

# The Archibald Archive – Genus Guides

## LILIUM, NOMOCHARIS, NOTHOLIRION AND CARDIOCRINUM

These closely allied genera in Liliaceae include the most beautiful of bulbous plants. Raising the species from seed is by far the best way of acquiring healthy, virus-free stock. Continuing to maintain your stocks from annual seed-sowing ensures not only that they can be kept free from virus but that the species become better adapted to the particular conditions in your own garden. *Lilium* itself with over 100 species distributed around the temperate areas of the northern hemisphere is the largest of these related genera. The greatest concentration is in eastern Asia with over 50 species in China alone. As with *Fritillaria*, we do not consider that the present division of the genus *Lilium* into sections is satisfactory or in any way helpful to gardeners so this is one of the few large, important genera for which we do not quote the section for each species.

The European and West Asian species of *Lilium* include some of the most adaptable for open garden conditions in Britain. Species like *Lilium martagon* and *L. pyrenaicum* are reliable, permanent garden-plants in most of Britain. Many are also more lime-tolerant than those from other areas. *L. pomponium* and *L. candidum* always grow on limestone. Seed of several of the Mediterranean species will germinate quickly in autumn if sown in summer, reasonably soon after collection.

The species of *Lilium* from East Asia, where well over half of the species occur, are extremely diverse both in appearance and in their requirements. There are limestone species like *Lilium henryi* and those which will not tolerate lime, like *L. speciosum*. We try to give some indication of the conditions required under each individual the species. Some, like *Lilium concolor* and *L. pumilum*, will germinate quickly from sowing in spring and will flower within 2-3 years.

The North American species of *Lilium* from the West fall very roughly into two groups: the dry-growers with ovoid bulbs with longer, unjointed scales and the wet-growers with rhizomatous bulbs with shorter, jointed scales. In the latter group, *Lilium pardalinum*, the equivalent of the eastern *L. superbum*, is the focus of a number of taxa. These have been placed under it at subspecific level by Mark Skinner in "Jepson" but we keep them at specific level, as we feel this is of more use to gardeners. There is a great deal of introgression and hybridization. Many stands of *L. pardalinum* itself are extremely variable. This and *L. humboldtii*, a dry-grower, have been crossed in cultivation (the old 'Bellingham Hybrids'). There is no reason they and others should not cross in nature. Obviously the wet-growers are going to be much more amenable to the open-garden in cool temperate climates, seldom needing the very wet conditions of their natural habitats. These are well-suited to the peat-bed or similar humus-rich conditions. In all cases, the westerners are plants of

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lime-free soils. Seed does not mature from most species until September and, if sown from autumn to winter, should give no problems. Germination of the western species is hypogeal but, in our experience, it is not always delayed and the first true leaves can appear irregularly and earlier than text-books claim. Most will flower in 3-5 years depending on cultivation and conditions.

Seed germination has been categorized in most books on lilies but the lilies have not always read the books so do not trust such information implicitly. We have not indicated the alleged germination pattern for each species listed as we have not found the existing information totally reliable. For this reason, we prefer to sow seeds conventionally in containers, place these outside and let 'nature' take its course rather than attempting to cut corners by moving polythene bags of seed mixed with damp vermiculite in and out of a refrigerator. Germination patterns are supposed to be as follows:

1. Immediate epigeal germination. The cotyledon appears above ground as with *Fritillaria* and most other Liliaceae. The 'immediate' epithet means that this happens within a few weeks, unlike with *Fritillaria*. These species can be sown in warmth in winter. Examples are *L. concolor*, *L. davidii*, *L. formosanum*, *L. leichtlinii*, *L. regale* and *L. pumilum*.

2. Delayed epigeal germination. The cotyledon appears above ground after a warm-cold-warm cycle (i.e. autumn-winter-spring). Examples usually given are *L. pomponium*, *L. candidum* and *L. henryi* but all these have germinated with us in autumn from late summer sowings. *L. chalcedonicum*, which is usually a high altitude plant starting growth late in spring, shows delayed epigeal germination and does seem to require a cold period.

3. Immediate hypogeal germination is not accepted as the norm but has occurred regularly with us on several occasions with such species as *L. auratum*, *L. speciosum*, *L. martagon* and several North Americans, like *L. washingtonianum* and *L. parryi*. We have had excellent immediate hypogeal germination with *L. maritimum*. In these cases, the first true leaf appears the first summer after sowing, after a tiny bulb has been formed underground.

4. Delayed hypogeal germination is as follows: warm period (small bulb forms underground) - cold period - warm period (true leaf appears above ground). If you sow in autumn or winter the pattern is first winter (nothing above ground) - first summer (bulb formed underground but nothing above ground) - second winter (nothing above ground) - second summer (first appearance above ground with a true leaf). Not every seed has learned to do this. Species which may behave in this way

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are *L. auratum*, *L. ledebourii*, *L. monadelphum*, *L. speciosum* and all the North American species. Flowering can take 3-5 years. Do not let all this put you off. We have seen *L. auratum* flowered in the second year after sowing from seed we have supplied.

**Nomocharis** is a small genus, currently accepted to include 6 species and essentially centered on south-west China but extending into the adjacent countries. They are separated from *Lilium* on the basis of the basally swollen filaments but it has always been debatable as to whether they should be included in the genus *Lilium* or given separate generic status, as is the case at present. The separation is hardly justified as allied species, currently placed in *Lilium*, such as *L. nanum*, *L. oxypetalum*, *L. mackliniae*, etc., provide links between the genera. These species are also closely allied to the genus *Fritillaria* and several of them have been placed in all three genera. *Nomocharis* species need cool, moist summers and cold, dry winters to do well and have always succeeded much better in Scotland than in the South of England. Light shade and a moist but well-drained, humus-rich soil are prerequisites for successful cultivation. Seed germination is epigeal and usually occurs quite quickly from seed sown in warmth under glass in winter. The seedlings dislike root-disturbance. A satisfactory procedure is to sow very thinly and plant out the contents of the seed-container with the roots undisturbed in the final position in the garden. They take 3-6 years to flower from seed.

**Notholirion** with about 5 species, distributed from Iran and Afghanistan along the Himalayas to western China, most obviously differs from all the other genera on this page in its bulbs which have a distinct tunic. They have also been placed both in *Lilium* and *Fritillaria*. They are not as easily cultivated as many of their allies and possibly require drier growing conditions. Good drainage and a sheltered site in a climate with cool, moist summers would seem to be the ideal.

**Cardiocrinum**, the spectacular, giant lilies, with 3 species distributed from the Himalayas to China and Japan most obviously differs from *Lilium* in its broad, heart-shaped, net-veined leaves. All species are plants of openings in summer-wet woodland and need a humus-rich soil in a moist but well-drained site, part-shaded and protected from wind. They take 5-6 years to flower from seed but this offers the easiest method to acquire a worthwhile number of bulbs to provide a succession to ensure annual flowering over a number of years.

Nomenclature: We follow the names in the standard floras for the areas concerned: 'The European Garden Flora', 'Flora Europaea' 'Flora Iranica' and 'Flora of Turkey'. For western North American species, we generally follow 'The Jepson Manual' (1993), though we are not always wholly comfortable with this account. *Lilium* is now

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covered in the 'Flora of China' (accessible at 'Flora Online':

<http://flora.huh.harvard.edu:8080/flora> ) but though this is the most modern account we have not always found the key easy to use when identifying wild material and also suspect little original research has gone into this treatment.

Further information: There are lots of books on lilies for gardeners but the best one for the species-enthusiast is long out of print. Nothing has bettered 'Lilies of the World' by Woodcock and Stearn, first published in 1950. Obviously some of the nomenclature has moved on in 50 years but for information based on practical experience and for taxonomic erudition this book has never been superceded or even equalled. As with other bulbous genera, 'The Bulb Book' by Martyn Rix and Roger Phillips provides a representative photographic record with brief, accurate notes. The chapter on 'The Genus Lilium' by Ed McRae in 'Bulbs of North America' (2001), ed. Jane McGary, gives an excellent, accessible overview of all the North Americans, though one always feels the author is more excited by variations and hybrids, both natural and artificial, than in the pure wild species.