyon, SW of Whitewater. 1800 m. Stony sandstone slopes with sparse *Juniperus*. 30.6.87 (Not seen in flower. On distributional grounds, most likely to be a lower altitude race of *C. nuttallii*, which sometimes has a pink ground-colour W of the Rockies.) (20+ seeds) D
- 8916 CALOCHORTUS SP. New Mexico, San Juan Co., NW of Aztec. 1900 m. Eroded clay hills with sparse *Pinus*. 4.7.87 (Not seen in flower. Apart from the above, *C. ambiguus* and *C. aureus* start occurring about here.) (10 seeds) E
- 9584 CALTHA LEPTOSEPALA Colorado, Clear Creek Co., Front Range, near Summit Lake below Mt. Evans. 4300 m. Wet depressions. 30.8.87 (The beautiful, pure-white Marsh Marigold of the high snow-melt marshes.) (20+ seeds) C
- CASTILLEJA. If *Calochortus* have a reputation for 'difficulty', this genus is traditionally 'impossible'. The Paintbrushes are a ubiquitous and spectacular feature throughout the area we travelled in. That they can be grown in Britain was shown by Jack Elliott's plant of *C. miniata*, which gained a Farrer Medal at the London Conference Show of 1961. More recently, attempts to grow them in Colorado have met with great success using a peat-based 'mo-soil' compost with liquid feeding. We feel the main reason they are seldom seen in cultivation is the generally negative attitude towards the genus. We had intended listing about 6 but before we realised what was happening moth larvae had consumed our capsules of the elegant, scarlet *C. linariifolia* and the stunning, strawberry-pink *C. rhexifolia*. The one we really wanted to distribute, the incredible saxatile, *C. scabrida barnebyana*, had been grazed back into its limestone crevices without a trace of seed left. Still, there is enough material here to give the adventurous ample opportunity to experiment.
- 8920 CASTILLEJA ? CHROMOSA New Mexico, San Juan Co., NW of Aztec. 1900 m. Eroded clay hills with sparse *Artemisia*. 4.7.87. (Red, orange or yellowish bracts; from an area with hot summers, so suited to alpine-house) (20 seeds) C
- 9437 CASTILLEJA INTEGRATA Colorado, Park Co., SW of Fairplay. 3100 m. Open, stony steppe with sparse *Artemisia*. 13.8.87 (Stiff, upright, greyish-leaved stems with brilliant, orange-scarlet spikes. Like the above, around 20-30 cm. high. If you only want to try one species, this is it! Superlative!) (50+ seeds) B
- 9465 CASTILLEJA OCCIDENTALIS Colorado, Park Co., Mosquito Range, above Horseshoe Lake. 4300 m. Exposed slopes. 15.8.87 (This is a beautiful, little species of the alpine tundra, often growing as isolated plants in rock stripes. Pale lemon-yellow bracts and purple-tinged leaves and stems, about 15 cm. high.) (30+ seeds) B
- 8865 CERCOCARPUS MONTANUS Colorado, Montrose Co., NW of Bedrock. 1800 m. Open, stony slopes with *Juniperus* and *Pinus*. 30.6.87 (One of the Mountain Mahoganies. Deciduous, Rosaceous shrub, about 2 m. high.) (20+ seeds) B
- 9458 CHAENACTIS ALPINA Colorado, Park Co., Mosquito Range, Mt. Sherman above mine. 4200 m. Scree and mine-tailings. 14.8.87 (Mats of much dissected, grey foliage. Distinctive, short-stemmed flower-heads open pink and turn to creamy white. A high-alpine Composite unlike anything familiar in cultivation. Perennial.) D
- 9279 CHAENACTIS DOUGLASSII Wyoming, Fremont Co., South Pass. 2600 m. Windswept, stony areas. 30.7.87 (Similar flowers carried on upright, branching, 15 cm. stems. Short-lived or monocarpic but with exquisite basal leaves, intricately cut and in flat, grey rosettes. Worth growing for these alone.) B
- 9443 CHIONOPHILA JAMESII Colorado, Park Co., Mosquito Range, Mt. Sherman. 4200 m. Open, stony alpine turf. (A Scrophulariad like a tiny, creamy-white *Penstemon*, only found around the high snow-patches.) (15+ seeds) D
- *9663 CIMICIFUGA RACEMOSA Seed of this Eastern woodlander from Fred Case's Michigan garden. Clumps of beautiful, divided foliage and branching 2 m. stems of white flowers, earlier than the E. Asian species. (20+ seeds) B
- 9588 CLAYTONIA MEGARHIZA Colorado, Clear Creek Co., Front Range, Mt. Evans. 4500 m. Exposed, stony slopes. 30.8.87 (A *lewisia*-relative, widespread in the highest tundra of the Rockies. Flat rosettes of fleshy, red-tinged leaves ringed by a succession pearly white to pinkish flowers.) (10 seeds) E
- 9511 CLEMATIS ? COLUMBIANA New Mexico, Bernalillo Co., Sandia Mts. above Albuquerque. 3600 m. Shady fissures on summit cliffs. 20.8.87 (Nodding, lilac to violet-blue bells but not seen in flower. The names of the N. American members of the *Atragene* Section are incredibly confused. There are certainly distinct taxa involved and we think we are suggesting the correct names. This seems to be the plant often referred to as *C. pseudoalpina* but, while saxatile, does have scandent stems and would be referable to var. *columbiana*. The tiny plant of the Big Horn Mts., which had set hardly a seed, seems assignable to *C. columbiana* var. *tenuiloba*. Whatever the names, these are lovely plants, virtually unknown in cultivation.) (20+ seeds) D
- 9642 CLEMATIS HIRSUTISSIMA Colorado, Front Range, Independence Mt. near Denver. 2700 m. (Seed kindly collected by Andrew Pierce on his own land. This is the herbaceous species with thick-textured, downy flowers, referred to in British gardening literature as *C. douglasii* and *C. scottii*, 'endangered' says the NCPPG.) (15+ seeds) D

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- 9487 ECHINACEA ANGUSTIFOLIA New Mexico, Santa Fe Co., SSE of Santa Fe. 2500 m. Open, stony areas. 19.8.87
(Fine, herbaceous perennial ; big purple-pink, dark-centred daisies on stiff stems of 1 m. or more)(15+ seeds) B
- *9479 ECHINOCEREUS TRIGLOCHIDIATUS var. GONACANTHUS Colorado, Costilla Co. Seed from the garden of Dean & Patti Swift but "it grows just along the road". This an extremely cold area in winter, a high plateau between the San Juan & Sangre de Cristo Mts. Many Rocky Mt. Cactaceae experience winter lows of -30 to -20 °F (-34 to -29 °C) - sometimes even lower and sometimes without snow-cover. 60 °F of frost is not something most growers of alpine-plants in gentle maritime climates can imagine ; nor could many high alpine used to an insulating blanket of snow survive for long - dehydration and death would result. These cold-climate Cactaceae are considered 'difficult' by Cactus-enthusiasts in Europe - they obviously resent heated greenhouses! While they can be grown outside in the more continental climates of Colorado or Germany, they are not going to tolerate mild, wet winters and are the obvious province of the alpine-house. There are few more spectacular flowers and we hope the unprejudiced might give them their rightful place alongside other treasures of the world's dry mountains and steppes. This has compact clumps of fat, ribbed stems, about 10 cm. high, with brilliant scarlet cup-shaped flowers. We look forward to its appearance on AGS show-benches, where it belongs.(15 seeds) D
- ERIGERON. This is a large Composite genus, widespread and ubiquitous in the areas we travelled in. While they are delightful and colourful wildflowers, we cannot honestly say we felt moved to collect a great number of different species. Because of our, perhaps unjustified, prejudice, you will find only a few outstanding species here - the ones which really jumped out at us!
- *9692 ERIGERON ELEGANTULUS The first is not even a species from our area but has proved itself absolutely first-class in cultivation in Colorado. This is a Californian, originally from wild seed collected by Dr. D. Hale with violet-blue, gold-centred daisies on compact clumps. This comes highly recommended! D
- 9473 ERIGERON PINNATISECTUS Colorado, Teller Co., Pike's Peak, Elk Park. 4000 m. Loose, granite grit on steep slope. 17.8.87 (One of the few cut-leaved species and one which attracted us again and again. Needless to say, it seemed better than elsewhere on Pike's Peak. Rich shades of violet-blue and only a few cm. high.) C
- 9598 ERIGERON SIMPLEX Colorado, Summit Co., Front Range, above Loveland Pass. 4200 m. Exposed tundra. 6.9.87 (Widespread at the highest altitudes. Rosettes of hairy leaves & many purple to pinkish lilac daisies. 10 cm.) C
- 8911 ERIGERON ? VAGUS Colorado, San Juan Co., San Juan Mts., Molas Divide S of Silverton. 3800 m. Vertical rock fissures. 4.7.87 (This is a gem - with its soft lavender-blue heads on pads of dissected, grey leaves, packing the rock-crevices, it might have been a Paraquilegia from afar. The name is somewhat uncertain as E. vagus is typically a scree-dwelling, stoloniferous plant. There are few cut-leaved species, however.) E
- 9330 ERIGERON SP. Wyoming, Big Horn Co., Big Horn Mts., Hunt Mt. road. 2900 m. Open, stony slopes. 2.8.87 (We do not yet have a name for this but it struck us a particularly attractive little plant, especially gay and generous in its profusion of ample, violet-blue daisies. May prove a worthwhile rock-garden plant.) B
- ERIOGONUM. Our remarks on Erigeron can largely be applied to these also. There is much more diversity of habit in this genus, however, from tall annuals and shrubs to the tiny, mound-forming species of great attraction to the specialist alpine-plantman. There is not a great number of these cushioned steppe-plants and they disperse their seed-heads quickly but we do list two of sufficient quality to whet anyone's appetite. The others are somewhat larger, woody-based perennial, mat-forming species of great character.
- 9162 ERIOGONUM JAMESII (E. flavum var. flavum) Wyoming, Laramie Co., S of Cheyenne. 2100 m. Exposed grassland. 22.7.87 (A neat plains-plant with heads of acid-yellow flushing to orange tints from tidy mats.) C
- 9579 ERIOGONUM JAMESII var. XANTHUM (E. flavum var. xanthum) Colorado, Clear Creek Co., Front Range, Mt. Evans. 3800 m. Exposed, stony slopes. 30.8.87 (Endemic to the high tundra around the Continental Divide in Colorado. A splendid and growable plant with mats of silvered leaves and almost stemless bright yellow heads.) D
- 8605 ERIOGONUM OVALIFOLIUM Wyoming, Carbon Co., NNW of Medicine Bow. 2300 m. Gravelly clay slopes. 20.6.87 (White-felted rosettes and rounded heads in cream blushing to rose as they age.) D
- 9302 ERIOGONUM OVALIFOLIUM Wyoming, Big Horn Co., Big Horn Mts., Medicine Mt. 3200 m. Open gravelly, limestone slopes. 1.8.87 (This species is widespread and very variable. This race builds its white rosettes into rounded hummocks ; long-stemmed flower-heads are white to pale-yellow.) D
- 8936 ERIOGONUM SHOCKLEYI Utah, San Juan Co., SW of Mexican Hat to Monument Valley. 1700 m. Exposed ridges of flaking sandstone. 6.7.87 (One of the pulvinate-caespitose species with mounds of tiny, white-felted leaves and almost stemless, creamy heads maturing to rusty-red tones. Very unlikely to be an easily-grown plant!) F
- 9019 ERIOGONUM ? SOREDIUM Utah, Beaver Co., Wah Wah Mts. 2400 m. Gravelly limestone slopes. 11.7.87 (Of similar habit to E. shockleyi, this seems likely to be this endemic to Beaver Co., in the Utah portion of the Great Basin, recently described from the adjacent San Francisco Mts. Pads of snow-white, felted leaves and stemless flower-clusters in white becoming tinged with apricot-orange as they age. Doubtless a challenge!) F
- 9247 ERIOGONUM UMBELLATUM var. MAJUS (E. subalpinum) Wyoming, Carbon Co., Shirley Mts., NNW of Medicine Bow. 2500 m. Meadow near stream with tall Artemisia scrub. 27.7.87 (The largest listed here but a splendid thing forming wide mats with 20-30 cm. stems carrying huge, creamy heads ageing to pink and amber-orange.) C
- 9353 ERITRICHIMUM HOWARDII Wyoming, Park Co., Dead Indian Pass NW of Cody. 2800 m. Gravel patches on limestone. 4.8.87 (We were too late for seed of this and have only a few, so we are being miserably mean!) (5 seeds) F
- 9197 ERITRICHIMUM NANUM (E. aretioides) Colorado, Teller Co., Pike's Peak, near Elk Park. Open slopes in granite grit. 3500 m. upwards. 25.7.87 (This is a widespread, characteristic plant of Alpine tundra in the Rockies but not always setting seed freely nor easy to collect. Those who want it, know about it(10 seeds) F
- 9400 ERYTHRONIUM GRANDIFLORUM Wyoming, Albany Co., Medicine Bow Mts., above Mirror Lake. 3500 m. Open, stony areas among conifers. 8.8.87 (Exquisite, nodding yellow Dogtooth Violet - only sp. in the S.Rockies(20+ seeds) C

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- 9637 EUSTOMA GRANDIFLORUM Colorado, Larimer Co., NW of Fort Collins, near Poudre River. 1900 m. Moist depressions. 4.9.87 (coll. G. & P. Kelaidis) (The Tulip Gentian, one of the world's most exquisitely beautiful hardy perennials. Clumps of stiff, upright stems, clasped by bluish leaves, produce huge, tulip-like flowers from the leaf axils in lavender and purple satin. Once not uncommon in damp areas in the prairies, it is now extremely rare due to the destruction of its habitat through grazing and drainage. Attempts to breed a strain of this with potential as a half-hardy annual have used tender southern races. We do not believe material of the northern colonies has ever been widely tried in cultivation. Here temperatures drop to -30°F (-34°C) in winter. We see no reason why cultivation in a rich, moist soil in full sun should be unsuccessful - summers in the Laramie Plains are not all that warm! (100+ seeds) D
- 9638 EUSTOMA GRANDIFLORUM Field data as above. This is mainly from white forms. Maybe some lavenders. (100+ seeds) D
- 8957 FALLUGIA PARADOXA Utah, Garfield Co., E of Torrey. 2000 m. Among rocks in sandstone gulleys. 8.7.87 (Another odd, Rosaceous shrub, to 1.5 m. high, not unlike Cowania; white flowers, fluffy seeds.) (20+ seeds) C
- 9018 FRASERA ALBOMARGINATA Utah, Beaver Co., Wah Wah Mts. 2400 m. Open, stony limestone slopes. 11.7.87 (This genus seems better placed under Swertia and is usually separated through tradition, as with Douglasia and Androsace! The dwarfed, perennial species are centred on the Great Basin and are unknown to most gardeners. Beautiful basal rosettes of leathery, white-edged leaves; many-branched, 20 cm. stems carry a multitude of white flowers, intricately marked and dotted with green. Something really 'different'!) (15+ seeds) D
- 9234 FRASERA SPECIOSA (Swertia radiata) Wyoming, Carbon Co., Shirley Mts., NNW of Medicine Bow. 2600 m. Among grasses on steep slopes. 27.7.87 (Possibly the most striking plant widespread throughout the Rocky Mt. area. Usually monocarpic, with stout, statuesque stems up to 2 m. high, whorled with countless, starry flowers in pale green, dotted with purple. Splendid rosettes of smooth leaves.) (20+ seeds) B
- 9096 GAILLARDIA ARISTATA Utah, Daggett Co., Eagle Basin Trail, SSE of Manila. 2300 m. Stony clay among Juniperus & Artemisia. 15.7.87 (Lovely daisies with soft pale-yellow rays surrounding the purplish discs. This is the perennial half of the lurid red and yellow hybrids between this and the annual G. pulchella. 60 cm. high.) B
- 8917 GAILLARDIA PINNATIFIDA New Mexico, San Juan Co., NW of Aztec. 1900 m. Eroded clay hills with sparse Pinus. 4.7.87 (Superficially similar flowers to the above but with cut foliage. Also perennial and 50 cm. high.) B
- 9420 GENTIANA ALGIDA Wyoming, Albany Co., Medicine Bow Mts., Snowy Range, above South Gap Lake. 3800 m. Open slopes in stony turf. 9.8.87 (A direct link, via the Yukon and Alaska, with the NE Asian species, this is one of the most breathtaking high-alpines we have seen. This is widespread throughout the highest tundra of the Rockies but does not flower until late, long after its alpine companions are over. Then, in the wind-scorched turf, its rosettes of strap-shaped leaves produce huge creamy-white trumpets with exquisite external brush-strokes in inky blue-black or purple. Worth every effort from the alpine -plantsman!) (30+ seeds) E
- *9665 GENTIANA ANDREWSII A mid-western species from Fred Case's garden, near Saginaw, Michigan, where it is most skilfully naturalised with Liliium michiganense among Solidago and long grasses. Upright stems of about 60 cm. with pinched-in, blue flowers in the leaf-axils along much of their length in late summer.) (30+ seeds) B
- 9416 GENTIANA PARRYI Wyoming, Albany Co., Medicine Bow Mts., Snowy Range, W of Lewis Lake. 3600 m. Wet, peaty areas with Salix. 9.8.87 (A handsome plant with clustered heads of big, deep-blue trumpets, not unlike a somewhat smaller, wirier version of G. septemfida. Stems of 15 cm. or so thread among the turf.) (30+ seeds) D
- 9356 GENTIANELLA DETONSA (Gentianopsis detonsa, G. thermalis) Wyoming, Park Co., Beartooth Plateau, SE of Cooke City. 2500 m. Moist, open grassland. 4.8.87 (This group of monocarpic Gentians provides some marvellous displays of luminous violet flowers in damp, mountain areas. Worth trying in a peat-bed.) (100+ seeds) B
- 9238 GILIA AGGREGATA (Ipomopsis aggregata) Wyoming, Carbon Co., Shirley Mts., NW of Medicine Bow. 2600 m. Stony slopes. 27.7.87 (If Frasera speciosa is the most striking of the typical Rocky Mt. plants in habit, this can be by far the most stunning in colour. Variable in height, habit and colour, this race is quite compact at about 50 cm. high with branching stems of starry trumpets in scarlet-red. While usually monocarpic, even its non-flowering rosettes are infallibly attractive in the intricacy of their cut, lacy leaves.) (20+ seeds) B
- 9610 GILIA GLOBULARIS (Ipomopsis globularis) Colorado, Park Co., above Hoosier Pass. 4000 m. Gravel patches in tundra. 6.9.87 (An extraordinary, extremely narrow endemic with rounded, woolly heads of amethyst-purple flowers on short stems. "One of the most handsome alpine tundra plants, with a heavy fragrance", writes Weber in his field-guide to the flora of the Colorado West Slope. A 'must' for the enthusiast!) (10+ seeds) F
- 9645 HABRANTHUS TEXENSIS Collected by our Czech friend, Vojtech Holubeck, while studying in Texas. A delightful little, summer-flowering bulb with yellow, brown-backed, crocus-like flowers. Easy to grow. (20+ seeds) B
- 9596 HEUCHERA BRACTEATA Colorado, Clear Creek Co., Front Range, Mt. Evans area. 3800 m. Among rocks. 30.8.87 (Attractive mounds of evergreen foliage. Bronze-green flowers are of subtle appeal only. 30 cm.) (50+ seeds) B
- 9624 HEUCHERA HALLII Colorado, Teller Co., Pike's Peak, above Elk Park. 4000 m. Granite crevices. 9.9.87 (A most dainty and attractive plant endemic to the Pike's Peak area. Creamy-white bells on 20 cm. stems.) (50+ seeds) C
- 9093 HEUCHERA PARVIFOLIA var. UTAHENSIS Utah, Uintah Co., NW of Maeser. 2000 m. Sandstone crevices. 15.7.87 (Clumps of lobed basal leaves and spikes of tiny white flowers. From a rather hot, dry habitat.) (50+ seeds) B
- *9690 HEUCHERA RUBESCENS var. VERSICOLOR Cultivated seed from material collected by Sonia Lowzow. Described by her as "particularly lovely", growing in moist rock-crevices in the woodland at about 3000 m. in the White Mts., in E. Arizona. Has proved an excellent garden-plant. 30 cm. spikes of pink, upward-facing bells.) (50+ seeds) D
- 9508 HEUCHERA PULCHELLA New Mexico, Sandia Mts. above Albuquerque. 3600 m. Shady fissures on summit cliffs. 20.8.87 (A charming, tiny plant, which appears to be endemic to the Sandias and to be unknown in cultivation. Tufts of lobed leaves and dense, 10 cm. spikes of pink bells. Should make a superb pan-plant.) (50+ seeds) E
- 9315 HYMENOXYIS ACAULIS Wyoming, Sheridan Co., Big Horn Mts., Duncum Mt. 3300 m. Open, stony slopes. 1.8.87 (This is one of the most widespread and variable of the yellow daisies of the Rocky Mt. region. This is a good high altitude form with short, 10 cm. stems and felted foliage. Panayoti Kelaidis writes that it "is long-lived and easy to grow. With so many good qualities, it's" surprisingly rarely seen in cultivation.) B

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- 9467 HYMENOXYLS ACAULIS var. CAESPITOSA Colorado, Teller Co., Pike's Peak, Elk Park. 4000 m. Open slopes, in granite grit. 17.8.87 (This is shorter stemmed but less woolly than the Big Horn plant. Possibly the one to choose for an alpine-house pan but both are glorious, golden-flowered alpinists of great merit.) C
- 9316 HYMENOXYLS GRANDIFLORA (Rydbergia grandiflora) Wyoming, Sheridan Co., Big Horn Mts., Duncum Mt. 3300 m. Open, stony slopes. 1.8.87 (One of the most characteristic and improbable plants of the alpine tundra of the Rockies. Tufts of cut, grey foliage produce enormous, golden sunflowers, on short, woolly stems of about 5 cm. While this is less perennial than *H. acaulis* and tends to have a monocarpic tendency, it is surely one of the world's most stunning alpine-plants. For inspiration, look at the photograph in Clay's 'The Present Day Rock Garden' (under *Rydbergia*) - worth every effort to cultivate & flower successfully.) B
- 9431 IRIS MISSOURIENSIS Wyoming, Albany Co., E of Centennial. 2700 m. Meadows and ditches in stony clay. 9.8.87 (The only *Iris* sp. of the Rockies. A lovely plant, which washes the damp meadows blue in spring. Averages about 70 cm. in height and varies in colour from deep lilac-blue to white. Series *Longipetalae*.) (20+ seeds) B
- 9270 IVESIA GORDONII Wyoming, Fremont Co., Wind River Mts., above Fiddler's Lake. 3000 m. Open steppe with *Phlox*, *Antennaria*, etc. in granite grit. 29.7.87 (This is an odd genus of *Rosaceae*, which can be included under *Potentilla*, though to a gardener's eye there is little superficial similarity. Upright tufts of ferny leaves, not unlike a stiff version of *Polemonium viscosum*, send up rounded heads of little, starry, mustard-yellow flowers on 10 cm. stems. "Worthy of the alpine-house for its curiousness" writes Sampson Clay.) (20+ seeds) C
- 9651 KALMIA LATIFOLIA New York, Delaware Co., Catskill Mts., above Downsville. 500 m. Mixed woodland on steep slopes. 24.9.87 (Aristocratic, evergreen *Ericaceae* shrub ; gorgeous heads of crimped, pink flowers) (50+ seeds) B
- 9413 KALMIA MICROPHYLLA Wyoming, Albany Co., Medicine Bow Mts., Snowy Range, W of Lewis Lake. 3600 m. Wet, peaty areas with *Salix*, etc. 9.8.87 (A delightful, twiggy shrublet with tiny, narrow leaves and pink flowers, which forms 10 cm. high hummocks in the high-alpine peat-bogs. Slow-growing but not difficult in peat.) (50+ seeds) D
- 9336 KELSEYA UNIFLORA Wyoming, Big Horn Co., Big Horn Mts., Hunt Mt. area. 2950 m. Fissures on limestone cliffs of various aspects. 2.8.87 (In our experience, the most difficult seed to collect of any plant. Few accessible plants had set much seed and after several hours we have little. These are very tiny, be warned!) (10 seeds) F
- 9348 KELSEYA UNIFLORA Wyoming, Park Co., Shoshone Canyon, W of Cody. 1700 m. Fissures on vertical N-facing cliffs. 3.8.87 (This will be used as a 'back-up' if and when 9336 is exhausted. Only for the truly dedicated!) (10) F
- LESQUERELLA. Belonging to the *Cruciferae*, these come between *Draba* and *Physaria* in general appearance. All are yellow-flowered and have inflated seed-capsules, though seldom as large as the balloons of *Physaria*. There are some extremely choice, dwarf perennial plants in the genus and we list a few of them here.
- 9298 LESQUERELLA ALPINA Wyoming, Bighorn Co., Big Horn Mts., Medicine Mt. 3250 m. Fissures & ledges on limestone cliffs. 1.8.87 (A comparatively compact form of this widespread, grey-leaved species. Prostrate.) (10 seeds) C
- 8613 LESQUERELLA CONDENSATA (*L. alpina* group) Wyoming, Carbon Co., NE of Shirley Mts. 2400 m. Exposed slope in limestone & shale detritus. 20.6.87 (So minute, it most often grew in *Phlox muscoides* cushions.) (8 seeds) E
- 9513 LESQUERELLA ? PINETORUM New Mexico, Sandia Mts., above Albuquerque. 3600 m. Fissures on summit cliffs and stabilised scree. 20.8.87 (Appears an attractive, dwarf plant but not seen flowering by us.) (15+ seeds) C
- 9536 LESQUERELLA RUBICUNDULA Utah, Garfield Co., Red Canyon, above Butch Cassidy Draw. 2600 m. Unstable, limestone scree. 23.8.87 (Endemic to the pink Wasatch limestone of the Paunsaugunt Plateau. 3 cm. high.) (8 seeds) E
- LEWISIA. This genus is more diverse to the west of our area in 1987. The few Rocky Mt. and other eastern species are summer-dormant plants. Seedlings should be kept growing as long as possible and not baked when they eventually go dormant. They should be watered again in autumn but kept only 'just moist' over winter with plenty water in spring until the leaves start to die-back. Foliage can redden and shrivel in *L. rediviva* before the flowers open ; this is perfectly normal behaviour. With appropriate culture, they are no problem.
- 9591 LEWISIA PYGMAEA Colorado, Clear Creek Co., Front Range, Mt. Evans. 4,500 m. Exposed stony slopes. 30.8.87 (This is a tiny plant, so minute that it would only be noticeable if grown as a pan-plant. It is typically a snow-melt species, flowering rapidly in wet soil around the snow-patches and going dormant when this dries out. Variable in colour but usually a shrill, magenta-pink. Dense, leaf-rosettes 1 cm. high.) (20+ seeds) D
- 9269 LEWISIA REDIVIVA Wyoming, Fremont Co., Wind River Mts., above Fiddler's Lake. 3000 m. Open alpine-steppe with *Phlox*, *Antennaria*, *Penstemon*, etc. & among sparse *Pinus*, in granite grit. 29.7.87 (Perhaps the most beautiful of all N. American plants. Typically a plant of the middle-altitude steppes not the high-altitude tundra. The little clusters of fleshy, linear leaves are hardly noticeable under the huge, diaphanous, water-lily flowers, produced successively on the shortest of stems. The colonies we saw in flower in S. Wyoming were generally of a deeper pink than those we have seen in cultivation, possibly from the West.) (20+ seeds) D
- *9666 LILIUM MICHIGANENSE The species we most wanted to collect during a brief visit to Michigan - seed from plants naturalised in Fred Case's land near Saginaw, Michigan (see comment under *Gentiana andrewsii*). 2 m. (20+ seeds) D
- *9647 LILIUM PHILADELPHICUM var. ANDINUM Another very local plant, the disjunct, relic Rocky Mt. race of this upward-facing, orange-scarlet species. From wild, Colorado stock, preserved in a Denver garden. (10+ seeds) D
- 8986 LINUM KINGII Utah, Garfield Co., NW of Tropic to Ruby's Inn. 2500 m. Open areas of stony clay with sparse grasses. 9.7.87 (Carleton Worth, used to enthuse about this species but we are uncertain as to whether or not he ever collected and distributed seed of it. He usually referred to it as *L.k.* var. *sedoides*, a taxon which we have seen in flower in its type-locality in the Uinta Mts. This seed is from the type-locality of *L.k.* var. *pinetorum* but the differences seem imperceptible and insufficient to merit even varietal segregation. This is not so spectacular as some of the Turkish species but it is certainly a very fine and unusual plant with close, sedum-like rosettes of bluish foliage and branching, 20 cm. stems of straw-yellow flowers, more like a *Haplophyllum* than a *Linum* comments Dwight Ripley - a very esoteric simile, we fear!) (15+ seeds) E

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- 9001 LINUM PERENNE subsp. LEWISII Utah, Garfield Co., Red Canyon, Corral Hollow. 2500 m. Open grassy areas. 9.7.87 (Lovely Flax with pure, soft-blue flowers on wiry, fine-leaved stems of about 60 cm.) (20+ seeds) B
- 9294 LLOYDIA SEROTINA Wyoming, Big Horn Co., Big Horn Mts., Medicine Mt. 3250 m. Fissures on limestone cliffs. 1.8.87 (Charming, little, Liliaceous plant, which can be placed under Gagea, with dainty white bells on thready 8 cm. stems. Somewhat more widespread in the Rockies than it is in N. Wales!) (20+ seeds) C
- *9659 LOBELIA CARDINALIS A marvellous and utterly hardly plant with 1 m. spires of brilliant scarlet. Seed from a garden in upstate New York but it grows wild locally, forming scarlet ribbons along the streams. (100+ seeds) B
- 9595 MACHAeranthera PATTERSONII Colorado, Clear Creek Co., Front Range, Mt. Evans area. 3800 m. Among rocks on open slopes with sparse Pinus aristata. 30.8.87 (Huge pure-violet asters, up to 7 cm. across, on 20 cm. stems. This especially splendid race appears to be endemic to this part of the Front Range - a very special plant.) D
- 9534 MAHONIA REPENS Utah, Garfield Co., Red Canyon, above Butch Cassidy Draw. 2600 m. Loose, limestone scree on steep slopes. 23.8.87 (Leathery, pinnate, purple-tinged, evergreen leaves; yellow flowers and glaucous blue-black berries. Here it is extremely dwarf, under 10 cm. high, and stoloniferous. Can be 30cm.) (15+ seeds) B
- 9500 MELAMPODIUM CINEREUM New Mexico, San Miguel Co., S. of Chapelle. 2300 m. Open areas in stony clay. 19.8.87 (This is a delightful, little Composite forming 15 cm. high mounds of pure-white flowers all summer. Very like a white version of Zinnia grandiflora and like it for the sunniest, best-drained site. Totally hardy.) B
- MERTENSIA. The dwarf alpine plants are one of the great joys of spring in the Rocky Mts. but the deep despair of anyone who tries to put names to them. The fact that these are almost unknown in cultivation, inspired us to set off in our misguided ignorance and armed with a copy of William's painstaking monograph of the genus, to collect seed from as many dwarf 'species' as we could. While we have done this, our self-confidence evaporates when it comes to putting an acceptable name to many of the collections. To say we did not always have good flowering material available would be a valid excuse but even when we did we were little better off. In understandable desperation, Welsh in his 1987 'Utah Flora' pushes a great many under M. lanceolata, with the majority fitted into M.l. var. nivalis, to which he appends the comment that "attempts at further segregation of plants included within this variety are fraught with difficulties." Even Weber lumps many under M. lanceolata, including both M. bakeri and M. viridis here, with the comment that the latter, "in the Front Range at least, seems to have received genes from M. alpina." To agree with their realistic and informed assessments does not help gardeners looking for some way to distinguish taxa which seem very different! Enough to say all those listed as Mertensia sp. are very attractive dwarf plants, 5 to 15 cm. high with the most beautiful, pure-blue flowers in spring. All are worth your attention.
- 9630 MERTENSIA ALPINA Colorado, Teller Co., Pike's Peak, Devil's Playground. 4500 m. Exposed slopes in granite grit. 9.9.87 (Up on the highest tundra of Pike's Peak, this appears as an utterly distinct and even taxon. This is the plant distributed by Kathleen Marriage, who ran a nursery in Colorado Springs until the 1940's, as M. coriacea (a name belonging to the M. viridis/lanceolata complex). As such it may survive in some European gardens and we grew it for many years, propagating from the few seeds occasionally set. It is an exquisite plant with prostrate stems bearing heads of flat flowers in the purest blue imaginable. Suffice to say that if we were able to choose but one item from our 1987 collections, this would be it.) (15+ seeds) F
- 9449 MERTENSIA CILIATA Colorado, Park Co., Mosquito Range, Mt. Sherman below mine. 4100 m. Moist, stony areas near snow-melt streams. 14. .87 (This is one of the larger species, 60 cm. or more high, with big, bluish green leaves and showers of sky-blue bells. Quite easily grown in a moist place in the garden.) (15+ seeds) B
- 8753 MERTENSIA ? OBLONGIFOLIA Wyoming, Lincoln Co., ridge NW of Fossil Butte. 2700 m. Open areas among Pinus along summit ridge. 24.6.87 (A distinct plant about 30 cm. high growing in a dryish habitat.) (10 seeds) C
- 8726 MERTENSIA SP. Wyoming, Fremont Co., Wind River Mts., NE of Atlantic City, 2700 m. Open Artemisia-steppe in granite grit. 22.6.87 (This & the next four are all dwarf with flowers of pure, rich blue.) (15+ seeds) D
- 8642 MERTENSIA SP. Wyoming, Carbon Co., Shirley Mts., NW of Medicine Bow. 2600 m. Open, stony slopes. (10 seeds) D
- 9361 MERTENSIA SP. Wyoming, Park Co., ESE of Cooke City, Clay Butte. 3000 m. Steep, loose, stony slope. (5 seeds) D
- 9405 MERTENSIA SP. Wyoming, Albany Co., Medicine Bow Mts., Snowy Range. 3600 m. Open areas in stony turf. 8.8.87 (This is the type-locality for M. viridis var. dilatata (the true M. coriacea). Use it if you want!) (10 seeds) D
- 9441 MERTENSIA SP. Colorado, Park Co., Mosquito Range, Mt. Sherman, above mine. 4200 m. Open, stony turf and exposed tundra. 14.8.87 (Not quite the same as 9405 although the name is often applied to these.) (15+ seeds) D
- 9618 MERTENSIA SP. Colorado, Park Co., NE of Como to Jefferson. 3000 m. Steep, open, gravelly bank. 6.9.87 (This is a taller 20 cm. high plant, which one could more happily call M. lanceolata than the above) (10 seeds) C
- 9518 MIRABILIS MULTIFLORA New Mexico, Sandoval Co., Sandia Mts., S of Placitas. 2500 m. Dry, stony banks. 20.8.87 (A very showy plant for a hot, dry site; stout, decumbent stems with a succession of big, magenta, funnel-shaped flowers opening each summer afternoon. Worth trying on a hot bank. About 50 cm. high.) (5 seeds) B
- 9143 OENOTHERA BRACHYCARPA Colorado, Boulder Co., SE of Boulder. 2000 m. Stony clay banks. 19.7.87 (A lovely species with clumps of more or less cut, dark green foliage and stemless, long-tubed flowers in yellow turning to orange-red as they age. A Great Plains plant here reaching its Western limit. 12 cm.) (10+ seeds) D
- 9170 OENOTHERA CAESPITOSA (var. caespitosa) Wyoming, Laramie Co., S of Horse Creek. 2300 m. Open, stony, banks. 22.7.87 (A superlative species widespread but always local throughout western N. America. It is divisible into a number of somewhat intergrading varieties. All are very beautiful with enormous white bowl-shaped flowers carried on long tubes above the clumps of variable leaves. The flowers usually age to pink or even purple shades and, while individually short-lived, are produced successively over a very long period. We have grown O.c. var. macroglottis and O.c. var. marginata very successfully outside in S. England, in a sunny, well-drained position. Remember that too much food and water will mean too many lush, out of character leaves and fewer flowers. When you have them, they can be further propagated by root-cuttings.) (15+ seeds) C
- 9551 OENOTHERA CAESPITOSA var. CRINITA Utah, Millard Co., SSE of Garrison. 1500 m. Steep, loose, stony bank. 25.8.87 (Dry area race with grey, hairy leaves. Will need alpine-house or protection from wetness.) (10+ seeds) E

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- 9384 OENOTHERA CAESPITOSA var. MACROGLOTTIS Utah, Rich Co., WSW of Woodruff. 2400 m. S facing clay banks and loose shale slopes. 6.8.84 (This and the following are the largest flowered races but do not turn quite such deep purple-pinks as they age ; entire to toothed foliage.) (15+ seeds) C
- 9343 OENOTHERA CAESPITOSA var. MARGINATA Wyoming, Park Co., Shoshone Canyon, W of Cody. 1700 m. Loose, stony slopes. 3.8.87 (More deeply cut foliage. In this colony, with a somewhat stoloniferous habit.) (15+ seeds) C
- 9522 OPUNTIA WHIPPLEI Arizona, Coconino Co., E of Kaibito. 1800 m. Open areas among sparse Pinus. 22.8.87 (See comments on Cactaceae under Echinocereus. This is a Cylindropuntia with clumps of rounded stems about 10 cm. tall in this area. Beautiful, pale-yellow satin flowers.) (15+ seeds) C
- 9632 OREOXIS HUMILIS Colorado, Teller Co., Pike's Peak, Devil's Playground. 4500 m. Exposed slopes in granite grit. 9.9.87 (An extremely attractive, tiny member of the Umbelliferae, found only on the high tundra of Pike's Peak. From little sprigs of dark-green parsley come radiating, prostrate stems a few cm. in length & carrying round heads of bright-yellow flowers. Most definitely worth growing in a pan or trough.) (15+ seeds) E
- OXYTROPIS. While close to Astragalus, this is a much smaller genus in N. America and also rather less diverse in habit. There are some excellent plants here, which will need similar treatment to Astragalus.
- 9352 OXYTROPIS ? LAGOPUS Wyoming, Park Co., NW of Cody, Dead Indian Pass. 2800 m. Open, stony slopes. 4.8.87 (Globular, woolly heads of red-purple flowers on 8 cm. stems from felt-leaved mats.) (10+ seeds) D
- 9428 OXYTROPIS LAMBERTII Wyoming, Albany Co., W of Centennial. 2700 m. Open stony steppe among Artemisia, etc. 9.8.87 (A most handsome and striking plant, around 30 cm. high, with neat clumps of silver-grey, pinnate leaves and stiffly erect racemes of brilliant carmine-purple flowers. One of the showiest species.) (20+ seeds) C
- 8671 OXYTROPIS ? MULTICEPS Wyoming, Carbon Co., Muddy Gap. 2200 m. Gravelly slopes and in rock-detritus. 22.6.87 (Low-growing, silky-hairy plant with short-stemmed flowers, which should be bright pinkish purple.) (10+ seeds) D
- 9611 OXYTROPIS ? PODOCARPA Colorado, Park Co., above Hoosier Pass. 4000 m. Gravel patches in alpine tundra. 6.9.87 (A very tight-growing plant of the highest elevations. Pink flowers and inflated capsules.) (10+ seeds) D
- 9240 OXYTROPIS SERICEA Wyoming, Carbon Co., Shirley Mts., NW of Medicine Bow. 2600 m. Stony slopes of various aspects. 27.7.87 (A look-alike of O. lambertii, with which it sometimes crosses. Less spectacular but more tasteful with its stout 30 cm. stems of white flowers rising from the silver-leaved clumps.) (20+ seeds) C
- 9604 PARNASSIA FIMBRIATA Colorado, Summit Co., above Monte Cristo Creek to Hoosier Pass. 3800 m. Wet places among stones in openings in coniferous forest. 6.9.87 (Big, fringe-petalled, white flowers. 30 cm) (100+ seeds) C
- 9668 PARNASSIA SP. (P. asarifolia or P. caroliniana) Michigan, Montmorency Co., near E fork of Black River, off Meridian Road. 300 m. Wet woodland. 2.10.87 (These two N American species are much more robust, larger flowered plants than the circumboreal P. palustris. Well worth growing in a peat-garden. 30 cm.) (100+ seeds) C

REVELATIONS MCMLXVII

When collecting seeds in an unfamiliar area, we have learned that it is wiser not to have too many preconceptions. Of course, we must have some idea of what we should concentrate on and have worked-out a rudimentary outline of the species for our next list. In 1987, we had thought that we should give special attention to genera like Astragalus, Mertensia and Phlox. In Penstemon, we had not seen past a few of Section Caespitosi.

Our journey was very much one of discovery and education. It proved a revelation of the complexity and incredible diversity of the genus Penstemon, which constituted the most striking and brilliant group of plants throughout the area in which we travelled. Why did we not consider them more seriously before? The answer was quite simply : our ignorance, an ignorance we shared with most European gardeners, who have never had the chance to learn about them or grow many of them in their gardens. The Intermountain Area in Utah and Nevada, where they are most profuse in their diversity, is virtually an untapped source of material and of Penstemons in particular. Gardeners who travel in search of plants in North America have seldom been attracted to this daunting area of largely inhospitable land with its seemingly sparse flora. Understandably, those with but a short time in which to see wild flowers, head for the high Rocky Mts. of Colorado with their profuse displays of alpine flowers - the Switzerland of N. America ; or they visit accessible areas like the Big Horn Mts. of Wyoming, where they can see a concentrated range of fine plants within a short time. These areas have their Penstemons but the heartland of the genus lies beyond the Rockies in an area which can be hard work to collect in and can be disappointing. Though this Intermountain Area has been the scene of much botanical activity during the past decade, there have been few efforts to introduce plant material into cultivation. There has always been a much greater dichotomy between the botanical and horticultural worlds in the U.S.A. than in Europe. There is no botanical garden in Utah. Even in Denver, the botanical garden is run by the city and has no connection with any university botany department. It is the only botanical garden between California and St. Louis in Missouri. It is hardly surprising that there is no tradition of the collection of seed as well as herbarium specimens such as developed in Britain, as a result of the 19th and early 20th Century policies of Kew, Edinburgh and the R.H.S. As far as the skilled amateur grower is concerned, the A.R.G.S. has 6 members in Utah and Nevada combined - an area of about 200,000 square miles. There are probably rather more people involved in the investigation and cultivation of their native flora in Turkey or Iran than there are in Utah or Nevada.

In recent years, our hosts in Denver, Gwen & Panayoti Kelaidis have done an immense amount in growing and distributing horticulturally new material. Their interest in and involvement with Penstemon is paramount. It says much for their detachment that they did not try to bias us unduly towards this genus. Having 'discovered' it for ourselves, however, their advice has been invaluable. Panayoti, the professional gardener and current president of the Penstemon Society, and Gwen, the taxonomist and former secretary of the society, combine to form a formidable team of consultants and counsellors, whose most reassuring quality to those, such as ourselves, uninitiated into the labyrinthine world of Penstemon, was that they not infrequently disagreed on the finer points of nomenclature.

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DISTRIBUTION. Although Penstemons occur from coast to coast in N. America, their centre lies across the Great Plains and beyond the Rocky Mts., in the Intermountain Area between the Rockies and the Californian ranges : Weber lists 13 species in his flora of the Colorado E. slope and 42 species in his W. slope flora. Although there are lesser centres in the NW and in Mexico, the overall density of species declines outside the Intermountain Area. Hubbard lists 37 for New Mexico ; Holmgren lists 104 for the Intermountain Region with Neese giving 63 for Utah alone. Within Utah itself, Goodrich & Neese list 29 in their flora of the Uinta Basin ; the core of the genus. Even allowing for differing taxonomic interpretations, the general pattern is obvious. Our 1987 seed collections offer a fully representative range of the Rocky Mt. and Intermountain species ; seed was collected from about 50% of the species occurring in the areas visited.

NOMENCLATURE. There are two excellent, recent accounts of the genus in the Intermountain Area : by Holmgren in the 'Intermountain Flora', published in 1984 and by Neese in 'A Utah Flora' of 1987. Most of the names in our list are based on those used by these two authors. While there is no disagreement on what constitutes acceptable taxa, there are some differences in interpretation of the available material resulting in a few differences in the status at which a few taxa are recognised. For instance, Neese elevates Holmgren's *P. dolius* var. *duchesnensis* to specific status as *P. duchesnensis* but reduces Holmgren's *P. mucronatus* to varietal level under *P. pachyphyllus*. We have retained taxa at specific level, where there is disagreement over their appropriate status, and have pointed out any differences between the 'Intermountain Flora' account (IMF) and that of 'A Utah Flora' (UF). There is no comparable account for the Rocky Mt. species but there is not so much complexity in this area and Weber's field-guides have generally been followed. Full determination of Penstemon specimens is only possible with flowering material ; a knowledge of the structure of the anthers is essential if conventional keys are going to be used. We did not have the opportunity to see flowering material of all the collections and so many names used are based on informed guesswork. These names are preceded by a '?' and, while we are confident most will prove to be correct, there may be some which turn-out to be incorrect. Voucher specimens for most of the Intermountain species are at present with Dr. Neese at Brigham Young University, Provo, Utah ; any corrections notified by her will be passed on in a future list. For some Colorado and Wyoming collections, we have relied on the local knowledge of Panayoti and Gwen Kelaidis and, in the Santa Fe area of New Mexico, on that of Ellen Wilde. Names used and given to us by these sources, are followed by (PK) or (EW). The genus is classified into Sections and a rough understanding of these may be of help in finding your way among the many names in this list. The appropriate section follows in brackets after each name in the list. As Gwen Kelaidis very rightly said to us, once you understand the sections, they all fall into place.

SECTIONS OF PENSTEMON. Only those relevant to this area and this list are considered. The classification adopted by Holmgren in IMF is used but the one used by Keck and others is given in brackets. Among those listed, *P. ambiguus*, *P. laricifolius*, *P. leonardii*, *P. palmeri*, *P. rostriflorus* and *P. utahensis* are the only representatives of their sections included. They are all utterly distinct from each other and all others in the list so no more need be said about them at present. The remainder fall into 6 of the remaining sections.

Sect. Penstemon. These are generally plants of 5 to 50 cm. high forming woody-based mats or clumps, producing upright stems ringed with verticillasters of flowers. They are montane plants of stony slopes or sometimes alpine turf. We did not collect some members of the section, such as *P. procerus* and *P. rydbergii*, as we felt them to be of less horticultural value than those listed and insufficiently distinct to gardeners.

Sect. Caespitosi. (Subgenus *Ericopsis*, Sect. *Caespitosi*). All are of great importance to the rock-gardener - small heath-like or thyme-like, tufted or mat-forming subshrubs, ideally suited to trough or pan-cultivation or, with luck, to the choicer places in the rock-garden. Generally plants of the middle altitudes.

Sect. Cristati. (Subgenus *Aurator*) Generally small, grey-leaved plants, seldom exceeding 20 cm., often with well-developed basal rosettes and strong, thong-like tap-roots. Generally plants of the steppes or the cold, semidesert areas of the Great Basin. All are important to the rock-gardener and the dwarfest species deserve every effort from the alpine-house specialist. Few have been tried in European conditions.

Sect. Coerulei. (Subgenus *Annularius*, Sect. *Coerulei*) These are often plants with thick-textured, bluish or greyish leaves, well-developed basally from a woody crown. They vary greatly in height from 3 to 40 cm. and usually have flowers in softer, cooler tones than Sect. *Glabri*. Always plants of drier habitats, often in steppe.

Sect. Glabri. (Subgenus *Habroanthus*, Sect. *Glabri*) These are extremely variable in habit and in height from 5 to 90 cm. and including tall meadow-plants, unparalleled in their spikes of pure-blue flowers, some prostrate species of mountain screes and a few dwarf enough to interest the alpine-house specialist.

Sect. Elmigera. Only two of these tall (to 1 m. high), southern, humming-bird pollinated species with scarlet flowers are listed. This is the section to which the tender hybrids grown in Europe belong. These are mainly derived from Mexican species, which come from a very different climate to that of our area.

CULTIVATION can be summed up for everyone : as much light and as much drainage as possible. E Coast N. American gardeners are often negative in their approach to plants of the Rocky Mt. area. Their high summer temperatures coupled with high humidity make growing any alpine or steppe plant difficult. Attempts to provide optimum drainage, such as Norman Deno's sand-beds or Lee Raden's crushed granite hummocks, can be successful. From Michigan to Pennsylvania we have seen thriving, established plants of several of the *Caespitosi* Penstemons. Wholly negative thinking cannot be justified. Many species are too little-known even in the U.S.A. for hardened opinions to be formed. As Geoffrey Charlesworth writes from New Hampshire, "the variety of growth habit makes this a fascinating genus. It is a pity most rock-gardeners only grow the *Dasanthera* Section and the Eastern weeds." For Europe, the tender garden hybrids could be added to these groups. Gardeners in the wetter areas of Europe or W coast N. America will have the usual problems with wetness in winter as well as in summer. While raised beds and the selection of hot, dry sites goes without saying, much comfort may be derived from the fact that two of the best-known cultivated species, the tall *P. barbatus* and dwarf *P. pinifolius*, are southern plants. *P. pinifolius*, in fact, grows much further south in New Mexico than we penetrated and has proved hardy, floriferous and reliable in the right site. While we are confident that the dwarfest species will receive the attention they deserve from the alpine-house grower, it is the largest members of the *Glabri* and *Coerulei* Sections that we should really like to see appreciated as the spectacular plants they indisputably are. A lack of longevity is a charge often made against Penstemons. There is no doubt that some can behave in the same way as *Meconopsis betonicifolia* for instance - and for the same reasons. They react to rich soil and moisture in a gratifying way, making too much growth too quickly. There seems little doubt that to raise seedlings in as hard and as Spartan a manner as possible and to grow the resulting plants in poor soil and full sun will not only produce plants more in character but with much longer lives. There is still much to be learned about this beautiful genus, however. We hope our 1987 seed-collections will give a wider range of gardeners throughout the world a chance to discover more about the neglected species of the West.

PENSTEMON

- 9101 P. ACAULIS (Sect. Caespitosi) Wyoming, Sweetwater Co., above McKinnon. 1900 m. Steep, stony slopes in sparse steppe-vegetation. 15.7.87 (The smallest of all Penstemons and the ultimate reduction of even the Caespitosi Sect. to tiny Androsace-like tufts set with stemless, sky-blue flowers.) (10 seeds) F
- 9164 P. ALBIDUS (Sect. Cristati)(PK) Wyoming, Laramie Co., S of Cheyenne. 2100 m. Exposed prairie. 22.7.87 (A neat Great Plains plant with greyish leaves and white flowers on stiff, glandular stems of about 20 cm.) (25+ seeds) B
- 9577 P. ALPINUS (Sect. Glabri)(PK) Colorado, Clear Creek Co., Front Range, Squaw Pass below Mt. Evans. 3100 m. Loose, gravelly slopes. 30.8.87 (A fairly dwarf, compact form of this splendid scree-plant with stout, decumbent stems bearing huge heads "of big sprayed flowers in the most heavenly shade of violent clear-blue with a white throat." Reginald Farrer writing in 1919 is remarkably accurate in his descriptions of some Rocky Mt. species (he is equally inaccurate and typically Farrerian in his curt dismissal of some like *P. albidus* and *P. cobaea*!). He had corresponded with the Boulder nurseryman, Darwen Andrews, and obviously knew species like this first-hand in cultivation rather than through descriptions by botanists.) (30+ seeds) C
- 9501 P. AMBIGUUS (Sect. Ambigui) New Mexico, San Miguel Co., S of Chapelle. 2300 m. Among large boulders on steep slopes. 19.8.87 (Unlike any other species and a plant which few people would recognise as a Penstemon. Woody-based wiry, bushily branching stems, fine-leaved and fluttering with a myriad shell-pink or white butterfly-like flowers, long-tubed and phlox-like. We list 2 colls. of this lovely, 60 cm. high plant.) (30+ seeds) C
- 9523 P. AMBIGUUS Arizona, Coconino Co., E of Kaibito. 1800 m. Exposed sandy areas with grasses. 22.8.87 (30+) C
- 9165 P. ANGUSTIFOLIUS (Sect. Coerulei)(PK) Wyoming, Laramie Co., S of Cheyenne. 2100 m. Exposed prairie. 22.7.87 (Compact, 15 cm. high form of a fine species with narrow, channelled blue-grey leaves: "another queen in the race...spikes of ample blossom such as only the high gods...could have imagined...not even in *Omphalodes* is there any matching the tender yet assured magnificence of the pale azures..." (Farrer, of course!)) (15+) D
- 9517 P. BARBATUS var. TORREYI (Sect. Elmigera) New Mexico, Sandoval Co., Sandia Mts., S of Placitas. 2800 m. Open stony banks in *Abies* woodland. 20.8.87 (Elegant and striking scarlet-flowered plant of about 1 m. in height. Material cultivated in Britain - probably derived from lower altitudes too - is hardy.) (25+ seeds) B
- 9007 P. BRACTEATUS (Sect. Coerulei) Utah, Garfield Co., Red Canyon, above Butch Cassidy Draw. 2600 m. Loose limestone scree on steep slopes. 10.7.87 (5 cm. high heads of blue flowers and rosettes of fleshy, blue-grey leaves from subterranean stems, threading among the pink limestone scree. Rated as possibly the best of all the dwarf species by Dwight Ripley but we have very little seed as the immature capsules are considered the ultimate delicacy by the rodents of Red Canyon and are licked-out like ice-cream cornets.) (5 seeds) F
- 8851 P. ? BREVICULUS (Sect. Cristati) Colorado, Mesa Co., East Creek Canyon, SW of Whitewater. 1800 m. Stony, sandstone slopes with sparse *Juniperus*. 30.6.87 (Dwarf, 9 cm. high plant, not seen in flower. Few.) (5 seeds) D
- 8739 P. CAESPITOSUS (var. caespitosus) (Sect. Caespitosi) Wyoming, Lincoln Co., N of Kemmerer. 2400 m. Gravelly slopes in *Artemisia*-steppe. 23.6.87 (Prostrate with woody, mat-forming stems clothed in narrow, greyish leaves and bearing lavender-blue flowers, marked white and red-violet within, with gold beards.) (10+ seeds) E
- 8996 P. CAESPITOSUS var. DESERTIPICTI (Sect. Caespitosi) Utah, Garfield Co., NE of Ruby's Inn to Antimony. 2600 m. Exposed, gravelly banks. 9.7.87 (The even more reduced southern race with smaller, narrower, greyer leaves and tighter mats. We rate this very highly in its potential as an alpine-house plant.) (15+ seeds) F
- 9100 P. ? CLEBURNEI (Sect. Cristati) Wyoming, Sweetwater Co., above McKinnon. 1900 m. Steep, stony slopes in sparse steppe-vegetation. 15.7.87 (Almost certainly this 15 cm. high, Uintah Basin endemic with dense heads of lavender-purple flowers, with conspicuously white-bearded throats and hairy, orange staminodes.) (10+ seeds) E
- 9488 P. COBAEA (Sect. Cristati) (EW) New Mexico, Santa Fe Co., SSE of Santa Fe. 2500 m. Open, stony, roadside area. 19.8.87 (A big, handsome species, considered to be one of the parents involved in the garden hybrids and with very large lavender-blue flowers. Native over to the S & E, must be considered adventive here.) (20+ seeds) B
- 9529 P. COMARRHENUS (Sect. Glabri) Utah, Red Canyon, Butch Cassidy Draw. 2600 m. Stony clay in openings among *Pinus*. 23.8.87 (An elegant plant, about 60 cm. high, with erect, narrow-leaved stems of large flowers with densely woolly white anthers and in softer, paler blues and lavenders than most of Sect. Glabri.) (20+ seeds) C
- *9648 P. CRANDALLII (Sect. Caespitosi) This is the form grown by rock-gardeners in the Denver area and probably a Colorado race, forming spreading, rooting mats, about 10 cm. high. An excellent garden-plant. (15+ seeds) C
- 9482 P. CRANDALLII subsp. GLABRESCENS (Sect. Caespitosi) New Mexico, Taos Co., N of Questa. 2500 m. Gravelly clay among *Pinus*. 18.8.87 (Distinct from the above, with close tufts of upright, heath-like stems, about 12 cm. high, set with lavender-blue flowers with orange-bearded staminodes. Delightful and neat.) (15+ seeds) D
- 9567 P. aff. CRANDALLII (Sect. Caespitosi) Colorado, Eagle Co., Turkey Creek, SE of Minturn. 3400 m. Steep, loose, stony slopes. 28.8.87 (We were taken to see this colony by Marty Jones of Avon as *P. teucroides*. Panayoti & Gwen Kelaidis consider it to be nearer *P. crandallii*! A very good, greyish, mat-former, anyway!) (15+ seeds) D
- 9387 P. CYANANTHUS (Sect. Glabri) Utah, Rich Co., Wasatch Mts., Wasatch Ridge to Squaw Flat. 3200 m. Meadows with sparse *Artemisia*. 6.8.87 (The glory of the Wasatch range. Stout, 80 cm. high stems with dense-flowered, cylindrical spikes of rich gentian-blue flowers. Must be tried by all wanting the best hardy plants (30+ seeds) C
- 8866 P. CYANOCAULIS (Sect. Glabri) Colorado, Montrose Co., WNW of Naturita, above Paradox Valley. 1800 m. Open, stony slopes with *Juniperus*. 30.6.87 (A distinct plant here with rather leathery foliage with crisped edges and fine 20 - 30 m. high spikes of blue flowers.) (10+ seeds) D
- 8871 P. ? aff. CYANOCAULIS (? Sect. Glabri) Colorado, Montrose Co., NW of Bedrock. 1800 m. Open, stony slopes with sparse *Pinus*, *Cercocarpus*, etc. 30.6.87 (A much taller plant, not seen in flower, which resembles the above in seed and other characteristics but yet seems very different. May be of hybrid origin.) (15+ seeds) C

PRICE CODE A	:	\$1.00	;	£0.80	;	DM2, -	;	FF 7. -	PRICE CODE D	:	\$4.00	;	£2.50	;	DM 8, -	;	FF25. -
B	:	\$2.00	;	£1.50	;	DM4, -	;	FF15. -	E	:	\$5.00	;	£3.50	;	DM10, -	;	FF35. -
C	:	\$3.00	;	£2.00	;	DM6, -	;	FF20. -	F	:	\$6.00	;	£4.50	;	DM13, -	;	FF45. -

- 9051 P. ? DOLIUS (Sect. Cristati) Nevada, White Pine Co., Diamond Mts., Pancake Summit. 2250 m. Bare, exposed stony slopes. 12.7.87 (Growing in the same area as 9048 (P. ? janishiae), but with eglandular calyx and somewhat different habit and habitat - these may be slightly mixed collections. Stems about 9 cm. long, rather decumbent and with ashy grey leaves ; will possibly have pale-blue to blue-violet flowers.) (10+ seeds) D
- 9086 P. DUCHESNENSIS (Sect. Cristati) (P. dolius var. duchesnensis in IMF) Utah, Duchesne Co., E of Duchesne. 1900 m. Stony slopes among sparse steppe vegetation. 14.7.87 (The above is dwarf but this is tiny - a showy little plant eminently suitable for the alpine-house or trough."Low, gray-puberulent plants form large colorful patches" writes Elizabeth Neese. Blue to blue-purple flowers in almost stemless heads.) (15+ seeds) E
- 8929 P. EATONII (Sect. Elmigera) Utah, San Juan Co., Sunbonnet Rock above Bluff. 1550 m. Steep, stony sandstone slopes below cliffs. 5.7.87 (A spectacular plant with tall stems - the Firecracker Penstemon. 1 m. high wands of tubular scarlet flowers. A brilliant plant which we have never seen in European gardens.) (30+ seeds) B
- 9176 P. ERIANTHERUS (Sect. Cristati)(PK) Wyoming, Albany Co., NE of Laramie. 2600 m. Exposed, level steppe with sparse Artemisia. 22.7.87 (Stiffly erect, 20 cm. stems with dense heads of pale lavender-violet flowers with prominent, yellow-bearded staminodes. Ashy-grey basal rosettes and stem-leaves.) (20+ seeds) B
- 8649 P. ? ERIANTHERUS (Sect. Cristati) Wyoming, Natrona Co., SSE of Alcova. 1800 m. Open slopes in clay or sand-stone detritus. 21.6.87 (About here, P. eriantherus seems to grade towards P. cleburnei but these are dwarfer than either. Very tight, little grey plants, 5-10 cm. high, which look exciting.) (15+ seeds) D
- 9545 P. FRANCISCI-PENNELLI (Sect. Glabri) (P. leiophyllus var. francischi-pennellii in IMF) Nevada, White Pine Co., Snake Range. 3400 m. Open, stony slopes near conifers. 24.8.87 (A most distinct, handsome plant which we were thrilled to be able to collect. Dark, leathery, infolded and curved basal leaves in woody-based tufts. Wiry stems of 5-15 cm. carry one-sided spikes of big, blue-violet flowers. A plant of great character.) (25+ seeds) E
- 9290 P. GLABER (Sect. Glabri) Wyoming, Big Horn Co., ENE of Greybull, above Shell Creek Canyon. 1700 m. Loose scree on open slopes. 30.7.87 (Another superb scree-plant on the pattern of P. alpinus but rather more robust and with huge heads of big, baggy flowers in the bluest of blues. Decumbent stems.) (25+ seeds) C
- 9090 P. ? GOODRICHII (Sect. Cristati) Utah, Uintah Co., E of Tridell. 1700 m. Sandy clay and pebble ridges with sparse Juniperus. 14.7.87 (Almost certainly this extremely narrow and recently described endemic of the Uinta Basin, closest to P. marcusii of the Canyon Lands region. These both have distinct, regular flowers - not two-lipped as in most Penstemons. Pale blue to blue-lavender flowers. 20 - 30 cm. tall.) (25+ seeds) D
- 9461 P. HALLII (Sect. Glabri) Colorado, Park Co., Mosquito Range, below Mt. Sherman to Fairplay. 3800 m. Loose, stony banks in coniferous forest zone. 14.8.87 (A marvellous plant endemic to the higher altitudes around the Continental Divide. Close-clumped rosettes of narrow, smooth-green leaves with 15 cm. stems of flowers in an unusual shade of luminous, reddish-violet. This is very accurately illustrated on Plate 13 of 'Rocky Mountain Alpines' ; the colour is perfect - a superlative photograph of a superlative species.) (30+ seeds) C
- 9263 P. HUMILIS (Sect. Penstemon) Wyoming, Fremont Co., Wind River Mts., SW of Lander. 2500 m. Subalpine meadow in stony clay. 29.7.87 (A fairly large-flowered and floriferous race of this widespread species. 12 cm. stems of deep violet-blue flowers from basal rosettes forming rooting, prostrate mats.) (50+ seeds) B
- 9546 P. ? HUMILIS (Sect. Penstemon) Nevada, White Pine Co., Snake Range. 3400 m. Among stones between Cercocarpus scrub. 24.8.87 (Very compact cushions of rosettes with 10 cm. wiry stems. Not seen in flower.) (50+ seeds) C
- 9496 P. JAMESII (Sect. Cristati) (EW) New Mexico, San Miguel Co., S of Chapelle. 2300 m. Open areas in stony clay with sparse Pinus. 19.8.87 (Handsome, 30 cm. high plant centred on E New Mexico. Compact basal rosettes and stiff, upright stems packed with large flowers must have been spectacular but not seen by us.) (25+ seeds) C
- 9505 P. ? JAMESII (Sect. Cristati) New Mexico, Bernalillo Co., Sandia Mts., above Albuquerque. 3500 m. Among rocks on open slopes in coniferous zone. 20.8.87 (Similar habit to the above but seeds look different! The remains of the last flowers were rich reddish-violet to blue-violet on 20-30 cm. stems.) (25+ seeds) C
- 9048 P. ? JANISHIAE (Sect. Cristati) Nevada, White Pine Co., Diamond Mts., Pancake Summit. 2250 m. Open, level areas in heavy clay. 12.7.87 (Possibly this Great Basin endemic but see comments under 9051 (P. ? dolius). Dwarf with erect, 10-15 cm. stems and greyish leaves. The species has distinctive, large violet to pink flowers, streaked with dark purple, and with white to yellow beards and hairy, orange staminodes.) (15+ seeds) E
- 9060 P. ? JANISHIAE (Sect. Cristati) Nevada, Eureka Co., W of Eureka. 2100 m. Exposed, bare alkaline 'flats' with sparse Pinus. 12.7.87 (From the type-locality, whence it was described as recently as 1978.) (10+ seeds) F
- 9249 P. LARICIFOLIUS (Sect. Laricifolii) Wyoming, Carbon Co., Shirley Mts., NW of Medicine Bow. 2500 m. Fissures and rock detritus on exposed ridge. 27.7.87 (In a section all on its own and unlike any other species. "One of the most beautiful plants in all the world" writes Norman Deno. Neat, basal rosettes of linear leaves, exactly like a little tuft of larch-foliage. Branching, wiry stems of 3 to 15 cm. in height dance with a succession of salmon-pink flowers. An absolute delight, which must be established in cultivation.) (25+ seeds) E
- 9231 P. LARICIFOLIUS var. EXILIFOLIUS (Sect. Laricifolii) Wyoming, Albany Co., S of Laramie. 2500 m. Exposed, gravelly areas among sparse steppe-vegetation. 27.7.87 (Diminutive race endemic to the Laramie Plains with their severe continental climate. Sometimes considered inferior to the type-race, we think it may appeal even more to the alpine-house grower - it is usually even dwarfer and with pure white flowers.) (25+ seeds) E
- 8941 P. ? LENTUS var. ALBIFLORUS (Sect. Coerulei) Utah, San Juan Co., W of Blanding to Natural Bridges. 2100 m. Sandy areas among Pinus & Juniperus. 6.7.87 (A distinct race, endemic to the SW foothills of the Abajo Mts., with white flowers, occasionally flushed pale-pink or bluish, on 30-50 cm. stems. Glaucous leaves.) (25+ seeds) C
- 9520 P. ? aff. LENTUS (Sect. Coerulei) Arizona, Apache Co., Chuska Mts. above Lukachukai. 2600 m. Stony clay banks among Quercus scrub. 21.8.87 (20 cm. tall with blue-grey leaves ; seems near the more N. P. carnosus.) (10+) C
- 9385 P. LEONARDII (var. leonardii) Utah, Weber Co., Wasatch Mts., WSW of Woodruff. 3100 m. Stony, exposed areas. 6.8.87 (Endemic to N Utah and the only member of the Saccanthera Section we list. Low, shrubby growth to about 15 cm. with narrow, thick leaves and a mass of gentian-blue flowers. The best new plant for 1987!) (25+ seeds) E

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 B : \$2.00 ; £1.50 ; DM4, - ; FF15. - E : \$5.00 ; £3.50 ; DM10, - ; FF35. -
 C : \$3.00 ; £2.00 ; DM6, - ; FF20. - F : \$6.00 ; £4.50 ; DM13, - ; FF45. -

PENSTEMON continued

- 9385 P. LEONARDII (Sect. Saccanthera) We hope you have not skimmed past this absolutely superlative species - utterly distinct from anything else listed and completely new to cultivation. It has to be tried. (25+ seeds) E
- *9694 P. LINARIOIDES (Sect. Caespitosi) We did list this last season but have a few 1987 seeds from cultivated material for anyone who still wants it. Lavender-blue flowers on 15 cm. stems from grey mats. (15+ seeds) D
- 9555 P. LONGIFLORUS (Sect. Glabri) (P. cyananthus var. longiflorus in UF) Utah, Beaver Co., Beaver Canyon, E of Beaver. 2250 m. Steep, stony banks. (More southern race of P. cyananthus with one-sided spikes of fewer, larger flowers in the same incredible blue. Somewhat dwarfier at 30 - 60 cm.) (20+ seeds) C
- 8852 P. ? MOFFATII (Sect. Cristati) Colorado, Mesa Co., East Creek Canyon, SW of Whitewater. 1800 m. Stony, sandstone slopes with sparse Juniperus. 30.6.87 (15 cm. high; possibly this Colorado Plateau sp.) (10 seeds) D
- 8858 P. ? MOFFATII (Sect. Cristati) Colorado, Mesa Co., Gateway. 1600 m. Steep, loose, clay slope. 30.6.87 (Taller than 8852 at about 20 cm., most measurements fit P. marcusii from a small area to the NE but the dried remains of a few old violet-blue flowers were inadequate for full determination.) (10 seeds) D
- 8800 P. MUCRONATUS (Sect. Coerulei) Utah, Daggett Co., S of Manila. 2250 m. Eroded, stony clay slopes. 25.6.87 (Reduced to P. pachyphyllus var. mucronatus by Neese, who describes it as "one of our most beautiful penstemons." (In Utah) She adds that it is "a well-marked taxon in the vicinity of the type-collection" - where this seed was gathered. Quite distinct from the P. pachyphyllus collections listed next, this has beautiful, fleshy, blue-grey leaves and 20 cm. stems of blue flowers streaked red-purple inside.) (20+ seeds) C
- 9125 P. PACHYPHYLLUS (Sect. Coerulei) Colorado, Jackson Co., N of Cowdrey, near Ginger Quill Ranch. 2400 m. Stony banks among grasses. 17.7.87 (Tall here with erect 60 cm. stems; bluish leaves.) (15+ seeds) B
- 9043 P. ? PACHYPHYLLUS var. CONGESTUS (Sect. Coerulei) Nevada, White Pine Co., SE of Ely, Connor's Pass. 2650 m. (Level, stony area among Artemisia. 11.7.87 (Thick, glaucous basal foliage and 30 - 50 cm. stems with a multitude of flowers. These can vary from lavenders and violets to blue in this species.) (20+ seeds) C
- 9550 P. PALMERI (Sect. Spectabiles) Nevada, White Pine Co., Snake Range. 2200 m. Stony areas. 24.8.87 (For sheer size and impact this is hard to beat! Woody based clumps of blue-grey, toothed leaves and great 2m. wands of huge, pink flowers, beautifully marked inside with wine-red and with yellow-bearded staminodes.) (30+ seeds) B
- 9527 P. PALMERI var. EGLANDULOSUS (Sect. Spectabiles) Utah, Kane Co., N of Kanab. 1900 m. Stony areas and open slopes among Pinus. 22.8.87 (This race differs technically only on the absence of pubescence on the stems but plants here were rather dwarfier, about 60 cm., and more branched. Try this if the above is overwhelming.) (30+) B
- 9251 P. RADICOSUS (Sect. Penstemon) Wyoming, Carbon Co., Shirley Mts., NW of Medicine Bow. 2500 m. Rock detritus 27.7.87 (Woody based clumps of erect, narrow-leaved, 30 cm. stems with heads of dark-blue. This and the rather larger, closely allied P. watsonii may prove long-lived, 'front of the border' plants.) (50+ seeds) B
- 9548 P. ROSTRIFLORUS (Sect. Bridgesiani) (formerly P. bridgesii) Nevada, White Pine Co., Snake Range, 2800 m. Loose, gravelly slopes. 24.8.87 (A most distinct species and the only member of its section. A low, shrubby base with narrow, leathery, green leaves send up stems of scarlet tubular flowers, superficially rather like those of P. barbatus. A most spectacular and long-flowering species which is surprisingly unfamiliar in Europe. This is a low-growing race, under 30 cm. high, and must be utterly temperature-hardy.) (25+ seeds) C
- 9097 P. SCARIOSUS var. GARRETTII (Sect. Glabri) Utah, Daggett Co., Uinta Mts., Eagle Basin Trail. 2300 m. Stony clay with Artemisia & Juniperus. 15.7.87 (This is a member of the complex group around P. strictus, all with stunningly blue flowers. Well-developed clumps of narrow, shiny green basal leaves send up erect stems to about 30-40 cm. - fairly dwarf for this group. This colony was breathtaking in flower in June.) (25+ seeds) C
- 9427 P. SECUNDIFLORUS (Sect. Coerulei) Wyoming, Albany Co., W of Centennial. 2800 m. Open stony areas among Artemisia & Eriogonum. 9.8.87 (Seen in flower on 19.6.87, this was a most delicately tasteful plant with greyish leaves and one-sided spikes of soft lilac-pink. Fairly dwarf race at 10-15 cm. high.) (20+ seeds) B
- 9484 P. SECUNDIFLORUS (Sect. Coerulei) (EW) New Mexico, Santa Fe Co., Santa Fe. 2400 m. Disturbed banks and open areas among scrub. 19.8.87 (This is a much more robust plant, around 30 cm. high, not seen in flower but the southern races can be deeper, even magenta, in colour. The species is an E slope plant only.) (20+ seeds) B
- 8940 P. ? STRICTIFORMIS (Sect. Glabri) Utah, San Juan Co., W of Blanding to Natural Bridges. 2100 m. Sandy areas among Pinus & Juniperus. 6.7.87 (Basal rosettes of strap-shaped leaves and usually with blue-lavender flowers. A somewhat ill-defined species which tends to approach P. cyanocaulis here and P. strictus to the East.) (20+) C
- 9275 P. STRICTUS (Sect. Glabri) Wyoming, Fremont Co., Wind River Mts., above Louis Lake, NE of Atlantic City. 2800 m. Open areas among Pinus in granite grit. 29.7.87 (We are reasonably happy with this name as seed was collected in the general area of Fremont's 1842 type-collection above South Pass! All are splendid plants with one-sided spikes of fine, rich-blue flowers with woolly, white anthers. About 60 cm. high.) (25+ seeds) B
- 9246 P. ? STRICTUS (Sect. Glabri) Wyoming, Carbon Co., Shirley Mts., NW of Medicine Bow. 2500 m. Meadow near stream with tall Artemisia. 27.7.87 (Extremely fine colony seen in flower on 20.6.87. Azure-blue.) (25+ seeds) C
- 9519 P. ? STRICTUS (Sect. Glabri) Arizona, Apache Co., Chuska Mts., between Red Rock Trading Post & Lukachukai. 2700 m. Loose, stony banks in coniferous woodland. 21.8.87 (Tall plants, 60-90 cm. high; old flower remains blue. This is an interesting, little visited area with a lot of Penstemon spp. around it!) (25+ seeds) C
- *9494 P. STRICTUS 'BANDERO' This is the plant usually grown as P. strictus in the USA; in general aspect unlike our Wyoming material but a splendid azure-blue spectacle, as far as we can judge from photographs. It seems to be a selected line or strain, maybe closer to the P. strictiformis end of this complex group. (20+ seeds) B
- 9619 P. TEUCRIOIDES (Sect. Caespitosi) (PK) Colorado, Park Co., NE of Como to Jefferson. 3000 m. Steep, open, gravel bank. 6.9.87 (Lavender-blue flowers on 9 cm. shrublets with very narrow, grey leaves. Crandall's type-specimen of P. crandallii was collected in "vicinity of Como" in 1897 - a confusing group of little plants.) (15+ seeds) D

PRICE CODE A	:	\$1.00	;	£0.80	;	DM2, -	;	FF 7. -	PRICE CODE D	:	\$4.00	;	£2.50	;	DM 8, -	;	FF25. -
B	:	\$2.00	;	£1.50	;	DM4, -	;	FF15. -	E	:	\$5.00	;	£3.50	;	DM10, -	;	FF35. -
C	:	\$3.00	;	£2.00	;	DM6, -	;	FF20. -	F	:	\$6.00	;	£4.50	;	DM13, -	;	FF45. -

- 9558 P. TUSHARENSIS (Sect. Caespitosi) (P. caespitosus var. suffruticosus in UF) Utah, Beaver Co., Tushar Range, Lousy Jim Creek. 2500 m. Open gravelly areas at margins of coniferous woodland. 26.8.87 (A charming, little plant, perfectly distinct here, in the vicinity of the type-collection. Neese states it intergrades towards P. caespitosus var. desertipicti towards the SE. The scaly leaf pubescence, which it shares with the Great Basin P. thompsoniae, gives the tiny, rounded leaves a silvery appearance. 5 cm. stems of pale-blue flowers with yellow beards and throats lined with wine-red. A marvellous pan- or trough-plant) (10+ seeds) E
- 8857 P. UTAHENSIS (Sect. Gentianoides) Colorado, Mesa Co., Gateway. 1600 m. Steep, loose, clay slopes. 30.6.87 (Another utterly distinct plant and the only member of its section listed. Smooth, leathery, blue-grey foliage and wand-like stems of around 50 cm. erupting into a mass of funnel-shaped flowers in the most brilliant carmine-red - a pure red, not the orange-scarlets of P. eatonii and P. barbatus. An incredible plant - "like a fire-engine standing up and shouting at you" said Panayoti Kelaidis, consummate "master of the mixed metaphor" - his wife's assessment - not ours!) (30+ seeds) D
- 9158 P. VIRENS (Sect. Penstemon) Colorado, Boulder Co., Front Range, Flagstaff Mt. above Boulder. 2200 m. Open grassy slopes and gravelly areas. 19.7.87 (Rather smaller and dwarfer than the next - in the wild.) (50+ seeds) B
- 9580 P. VIRENS (Sect. Penstemon) Colorado, Clear Creek Co., Front Range, Mt. Evans. 3800 m. Open slopes. 30.8.87 (Low, long-lived, clump-forming plants send up a multitude of wiry stems to around 15 cm. with bright, deep blue-violet flowers. More or less restricted to the Colorado Front Range - a fine spectacle there.) (50+ seeds) B
- *9493 P. VIRGATUS (Sect. Glabri) A larger, more typical form of this than the next. From Ellen Wilde's garden. (20+) B
- 9438 P. VIRGATUS subsp. ASA-GRAYI (sect. Glabri) Colorado, Park Co., Four Mile Creek Road, S of Fairplay. 3100 m. Open, stony steppe with sparse Artemisia. 13.8.87 (Another plant with an E slope distribution - this is a very fine, compact form about 30 cm. high. One-sided racemes of rich-blue flowers.) (30+ seeds) C
- 9563 P. WATSONII (Sect. Penstemon) Utah, Piute Co., Tushar Range, above Junction. 2700 m. Open, stony steppe. 26.8.87 (Woody-based clumps without basal leaves send up clumps of erect, 30-50 cm. stems with narrow green foliage and clustered heads of flowers in a very deep, rich blue. A very fine herbaceous plant.) (50+ seeds) B
- 9399 P. WHIPPLEANUS (Sect. Penstemon) Wyoming, Albany Co., Medicine Bow Mts., above Mirror Lake. 3500 m. Stony openings among conifers. 8.8.87 (A widespread and characteristic plant of the higher areas throughout the Southern Rocky Mts. Smooth green basal leaves and stems of around 50 cm. with big, baggy, drooping flowers of variable colour - here mainly in pale purples. Long-lived and probably reliable in gardens.) (50+ seeds) B
- 9504 P. WHIPPLEANUS (Sect. Penstemon) New Mexico, Bernalillo Co., Sandia Mts. above Albuquerque. 3500 m. Open slopes in coniferous zone. 20.8.87 (This is where Bigelow made the type-collection during Whipple's expedition of 1853. A rich wine-purple here but not quite so dark as the maroon-black San Juan forms.) (50+ seeds) B

If you are one of the ignorant and benighted - as we were - and unfamiliar with the diversity of Penstemon, but would like to try a selection from the 70 we have just listed, we offer two collections. We know this is not 'our thing' but we feel quite a lot of people are still going to be somewhat confused as to what they might want and this may help!

11 OF THE BEST LARGER PENSTEMONS collected in 1987. Species from over 30 cm. to almost 2 m. (1-5 ft.) in height.
P. ambiguus, P. cyananthus, P. eatonii, P. palmeri, P. strictus, P. secundiflorus from Santa Fe, P. lentus albiflorus, P. virgatus asa-grayi, P. utahensis, P. watsonii and P. whippleanus (9399).
 11 packets of seed (total list price £19.50) for £15.00 (or \$20.00 or DM40, -, or FF150. -)

9 OF THE BEST MEDIUM-SIZED PENSTEMONS collected in 1987. Species about 15-30 cm. (6-12 in.) in height
P. alpinus, P. francisci-pennellii, P. hallii, P. humilis, P. jamesii, P. leonardii, P. rostriflorus, P. scariosus garrettii and P. virens.
 9 packets of seed (total list price £19.50) for £15.00 (or \$20.00 or DM40, -, or FF150. -)

9382 PHACELIA HASTATA var. ALPINA Wyoming, Lincoln Co., NE of Geneva. 2200 m. Loose shale slopes on open hill-side. 6.8.87 (A larger plant than the next and with less 'class' but attractive, entire, silvered basal foliage with impressed veins. Dense heads of small, mushroom-pink flowers. 20-30 cm.) (20+ seeds) B

9272 PHACELIA SERICEA Wyoming, Fremont Co., Wind River Mts., above Fiddler's Lake. 3000 m. Granite grit on eroded banks. 29.7.87 (Widespread 'classic' Rocky Mt. alpine with much-cut, silky, silvery basal foliage and stiff, upright spikes packed with tiny deep violet-purple flowers. Must have perfect drainage & a poor diet.) (20+) C

PHLOX. These are the despair of the seedcollector. We had long wondered how it was that seed of these hardly ever seemed to be collected. Now we know. The plants can be extremely common; almost everywhere we went there seemed to be a Phlox. In spring, the thousands of mats or cushions are covered with hundreds of thousands of flowers. Out of flower, they are not at all obvious but, even when you know exactly where there are good colonies, you can return to find barely any seed set. Hundreds of cushions have no seed at all; some have one or two capsules; maybe one in a thousand will have set a reasonable amount. There is usually only one developed seed in each capsule but some fat capsules can be quite empty. When we told Dr. David Vesall in Minnesota that we hoped to collect a good range of Phlox spp., he replied "Phloxes! We'll all give you five bucks a seed for Phloxes!" The price is right. In spite of all this, it can be done, if you spend enough time searching with your nose to the ground. We do actually have some hard-won seed from some of the finest cushion-phloxes. These can rival Dionysia and Androsace and will doubtless be just as difficult to grow well. The reference accessible to most gardeners is E.T. Wherry's monograph 'The Genus Phlox'; this is an extremely difficult work to use in the field. Fortunately, the Phlox spp. of our area are covered by two more recent and more realistic and workable accounts, in the 'Intermountain Flora' and 'A Utah Flora'. Their classification is also used by Weber in his field-guide to the Colorado W. Slope. Our names match all these. Wherry's names or other comments are in brackets. Take heart from the fact that Phlox seed appears to be fairly reliable in germinating well. On the two occasions, we have had wild Phlox seed - of P. nana and P. missoulensis - we only had five seeds of each and we certainly raised three or more plants of each to flowering!

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 C : \$3.00 ; £2.00 ; DM6, - ; FF20. - F : \$6.00 ; £4.50 ; DM13, - ; FF45. -

- 9440 PHLOX CONDENSATA (*P. caespitosa* subsp. *condensata* of Wherry) Colorado, Park Co., Mosquito Range, Mt. Sherman above mine. 4200 m. Open stony turf and exposed tundra. 14.8.87 (The tightest and highest-growing of the alpine species, endemic to around the Continental Divide in the Southern ranges. Firm-packed pads of tiny rosettes massed with fragrant flowers, which are always pure white. No doubt very difficult to grow.) (8 seeds) F
- 9154 PHLOX MULTIFLORA (? subsp. *multiflora* of Wherry) Colorado, Boulder Co., Flagstaff Mt. above Boulder. 2200 m. Grassy slopes in openings among Pinus. 19.7.87 (Loose mats of needle-leaves with large pink, white-eyed flowers. This will be similar to the photograph on Plate 20 of 'Rocky Mountain Alpines') (8 seeds) E
- 9244 PHLOX MULTIFLORA (? subsp. *depressa* of Wherry) Wyoming, Carbon Co., Shirley Mts., NW of Medicine Bow. 2600 m. Stony slopes of various aspects. 27.7.87 (Much tighter mats but almost always with white flowers.) (8 seeds) F
- 9171 PHLOX MUSCOIDES (*P. bryoides* of Wherry and most horticultural literature) Wyoming, Laramie Co., S of Horse Creek. 2300 m. Open stony banks. 22.7.87 (As we understand them, all the recent publications already mentioned, adopt this name; many of Wherry's taxa intergrade and this is a complex group about which there will doubtless be continuing confusion. This is a superlative cushion plant with hard hummocks of woolly rosettes which cover themselves with white, or occasionally palest lavender, flowers, in spring.) (8 seeds) F
- 9422 PHLOX PULVINATA (*P. caespitosa* subsp. *pulvinata* of Wherry; *P. sibirica* subsp. *pulvinata* in Weber's 'Rocky Mountain Flora', the latter probably being a more accurate indication of its affinities) Wyoming, Albany Co., Medicine Bow Mts., Snowy Range, above South Gap Lake. 3800 m. Exposed rock outcrops with *Silene*, *Eritrichium*, etc. 9.8.87 (A very even, 'classic' population here of this beautiful plant with ice-blue to cool pale-lilac flowers. A distinct colour accurately reproduced on both Plates 18 & 19 of 'Rocky Mountain Alpines') (8 seeds) F
- 9076 PHLOX PULVINATA Utah, Wasatch Co., NW of Strawberry Lake. 2600 m. Open, gravelly areas. 14.7.87 (This looks superficially very different to 9422 but the name seems correct in both 'A Utah Flora' and the 'Uinta Basin Flora'. Wider cushions, compact but soft, with white to pale lilac-pink flowers.) (8 seeds) E
- PHYSARIA. A small but complicated genus of the Cruciferae, which intergrade confusingly. Most will probably end up 'lumped' under *P. newberryi* although all the following seem distinct enough when growing in their wild colonies. All are on the same general pattern: flat rosettes of greyish leaves with radiating racemes of yellow 'wallflowers' followed by the most striking clusters of large, inflated, bladder-like fruits, varying in size and to the degree they are tinged with pink, lilac or pearly shades. All are fine plants.
- 8648 PHYSARIA ? ACUTIFOLIA Wyoming, Natrona Co., SSE of Alcova. 1800 m. Open clay and sandstone slopes. 21.6.87 (The dwarfiest collection with extremely fine grey-white rosettes; little pearl-clusters of fruits) (12+ seeds) D
- 9172 PHYSARIA ACUTIFOLIA Wyoming, Laramie Co., S of Horse Creek. 2300 m. Open, stony banks. 22.7.87 (12+ seeds) C
- 9457 PHYSARIA ALPINA Colorado, Park Co., Mosquito Range, Mt. Sherman, above mine. 4200 m. Loose stony slopes, screes and mine-tailings. 14.8.87 (Mosquito Range endemic and by far the highest-altitude plant in the genus. Distinct not only in its isolated tundra-habitat but in its extremely large chrome-yellow flowers.) (12+ seeds) D
- 9011 PHYSARIA CHAMBERSII var. MEMBRANACEA Utah, Garfield Co., Red Canyon. 2500 m. Unstable limestone scree. 10.7.87 (Endemic to the limestones of Kane & Garfield Co. Distinct trichomes seen under a lens!) (12+ seeds) C
- 8980 PHYSARIA NEWBERRYI Utah, Garfield Co., SW of Escalante to Henrieville. 2000 m. Loose gravelly banks. 9.7.87 (Robust form of this species with sharply angled fruits; tends to grade into *P. chambersii*.) (12+ seeds) C
- POLEMONIUM. Like several genera mentioned - *Mertensia*, *Phlox*, *Physaria*, etc. - the alpine species can intergrade, presumably as a result of introgressive hybridisation, and there are not so many well-defined species as older accounts in gardening literature (Farrer, Clay, etc.) would lead one to believe. In our area most alpine taxa can be fitted under *P. viscosum* or *P. pulcherrimum* without any problem.
- 9510 POLEMONIUM BRANDEGEEI New Mexico, Bernalillo Co., Sandia Mts., above Albuquerque. 3600 m. Fissures on summit cliffs. 20.8.87 (We are very excited about this collection which we believe represents the pure species with clusters of long-tubed, golden-yellow flowers on 10 cm. stems. These plants grow high on an isolated range of mountains. The variable plants from further North in the main chains of the Rocky Mts. have probably all been 'contaminated' to some extent by *P. viscosum*, although they are assigned to this species.) (10+ seeds) E
- 9389 POLEMONIUM FOLIOSISSIMUM var. ALPINUM Utah, Rich Co., Wasatch Mts., Wasatch Ridge to Squaw Flat. 3200 m. Meadows among *Artemisia* and at margins of woodland. 6.8.87 (A handsome and distinct race of this tall, herbaceous plant. The pure white flowers and robust habit to about 1 m. in height are diagnostic.) (20+ seeds) B
- 9360 POLEMONIUM PULCHERRIMUM (var. *pulcherrimum*) Wyoming, Park Co., ESE of Cooke City, Clay Butte. 3000 m. Steep, loose, stony slope. 4.8.87 (A pretty little plant about 15 cm. high with heads of blue flowers. Not so spectacular as *P. viscosum* but generally much more easily grown and can be a good garden-plant.) (15+ seeds) C
- 9402 POLEMONIUM VISCOSUM Wyoming, Albany Co., Medicine Bow Mts., Snowy Range. 3600 m. Open areas in stony turf. 8.8.87 (One of the most superlative alpine-plants of the Rocky Mts. Upright tufts of sticky, cut foliage and stems of about 10 cm. with dense heads of large, azure-blue flowers. A breathtaking plant.) (20+ seeds) D
- 9310 POLEMONIUM VISCOSUM Wyoming, Sheridan Co., Bighorn Mts., Duncum Mt. to Sheep Mt. 3200 m. Unstable limestone scree on steep slope. 1.8.87 (This is dwarfer with fewer but much larger, paler flowers than the above. Quite a distinct race which seems rather closer to the Rocky Mt. taxon separable as *P. grayanum*.) (10+ seeds) F
- PRIMULA. Most specialist growers will probably refer to the A.G.S. publication 'Primulas of Europe and America'. This is a well-researched and informative account. The comments we add after these collections are mainly to qualify or correct statements made in this resulting from the authors' lack of familiarity with the American species in nature. In general, this must be considered a very reliable source of information.
- 9631 PRIMULA ANGUSTIFOLIA Colorado, Teller Co., Pike's Peak. 4500 m. Exposed slopes in granite grit. 9.9.87 (An exquisite, tiny plant with rich purple-carmine flowers - we saw none as pale as those in the A.G.S. book - Plate 14 in 'Rocky Mountain Alpines' is accurate. Remember it is a tundra-plant - keep cool in summer.) (15+) F

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- 9509 PRIMULA ELLISIAE New Mexico, Bernalillo Co., Sandia Mts., above Albuquerque. 3600 m. Shady fissures on summit cliffs (not particularly damp but always shaded - on rocks in woodland lower down). 20.8.87 (There was virtually no seed set in this locality in 1987, so we have very little ; we say no more.) (10 seeds) E
- 8769 PRIMULA MAGUIREI Utah, Cache Co., Logan Canyon, NE of Logan. 1700 m. N-facing limestone cliffs, in fissures and in moss on ledges. 24.6.87 (An extremely local species - one of the group of isolated relic species around *P. cusickiana* - only known from a few shady cliffs in Logan Canyon, we feel it is most important that species like this should be established and maintained in cultivation. Mesophytes like this can usually be grown more easily in moist maritime climates than they could in their native land. This should be given Dionysia-treatment but is dormant in summer ; plants in seed were already yellowing in leaf in late June.) (10 seeds) F
- PRIMULA PARRYI. This is a large, magnificent species, which we have never seen well-grown in cultivation. We feel it should be growable outside, possibly in a peat-garden ; it is too large for pot-cultivation and will become starved. Most photographs do not do it justice either - those in the A.G.S. publication give as good an idea of it as any. In spite of being placed in a different subgenus, it is a typical Nivalid *Primula* in aspect and in its choice of habitat - it is never happier than with its feet in snow-melt water. It does, however, grow in a wide variety of habitats - even on moist cliffs. As it is also widespread, we have made collections from four widely spaced localities, more in the hope that some might prove more adaptable in cultivation than others rather than because there is any great variation in colour or habit. 50+ seeds of all.
- 9327 PRIMULA PARRYI Wyoming, Big Horn Co., Big Horn Mts. Hunt Mt. 2900 m. Shady ledges & base of limestone cliffs. C
- 9418 PRIMULA PARRYI Wyoming, Albany Co., Medicine Bow Mts., Snowy Range. 3800 m. Stony areas in melt-water. (50+) C
- 9450 PRIMULA PARRYI Colorado, Park Co., Mosquito Range. 4200 m. Wet, stony areas. 14.8.87 (50+ seeds) C
- 9543 PRIMULA PARRYI Nevada, White Pine Co., Snake Range. 3500 m. Moist humus in coniferous woodland. (50+ seeds) C
- 8926 PRIMULA SPECUICOLA Utah, San Juan Co., Sunbonnet Rock above Bluff. 1550 m. Seepage lines on shady, sandstone cliffs. 5.7.87 (To correct the A.G.S. publication, it does not grow on "hot cliffs" nor is it "very rare" in the wild. It is, however, confined to the canyons of the Colorado River where it is restricted to the extraordinary 'hanging garden' plant-communities along with similarly localised species - *Mimulus eastwoodiae* & *Aquilegia micrantha*. Even species like *Epipactis gigantea* and *Smilacina stellata* are stranded with it on a few wet cliffs. This is an exciting and extraordinary member of the Section *Aleurtia* (*Farinosae*) like a giant *P. farinosa* with bunches of dark-green leaves, white-backed with farina, and stems of about 15 cm. carrying umbels of up to 40 flowers, which can be lavender, rose-pink or white. An amazing plant.) (50+ seeds) E
- 9332 PULSATILLA PATENS subsp. MULTIFIDA Wyoming, Big Horn Co., Big Horn Mts., Hunt Mt. area. 2900 m. Open, stony slopes. 2.8.87 (Beautiful, silky, lavender-blue pasque-flower. Much-cut, woolly foliage.) (20+ seeds) C
- 9572 PYROLA ASARIFOLIA Colorado, Clear Creek Co., Front Range, below Squaw Pass. 2800 m. Moist areas among conifers. 30.8.87 (Choice, humus-loving woodlander ; 20 cm. stems of purple to pink bells.) (100+ seeds) C
- 9463 RANUNCULUS ADONEUS Colorado, Park Co., Mosquito Range, above Horseshoe Lake. 4300 m. Stony slopes near late snow-patches. 15.8.87 (Lovely, cut-leaved, snow-melt species with glossy, yellow cups. 5-10 cm.) (15+ seeds) D
- 9495 RATIBIDA COLUMNIFERA New Mexico, San Miguel Co., S of Chapelle. 2300 m. Stony clay in open areas with sparse *Pinus*. 19.8.87 (Cut-leaved, herbaceous perennial, about 60 cm. high, and the ultimate coneflower with columns of purple-brown disc-flowers and reflexed rays in yellow or mahogany-red (f. *pulcherrima*) more usually here. B
- 9451 RHODIOLA INTEGRIFOLIA (can be placed under *R. rosea* (*Sedum rosea*) but horticulturally most distinct) Colorado, Park Co., Mosquito Range, Mt. Sherman, near mine. 4200 m. Moist stony areas & tundra. 14.8.87 (A most striking sculptured species with marvellous autumn colour. Not difficult to grow but very slow-growing.) (50+ seeds) C
- 9414 RHODIOLA RHODANTHA (*Sedum rhodanthum*, *Clementsia rhodantha*) Wyoming, Albany Co., Medicine Bow Mts. 3600 m. Wet, peaty areas with *Salix*. 9.8.87 (Similar in habit but more elongated, pink heads. About 20 cm.) (50+ seeds) B
- 9516 RUDEBECKIA LACINIATA New Mexico, Sandoval Co., Sandia Mts., S of Placitas. 2800 m. Moist areas & streamside in *Abies* woodland. 20.8.87 (A very large, imposing perennial, about 2 m. high, with clumps of lacinate leaves and showy, yellow coneflowers. Would make a splendid wild-garden plant flowering all late summer.) B
- 9590 SAXIFRAGA CHRYSANTHA Colorado, Clear Creek Co., Front Range, Mt. Evans. 4500 m. Exposed stony slopes in tundra vegetation. 30.8.87 (An alpine-plant of the first-rank and a complete surprise to us, who in our ignorance had no idea there was a saxifrage of such superlative quality in North America! The fact that it is in the *Hirculus* section deludes one. Forget this and imagine pads of tiny lead-green rosettes set with goblet-shaped golden flowers flushing orange in the centres - a marvellous thing which must be tried as a pan-plant by the specialist-grower. As with all tundra-plants, it will be best outside all summer.) (50+ seeds) E
- 9612 SAXIFRAGA FLAGELLARIS subsp. PLATYSEPALA Colorado, Park Co., above Hoosier Pass. 4000 m. Gravel patches in tundra. 6.9.87 (Beautiful, bright-yellow flowers from rosettes with thready, reddish stolons. 6cm.) (50+ seeds) D
- 9569 SAXIFRAGA ODONTOLOMA Colorado, Clear Creek Co., Front Range, below Squaw Pass. 2800 m. Moist, shaded areas among conifers. 30.8.87 (60 cm. high airy panicles of white flowers ; round, toothed leaves.) (50+ seeds) B
- 8939 SHEPHERDIA ROTUNDIFOLIA Utah, San Juan Co., W of Bluff to Natural Bridges. 2100 m. Sandy areas among *Pinus* & *Juniperus*. 6.7.87 (A most beautiful shrub endemic to the Colorado Plateau. A member of the *Elaeagnaceae*, usually about 1 m. but can be 2 m., somewhat like *Buxus* dipped in silver-paint! Striking foliage!) (5 seeds) C
- 9531 SILENE PETERSONII Utah, Garfield Co., Red Canyon, above Butch Cassidy Draw. 2600 m. Loose, unstable, lime-stone scree. 23.8.87 (Another of the very special S Utah endemics much lauded by Carl Worth but which has never been cultivated to perfection. A relic species which runs underground sending up 6 cm. stems of big brilliant pink flowers with notched petals and baggy, purple-veined calyces, all summer.) (5 seeds) F
- 9434 SISYRINCHIUM MONTANUM Colorado, Park Co., Four Mile Creek, SW of Fairplay. 3100 m. Moist depressions in sandy clay. 13.8.87 (Dainty, little violet-purple flowered member of the *Iridaceae*, 15 cm. high.) (15+ seeds) B
- 9378 SMILACINA RACEMOSA Wyoming, Lincoln Co., Salt River Range, SE of Alpine Junction. 2400 m. Undergrowth in mixed woodland above river. 5.8.87 (Lovely Liliaceous woodlander ; fluffy white heads. 1 m. high.) (8 seeds) B

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- 9627 SOLIDAGO SPATHULATA var. NANA Colorado, Teller Co., Pike's Peak, Elk Park. 4000 m. Open slopes in granite grit. 9.9.87 (One of the few dwarf, alpine golden-rods ; fluffy yellow heads on 9 cm. stems.) C
- 9232 SPHAEROMERIA CAPITATA Wyoming, Albany Co., S of Laramie. 2500 m. Exposed gravelly areas. 27.7.87 (A choice genus of Compositae, split from Tanacetum. Globular, rayless flower-heads but forming superlative even 10 cm. hummocks of distinctively, dissected silver leaves. If growable, this will prove an outstanding foliage-plant) D
- 9113 STANLEYA INTEGRIFOLIA Colorado, Moffat Co., NE of Massadona to Elk Springs. 1700 m. Steep, bare clay slopes. 16.7.87 (Woody-based perennial with entire, glaucous basal leaves and flower stems to about 80 cm.)(15+ seeds) B
- 8928 STANLEYA PINNATA Utah, San Juan Co., Sunbonnet Rock above Bluff. 1550 m. Steep, stony sandstone slopes. 5.7.87 (Bluish, pinnatifid leaves and usually over 1 m. These are both generally similar herbaceous perennials with wand-like spires of bright yellow flowers for all the world like *Eremurus stenophyllus* until you look more closely and see they are Cruciferae! Try these in a hot, dry situation with good drainage.) (15+ seeds) B
- 9412 SWERTIA PERENNIS Wyoming, Albany Co., Medicine Bow Mts., Snowy Range. 3600 m. Wet, peaty areas with *Salix*. 9.8.87 (15 cm. heads of inky-blue speckled flowers, more typical of the Eurasian species.) (20+ seeds) C
- 9435 THERMOPSIS DIVARICARPA Colorado, Park Co., Four Mile Creek SW of Fairplay. 3100 m. Moist depressions in clay. 13.8.87 (This and the following are attractive herbaceous perennials, about 60 cm. tall, with downy, palmately cut leaves and colourful, bright yellow flower-heads like stubby lupin-spikes.) (10+ seeds) B
- 9506 THERMOPSIS MONTANA New Mexico, Bernalillo Co., Sandia Mts., above Albuquerque. 3500 m. Open slopes.(10+ seeds) B
- 9166 TOWNSENDIA GRANDIFLORA Wyoming, Laramie Co., S of Cheyenne. 2100 m. Exposed grassland. 22.7.87 (This is a superb, extremely compact form with huge, white, long-rayed daisies, upward-facing and almost stemless.) (12+) C
- 8809 TOWNSENDIA ? MENSANA Colorado, Moffat Co., E of Dinosaur. 1700 m. Open, bare, clay banks. 26.6.87 (Cushions of ashy-grey rosettes with stemless, rounded daisies, usually white but sometimes pink-tinged. This is an extremely desirable plant - possibly this Uintah Basin endemic - ideal for trough or pan-cultivation.) E
- 9300 TOWNSENDIA PARRYI Wyoming, Big Horn Co., Big Horn Mts., Medicine Mt. 3200 m. Open slopes in sparse steppe vegetation. 1.8.87 (Huge lavender-blue asters on stems of about 10 cm. A spectacular plant, much larger than any of the other *Townsendias* here but generally with a monocarpic habit. Others are perennials.) B
- 9464 TOWNSENDIA ROTHROCKII Colorado, Park Co., Mosquito Range, above Horseshoe Lake. 4300 m. Stony slopes in vicinity of late snow-patches. 15.8.87 (Tight, little green-leaved rosettes and comparatively enormous pale lilac, yellow-centred daisies. As far as we can ascertain, this outstanding taxon is endemic to the Mosquito Range, where it is narrowly limited to bare earth round the highest and latest snow-patches, and it has never been in general cultivation. Unfortunately, the name occurs misapplied to various other species in horticultural literature. There is only one brief mention of the authentic plant on p. 116 of 'Rocky Mountain Alpines' and, unfortunately, no colour illustration. There is, however, a very good, if somewhat over-exposed, photograph of it in Weber's 'Colorado Flora : Western Slope' (Plate 58) - superlative.) (12+ seeds) F
- 9600 TRIFOLIUM NANUM Colorado, Summit Co., Front Range, above Loveland Pass. 4200 m. Exposed slopes in tundra-vegetation. 6.9.87 (Another superlative high-alpine but rather more widespread than *T. rothrockii*! The ultimate reduction in alpine clovers forming hard cushions of tiny, trifoliate leaves and covered with comparatively large, stemless, rose-pink pea-flowers. A marvellous thing but doubtless difficult.) (8 seeds) F
- 9406 TROLLIUS LAXUS Wyoming, Albany Co., Medicine Bow Mts., Snowy Range. 3600 m. Moist areas among *Salix*. 8.8.87 (Lovely cream or white, cup-shaped flowers on stems of about 50 cm. Palmately cut leaves.) (15+ seeds) C
- 9664 UVULARIA SESSILIFOLIA Seed from a fine colony of this Eastern woodlander established in Fred Case's Michigan garden. Pendant creamy bells from clumps of *Polygonatum*-like foliage, about 30 cm. high. (8 seeds) B
- 9570 VACCINIUM CAESPITOSUM Colorado, Clear Creek Co., Front Range, below Squaw Pass. 2800 m. Shaded slopes near conifers. 30.8.87 (Choice, ericaceous shrublet with pink-white flowers & blue fruits ; 10-20 cm.) C
- 9688 VIOLA FLETTII Saxatile endemic of the Olympic Mts. of Washington collected for us by Dr. D. Vesall. (8 seeds) E
- YUCCA. There are not so many species of this spectacular and arresting genus in the areas we travelled in in 1987. Their centre lies to the South in Southern Arizona. Of those listed, *Y. glauca* and *Y. harrimaniae* are the two widespread northern species penetrating to areas where temperatures drop to -34 to -29 °C. *Y. toftiae* and *Y. kanabensis* are more local species from S Utah, where temperatures will only drop to -23 to -17 °C (not more than 40 °F below freezing). The cultivated species in W Europe are almost all from the Southeast, where the climate is milder. These are, however, dry-climate plants and maximum drainage and sunlight will be essential. These are among the most beautiful garden-plants which can be grown in temperate areas.
- 9141 YUCCA GLAUCA Colorado, Boulder Co., SE of Boulder. 2000 m. Exposed grassland. 19.7.87 (Clumps of erect, very narrow blue-grey leaves ; stems, about 1 m. high, of lime-green to cream, pendant flowers.) (10 seeds) C
- 8922 YUCCA HARRIMANIAE Arizona, Apache Co., W of Teec Nos Pos. 1900 m. Open areas in stony clay. 5.7.87 (Rosettes of much shorter, broader leaves than *Y. glauca*. White marginal fibres peel off in curling filaments)(10 seeds) C
- 9081 YUCCA HARRIMANIAE Utah, Duchesne Co., between Duchesne & Starvation Lake. 2000 m. Open, rocky slopes. 14.7.87 (Seed from a very floriferous clone with especially broad leaves. Stems were about 70 cm. high, about as high as the species ever reaches. Flowers can be greenish yellow to cream, tinged with purple.) (10 seeds) D
- 8983 YUCCA KANABENSIS (*Y. angustissima* group) Utah, Kane Co., S of Cannonville to Kodachrome Basin. 2000 m. (Open areas in stony clay. 9.7.87 (Very narrow, linear leaves with curled fibres on the margins. Racemes of huge bells in greenish white to cream all up the stems, which can reach 3 m. in height - outstanding!) (10 seeds) D
- 8943 YUCCA TOFTIAE (*Y. angustissima* group) Utah, Garfield Co., NE of Hite above confluence of Colorado & Dirty Devil Rivers. 1400 m. Gravelly areas on sandstone. 6.7.87 (Even taller with branching flower-stems.)(10 seeds) D

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- 9403 ZIGADENUS ELEGANS Wyoming, Albany Co., Medicine Bow Mts., Snowy Range. 3600 m. Stony slopes in coniferous forest zone. 8.8.87 (A handsome bulbous member of the Liliaceae with greenish-white to cream flowers and rather broad, basal leaves. This is the largest flowered, hardy species and predominantly a plant of high altitudes. After becoming better acquainted with this genus during 1987, we have a dreadful feeling that what we grew and sold as this in the days when we had a nursery was, in fact, *Z. paniculatus*!) (20+ seeds) C
- 8666 ZIGADENUS VENENOSUS Wyoming, Carbon Co., Whiskey Gap to Muddy Gap. 2200 m. Artemisia-steppe and prairie. (Narrower racemes of white to cream flowers on stems of about 50 cm. Flowers & goes dormant earlier.) (20+) C
- 9498 ZINNIA GRANDIFLORA New Mexico, San Miguel Co., S of Chapelle. 2300 m. Open areas in stony clay with sparse Pinus. 19.8.87 (15 cm. high perennial with wiry stems carrying a profusion of long-lasting bright yellow flowers with a few, broad rays. After quoting all the nice things Claude Barr and Sampson Clay wrote about this, we sold-out last year! Having seen it grown in Denver last summer, we can endorse its good qualities.) B

SECTION II : SEEDS FROM EUROPEAN AND TURKISH SPECIES

Having spent the season in North America, we are unable to list new wild collections made by ourselves in these areas during 1987. About one-third of the species which follow is 1987 seed from cultivated material of known wild origin or from wild-collections by others. The remainder is selected from our seed-bank. In making these selections, we have favoured 'bulbs' as we felt that many specialists in these plants are not going to derive much from our travels in 1987, which were confined to a part of North America, which is not rich in petaloid monocotyledons. Seed from garden-plants without field-data or from areas outside North America, Europe and Turkey, will for the most part be found in Section III. Numbers in this section are the permanent field-reference numbers for the populations concerned.

OUR SEED-BANK was instituted in 1984 as a simple storage-system for seed from particularly good harvests. This is stored with silica gel in air-tight containers at just below freezing-point (0°C). Having discussed this method with a number of people involved with seed-storage and having ascertained the procedures adopted at the centres involved in large-scale seed-storage, such as at Kew in England or Fort Collins in Colorado, we are satisfied that our methods are adequate to store most seeds indefinitely in good condition. The simple requirements seem to be an extremely dry atmosphere and an even temperature. Dean Swift, whom we visited in S. Colorado, markets N. American conifer seed on a large scale, as well as field-growing some N. American wildflowers for wholesale seed-production. He often stores seed for several years, keeping it carefully monitored for moisture-content and viability, without any deterioration, thanks to the extreme dryness of the climate. This is standard procedure with commercial seed-producers - the people who actually grow the seed in places like Costa Rica or California; not the retailers like Sutton's or Thompson & Morgan, who have as much to do with producing seed as your local supermarket has to do with farming and fishing. Such seed-producers can thus cover themselves for years when harvests are inadequate. This is not so much a consideration from our viewpoint. We insure ourselves by covering a wide area. Our collecting works on the 'swings and roundabouts' principle: 1987 was a poor year for seed in SW Wyoming but a good year on the Colorado E. slope. Our purpose in storing seed is to make sure as many people as possible have as good an opportunity as possible of establishing our collections. Of course, we hope that most growers will try to obtain all species of interest to them from the first listings. Apart from other considerations, in many cases, we can only collect enough seed to make a single listing. We shall bank seed when we can, however, always making it clear that this has been stored from a previous harvest. We know that we have the world's most experienced and imaginative growers as our customers and we intend to keep our customers. Our seed has a very good reputation for quality among people whose experience and expertise we respect. We receive invaluable 'feed-back' regarding germination and we hope this will continue. As far as seed-bank material is concerned, reports on germination will be especially welcome - only positive results are really of much use to us, however. There can be a multitude of reasons why seed does not germinate, lack of viability being only one of them; if we know seed germinates, even if only with one person, then we know all is well. In the case of isolated reports, details of treatment will be made available in our lists.

ACANTHOLIMON: Update. We were particularly anxious to secure information on this genus from last season's material. Norman Deno of State College, Pennsylvania, ran tests on standard packets of all our collections and rapidly reported germination of all but two. These tests were made under controlled conditions. Conventional sowing at Denver produced seedlings of the two which did not germinate at State College but not on some of the others. It is far too early to make any suggestions far less reach conclusions and more reports will be welcome. It is interesting, however, to note that a trial was made recently at Denver Botanic Garden, using their own seed (Denver is one of the few places where viable seed is set in cultivation) treated in various ways. The best germination was from the discarded debris remaining after 'seed' had been stripped out of the calyces! So at least there is a good argument for leaving the fragile seed where it is and sowing everything. Irregularity of germination may simply be due to a naturally low viability; we can only try to supply what seems to be a sufficient quantity of mature calyces.

- 101.500 ACANTHOLIMON BRACTEATUM (var. bracteatum) Turkey, Van, Ispiriz Da., MNW of Baskale. 2800 m. Steep, stony slopes. SB coll. 8.8.86 (The only truly capitate one here with papery, bright-pink, rounded heads.) E
- 101.900 ACANTHOLIMON CARYOPHYLLACEUM (subsp. caryophyllaceum) Turkey, Sivas, Ziyaret Tepe. 2100. Open, limestone slopes. SB coll. 25.8.86 (Compact, spiny cushions covered with pale-pink, 2-ranked spikes.) B
- 104.200 ACANTHOLIMON SPIRIZIANUM var. MULTIFLORUM Turkey, Van, ESE of Guzelsu. 2000 m. Sedimentary clay and gravel hills. SB coll. 8.8.86 (Very local & confined to the Guzelsu valley. Only Turkish member of Subsect. Microcalycina with branching spikes of pink flowers from compact cushions of spiny rosettes.) C
- 130.100 ALLIUM AKAKA Turkey, Erzurum, Palandoken Da. 2700 m. Steep, S-facing, igneous scree on exposed summit ridge. SB coll. 16.7.86 (Close to the better-known *A. cristophii* and best described as a miniature version of this. Bulbous with lovely, ribbed blue-grey leaves and rounded pale-lilac heads. 9 cm. high.) (15+ seeds) D
- *161.002 ANEMONE HORTENSIS France, Corse, Cap Corse, Col de la Serra above Luri. 275 m. 1987 seed ex hort. & coll. A. Edwards. (Starry flowers (its synonym *A. stellata* is more appropriate) in many shades from pinks to blue and lilac. A very lovely, dainty and neglected, summer-dormant species) (20+ seeds) B

PRICE CODE A : \$1.00 ; £0.80 ; DM2, - ; FF 7. -	PRICE CODE D : \$4.00 ; £2.50 ; DM 8, - ; FF25. -
B : \$2.00 ; £1.50 ; DM4, - ; FF15. -	E : \$5.00 ; £3.50 ; DM10, - ; FF35. -
C : \$3.00 ; £2.00 ; DM6, - ; FF20. -	F : \$6.00 ; £4.50 ; DM13, - ; FF45. -

- *161.600 ANEMONE PALMATA Spain, Jaen, Sierra de Cazorla. 1987 seed coll. & ex hort. A. Edwards. (Charming, little summer-dormant species with yellow, buttercup-flowers. Not particularly difficult; seldom-seen)(20+ seeds) C
- 173.600 AQUILEGIA OLYMPICA Turkey, Erzurum, Kop Da., 2400 m. Wet-flush among Salix and Betula scrub. SB coll. - 25.8.86 (Short-spurred blue and white flowers on branching 50 cm. stems.) (20+ seeds) C
- *196.500 ARUM NIGRUM Yugoslavia, Bosna i Hercegovina, above Dubrovnik to Trebinje. 500 m. Holes & crevices on limestone, usually in oak scrub. 1987 ex hort. M. Tucker from a Brian Mathew coll. (This is an unusual & absolutely hardy species which seldom sets much seed in nature or in gardens; maroon-black.) (5 seeds) C
- 201.100 ASPERULA ARCADIENSIS Greece, Korinthia, S of Lake Stimfalia. 500 m. NW-facing limestone cliffs. SB coll. - 14.6.86 (Exquisite chasmophyte with fragile, downy, fine-leaved stems bearing soft-pink tubes.) (20+ seeds) C
- 213.140 ASTRAGALUS DAVISII Turkey, Bitlis, W of Kuskunciran Gecidi. 2200 m. Loose, stony, igneous slope. SB coll. - 1.8.86 (A "very distinct & beautiful species" according to the 'Flora of Turkey' - a woody-based herbaceous perennial with 20 cm. racemes of fragrant, cream flowers from tufts of erect leaves.) (10 seeds) E
- 219.570 ASTRAGALUS TRIFOLIATRUM Turkey, Van, SW of Ercek Golu. 1850 m. Open, gravelly slopes. SB coll. 4.8.86 (One of the Sect. Hymenostegis with large, 'rabbits' tails' of soft lemon-yellow flowers among hairy bracts, on 15 cm. stems from woody-based tufts. A sumptuous plant which has germinated well.) (10 seeds) D
- 227.770 BELLEVALIA FORNICULATA Turkey, Agri, Sac Gecidi, W of Eleskirt. 2300 m. Hay meadow. SB coll. 10.7.86 (Outstanding with its pure turquoise-blue flowers, forming pools of blue in a few special sites)(20+ seeds) C
- 251.500 CAMPANULA AUCHERI Turkey, Trabzon, Soganli Da.. 2300 m. Short turf in meadows. SB coll. 29.8.86 (Big, downy, blue-purple bells from close rosettes. An excellent rock-garden plant.) (20+ seeds) C
- 252.005 CAMPANULA BETULIFOLIA Turkey, Trabzon, Soganli Da.. 2200 m. Rock crevices. SB coll. 19.8.86 (Rosettes of dark-green birch-leaves and pendant stems of huge white bells from pink-tinged buds. Superlative endemic of the Coruh River drainage, here at an unusually high-altitude and in a very fine form.) (50+ seeds) D
- 252.301 CAMPANULA BORNMOELLERI Turkey, Van, Kavussahap Da. 2800 m. Shady, limestone cliffs. SB coll. 5.8.86 (Beautiful, narrow endemic, only from S of Lake Van. Long, angular, rich violet bells.) (20+ seeds) E
- 253.800 CAMPANULA CORIACEA Turkey, Van, W of Yukari Narlica. 2200 m. Shady, conglomerate cliffs. SB coll. 8.9.86 (Another little-known endemic to the Van area. Wide, lilac-blue bells; thick-textured leaves.) (50+ seeds) E
- 253.901 CAMPANULA CRISPA Turkey, Mus, E of Malazgirt. 1700 m. Crevices on igneous outcrops. SB coll. 3.9.86 (Stiff upright stems to about 30 cm. packed with wide-open, pure-white flowers.) (50+ seeds) D
- 256.001 CAMPANULA HAWKINSIANA Greece, Ioanina, Katara. 1700 m. Unstable, S-facing, serpentine scree. SB coll. 8.8.85 (Wide bells of pure violet shading to electric-blue; a challenge to grow well.) (50+ seeds) D
- 259.700 CAMPANULA OREADUM Greece, Pieria, Oros Olimbos. 2000 m. Vertical, limestone cliffs. SB coll. 10.8.85 (Incomparable, saxatile Olympian endemic with long, violet bells from neat rosettes.) (20+ seeds) F
- 259.800 CAMPANULA ORPHANIDEA Greece, Drama, Falakro. 2000 m. Exposed areas on limestone summit-ridge. SB coll. 3.10.86 (Superb violet-purple endemic of the Greek/Bulgarian border mountains. Little-known.) (20+ seeds) F
- 262.400 CAMPANULA RUPICOLA Greece, Viotia, Oros Parnassos. 1500 m. & above. N & NW-facing limestone cliffs. SB coll. 2.8.85 (Not to be confused with *C. rupestris*! This is a high-altitude perennial with large violet bells, possibly closest to *C. oreadum*. Always an obscure plant in horticultural literature.) (20+ seeds) E
- 265.400 CAMPANULA TRIDENTATA Turkey, Rize, Ovit Da. 3000 m. Dryish, stony turf. SB coll. 30.8.86 (Similar habit to *C. aucheri*. These are both members of a variable group centered on the Caucasus. Violet-blue)(20+ seeds) C
- 265.500 CAMPANULA TROEGERAE Turkey, Artvin, NW of Yusufeli. 600-700 m. Crevices in shady, igneous cliffs. SB coll. Recently described race of *C. betulifolia*, apparently endemic to the Barhal Valley. Thick-textured, grey, pubescent foliage & very large flowers with expanded, wide-open, flat flowers in pure-white.) (50+ seeds) F
- 266.000 CAMPANULA WALDSTEINIANA Yugoslavia, Hrvatska, Velebit Planina, Mali Halan. 1100 m. Vertical, limestone fissures. SB coll. 18.8.85 (Rich-blue stars on wiry, erect 10 cm. tufts. Exquisite trough-plant)(50+ seeds) C
- 311.400 COLCHICUM AUTUMNALE England, Dorset, W of Blandford Forum. 150 m. Open areas in mixed woodland. (Coll. by W. & B. Chapman, 1987) (Lovely, pink autumn-flowering species - the only British native one.) (30+ seeds) B
- 314.751 COLCHICUM KOTSCHYI Turkey, Van, Kavussahap Da., 2300 m. Open, stony slopes. SB coll. 2.7.86 (Dwarf species from E Turkey and Iran, flowering there in early autumn - always white in this locality.) (15+ seeds) D
- *317.500 COLCHICUM PYRENAICUM (*Merendera pyrenaica*, *M. montana*) Spain, Rio Aragon valley, N of Canfranc-Estacion. 1300 m. Open stony areas. 1987 seed from our own corms. (Bright rose-pink in autumn.) (20+ seeds) C
- 321.000 COLUTEOCARPUS VESICARIA (subsp. *vesicaria*) Turkey, Erzurum, Kop Da. 2300 m. Dryish, gravelly slopes. SB coll. 17.7.86 (Extraordinary crucifer with cushions of Androsace-like rosettes; white or lilac-tinged Thlaspi-like flowers followed by inflated fruits - pale-green balloons tinged white or lilac.) (20+ seeds) E
- 324.301 CONVOLVULUS BOISSIERI subsp. COMPACTUS Turkey, Nigde/Adana, Ala Da., E of Camardi. 1800-2200 m. Open steppe. SB coll. Z. Zvolanek & J. Jurasek, 10/19.9.86 (An extremely desirable but rather difficult cushion-plant with pure silver rosettes and large, stemless, flat, white flowers from pink buds.) (5 seeds) F
- CORYDALIS - Update. We have no reports on germination of this notorious genus, of which we listed seven collections of dwarf, tuberous species last season. It would be too early to expect germination with conventional-sowing methods but we have had the opportunity to discuss the problems with Norman Deno in Pennsylvania. He has induced a first-stage of germination under controlled conditions; activating leaf and root-growth from this is the next problem. Using conventional methods, Henrik Zetterlund at Goteborg tells us *C. thyrsoiflora* (see Section III) germinates reliably after 2 or 3 seasons; Stan Taylor in Warwick endorses this for *Dicentra peregrina*. Keep all seed and do let us know of any germination in 1988.

- *345.200 CROCUS GOULIMYI Greece, Messinia, SSE of Agios Nikonas. 300 m. Humus-filled crevices among stones. 1987 seed from our own corms. (Beautiful, long-tubed, lilac-blue flowers in autumn; accommodating) (15+ seeds) B
- 347.101 CROCUS KOTSCHYANUS subsp. SUWOROWIANUS Turkey, Rize, Ovit Da. 3000 m. Stony, dryish ridges. SB coll. 21.7.86 (Beautiful, white autumn-flowering species, very little known in cultivation.) (15+ seeds) D
- *347.402 CROCUS LAEVIGATUS Greece, Evia, Nea Artaki. 300 m. Among *Cistus macchie* & *Pinus*. 1987 seed coll. & ex hort. D. Hoskins. (Very variable here with many richly feathered lilac flowers in late autumn.) (15+ seeds) B
- *352.550 CROCUS SIEBERI subsp. SUBLIMIS Greece, Evia, Gros Dirfis. 1000 m. Open, stony, limestone slopes. (Coll. & ex hort. D. Hoskins, 1987 seeds. Large, lilac with rich-yellow throat in spring.) (15+ seeds) B
- *353.000 CROCUS SPECIOSUS (subsp. *speciosus*) Turkey, Bolu, near Abant Golu. 1100 m. Open, stony turf. Our 1987 seeds from a nice deep lilac-blue form which appeared as a 'contaminant' in *C. b. pulchricolor*.) (15+ seeds) B
- 354.002 CROCUS VELUCHENSIS Yugoslavia, Srbija-Kosovo, S of Urosevac. 800 m. Humus in *Fagus* woodland. SB coll. 1.6.86 (Superlative form with large, luminous, lilac-blue flowers in spring. Hates drying-out.) (15+ seeds) D
- CYCLAMEN. See also Section III for *Cyclamen* without precise field data. All listings are from 1987 seed from cultivated material. We have seen some splendid germinations from our *Cyclamen* seed!
- *358.500 CYCLAMEN BALEARICUM Spain, Islas Baleares, Mallorca, N of Andratx. 350 m. In humus among *Quercus*. (Coll. & ex hort. D. Hoskins) (Little, delicately pencilled, white flowers in spring; variable leaves.) (20 seeds) C
- *359.002 CYCLAMEN CILICIMUM Turkey, Konya, NW of Bozkir. 1000 m. At base of N-facing limestone cliffs. Our own 1987 seed. (An exceptionally hardy, autumn-flowering species; pink with well-marked leaves.) (20+ seeds) B
- *367.500 CYCLAMEN PURPURASCENS Italy, N of Trieste. 300 m. Ex hort. D. Hoskins from material we collected in 1966 - makes us feel old. Big rosy carmine flowers in late summer. Well-marked leaves. (10+ seeds) C
- *367.900 CYCLAMEN REPANDUM France, Corse, N of Bastia. 100 m. Ex hort D. Hoskins from material collected in 1962 - makes us feel even older. These were selected for the size and depth of colour of the luminous carmine flowers and we gained an F.C.C. for this species with a pan of this collection. Spring flowers. (15+ seeds) D
- 380.800 DAPHNE BLAGAYANA Yugoslavia, Srbija-Kosovo, S of Urosevac. 800 m. Among *Juniperus* & *Ostrya* scrub. SB coll. 1.6.86 (Prostrate stems with large, scented, creamy-white flowers; seldom sets seed.) (15+ seeds) E
- 388.500 DELPHINIUM CARDUCHORUM Turkey, Van, Ispiriz Da. 2800-3000 m. Among stones by streams - dry in summer. SB coll. 8.8.86 (Most attractive, 30 cm. high, azure-blue, tuberous-rooted perennial.) (20+ seeds) D
- 407.402 DIGITALIS FERRUGINEA (subsp. *ferruginea*) Turkey, Bolu, near Abant Golu. 1000 m. Dryish slopes at woodland margins. SB coll. 19.9.86 (1.5 m. stems packed with orange-netted flowers; perennial.) (100+ seeds) B
- 408.300 DIGITALIS LAMARCKII Turkey, Gumushane, Vauk Da. 1800 m. Open stony slopes. SB coll. 28.8.86 (Narrow-leaved, perennial clumps; 50 cm. stems of soft-brown, baggy flowers with huge, white lips.) (100+ seeds) D
- *409.402 DIGITALIS OBSCURA Spain, Soria, Puerto del Pinar. 1100 m. Open, limestone slopes in rock debris. (1987 seed ex hort. D. Hoskins. A rather dwarf form of this beautiful, amber-yellow shrubby species.) (50+ seeds) D
- *419.500 DRABA CAPPADOCICA Turkey, Kayseri, Erziyes Da. 1500 m. Fissures in NW-facing, igneous cliffs. 1987 seed from plants grown in Colorado from our 1984 introduction of this yellow-flowered, cushion-plant. (30+ seeds) D
- 422.000 DRABA ROSULARIS Turkey, Van, Ispiriz Da., NNW of Baskale. 2700 m. Crevices on gneiss outcrops. SB coll. 8.8.86 (Compact, hairy cushions with yellow flowers. Grow these hard to keep them in character.) (30+ seeds) D
- 490.500 FRITILLARIA ALBURYANA Turkey, Erzurum, Palandoken Da. 2500 m. Rock detritus on open slope. SB coll. 22.7.86 (Incomparable flowers of rich, clear pink. A very local plant, snow-covered from November till May and relatively dry in late summer. A great challenge to grow well but worth all efforts.) (20+ seeds) F
- *490.800 FRITILLARIA ALFREDAE subsp. GLAUCOVIRIDIS Turkey, Adana, above Hasanbeyli. 1100 m. Open, stony areas (1987 seed from our material of this distinctive, yellow green species with a glaucous bloom.) (20+ seeds) D
- *493.500 FRITILLARIA CRASSIFOLIA subsp. KURDICA Turkey, Van, Ispiriz Da., NNW of Baskale. 2800 m. Open, stony slopes. (1987 seed of this accommodating little race, very variable in this colony from yellow-greens to reddish-browns, variously chequered and striped. Flowers more quickly from seed than most.) (20+ seeds) D
- *494.800 FRITILLARIA EHRHARTII Greece, Evia, above Metohi. 200 m. N & W-facing sides of gulleys on talc-schist. Our 1987 seed of this local plant with bloomy, grape-black flowers, ruby against the light. (20+ seeds) D
- *496.000 FRITILLARIA GRAECA (subsp. *graeca*) Greece, Ahaia, Ori Aroania, Helmos. 2000 m. Stony, alpine-steppe. (Our 1987 seed - we were thrilled with this last season and have a good quantity of hand-pollinated seed. This is a very dwarf, alpine form, under 10 cm., with wide, brown bells, neatly striped with pale-green, one of the best plants for pan-cultivation we have seen. This race is illustrated in Rix & Phillips 'The Bulb Book' p.90 from material collected here under Polunin & Chater 13017. Tolerated last winter!) (20+ seeds) D
- 499.401 FRITILLARIA MESSANENSIS (subsp. *messanensis*) Greece, Pieria, Gros Olimbos above Vrondou. 1000 m. Steep, limestone slopes. SB coll. 18.6.86 (Very fine, elegant race here, illustrated in 'The Bulb Book' p.91) (20+) D
- *499.700 FRITILLARIA MESSANENSIS subsp. GRACILIS Yugoslavia, Bosna i Hercegovina, W of Trebinje. 500 m. Base of *Quercus* scrub on limestone. (Our 1987 seed. Untesselated chestnut-brown, gold-edged bells.) (20+ seeds) C
- 500.001 FRITILLARIA MINIMA Turkey, Van, Kavussahap Da. 2700 m. Steep scree on open slope. SB coll. 2.7.86 (Listed last year under our field number 7630, this has now flowered. Beautiful, little snow-melt species with yellow bells, like the N American *F. pudica*. Little-known in cultivation but not an easy plant.) (20+ seeds) F
- 500.100 FRITILLARIA MINUTA Turkey, Van, Kavussahap Da. 2800 m. Stony alluvial silt by snow-melt stream. SB coll. 2.7.86 (Expanded bells in apricot & amber shades in the wild but again difficult to grow well.) (20+ seeds) E
- *499.900 FRITILLARIA MICHALOVSKYI Turkey, Kars, W of Sarikamis. 2100 m. Alpine meadows among *Pinus*. (Our 1987 seed derived from the 1965 coll. M & T 4299 and from an E.M. Rix collection from the same area. We have not been able to relocate this in this particular locality recently. Seedlings can vary a lot in size and shape of their big, mahogany bells, edged with gold. Has proved a very satisfactory plant in gardens.) (20+ seeds) C

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 E : \$5.00 ; £3.50 ; DM10, - ; FF35. -
 F : \$6.00 ; £4.50 ; DM13, - ; FF45. -

- 502.000 FRITILLARIA PONTICA Turkey, Bolu, near Abant Golu. 1000 m. Deep shade among conifers. SB coll. 19.9.86 (Green bells tinged with brown. Easily grown outside in wetter climates : from cold, wet areas.) (20+ seeds) B
- *487.700 FRITILLARIA IONICA Greece, Kerkira, Pandokrator. Coll. & ex hort. A. Edwards. (Corfu race, which has been placed under the above and is currently under *F. graeca* subsp. *thessala*. Distinct to gardeners.) (15+ seeds) D
- 518.400 GENTIANA GELIDA Turkey, Gumushane, Kop Da. 2300 m. Meadows in moist to dryish turf. SB coll. 28.8.86 (Like a pale yellow *G. septemfida* but not so easy to grow - outstanding and worth every effort.) (30+ seeds) E
- 519.200 GENTIANA OLIVIERI Turkey, Hakkari, Zap Gorge below Hakkari. 1300 m. E-facing, limestone scree. SB coll. 6.7.86 (Summer-dormant with rosettes of narrow leaves and clusters of amethyst-blue, white-throated flowers. Seedlings go dormant the first season without producing true-leaves and need careful handling the first season - do not overdry. *Helleborus vesicarius* behaves in the same way - *Primula maguirei* may also do this - leading growers to suppose the seedlings have died at the cotyledon stage.) (30+ seeds) E
- 520.402 GENTIANA PYRENAICA Turkey, Trabzon, Zigana Da., 2100 m. Grazed alpine-turf among *Daphne* & *Vaccinium*. SB coll. 18.7.86 (Exquisite royal-blue trumpets. Cool, moist conditions in acid, peaty soil.) (30+ seeds) F
- 520.900 GENTIANA SEPTEMFIDA Turkey, Artvin, Genya Da. 1800 m. Dryish, open meadows on summit-ridge. SB coll. 1.9.86 (Large clusters of blue flowers, one of the finest, most reliable garden-plants in the genus.) (30+ seeds) B
- 532.601 GLADIOLUS KOTSCHYANUS Turkey, Van, Ispiriz Da. 3000 m. Wet turf. SB coll. 8.8.86 (Delicate, dwarf race with pale-lilac or sometimes white flowers on wiry, 20-30 cm. stems. Not a difficult plant.) (20+ seeds) D
- 532.602 GLADIOLUS KOTSCHYANUS Turkey, Erzurum, Kop Da. 2400 m. Wet flush with *Salix* and *Betula* scrub. SB Coll. 28.8.86 (As dwarf and delicate as the preceding but with hooded, crimson flowers.) (20+ seeds) D
- 547.000 HABERLEA RHODOPENSIS Greece, Drama, NW of Drama. 300 m. N-facing rock crevices. SB coll. 20.6.86 (Very beautiful Gesneriad with exquisite pale-lavender flowers. Tiny seedlings need care to raise.) (200+ seeds) D
- 563.002 HELLEBORUS VESICARIUS Turkey, Maras, SW of Kahramanmaraş. 750 m. NE-facing slope among sparse *Paliurus* scrub. SB coll. 15.6.85 (Legendary relic with huge, inflated seed-capsules. Summer-dormant and can be grown in bulb-frame conditions. Seed germinates irregularly - see also note under *Gentiana olivieri*.) (15+) E
- 574.500 HYPERICUM CAPITATUM Turkey, Gaziantep, WNW of Nizip. 600 m. Marl slopes between cultivated areas. SB coll. 15.8.86 (Woody-based, 15 cm. high species with incredible burnt-orange-scarlet flowers. Not easy (15+) F
- 614.000 LALLEMANNTIA CANESCENS Turkey, Erzurum, Kop Da. 2400 m. Stony clay. SB coll. 28.8.86 (*Salvia*-like, woody based, herbaceous perennial. Toothed grey leaves and 30 cm. intense violet-blue spikes.) (15+ seeds) D
- *632.001 LILIUM ALBANICUM (*L. carniolicum* group) Greece, Ioanina, Katara. 1700 m. Coll. & ex hort. A. Edwards. (1987 seed of the most southern, Pindus Mts. race of this magnificent yellow lily.) (20+ seeds) D
- *632.002 LILIUM ALBANICUM Yugoslavia, Sar Planina. 1987 seed "from some exceptional black-centred forms", grown from material originally selected by H. Zetterlund - HZ85-33. Not difficult in acid soil. (10 seeds) E
- *633.201 LILIUM CHALCEDONICUM Greece, Magnissia, Oros Pilio. 1500 m. Steep, SW-facing schist slope. (SB - 1986 hand-pollinated seed ex hort D. Hoskins. Pendant flowers of immaculate, glowing scarlet.) (15+ seeds) D
- 634.500 LILIUM PONTICUM (var. *ponticum*) (*L. carniolicum* group) Turkey, Trabzon, Soganli Da. 2000-2200 m. Steep, N-facing slope among *Rhododendron* & *Vaccinium*. SB coll. 29.8.86 (Butter-yellow flowers, usually brown-centered and with a few speckles, on stems of about 50 cm. Growable in peat-garden conditions.) (20+ seeds) D
- *688.600 MUSCARI CAUCASICUM (Subgen. *Leopoldia*) Turkey, Kars, SSW of Sarikamis. 1800 m. Stony, igneous slopes. 1987 seed. (Very handsome tassels of sterile, blue-violet flowers above brownish bells.) (20+ seeds) C
- *689.450 MUSCARI GRANDIFOLIUM Morocco, Middle Atlas above Ifrane. 1700 m. Heavy, red clay on limestone outcrops. (Our 1987 seed of this handsome, distinct species ; ink-blue flowers from china-blue buds.) (10+ seeds) B
- NARCISSUS. For other *Narcissus* spp. collected and grown by John Blanchard see Section III.
- *696.200 NARCISSUS BULBOCODIUM subsp. NIVALIS (of Maire) Morocco, High Atlas, above Tizi-n-Tichka. 2000 m. In turf. (We use Maire's classification for these N Africans. This does not seem the same as the Spanish taxon and Maire's use of this name is probably incorrect but there is no other. Variable, dwarf, snow-melt race with yellow hoop-petticoats. An extremely hardy tolerant race proving an excellent garden-plant) (15+ seeds) B
- *699.200 NARCISSUS BULBOCODIUM subsp. VULGARIS var. PALLIDUS Morocco, High Atlas, Tizi Gourane above Amizmi. 1800 m. Schist fissures. (A more distinct taxon than might be imagined. Primrose-yellow flowers on 4-10 cm. stems in early spring. An excellent pan or bulb-frame plant enjoying drying-out in summer.) (15+ seeds) D
- *705.600 NARCISSUS RUPICOLA subsp. MARVIERI Morocco, Middle Atlas, Tizi-n-Ait Ouira. 1700 m. N slope in *Cedrus* & *Quercus* woods on limestone. (A local plant, seldom-collected with large, soft-yellow flowers.) (10 seeds) D
- *705.702 NARCISSUS RUPICOLA subsp. WATIERI Morocco, High Atlas, below Oukaimeden. 1800-2000 m. N & NW-facing slopes in stony clay. (Crystalline white race endemic to the highest, igneous massif. Exquisite.) (10 seeds) D
- 707.200 NARCISSUS TORTIFOLIUS Spain, Almeria, Sierra de los Filabres near Sorbas. 400 m. Gypsum hills. SB - wild seed coll. J. Blanchard, 1.4.86 (Recently described species, closest to *N. dubius*. Creamy, clustered flowers and short, glaucous leaves, twisting flat on the ground. Quite dwarf and most distinct.) (15+ seeds) F
- 735.000 ORIGANUM ACUTIDENS Turkey, Tunceli, SW of Pulumur. Gravelly places on steep, open slopes. 1500 m. SB coll. 26.8.86 (Larger, more robust version of the next - drooping spikes, stacked with cream bracts.) (20+ seeds) C
- 736.300 ORIGANUM ROTUNDIFOLIUM Turkey, Artvin, Coruh valley near Borcka. 500 m. Sunny sandston cliffs & banks. SB coll. 31.8.86 (An excellent garde-plant, smaller than the above. Similar, long-lasting bracts.) (20+ seeds) B
- 738.100 ORNITHOGALUM ARCUATUM Turkey, Van, W of Yukari Narlica. 2200 m. Stony alluvium in river bed (dry in summer.) SB coll. 5.8.86 (Very handsome long, spikes of white flowers, 60 cm. or more high.) (30+ seeds) B

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- 758.100 PELARGONIUM QUERCETORUM Turkey, Hakkari, Zap Gorge, S of Hakkari. 1300 m. Limestone scree among Quercus & Paliurus scrub on steep, E-facing slope. SB coll. 6.7.86 (Remarkable relic, recently described from N Iraq. Large, lobed, toothed leaves and 1 m. stems of magenta-carmine, butterfly-like flowers. This gave almost 100% germination and plants grew well in Britain last season - even outside.) (8 seeds) F
- 785.000 PRIMULA ALGIDA Turkey, Van, Ispiriz Da., NNW of Baskale. 2800 m. Short turf in moist alpine-meadow. SB coll. 5.7.86 (Choice, dwarf with neat rosettes & lilac-pink heads. Aleuritica Section.) (50+ seeds) E
- 785.150 PRIMULA AMOENA Turkey, Rize, Ovit Da. 3000 m. & above. Cool slopes & cliff-ledges. SB coll. 30.8.86 (Very beautiful, intense red-violet flowers; growable but by no means an 'easy' plant. Rich, acid soil.) (30+) E
- 785.602 PRIMULA AURICULATA Turkey, Van, NW of Ercis. 1800 m. Moist hay-meadow. SB coll. 10.7.86 (10-50 cm. high with pale lilac to red-violet flowers. Widespread and variable E Turkish plant. Sect. Aleuritica)(50+ seeds) C
- 788.200 PRIMULA LONGIPES Turkey, Rize, Ovit Da. 3000 m. & above. Shady crevices and on rocks in melt-water stream SB coll. 30.8.86 (Exquisite Turkish endemic. White-eyed flowers in soft lavender. Sect. Nivales)(20+ seeds) F
- *812.505 RANUNCULUS ASIATICUS var. PUNICEUS Greece, Kriti, Rethimno, Oros Idi, above Fourfouras. Coll. & ex hort. A. Edwards. (The spectacular scarlet race, not previously recorded for Crete. Summer-dormant.) (15+ seeds) C
- 822.000 RHODODENDRON CAUCASICUM Turkey, Trabzon, Soganli Da. 2300 m. Rocky outcrops. SB coll. 29.8.86 (The true, wild form with white flowers from pink buds is little-known in gardens. Dense-growing to 60 cm.)(50+ seeds) D
- 824.001 RHODOTHAMNUS CHAMAECISTUS Austria, Karnten, Karawanken, Koschuta. 1500 m. Steep, limestone slope. SB coll. 12.10.86 (Lovely, dwarf Ericaceous shrublet with flat, pink flowers. Not an easy plant.) (50+ seeds) D
- 860.200 SAXIFRAGA FERDINANDI-COBURGI Greece, Drama, Falakro. 2000 m. SE-facing limestone cliffs. SB coll. 3.10.86. (Dense, greyish cushions with beautiful, pale-yellow flowers, Sect. Porophyllum.) (100+ seeds) C
- 860.300 SAXIFRAGA FLORULENTA Italy, ValdieriEntracque (Piemonte), NW of Colle della Finestra. 2600 m. Siliceous cliffs. SB coll. 29.8.85 (Mythical relic eulogised by Farrer. Germinates easily; difficult to grow!) (50+) F
- 861.400 SAXIFRAGA KOTSCHYI Turkey, Van, Kavussahap Da. 2200-3000 m. Shady agglomerate & limestone cliffs. SB coll. 2.7.86 (Very seldom seen in cultivation. Tight cushions, yellow flowers. Sect. Porophyllum)(100+ seeds) C
- 863.901 SAXIFRAGA SCARDICA Greece, Ahaia, Ori Aroania, Helmos. 1300-1500 m. Shady, limestone fissures. SB coll. 13.6.86 (Close cushions & branching heads of pale-pink flowers. Outstanding. Sect. Porophyllum)(100+ seeds) C
- 872.300 SCILLA ARMENA (S. siberica group) Turkey, Erzurum, Palandoken Da. 2500 m. Steep, open slopes. SB coll. 26.6.86 (Lovely, small, snow-melt bulb with bells of penetrating, electric-blue.) (20+ seeds) D
- *874.800 SCILLA LITARDIERI Jugoslavia, Bosna i Hercegovina. W of Trebinje. 500 m. Fragmented limestone. Our 1987 seed. (A delightful plant, 15-20 cm. high with erect spikes of pale-blue flowers.) (20+ seeds) B
- *876.800 SCILLA PERUVIANA Spain, Grazalema. Coll. & ex hort. A. Edwards. (Large, handsome azure-blue sp.) (20+ seeds) A
- 969.200 TULIPA ARMENA (var. armena) Turkey, Erzurum, Palandoken Da. 2500 m. Rock detritus on open slopes. SB coll. 22.7.86 (Spectacular scarlet tulip, companion to Fritillaria alburyana but flowers later.) (20+ seeds) C
- 969.201 TULIPA ARMENA - YELLOW FORMS All data as above. (Selected soft-yellows, occasionally pinkish.) (15+ seeds) D
- 980.850 VERBASCUM DUMULOSUM Turkey, Antalya, Gullukdagi (Termessos). 900-1000 m. Crevices in ruins. Coll. P. & P. Watt in Oct. 1986 & received too late for our last list. (Unrivalled as the finest, dwarf saxatile member of this genus. White-felted rosettes and 10 cm. spikes of yellow flowers. A superb plant.) (30+ seeds) D
- 984.150 VERONICA OLTENSIS Turkey, Erzurum, SSW of Oltu. Fissures on W-facing, igneous cliffs. 1500 m. SB coll. 15.7.86 (Minute, pinnate leaved relative of V. liwanensis; pads of pure, intense azure-blue.) (20+ seeds) F
- 989.601 VIOLA DELPHINANTHA Greece, Drama, Falakro. 2100 m. SE facing, limestone, summit-cliffs. SB coll. 29.7.85 (Classic alpine. Long-spurred pink violets on tufts of wiry stems. A challenge to grow well.) (15+ seeds) F
- 992.600 VIOLA PERINENSIS Greece, Drama, Falakro, above Agio Pnevma plateau. 1800 m. Limestone scree. SB coll. 20.6.86 (Thick leaves and large, purple flowers; a beautiful and distinct species.) (20+ seeds) E

SECTION III : SEED FROM CULTIVATED PLANTS COLLECTED DURING 1987 : As usual, much of this seed is from personal friends and we cannot always go to the same trouble to verify names as we do with our own, wild collected seeds. If you are unhappy about any name, we can always put you in touch with the source. Apart from the many kind friends, who let us have seeds from their gardens in the U.S.A., we are grateful to the following for thinking of us last summer and collecting some seed for us : J. Blanchard, P. Chappell, B. Chapman, K. Dryden, A. Edwards, D. Hoskins, W. McLewin, S. Taylor and M. Tucker, all in Britain; Terry Hatch for some little-known New Zealand material; Jimmy Persson & Henrik Zetterlund for some outstanding new material, established from the Swedish Expedition to Pakistan in 1983.

- ADLUMIA FUNGOSA Climbing Corydalis with finely cut leaves and pendant, pink flowers. Monocarpic but fun. (20+ seeds) A
- AQUILEGIA FORMOSA Originally from wild material coll. Vancouver Island. Fine scarlet and yellow flowers. (20+ seeds) B
- ASTELIA NERVOSA X FRAGRANTISSIMA Natural hybrid from Central plateau, N. Island, N.Z. Very beautiful foliage. This genus of N.Z. Liliaceous plants does well at the R.B.G. Edinburgh but is seldom-seen. Acid, well-drained. (15+ seeds) C
- ARISAEMA ? ROBUSTUM Originally received from Japan as A. ringens, which it is not. Green spathes. 15 cm. (8 seeds) C
- ARISAEMA TORTUOSUM Vigorous, tall clone, hardy in Somerset, U.K. Himalayan with extraordinary spathes. 1m. (8 seeds) D
- ARUM ALBISPATHEM Very hardy with extremely large, membranous, greenish-white spathes. Scarlet fruits. (15+ seeds) B
- ARUM CYRENAICUM Little-known, Libyan cousin of A. palaestinum. Big, purple-lined spathes. Tender. (8 seeds) D
- ARUM DIOSCORIDIS var. PHILISTAEUM Green spathe blotched with maroon-black. Long, protruding spadix. (8 seeds) C

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- CALOCHORTUS VENUSTUS 'COLORADO STRAIN' Originally from bulbs received from Wayne Roderick in California - the name presumably refers to the river, not the state. White, cream, yellow, through pink to red, exquisitely marked flowers. Kath Dryden tells us this is easily grown in a bulb-frame, kept dry from July to March (25+ seeds) C
- CAMPANULA ALLIONII An extremely fine vigorous form established in Colorado. Huge, long, violet bells. (20+ seeds) C
- CARDIOCRINUM CATHAYANUM Chinese species, much more rarely seen in cultivation than the next. Smaller. (20+ seeds) D
- CARDIOCRINUM GIGANTEUM YUNNANENSE (*Lilium giganteum*) An incredible plant, about 3 m. high. English seed. (25+ seeds) C
- CERASTIUM CANDIDISSIMUM Endemic to S Greece, has proved a superb & choice 'silver' in the Denver area. (30+ seeds) B
- CERCIS CHINENSIS From a clone which has remained only about 1.5 m. high in Pennsylvania after many years. (10+ seeds) B
- CLEMATIS MARMORARIA Marvellous, saxatile N.Z. sp. ; A.M. 1986 ; colour illustration in Bull. Alp. Gard. Soc. Vol. 52, p. 391 with a full description on p. 390. This is English seed from Stan Taylor. (10+ seeds) F
- COLCHICUM SP. Wild seed coll. D. & P. Hoskins, at about 500 m. above Lichnos in NW Greece, in 1987. (20+ seeds) C
- CORYDALIS THYRSIFLORA SEP 141 : Pakistan, Hazara, Babusar Pass. 4300 m. (Original coll. in 1983) (15+ seeds) E
- CORYDALIS THYRSIFLORA SEP 281 : Pakistan, Hazara, Kaghan Valley, Saiful Maluk. 3400 m. Talus slope. (A beautiful plant with blue-grey foliage & rich-yellow flowers. "Will germinate if kept 2-3 winters" says H. Zetterlund. (15+) E
- CYCLAMEN CILICIMUM var. INTAMINATUM Dwarf, hardy, autumn-flowering white. From a variety of leaf-forms. (20+ seeds) B
- CYCLAMEN CILICIMUM var. INTAMINATUM EKB 628 Leaves especially well-marked with a silvery zone. (15+ seeds) C
- CILICIMUM var. INTAMINATUM - PLAIN-LEAVED Rather large white flowers and leaves like *C. coum*. Distinct (20+ seeds) B
- CYPRIMUM Autumn-flowering, pink-nosed white. Hardy in Britain in a cold-greenhouse or bulb-frame. (15+ seeds) C
- GRAECUM From good leaf forms selected by A. Edwards in the Mani, S. Greece. Autumn-flowering, pink. (15+ seeds) C
- HEDERIFOLIUM From D. Hoskins 'Highfield' clone - distinct, glossy foliage, well-marked. (20+ seeds) B
- HEDERIFOLIUM - MIXED From a wide range of pinks, whites and a variety of leaf-forms. Easy & hardy. (20+ seeds) A
- LIBANOTICUM Sumptuous, spring-flowering pink. Best in cold greenhouse or frame - likes some shade. (15+ seeds) C
- PERSICUM Spring-flowering pale pink or white. Originally from material coll. in Rhodes by E. Sewell. (15+ seeds) B
- DAPHNE GIRALDII Rather like a pure-yellow flowered version of *D. mezereum*, about 60 cm. high. Superb. (10 seeds) C
- DIANTHUS MICROLEPIS Dwarf, compact cushion-forming Bulgarian sp. One of the best rock-garden species. (20+ seeds) B
- DICENTRA PEREGRINA NE Asian alpine of unparalleled beauty - pendant, pink flowers over a congested filigree of silvered-blue foliage. English-seed from Stan Taylor, who tells us it germinates well after 2 winters. (10 seeds) F
- DRACOCEPHALUM BOTRYOIDES Extremely good, compact, mat-forming Caucasian Labiate. Purple spikes. Choice. (20+ seeds) C
- EDRAIANTHUS PUMILIO Cushion-forming endemic of the Yugoslavia Biokovo Mts. Solid mounds of violet bells. (20+ seeds) B
- EREMURUS HIMALAICUS Magnificent white Foxtail Lily with 3 m. columns of pure-white flowers. Early summer. (10+ seeds) B
- ROBUSIUS Huge, cylindrical spikes of clear-pink flowers. All these want full sun & good drainage. (10+ seeds) B
- STENOPHYLLUS Dwarfest of these with 1.5 m. spikes of bright-yellow flowers. A good grower. (15+ seeds) B
- ERYTHRONIUM ALBIDUM English-grown seed of this seldom-seen, white-flowered sp. from Eastern U.S.A. (20+ seeds) C
- FRITILLARIA ACMOPETALA Elegant S Turkish sp. with green & purple-brown bells. One of the easiest to grow. (15+) B
- CRASSIFOLIA subsp. KURDICA BSBE 1434 From NW Iran. Smaller with darker, more globular bells. (15+ seeds) D
- MELEAGRIS Both purple-chequered & white forms. Easy, hardy W. European sp. for a moist, open site. (30+ seeds) A
- RADDEANA PF 6287 From stock maintained by Kath Dryden from the original Paul Furse coll. from NE Iran - a very fine larger sp., like a small, soft-yellow version of the Crown Imperial, *F. imperialis*. 30-40 cm. (15+ seeds) D
- HEBE MACRANTHA Heads of pure-white flowers, very large for the genus. A New Zealand evergreen. 30 cm. (50+ seeds) C
- HELICHRYSUM BELLUM Extremely fine S. African species, becoming established in the Denver area from material quite recently coll. in the Drakensberg by B.L. Burt. Hardy in Colorado - must be tried in Europe. About 30cm (100+ seeds) D
- HELIPTERUM ALBICANS Low-growing Tasmanian Composite with long-lasting white flowers. Relatively hardy in England. B
- HELLEBORUS All from specialist Will McLewin. Germination seems reliable during the winter after sowing. Keep moist.
- 'DRACO STRAIN' Maroon-zone ; pink edge. (10+ seeds) C ; 'PINK STRAIN' Unspotted clear pinks. (15+ seeds) C
- 'PURPLE STRAIN' Wine to very dark. (10+ seeds) C ; 'ZODIAC STRAIN' Purple-spotted zone ; pink (15+ seeds) C
- X HYBRIDUS From a very wide colour range, mainly derived from *H. orientalis* but not entirely. (30+ seeds) B
- X STERNII From a good, selected clone of this *H. lividus* hybrid. Clusters of pink-tinged cups. (20+ seeds) B
- HEPATICA MAXIMA From material coll. on Ullung Is. between Japan & Korea by Tor Nitzelius in 1976. (10+ seeds) D
- IRIS INNOMINATA From a pale-yellow clone of this variable Pacific Coast sp. For rich, acid soil. 20 cm. (10+ seeds) B
- TENAX Very elegant Pacific Coast sp. Flowers can vary from lavender to cream & yellow. 20 cm. (10+ seeds) B
- JUNCUS CONCINNUS SEP 187 Pakistan. Upper Kaghan Valley near Lulu Sar Lake. 3450 m. Wet meadow by stream. Described from Sweden as "a super plant. Leaves & scapes brownish-red, white flowers in umbels & shiny black fruit. (50+ seeds) D
- LILIUM MARTAGON 'QUARRY WOOD STRAIN' Developed from some of the best colour, especially dark ones. (20+ seeds) A

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- LEWISIA COTYLEDON From the wild race with pink, candy-striped flowers - not a selected garden race. (20+ seeds) B
- LILIUM NEPALENSE Superlative plant, best in a cold-greenhouse - flowers late and best dry in winter (15+ seeds) D
- LINUM CAPITATUM Splendid dwarf yellow flax from the same collection as received an A.M. in 1986 - colour illus. in Bull. Alp. Gard. Soc. Vol.54, p.351. Original coll. by Z. Zvolanek in the Pirin Mts. of Bulgaria. (20+ seeds) C
- LOBELIA 'PINK FLAMINGO' New selection from New Zealand, where much good work is done with these. 1m. high. (50+) C
- MAURANDIA. Seed from 3 members of this handsome, C. to S. American genus of Scrophulariaceae, received from Paul Mathews too late for our last list. All are pink-flowered, more or less climbing. Must be frost-free in winter.
- M. BARCLATIANA (50+ seeds) B M. ERUBESCENS (50 seeds) M. PURPUSII (50+ seeds) B
- MYOSOTIS ARNOLDII May be the choicest of all New Zealand spp. Silver leaves, large yellow flowers. Difficult. (10+) E
- MYOSOTIS PETIOLATA var. POTTSIANA Possibly the rarest of all N.Z. spp. Cultivated N.Z. seed (above is Swedish!) - this is only known from the type-locality on the Otara River, rediscovered 2 years ago. White. Alpine-house. (10+) E
- NARCISSUS. All the following from material grown by John Blanchard. Limited quantities of seed only available.
- N. ASTURIENSIS (Pto. de San Isidro) (10+ seeds) C N. BULBOCODIUM (E. Hodgkin coll. Morocco) (15+) B
- N. BULBOCODIUM (Serra da Estrella, Portugal) (15+) B N. BULBOCODIUM (Pto. de San Isidro, N. Spain) (10+) B
- N. BULBOCODIUM TENUIFOLIUS (C. Portugal) (15+) B N. JONQUILLA HENRIQUESII (= N. cordubensis) (10+) B
- N. FERNANDESII (MS 449 - type loc. coll.) (10+) C N. JONQUILLA (Sierra de Gabra, Cordoba, Spain) (15+) B
- NARCISSUS EUGENIAE From type-locality material of this recently described taxon - E Spain, above Valdolinales, E of Teruel. This will eventually have to be placed at some level in the complex N. pseudonarcissus group but this has not yet been done. It will remain a distinct taxon with almost stemless trumpets - a snow-melt plant. 3 cm. (10+) E
- PARAQULEGIA GRANDIFLORA SEP 237 Pakistan, Hazara. From both white and violet-flushed forms of this superlative saxatile alpine. Seed of this large-flowered & apparently vigorous race germinated well when last listed. (20+ seeds) F
- PENSTEMON 'BREITENBUSH BLUE' Dwarf natural hybrid of P. fruticosus coll. by Roy Davidson. Superb. 10 cm. (20+ seeds) C
- FRUTICOSUS var. SERRATUS All these belong to the Sect. Dasanthera from the NW U.S.A., far from our collecting area in 1987, so we have kept these separate. These are all shrubby. Lilac-blue, originally from Oregon. (20+) B
- 'GINA' Extremely fine hybrid involving the above, P. rupicola & maybe others. Rather silvery-leaved and about 30 cm. high with rich rosy-pink flowers. A very hardy, long-lived plant. Will obviously vary from seed. (20+) B
- PINELLIA PEDATISECTA Weird, NE Asian Aroid with strange green spathes and much-cut foliage. Fairly hardy. (8 seeds) C
- POMADERIS Terry Hatch has sent us some very interesting material of these New Zealand shrubs, all coll. N. Island, N.Z. These will not be hardy in cold areas but will be worth trying in the cold or cool greenhouse.
- P. APETALA (Erect, 2 m., pale-green flowers) (30+) B P. KUMERAHO (1.5 m., yellow corymbs) (30+ seeds) B
- P. ORARIA NOVAE-ZELANDIAE (Prostrate; gold) (30+) C P. PHYLICIFOLIA ERICIFOLIA (Pale yellow) (30+ seeds) B
- P. PHYLICIFOLIA POLIFOLIA (50 cm., pale gold) (30+) B P. SP. - N. CAPE (Prostrate, lemon-yellow) (30+) C
- PRIMULA HAZARICA SEP 400 Pakistan, Ushu Valley near Mahodan (Swat). 3200-3800 m. N-facing, moist rocks. (A superb but difficult member of Sect. Aleuritia, not grown since the 1930's. Membranaceous leaves, covered in white farina. Large, fragrant, deep violet flowers on 5-10 cm. stems. Alpine-house only - hand-pollinate for seed.) (15+ seeds) F
- RHODODENDRON CAMTSCHATICUM ALBUM Original material from Alaska coll. Aline Strutz; stock kept isolated. (50+ seeds) E
- ROMULEA SALDANHENSIENSIS Magnificent S African sp., hardy in a cold-greenhouse. Golden, brown-backed 'crocuses' (15+) C
- RUPELLIA HUMILIS Hardy, perennial member of the Acanthaceae from Eastern U.S.A. Showy pink flowers. 50 cm. (5 seeds) B
- SAXIFRAGA CINEREA Red-stemmed, pure-white flowers. Compact cushions. Keep cool outside in summer. (50+ seeds) F
- POLUNINIANA Tight cushions with white, crimped-edged flowers, turning pink. These are both of the Porophyllum Sect., introduced from the upper Barun Valley, Nepal, by Dr. D. Walkey. Received too late for last list. (50+) F
- SCUTELLARIA ORIENTALIS subsp. PINNATIFIDA Prostrate, matforming with yellow, hooded flowers. (15+ seeds) B
- PROSTRATA Himalayan species with toothed leaves and spikes of pale-yellow and violet flowers. (15+ seeds) C
- SOPHORA SP. Palliser Bay, N. Island, N.Z. Prostrate shrubs, probably gold-flowered. Chip & soak seed. (10 seeds) C
- SUKSDORFIA VIOLACEA Small member of Saxifragaceae from Western N. America. Bright violet flowers. Leaf-growth starts in autumn; flowers in early spring; tiny tubers are dormant in summer. Delightful pan-plant. (50+ seeds) C
- TANACETUM TOMENTOSUM SEP 462 Pakistan, Gilgit, near Sango Sar Lake, W of Astor. 4320 m. (One of the most promising rock-garden plants from this expedition - woolly, grey-white foliage & dense flower-heads; about 30 cm. high.) C
- TEUCRIUM PSEUDOCHAMAEPIITYS Another good garden-plant. Spanish, herbaceous sp. Large, white flowers. 30 cm. (15+) B
- TULIPA HUMILIS From a large colony naturalised in Sandy Snyder's Colorado garden - originally from various Dutch clones (T. "pulchella violacea", etc.) but now in varying shades of violet-pink. Blue or yellow centres. (20+) B
- VERONICA KOTSCHYANA Distinct, high-altitude, limestone-crevice species endemic to the Cilician Taurus in Southern Turkey. Decumbent stems with tiny, hairy leaves; dense racemes of bright violet-blue on 9 cm. stems. (20+ seeds) D
- XERONEMA CALLISTEMON Extraordinary member of the Liliaceae, endemic to Poor Knight's Is. off the New Zealand coast, where it grows, wind-blasted with sea-spray, as a semi-epiphyte on volcanic scoriae. Recently the subject of some "hype" by Duncan & Davies who ran a full-page colour advertisement in the R.H.S. Journal to sell plants at an idiot price. We do not aim to sell to "mugs" - this germinates irregularly, must be grown frost-free in a well-drained, low nutrient, lime-free (like old, weathered boiler-cinders!). It can be done - several people in Britain told us they were growing it last time we listed it. Incredibly spectacular sprays of brilliant red flowers. (50+ seeds) B

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