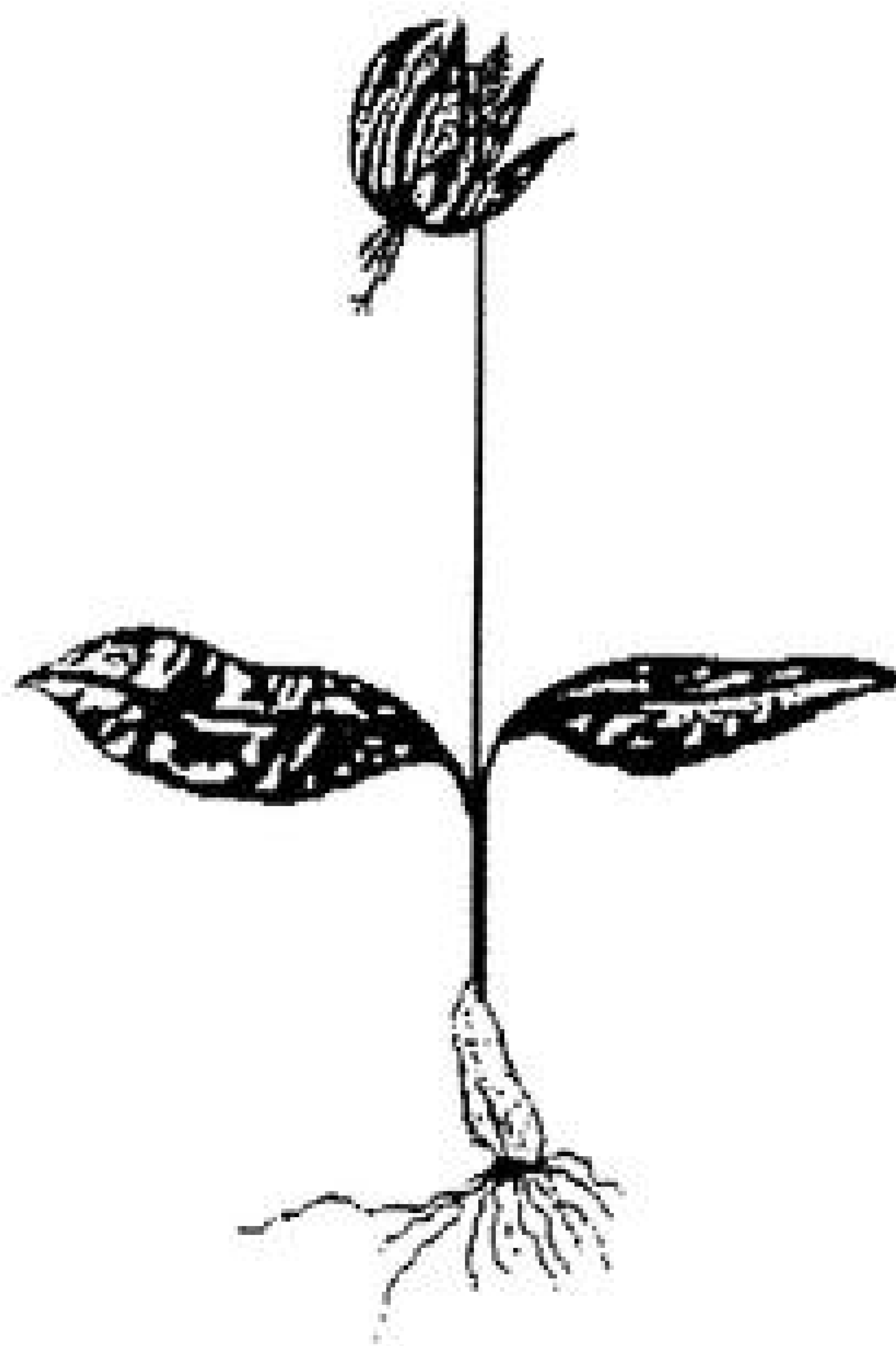


THE BULB
NEWSLETTER



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The Bulb Newsletter No. 10

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Some fairly new Colchicums

Whilst sorting our collection of reprints (at last!) the other day I came across the descriptions of two Greek *Colchicum* species by Karin Persson in 1988*, not very new but since they have not yet become well-known it seems a good idea to give them an 'airing'. The two are *C. pulchellum* K.Persson and *C. graecum* K. Persson.

Colchicum pulchellum ('small and beautiful') is an early autumnal species (August-September in the wild), flowering before the leaves ('leaves hysteroanthous'); the small flowers have a tube of variable length (as do most colchicums), usually about 4-12 cm long, and the segments are 1.5-3 cm long, rounded at their apices; the flower shape is described as funnel- to bell-shaped, and the colour, pinkish-purple to mid rosy-purple with a distinct white central stripe on the lower half of the segments. The leaves are 3-4 in number and are short and narrow compared with, for example, those of *C. autumnale*, linear or linear-oblong and only 7-12 cm long and 5-10 mm wide. For those who like to delve into colchicums in greater detail, the anthers are yellow and the styles almost straight with the stigmatic surface confined, or very nearly so, to the tip ('punctiform' in *Colchicum* terminology); *C. pulchellum* occurs in the Peloponnese, in the Taygetos Mts and Mt Killini (Kylene).

Colchicum graecum is also an autumnal hysteroanthous species with pale to deep pinkish-purple or rosy-purple funnel-shaped flowers, not or only rarely slightly marked with a tessellated pattern, the tube about 6.5-18 cm long and segments usually 3-6 cm long, pointed at their apices ('subacute to subobtuse or obtuse-acuminate'). The leaves are usually 4-5 in number, lance-shaped to oblong or elliptic and 2-6 cm wide. The anthers are yellow and the styles are curved at the apex with the stigmatic surfaces relatively long (usually 2-6 mm). This is widespread in the Greek mountains from the Peloponnese to the Pindus and the author says that this has been confused in the past with *C. parnassicum* which is actually confined to Mt Parnassus and Mt Elikon (Helikon); *C. graecum* is also compared with *C. autumnale* which is, in Greece, only in the extreme north of the country.

* *Willdenowia* 18:29-46(1988)

The differences given are: *C. graecum* is a more robust plant than *C. parnassicum*, with stronger, darker corm tunics, perianth segments not tessellated, more leaves which are larger and of a duller green, and a different chromosome number ($2n=42$ or 44 , $2n=54$ in *C. parnassicum*). In *C. parnassicum* the flowers are usually tessellated to varying degrees. From *C. autumnale* it differs in the corm tunics (thinner & paler in the latter), in the proportions of the leaves (relatively shorter & broader in *C. graecum*), longer anthers (usually 6-10 mm long, 4.5-7 mm in *C. autumnale*) and also in chromosome number ($2n=36$ in *C. autumnale*). *Colchicum graecum* has been illustrated in *Curtis's Botanical Magazine*, new series plate 174(1962), as *C. parnassicum*. I must check again the very vigorous plant received many years ago as *C. parnassicum* from Eliot Hodgkin: it looks as if it might in fact be *C. graecum* - how irritating to have to wait for 6 months until it flowers again!

IBS Update

I have mentioned the International Bulb Society before in the BN (BN2:10, BN5:11, BN9:15) but we have been informed that the Society has had a change of address* and is taking off with renewed enthusiasm, welcome news indeed since its periodical, *Herbertia*, is a great source of interesting items in the bulb world. Nowadays their interests are wide-ranging, not restricted to the Amaryllidaceae, so we can expect articles on almost any aspect of petaloid monocots. The latest *Herbertia*, Volume 49, contains features on Californian *Allium* species (with 12 colour photos), *Calochortus*, a review of *Nothoscordum*, *Milla* and its allies (+ photos of the rarities *Dandya thadhowardii* and *Milla rosea*), three new *Crocus* species (with colour photos, of *C. paschei*, *C. kerndorffiorum* and *C. biflorus* subsp. *albocoronatus*), a new species of *Calochortus* (*C. syntrophus*), a new *Nothoscordum* (*N. castilloi*), and a new *Zephyranthes*, *Z. leucantha*. Brief details of these novelties follow, but the full details, and the other interesting articles, can be found in *Herbertia*, Volume 49 (1993, published 1994).

*The International Bulb Society's NEW address is: P.O.Box 92136, Pasadena, California 91109-2136, U.S.A.

New Crocus species

Crocus paschei, described by Helmut Kerndorff, is from southern Turkey, in the Taurus Mountains; it is a spring-flowering species with a papery corm tunic splitting lengthways at the base. It is compared with its relative *C. antalyensis* and has a similar flower colour to some variants of this species,

pale to deep lilac blue on the inside and silvery or buff on the outside with a small amount of speckling near the base; however, *C. paschei* has a three-branched style which distinguishes it from this species; inside, the throat is yellow, as in *C. antalyensis*, but, unlike *C. antalyensis*, this yellow area is surrounded by a white zone.

Crocus kerndorffiorum, described by Erich Pasche, is from the central Taurus Mountains; it is also spring-flowering, and has a membranous corm tunic splitting into vertical fibres at the base, not into horizontal rings. The flowers are a variable shade of lilac-blue (rarely white) with a yellow throat and have various markings on the outside, described as 'creamy-white or yellowish with a more or less narrow, median blue or violet stripe, sometimes closely accompanied by very fine veins, the median stripes converging with short stripes of the same colour radiating from a brown-violet segment base.' The anthers are yellow at first but developing a blue-green to grey-green discolouration; the style has three short bright red branches. The author compares it particularly with *C. leichtlinii*; however, the new species has a rather more softly membranous corm tunic, that of *C. leichtlinii* being tough and egg-shell like, splitting into triangular teeth and somewhat reminiscent of that of *C. laevigatus* in texture, although really quite distinct from all others.

The third *Crocus* to be described is *C. biflorus* subsp. *albocoronatus* Kerndorff, also collected in the central Taurus Mountains. It is a colourful spring crocus, one of the '*C. biflorus* group' having a corm tunic with rings splitting off at its base; the flower colour is described by the author as: 'inner surfaces of the segments are mid- to deep-violet having a more or less distinct white zone, streaked with few lilac veins above the dark yellow base. The outside of the outer segments cream-coloured, heavily striped with 3-(-5) dark brown to violet stripes. The outside of the inner segments is light violet with a dark brown to violet base. Throat yellow, glabrous'. The style is divided into three orange to red branches and the anthers are yellow.

A new Calochortus

Calochortus syntrophus, described in *Herbertia* Vol. 49 by Frank T. Callahan II from Shasta County, California, is a Mariposa Tulip related to *C. venustus*; it has large white erect flowers with a red-brown blotch and the whole of the cupped central area is yellow. The differences between it and related species (there is a useful key to *C. luteus*, *C. argillosus*, *C. superbus*, *C. simulans*, *C. venustus*, *C. syntrophus* and *C. vestae*) are in the positioning of the blotch in relation to the base and tip of the petal (in

Calochortus the three large inner segments are often referred to as petals), in the shape of the gland on the petal, and in the flower colour. In the case of the new species the outer margin of the dark blotch is about equidistant from the petal base and tip, as in *C. venustus*, whereas in the other species mentioned, the edge of the blotch is nearer to the petal base. From *C. venustus* it differs in the shape of the gland (more or less quadrangular in *C. venustus*, concave-elliptical in *C. syntrophus*); *C. syntrophus* has white flowers with one red-brown blotch whereas *C. venustus* may be white, red, lavender or yellow and often has two blotches on each petal. A table showing the differences between it and *C. superbus* is also supplied. The author explains the reason for the specific epithet he has chosen: *syntrophus* is of Greek derivation, meaning 'flourishing together' in reference to the way in which the bulbs divide, thus forming clusters. In spite of this, *C. syntrophus* is said to be very restricted in the wild, to an area of only about 2 hectares or 5 acres, consisting of 500-1000 individuals.

The new Nothoscordum castilloi.

Nothoscordum castilloi, described in *Herbertia* Vol. 49 by Thad. Howard, is a Brazilian species named after the well-known Argentinian bulb specialist, Alberto Castillo. It has 6-8 narrow leaves and stems up to 35 cm in height bearing in spring 4-5-flowered umbels of white flowers which open at night; the flowers are widely funnel-shaped or flattish, about 1.5 cm diameter and have a wide purplish stripe along the centre of each segment. Although described as having an unpleasant scent there is a comment that this is an attractive plant. The leaves show the unusual feature of being sheathed together at the base to form a short false stem. *N. castilloi* occurs in the state of Rio Grande do Sul in grassy places.

And the new Zephyranthes

Zephyranthes leucantha is also described by Thad. Howard in *Herbertia* Vol. 49 and is from Mexico, in the state of Hidalgo. It flowers in the period May to July and has, as its name suggests, white flowers which are greenish at the base with a green tube, and they age pinkish at the tips; they are apparently widely funnel-shaped, 4.5-7.3 cm long and 3-10 cm diameter (a very wide range but with a funnel-shaped flower the diameter depends not only on the segment length but also on how wide open the flower is at the time of measurement; the segments are 3-5 cm long). The 2-4 medium green leaves are up to 30 cm long and only 3.5 mm wide. It is described by Thad. Howard as 'lovely', so it is to be hoped that it will be in time introduced into cultivation, as long as it is legitimately and without

threat to the apparently rather restricted wild populations.

Crocus sativus var. *cashmerianus*

I recently had the opportunity to check on the original specimen of *C. cashmerianus* (*sativus* var. *cashmerianus*), published in Royle's *Illustrations of the Botany of the Himalayan Mountains*: tab. 90 (1836). The specimen, which is in the Herbarium of the National Museums and Galleries on Merseyside, Liverpool, bears the inscription 'bulbs from Cashmere, fl. in S.B.G. in Nov. 1829'. There is nothing to suggest that this is anything other than the cultivated clone of *C. sativus* as we know it, so, as Maw pointed out in his wonderful monograph *The Genus Crocus* 169(1886), it appears that this should be regarded as a straight synonym of *C. sativus*.

Crocus goulimyi var. *leucanthus*

This was reported in BN6:7, with the comment that the name had not been validated. This has now been rectified with the publication of 'A new variant of *Crocus goulimyi*' by B. Mathew in *Annales Musei Goulandris* 9: 165(1994). This white to very pale lilac variant from the eastern 'prong' of the Peloponnese ('ordinary' *C. goulimyi* occurs mainly on the central prong, the Mani Peninsula) has been observed on and off over the years, in fact the first specimen to be collected was that of Martyn Rix in 1974. Much more recent observations and collections of this pale eastern variant have been made by Jack Elliott, Ernst Markus and Steve Keeble, who made the valuable observation that this variant had 'most flowers white with a slight mauve tinge; palest mauves & palest bicolours occasional; one pale lilac individual found; no normal *goulimyi* present'. Although colour is the most obvious distinguishing feature between the two varieties, when grown side by side it is clear that there is a tendency for the two to differ in the size and aspect of the flowers, var. *leucanthus* being the smaller. However, there is certainly an overlap and one would need to measure a lot of wild samples in order to determine the validity of this apparent distinction. Should size prove to be a real distinction, this, together with the different flower colour and geographical separation, would suggest that the two variants would be better treated as subspecies. However, for the present the correct names as published are: *C. goulimyi* var. *leucanthus* : Peloponnese, eastern peninsula southwards from Monemvassia *C. goulimyi* var. *goulimyi* : Peloponnese, central peninsula (Mani) and northern part of eastern peninsula (only to the north of Monemvassia). The vigorous pure white selection of this which occurred in a nursery bed has been loosely referred to as *albus* in the past but has now been named 'Mani White'.

Two more Alliums

The description of newly discovered alliums continues apace, particularly in the section *Codonoprasum*, that confusing group of primarily Mediterranean species, such as *A. flavum* and *A. stamineum*, which have loose umbels of small bell-shaped flowers on unequal slender arching stalks which tend to become erect in the fruiting stage. Two new ones, *A. dodecanesii* and *A. candargyi*, are described in *Annales Musei Goulandris* 9:141-146(1994).

A. dodecanesii, from the islands of Lipsos and Kalimnos in the Dodecanese, is said to be most closely related to *A. stamineum* but has straw-coloured flowers (purplish-pink in *A. stamineum*) about 4-5 mm long; the very loose umbel is about 5-6 cm across and has two very long narrow spathe valves, the longest up to 11 cm in length; the 2-5 stem leaves are only 1 mm broad and the flower stem 20-40 cm in height, so this is not an onion of great aesthetic value.

Allium candargyi is 8-20 cm in height with 3-5 slender stem leaves 0.5-2 mm broad; the umbel is up to 4.5 cm in diameter with pinkish-white flowers about 4 mm long, the segments of which each have a darker purple line along the centre; in this species the spathe valves are shorter, at 3-5 cm. Although similar to *A. stamineum* in flower colour, it differs clearly in the shorter spathe valves and in details of the ovary (it is carried on a short stalk, but not in *A. stamineum*). *A. candargyi* is from the islands of Lesbos and Kalymnos where it flowers in spring, in April or May, which is rather early for species of this group; most of them, including *A. dodecanesii*, flower later on in summer. As with the other new species, this is probably not a plant of great beauty, although interesting botanically.

Stamps

Two elegant long narrow stamps from Belgium arrived recently, a 14 cent one of *Lilium bulbiferum* and a 10 cent blue bearded iris labelled *I. florentina* but looking more like *I. pallida*. There is also a more conventionally shaped 12 cent one showing a hybrid *Phalaenopsis* orchid. From the United States we have received two 20 cent stamps showing two more orchids, *Calypso bulbosa* and *Cypripedium calceolus*, a 6 cent *Cypripedium reginae* and a 29 cent 'Lily' which portrays two different lilies, probably both hybrids and one of them looking very like the *L. speciosum* hybrid 'Stargazer'.

The New Plantsman, Volume 1, Part 4

This new and excellent periodical contains a few items of monocot interest, including an article on *Fritillaria ruthenica* by Martyn Rix. This is one of the group of confusing species with blackish-brown flowers and narrow leaves, some of which have tendril-like tips to the leaves; other species in this group are *F. montana*, *F. orientalis* and *F. meleagroides* but the differences between these are not dealt with in this article; we will have to await Martyn's definitive monograph which will be hopefully published fairly soon. The lovely Mariposa Tulip, *Calochortus gunnisonii* is dealt with by Victoria Matthews who includes the gory tale of the fate of Captain John Gunnison whose expedition to Utah in 1853 met a sticky end at the hand of locals. In addition to these articles there is a note from Alun Rees on the pollination of *Fritillaria imperialis* in Britain by blue tits, the first record of bird pollination in Europe.

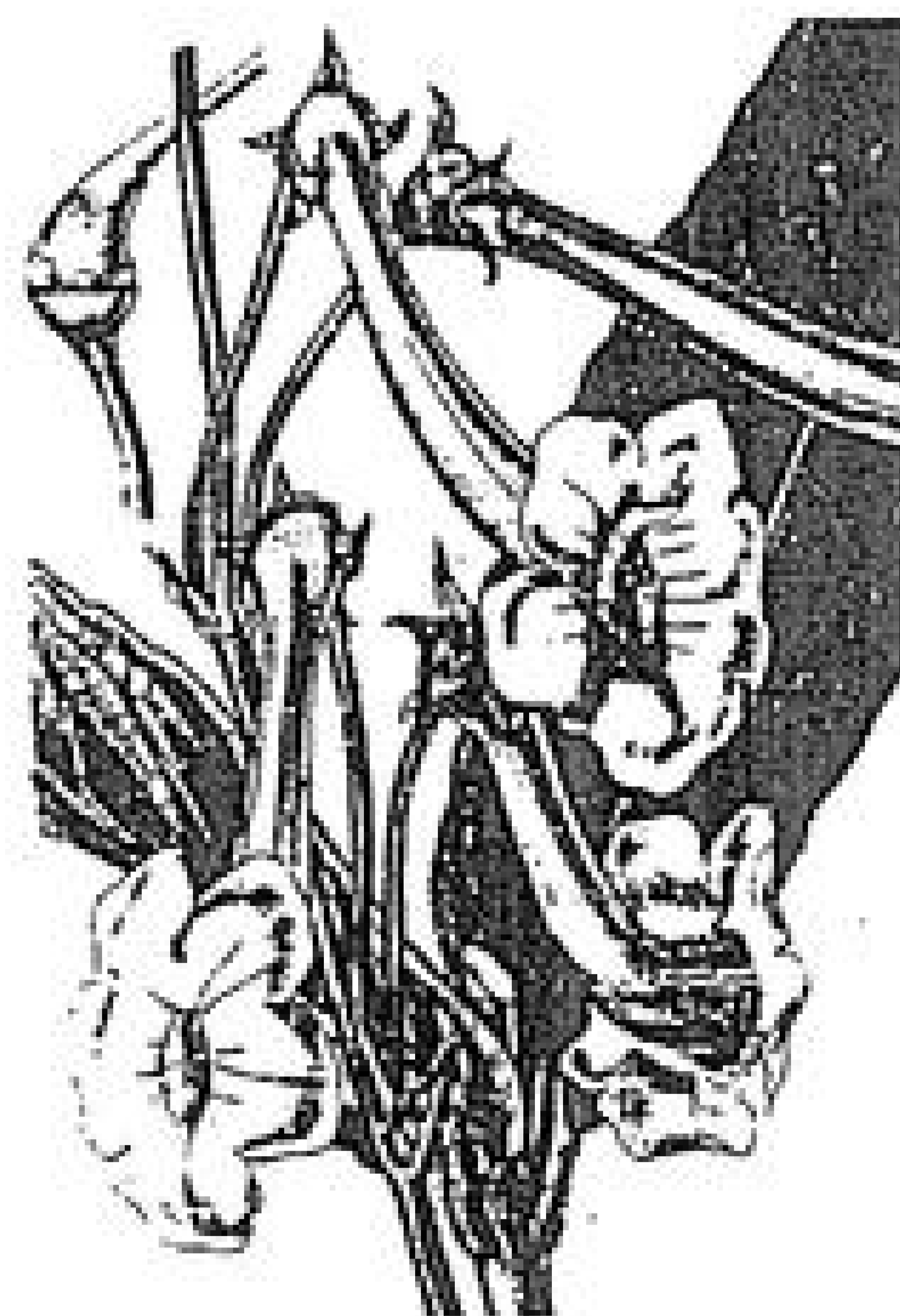
The New Plantsman Volume 2, Part 1

This appeared in March 1995 and, like its predecessor, has some interest for monocot enthusiasts. The non-bulbous shrubby/climbing Liliaceae - now Philesiaceae - in the genera *Philesia*, *Lapageria* and *Luzuriaga* are reviewed by Martin Gardner who includes interesting habitat and distribution notes. Henry Noltie describes some of the monocots of Bhutan, and I have written some notes on the exciting dwarf yellow *Ipheion* (or *Nothoscordum*) species, *I. dialystemon* and *I. sellowianum* which are now becoming more widespread in cultivation. These have large solitary bright yellow flowers on short stems and are every bit as easy to cultivate as *I. uniflorum*, although as yet I have not tested them for hardiness outside the unheated glasshouse.

Sinningia tubiflora

In the above mentioned Vol. 1 Part 4 of *The New Plantsman* I have written a short article about this lovely plant which we grow in our only slightly heated conservatory for flowering in late summer. Although not monocotyledonous, this unusual member of the Gesneriaceae does have tubers and may be cultivated in the same way as many of the tender summer-flowering bulbs. The long-tubular flowers are white and have a strong tangy fragrance, rather lemon-like, so this in itself is an unusual feature in this large family, the majority of species of which are gaudily coloured but have no scent. Anyone who wishes to obtain this rarely-seen plant could try writing to Michael Salmon's nursery since he tells me that he has a stock; in a recent letter he makes the following comments: 'I am hoping that your

article will engender a few orders! I have grown this plant for some forty years, the material was originally from Constables. In all this time I have never sold a tuber through the catalogue though visitors to the nursery, when it is in flower, invariably take a pot away with them. The perfume of a few flowers will scent a 50 ft greenhouse. I grow mine in equal parts of leafmould, old cow manure and coarse sand and re-pot every second year, though only to thin out the tubers. When in growth I soak and then allow to dry out before watering again. They do not appear to like being wet all the time and can be absolutely dry during the winter months.'



Mike Salmon can be contacted at: Monocot Seeds, Jacklands, Jacklands Bridge, Tickenham, Clevedon, Avon, BS21 6SG, UK.

The Genus Arawia (Liliaceae/Hyacinthaceae)

This note is included more as a plea than anything since I am not sure whether any of the species are still around in cultivation. Any information would be interesting, and spare bulbs would be even more acceptable! The two species, *A. bellii* (syn. *Scilla bellii*, *S. leucophylla*, *Bellevalia dichroa*, *B. oxycarpa*) and *A. nutans* (syn. *Hyacinthella nutans*), are from Iran and Iraq respectively; they are bulbous and rather *Bellevalia*-like, with several strap-shaped basal leaves and short racemes of pendent violet blue bell-shaped flowers which become brown with age. They are 'winter growers', starting to root in autumn, flowering in spring and then dying down for a long warm dry summer. So, the bulbs should be planted in autumn and watered through winter and spring until the leaves begin to die back in late spring/early summer, then dried off for the dormant period. I have not tried them outside but they should be very frost hardy, so a well-drained soil in full sun should be suitable; I grew them in a bulb frame, not so much for frost protection but to give the bulbs a reliable warm dry period in summer. Although not showy, they are interesting and are no less decorative than many of the *Muscari* and *Bellevalia* species. Before its recognition as a genus, *Arawia* had been described as a section of the related genus *Hyacinthella* by Per Wendelbo after the Iraqi botanist Dr Ali Al-Rawi who was the Curator of the National Herbarium of Iraq; he collected widely in Iraq and his many specimens have proved invaluable for the Flora of Iraq (see next item).

Flora of Iraq

At one time I was Editor of the *Flora of Iraq* but sadly this unfinished project is now 'on hold', for obvious reasons. However, the monocotyledonous Volume 8, in which many interesting 'bulbous' plants are described, was published in 1985 and is obtainable from The Bentham-Moxon Trust, Royal Botanic Gardens, Kew, Richmond, Surrey, TW9 3AE, UK, at a price of £10.

Smoking again

Terry and Pam Hatch, bulb growers *par excellence* in Pukekohe, New Zealand, recently sent a copy of one of Terry's articles on the subject of the use of smoke; I am sure that he will not mind if I pass on part of this to his fellow enthusiasts around the world. This is not so much about the treatment of bulbs with smoke (see BN5:8), which is known to promote more reliable flowering, but in its use for encouraging seeds to germinate. On the former topic, Terry writes that 'a good burn off on my bulbs does save many hours of cleaning dead foliage, keep fungal infections to almost nil, wipes out snails and the odd mouse plus the hairs on my legs.'

It has also been observed that after a fire many seedlings appear very rapidly, so the smoke treatment of dormant seeds is now a suggested option for any which do not germinate very readily. Terry continues: 'After a recent trip to South Africa and a brief conversation with Dr Nevil Brown of Kirstenbosch Botanical Gardens about the 'smoke subject' and the research he and others had been doing, I resolved to undertake further trials on returning to New Zealand. The method most smokers are using seems complicated; it involves sowing the seeds in trays, making a poly tent and filling this tent with smoke via pipes and tubes from a large metal combustion chamber. Other experiments involved making fire water; most of us know how quickly a billy of water is tainted by smoke when hung over a bush camp fire for tea. This product is used for watering the seeds. Further to this the South Africans have perfected and patented 'Dehydrated Smoke Water' which comes in packets for some small charge and can be rehydrated and used to water seeds. My own experiments at first were to put the seed into a small metal kitchen sieve, light a small smokey fire and gently roll the seed around in the smoke for thirty minutes. No great heat reaches the seed, as the flames are kept to a bare minimum; after smoking the seeds were sown and watered. The results were outstanding, seedlings of species I have never been able to germinate before grew thick and fast. The type of material used for burning I believe must contain a fairly wide range of chemicals [presumably this would be the case in a bush fire - BM] and I use a combination of *Eucalyptus*, *Leptospermum*, *Erica*, *Aestio* and

Proteaceae. These all emit a good smell when burning giving one a smoked fish aroma, and hereby hangs a tail! We have now started using a large fish smoker which can take four full sized seed trays; this is an excellent method of quick smoking any amount of seed. The herbage is loaded into the bottom of the smoker and a fire set outside on the ground; this can be ordinary firewood or a gas flame. This vapourises the material giving a good strong smoke without much heat. The trays get thirty minutes treatment which seems adequate for all species.'

Very many thanks for this note, Terry, you have encouraged us to get going straight away. There are no spare proteas and not a *Aestio* in sight here (and many Brits will not have sniffed a billy can too often either!), but we can improvise. We have *Erica* trimmings in abundance, there are plenty of (some say far too many) *Eucalyptus* around in gardens, and lots of aromatic Mediterranean subjects such as Bay, Rosemary and *Cistus* (last winter has killed ours`stone dead, so they will do nicely); probably pine needles would suffice as well. Alternatively, take your seed trays for an awayday outing in a smoking compartment of British Rail perhaps?

Cultivation Notes

Following the favourable response to this idea (see BN9:2), here are some notes about a few more genera. Experiences from other growers will be gratefully recieved.

Caloscordum (Liliaceae/Alliaceae)

A bulbous relative of *Allium*, consisting of only one species, *C. neriniflorum*, which has loose umbels of starry rose-pink flowers in mid-late summer. It is from the Pamir mountains and northern China. This is a summer grower, so plant the bulbs in spring in full sun in a well-drained soil, but one which has plenty of moisture available through the summer. Although frost hardy, the dormant bulbs need to be dry in winter so in areas where that killer combination of wet and cold frequently prevails (such as our garden!), they are best grown in pots and placed under cover for the winter; if planted out in the open garden for the summer, the bulbs can be lifted and stored nearly dry through the winter whilst dormant.

Chlorogalum (Liliaceae/?Anthericaceae)

A seldom-cultivated genus of 5 species, mainly from California, which have fibrous-coated bulbs producing long tough basal leaves, often greyish and wavy at the edges; the tall loosely branched flowers stems carry many flattish starry white, pinkish, blue or purple flowers which mostly open only in the evening (2 spp. open during the day). I have cultivated only *C.*

pomeridianum (flowering 'post-meridian'!) and this is a very easy plant in an open sunny position in reasonably well-drained soil; it is in active growth for much of the winter, spring and summer, flowering in mid summer and then dying back in the late summer and autumn. I have found this a very tough plant; even the overwintering leaves have never been damaged by frost and it flowers freely; a pity it is not more striking!

Leucocrinum (Liliaceae/Anthericaceae)

This is a genus of only one species, *L. montanum*, from rather dry situations in California, Oregon, Nevada and Utah. It has long fleshy roots radiating from a compact rhizomatous crown, producing a basal tuft of narrow grey-green leaves and, in spring, short-stemmed white flowers; the whole plant gives the impression of a very compact stemless *Anthericum*. I have found this relatively easy to cultivate in a deep pot of very gritty/sandy soil with the crown covered by about 5 cm of pure sharp sand; the pots are dried out completely in the summer, then watered in autumn to start the plants into growth; they are kept just frost-free in a glasshouse in winter, then given plenty of water again in spring. They need as much light as possible in winter or the flowers become elongated and weak and fall over. It would probably do well planted in a sandy bulb frame where the very long vigorous roots would have almost unlimited space.

A fascinating family, the Tecophilaeaceae

This small family of cormous monocots is famous for its most beautiful member the Chilean Blue Crocus, *Tecophilaea cyanocrocus*, which has the distinction of being relatively well-known in cultivation but [reputedly] extinct in the wild. However, apart from this superb plant there are several other fascinating genera which are far less frequently encountered but which are well worth cultivating, certainly for the bulb enthusiast. As currently circumscribed, the Tecophilaeaceae comprises six genera, *Conanthera*, *Cyanella*, *Odontostomum*, *Tecophilaea*, *Walleria* and *Zephyra*. *Cyanastrum*, a genus of blue- or white-flowered monocots from Tropical Africa, was formerly included in the family but is now considered to be distinct enough to merit a family of its own, Cyanastraceae; the few species have been rarely cultivated. The most obvious characters of the Tecophilaeaceae are: plants with corms, usually covered with fibrous coats, leaves carried on the stem, although often near the base, the flowers have six more or less equal segments, often blue (sometimes white or yellow), the ovary is usually semi-inferior (i.e. partly fused with the corolla), the 3 or 6 stamens are sometimes held in a cone, sometimes clustered together on

one side of the flower (like a miniscule bunch of bananas!) and they open to release pollen by means of pores or slits at the apex; the seed capsules also open at the apex.

Comments on the genera of Tecophilaeaceae:

Conanthera has about 5-6 species from Chile, mostly having loosely branched inflorescences of blue, purple or white-and-purple blotched pendent flowers, sometimes with reflexed segments. The species most frequently encountered in cultivation are *C. bifolia*, with pendent blue flowers with sharply reflexed segments and *C. campanulata* with pendent violet bell-shaped flowers. Other species include *C. variegata*, *C. trimaculata*, *C. johowi*, *C. parvula*, *C. tenella*, and others have been described more recently. These are winter growers so the corms should be planted in autumn and watered until leaves die down in early-mid summer, then dried off the following autumn. A sandy soil mix seems to suit them best. They are not very frost hardy, so in cold winter area they need the protection of a frame or greenhouse, just kept frost-free.



Cyanella. About 8 species, all from the south-western, primarily winter rainfall part of Southern Africa. They have long narrow leaves in rosettes or tufts, sometimes undulate-margined, and unbranched or loosely branched flower stems bearing small white, yellow or blue to lilac flowers; these have 6 segments which tend to reflex leaving the stamens protruding, usually situated to one side of the flower; some species have all six stamens fertile, others only three or even just one. As with *Conanthera*, the corms should be planted in a well-drained sandy/gritty soil in autumn and watered through the winter-spring growing season until after flowering in spring/early summer, then dried off for the rest of the summer. They could be grown outside in a sunny position in mild areas, otherwise, in cold-winter areas, in a frost-free glasshouse in pots. The species most often seen in cultivation are *C. orchidiformis*, *C. lutea*, *C. alba* and *C. hyacinthoides* (capensis); I'd like to try the interesting-sounding *C. aquatica* but have never seen seeds on offer.

Odontostomum. There is only one species from California, *O. hartwegii*, which has long narrow leaves at the base of a much-branched stem which bears small white flowers with reflexed perianth segments. It is a winter-grower, flowering in spring or early summer, so the corms should be

planted in autumn in a bulb frame, or in deep pots in an unheated glasshouse, in a sandy soil mix; water until late spring then dry off for rest of summer; in mild areas with dry summers it could be tried outside. I have not found it at all free-flowering, the corms tending to split into many small ones; possibly a heavier soil mix, with the corms planted deeply, would help since this appears to be a native of clay soils which bake in the summer months.

Tecophilaea has two species from Chile, *T. cyanocrocus* [of which there are deep blue, pale blue ('Leichtlinii') and purplish ('Violacea') variants] and *T. violiflora*; the former is well-known, with its large brilliant funnel-shaped flowers on short stems whereas the latter has much smaller flowers in shades of blue and violet, or white. These are winter growers, so plant the corms in autumn in well drained soil in full sun, water through winter and spring and dry off in summer, but don't allow to become sunbaked. In view of the high cost of *T. cyanocrocus* I have tended to grow it under glass, kept just frost-free, but last winter I had enough to try some outside in a gritty soil in full sun where they have done very well, staying more compact than those inside; the lowest temperature was -6 deg.C, enough to kill several shrubs outright (e.g. *Cistus purpureus* and *Garrya elliptica*). I have not tried *T. violiflora* outside and in fact have lost it altogether; the form I had was very poor with tiny flowers in a very pallid violet, so it was no great loss - I have seen much larger-flowered, more strongly coloured ones around in cultivation; this low altitude species is likely to be tender. Both make good alpine house plants but plenty of light is necessary to keep them compact.

Walleria. A little-known genus in cultivation, comprising perhaps three species (*W. gracilis*, *W. mackenzii* and *W. nutans*) from tropical and southern Africa. They have clustered corms (?tubers) producing leafy stems, the leaves alternate and very narrowly linear to oval, the stem and underside of the leaves sometimes armed with prickles. The smallish pendent to almost erect flowers are produced in the upper leaf axils and have six spreading to reflexed white to pale blue, deeper blue or mauve perianth segments with six stamens protruding in a cone shape, bicoloured yellow and blue or violet. I have not tried to grow these but would recommend trying them as summer growers, giving them a warm dry rest period in winter and starting them into growth in spring in pots of a sandy soil mix; almost certainly they would need to be kept at a minimum of about 10 deg. C in winter, rising to 18 deg. C and above during the growing season. There is some doubt as to whether the genus really belongs in the Tecophilaeaceae, so there may be changes in future.

Zephyra. This has just one, or possibly two, species from Chile. The white corms produce a sparsely leafy, loosely branched stem with flattish flowers, clear pale blue outside and white within. It is a winter grower, so plant the flattish corms in autumn in a sandy soil mix, water carefully through the growing season and then dry off in summer; the corms sometimes stay dormant for several years and if this happens try giving an extra warm dry period in mid-late summer period, followed by a drenching with water in late summer/early autumn. It is almost certainly not frost hardy so in cold winter areas the slight protection of a bulb frame or frost-free glasshouse is probably the best choice. When growing and flowering well it is a delightful plant, but I have not found this easy to achieve on a regular basis.

Glory of the Sun, Leucocoryne

This small genus from Chile has been known for a long time but is still seldom-cultivated although it contains some wonderful bulbous plants which are well worth growing where frost-free conditions can be provided.

Leucocoryne (Liliaceae/Alliaceae) has about 12 species, all from Chile. The rounded bulbs produce a few long narrow basal leaves in autumn and winter, accompanied in spring by tall wiry leafless flower stems carrying few-flowered umbels; the large flowers are short-tubed, fragrant in some species, and have with six spreading segments giving a flattish flower when fully open; the colour may be white, blue or purple, sometimes yellow or purple in the centre, and usually with three white or yellow sterile stamens (staminodes) protruding from the tube. Unfortunately, the taxonomy is not at all clear so it is not easy to identify the plants. Some 20 years ago there was an account of the genus by Otto Zoellner in Chile, and I still cultivate several of the species which he sent me under his own collection numbers, but other collections which have arrived since then show that there are still problems to be sorted out. The species which are around in cultivation include *L. coquimbensis*, *L. ixioides*, *L. odorata*, *L. pauciflora*, *L. purpurea*, *L. violascens*; *L. narcissoides* (*Stemmatium narcissoides*) is also now included in the genus but it is rather different in that it resembles a *Narcissus*, with a small corona in the centre [some subscribers may remember a splendid TV series of a few years ago, 'The Flight of the Condor' in which this Andean plant was shown, with the comment that at



this time of year the narcissus were blooming!). *Leucocorynes* are excellent for picking as they last for a very long time in water, several weeks in fact, and there is a certain amount of interest in the genus for the cut flower industry.

Cultivation: *Leucocoryne* species are all winter growers so the bulbs should be potted or planted and started into growth in autumn and kept in growth in full light through the winter until after flowering time in spring when water can be withheld as the foliage dies away and they go into summer dormancy; in cold winter areas they need to be grown under glass, just with frost protection, and are suitable for deep pots or containers in a conservatory. A sandy soil mix seems to suit them best.

Personalities in the Bulb World - 2 . Paul Sintenis

Paul Sintenis was born in Seidenburg, Germany on 4 June 1847. He studied pharmacology at Gorlitz and Breslau but appears to have spent much of his life travelling in search of plants, birds and mammals. His herbarium specimens are distributed widely in Europe but his personal collection, presumably the most complete, is at the University of Lund, Sweden. Sintenis died at Kupferburg, Germany in 1907.



A summary of his travels as follows:

1872-1876 Romania, in the Dobrudja region; 1880 Cyprus ;1881 North Italy and Dalmatia; 1883 Western Turkey; 1884-1887 Puerto Rico; 1888 Syria & south-eastern Turkey; 1889-1890 North-eastern Turkey; 1891 Macedonia, Thessaly & Thasos Is; 1892 Northern Turkey; 1894 North-eastern Turkey; 1896 Greece; 1900-1901 Northern Iran.

Although not a bulb specialist, Paul Emil Sintenis did collect a lot of monocots during his extensive travels in the Middle East and, as a result, several species were named in his honour: *Allium sintenisii* (a member of section *Allium* with pale pink flowers, strongly 'bearded' on the outside of the three outer segments; described from Turkey). *Gagea sintenisii* (now treated as a synonym of *G. luteoides*; Sintenis collected the specimen on which *G. sintenisii* was based at Birecik on the slopes of the Euphrates River in south-eastern Turkey. *Gladiolus sintenisii* (currently regarded as a synonym of the dark-violet-flowered *G. atrovioleacea*; the Sintenis specimen came from Harput in central Turkey). *Iris sintenisii* (series *Spuriae*, with violet flowers on 10-30 cm stems; based partly on Sintenis's specimens collected in the Dobrudja area of Romania). *Muscari sintenisii* (treated as a

synonym of *M. aucheri* in Flora of Turkey; a dwarf species, usually with only two greyish-green leaves and a dense spike of sky blue flowers). *Ophrys sintenisii* (now included in *O. transhyrcana*, a rather large-flowered species with a velvety dark brown-purple lip and green sepals; the Sintenis specimens were collected in northern Iran). *Ornithogalum sintenisii* (a very dwarf species with several narrow leaves coiled on the ground; from north-western Iran). *Romulea linaresii* var. *sintenisii* (a larger-flowered variant of this species which normally has rather small violet flowers; it was collected by Sintenis at Thymbra near Canakkale in western Turkey; now regarded as a synonym of *R. linaresii* subsp. *graeca*). *Tulipa sintenisii* (a 10-30 cm tall species with bright red, black-centred flowers; described from Erzurum, north-eastern Turkey. In addition to those which were named after him by other botanists, Sintenis collected specimens of several more previously undescribed species which subsequently named and described himself. Bulbous plants include *Allium filifolium* Freyn & Sintenis, *Colchicum bifolium* Freyn & Sintenis (now = *C. szovitsii*), *Fritillaria ophioglossifolia* Freyn & Sintenis (now = *F. crassifolia*), *Iris kerneriana* Ascherson & Sintenis, *Ornithogalum sigmoideum* Freyn & Sintenis.

Overlooked Fritillaries

Gary Fisher has reminded me that in BN2:18 I mentioned some unfamiliar *Fritillaria* names which had been used in the Greek periodical *Botanika Chronika* 10:253-270 (1991); I indicated that I would give more information in due course; so, without further delay I must rectify this. The species mentioned in this paper by Georgia Kamari which are most likely to be unfamiliar are: *F. spetsiotica*, *F. sporadum*, *F. ehrhartii* var. *prasinantha* and *F. mutabilis*.

F. spetsiotica is placed in the '*F. obliqua* group' (with *F. obliqua*, *F. obliqua* subsp. *tuntasia*, *F. ehrhartii*, *F. davisii*, *F. rhodokanakis* and *F. sporadum*). It occurs on Spetse island and adjacent parts of the north-eastern Peloponnese. It is said to be related to *F. rhodokanakis*, differing 'in flower characters (colour, size etc.)' and *F. davisii*, differing 'mainly in leaf characters'. It is described as 10-28 cm in height with 5-7 (rarely to 10) alternate, glaucous leaves, the lowest of which are ovate-lanceolate, the middle & upper oblong-lanceolate and acute; the flowers are bell-shaped, brownish-purple with obscure tessellation on the outside and more conspicuous tessellation on the inside; the upper part of the segments is marked with a yellowish 'fascia', or central stripe. The oblong-ovate brownish nectaries are 4-6 mm long and 1.5-2 mm wide, the style 3-branched and minutely hairy (papillose).

F. sporadum, which is also placed in the *F. obliqua* group, is considered to be 'easily distinguished from related species (*F. obliqua* and *F. ehrhartii*) by its green leaves, the style divided down to the middle, and by its short campanulate, darkly tessellated flowers'. It was described from Gioura island.

F. ehrhartii var. *prasinantha* is a name for yellowish-green variants of this dark purple-flowered species; such variation has been noted on Tinos island.

It should also be noted that *F. tuntasia* is regarded by Prof. Kamari as a subspecies of *F. obliqua*.

F. mutabilis is placed in the '*F. graeca* group' (with *F. graeca* and *F. thessala*). It 'differs from *F. graeca* mainly in the colour and shape of its leaves and flowers, as well as in its triangular nectaries. It varies, even in the same population, in flower colour, from almost green to dark purplish-brown, with or without fascia (central stripes), as well as in the number of uppermost leaves.' *F. mutabilis* is distributed in the northern Peloponnese, Kefallinia and in Sterea Ellas.

Androcymbium (Liliaceae/Colchicaceae)

This small genus has a few species in the Mediterranean region and several more in tropical and South Africa. The *Colchicum*-like corms produce rosettes of lanceolate leaves and a cluster of small funnel-shaped white or pinkish flowers, often surrounded by conspicuous leaf-like bracts which may be white, pink or suffused with purple and often veined green. A very sandy soil mix seems to suit them best. The species from the Mediterranean region (e.g. *A. gramineum*, *A. europaeum*, *A. rechingeri*, *A. palaestinum*) and the south-west Cape (e.g. *A. ciliolatum*, *A. dregei*, *A. pulchrum*) are winter-growers, flowering in winter to spring, so these should be planted in autumn after a warm, dry summer rest period, whereas those from tropical Africa and the eastern Cape are probably best treated as summer growers and dried off for the winter; *A. melanthioides* is one of these, but it is very widespread in southern tropical Africa and the eastern Cape and also occurs in the winter rainfall area, so the behaviour in cultivation depends upon the origin of any particular plant; my own plants of it are winter growers. In areas where the winters are frosty, all species are likely to require slight heat to provide frost-free conditions, and the winter growers will need as much light as possible to keep them compact. The corms of these summer-dormant ones have a tendency to remain dormant for several years without producing so much as a leaf; if this happens, try a summer baking, then carefully crack open the tough blackish

corm tunics just before the first watering in autumn - a tip provided by Chris Lovell.

More on Androcymbium

Mike Salmon is familiar with several of these, both in the wild and in cultivation and, prompted by the note on the Kew conservation project in BN6:3, has written in with some interesting notes regarding the Spanish and North African *A. europaeum* and *A. gramineum*. He owns a piece of 'sandy desert' on the Cabo de Gata which he visits each year. 'For the first two years it proved to be what I have always called it - 25 acres of desert - but on the third year, after a good rain, it was covered by thousands of *A. europaeum*, in fact as far as I have been able to ascertain about 95 per cent of the Spanish population. Since that time it has flowered somewhat erratically and is obviously very sensitive to the amount of moisture available in autumn. Late winter or spring rains do not appear to trigger growth. Flower size, colour and markings are quite variable and I find little to distinguish it from *A. gramineum* from N. Africa - except that the latter is much easier to grow and flower, as is the variety *punicum* from Tunisia. The last, incidentally, is quite distinct and has more the character of the South African species. The lovely deep pink variety *saharae* I find almost impossible.'

Clivia

Clivias are very popular just now, and quite rightly so for what splendid plants they are. The yellow forms of *C. miniata* are particularly sought after and I recently saw in a catalogue plants of the *C. miniata* cultivar 'New Dawn' being offered at £75 each (Imperial Bulb Company, P.O. Box 22, York, YO18 7YR, U.K.). This reminded me that one of the other species of Clivia, *C. nobilis*, was depicted in the latest part of that splendid South African journal *The Flowering Plants of Africa*, Vol. 53 (1994). Apart from the illustration and write-up of *C. nobilis* there is a useful key to the four recognised species, *C. miniata*, *C. nobilis*, *C. gardenii* and *C. caulescens*. The most frequently cultivated, *C. miniata*, is the most distinct of these with widely flared perianth segments giving trumpet-shaped flowers held horizontally or semi-erect; the other three species all have pendent tubular flowers without the flared segments. The author, P. Vorster, points out that these three are all very similar in appearance and are perhaps dubiously distinct as species. However, they can on the whole be distinguished on a combination of features such as the leaf tip shape, number of flowers in the umbel, the length of the individual flowers and the presence or absence of a stem to the whole plant.

C. nobilis has rounded or notched leaf tips; the umbel contains 40-60 flowers; the flowers are 2.4-4 cm long

C. caulescens has abruptly tapered leaf tips; the umbel contains up to 25 flowers; the flowers are about 3.5 cm long; the plant forms an obvious leafless aerial stem at the apex of which are borne the leaves and flowering stems.

C. gardenii has abruptly tapered leaf tips; the umbel contains 14-20 flowers 4.1-5.2(possibly to 7) cm long; the plant is stemless.

There are, of course, garden hybrids which will obscure the distinctions, and the number of flowers per umbel will vary according to how well the plants are being cultivated.

C. x cyrtanthiflora is the hybrid between *C. miniata* and *C. nobilis*, raised in the 19th century and resembling *C. nobilis* rather more than *C. miniata*.

From the postbag

Gary Fisher of Evesham, Worcestershire, has added some comments to those of BN9:4 on the subject of germinating seeds on moist tissue paper: 'I always use the damp paper towel method for summer growing seed, e.g. *Rhodophiala* & *Arisaema*. At room temperature some germinate in a few days (4-10). In fact I have better luck with this method. Putting paper towels & seeds in air-tight container stops the worry of having them dry out'.

Mike Salmon of Clevedon near Bristol writes to say that he has also seen bulblets forming on roots, (as in *Scilla hughii*, see BN5:16): 'Similar bulbs occur on the roots of several clones of *S. peruviana* (of which *S. hughii* is a close relative) collected in Morocco, particularly the dwarf variety *gattefossei* which frequently forms very dense clumps. I have not found them on any material from Spain'.

From the catalogues

The seed list which Jim & Jenny Archibald send out must rate as one of the most enticing of all, and informative as well since there are many useful comments about conditions & climate in the wild situation as well as cultivation hints. There are so many 'goodies' it is difficult to choose a few, but my eye did alight upon *Alstroemeria exserens*, a dwarf high altitude species with large pink flowers which sounds marvellous. I have grown only one or two *Bomarea* species (also Alstroemeriaceae from South America), unfortunately not the most spectacular ones and they are not frost hardy, but they make fine climbing conservatory plants for the summer; in this list

there is the superb-sounding *B. patacocensis* which is described as 'climbing to 2-3 m with leathery leaves and enormous heads of up to 120 huge, chocolate-spotted, apricot-yellow bells' and another I have not encountered, *B. isopetala*, 'climbing to 2 m with dark, leathery leaves. Heads of rose-pink & green flowers.' In the Iridaceae, *Onira unguiculata* merits 9 lines of the catalogue; who could resist a plant with 'big Tigridia-flowers, over 5 cm across, with broad, rounded pale violet blades to the outer segments. Base and inner segments banded with yellow and mottled with violet and brown. All on a very short stem of only 8-15 cm with slender grassy leaves. A stunning thing'; mine have yet to flower but now I await the event with even greater anticipation! The related *Cypella hauthalii* subsp. *opalina* attains 13 lines, including 'enough to make you abandon crocuses'; O.K., so it's good but you cannot be serious, Jim! There are refined alpine relatives of *Hippeastrum* in the form of several *Rhodophiala* species and *Rhodolirion montanum*, some 'dwarf alpine bulbs' (perhaps *Tristagma* species and, if so, Alliaceous *Ipheion* relatives) and some of the tuberous *Tropaeolum*, a genus 'on the up' in the popularity stakes. The North American section is awash with treasures - 35 *Calochortus*, 10 *Erythronium*, 12 *Fritillaria* and there are many other choice items from Europe, Asia and North Africa. *Iris loczyi*, *Lilium ledebourii*, *Muscari bourgaei*, *Fritillaria straussii* and *Arisaema yamatense* var. *sugimotoi* should be enough to make the point that this is no ordinary list. Jim and Jenny are off collecting again shortly so seeds ordered in May might have to await September delivery, just the right time to sow the winter growers! Address: 'Bryn Collen', Ffostrasol, Llandysul, Dyfed, SA44 5SB, Wales.

Bookends

Flora of Bhutan. In BN9:20 we reported the price of the monocot volume 3 of *Flora of Bhutan* as £18 + £2 postage. This is incorrect, it should be £27.50 + £2 postage. Available from: Royal Botanic Garden, Edinburgh, EH3 5LR, Scotland.

The Alpine Garden Society's excellent *Encyclopaedia of Alpines* has, of course, only a small proportion of bulbs included and a specialist bulb enthusiast might not find enough to justify the expense (£190) but there are details of some rare monocots, particularly South American, which are very difficult to locate anywhere else, and colour photos are included of some of these. For example, several illustrations of dwarf *Alstroemeria* species, including *A. exerens* mentioned above, and where else could one find photos of *Chamelum bodenbenderi* and *C. frigidum*? Money well spent, I think - in this case, Margaret's money since it was a present! AGS Centre, Avon Bank, Pershore, Worcs. WR10 3JP, U.K.