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HIMALAYAN PLANTS FOR THE GARDEN AND GREENHOUSE - 5

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Ornamental Himalayan Cobra Lilies *(Arisaema*)

The inability of plants to run or defend themselves from predators have often resulted in novel ways of self-protection. One such means is to mimic foes of predators which the himalayan cobra lilies do brilliantly. Here the inflorescence consisting of a magnified floral bract resembles the inflated hood of an angry cobra, housing and protecting the vital reproductive organs from being eaten up by predatory animals. The myriad shape, size and color of the cobra-like hood leaves even the most imaginative artist bewildered — and endears it to gardeners who find it hard to come by and cultivate.

The name *Arisaema* however, has nothing to do with the cobra-like inflorescence, and is derived from the Greek *aron*, meaning arum, and *aima*, blood red, in reference to the leaves and peduncles of some species that are red-blotched.

The tubers of some, like *A. griffithii*, are ground into flour and provide bread to local sherpas and lepchas in lean winter months, and also to Himalayan bears and wild boars. The leaves of *A. speciosum* are used as fodder for pigs by local folks.

The following Himalayan species are presently in cultivation and have highly ornamental leaf (leaves) and inflorescence. *A. concinnum, A. flavum, A. galeatum, A. griffithii, A. griffithii* var. *pradhanii, A. nepenthoides, A. speciosum,* and *A. tortuosum*.

A. concinnum -- Elegant Cobra-lily

This species is one of the prettiest in the genus and has a single radiate leaf bearing 13 lance-shaped segments. The spathe is green or purple vertically striped white. The ovate spathe limb is 3 - 6 cm. long by 2 – 4 cm. wide, narrowed to a long decurved tail. The tuber is small, subglobose (or semi-lunate), 2 – 4 cm. across and purple when cut.

A. concinnum flowers during May – June and inhabits the edges of jungles at elevations of 1650 - 3600 m. It is distributed from Garhwal to Arunachal Pradesh.

A. flavum -- Yellow Flowered Cobra-lily

Though small-flowered, the 1-2 palmately, 5-11 segmented leaves give this species an ornamental character of its own. The spathe is only 2 – 4 cm. long, urn-shaped, with hooded, slightly incurved limb 1.3 – 2.5 cm. in diameter, pale yellow and both striped and trellised with purple. Both male and female flowers are found on the spadix. The bulbs are subglobose 1.5 – 2.5 cm. in diameter.

The plant attains a height of 40 cm. and flowers in June. It inhabits open forests and rocky slopes at 1700 – 3600 m.

A. galeatum -- Helmeted Cobra-lily

In this species, the large single three-segmented, light-green leaf stays above the inflorescence. The leaf-segments are elliptic or ovate, 20 – 35 cm. long x 15 – 30 cm. wide and have crispulate red margins. The unusual *Darlingtonia*-like spathe is light green run by vertical white lines, and recurves suddenly forming a helmet-like structure. The edges near the mouth are recurved and end in a constriction followed by a pendant ovate green terminal lobe.

The spadix appendage is a long tail which is nearly 1½ - 2 times longer than the whole inflorescence. The bulbs are globose to elongated-globose 6 – 12 cm long x 5 – 7 cm. in diameter, and pale yellowish green in color.

A. galeatum inhabits deep-shaded places under shrubbery at 2000 – 2500 m. in Sikkim, Darjeeling, Bhutan and Mishmi Hills. It is quite rare in cultivation.

A. nepenthoides -- *Nepenthes*-like Cobra-lily

The spathe tube is broadly auricled at the mouth and colored not unlike the pitchers of *Nepenthes rafflesiana* in this species. The first *Arisaema* species to be described by Wallich in 1824 under the genus *Arum*, it is also one of the handsomest in the group. The thick dark-green digitate leaves, unlike any other *Arisaema*, bear 5 – 7 segments each 6 – 12 cm. long. The leaf-stalk and peduncle are yellowish brown striated with red and purple lines.

The inflorescence rises much above the leaves and takes the form of a cobra about to strike. Male and female flowers are born on separate plants and the spadix appendage is cylindric. The spathe is 15 – 20 cm. long, greenish or reddish brown and irregularly spotted and striped with 3 – 5 broad white longitudinal stripes at the back. The flattened tubers are 2.5 – 7 cm. in diameter and pinkish-yellow.

It flowers from April - June and inhabits open grasslands and shrubberies at 2300 – 3000 m.

***A. speciosum* -- Showy Cobra-lily**

The single leaf is 3-segmented, segments 15 – 35 cm long x 6 – 15 cm. broad, eliptic to ovate, color green edged with red. The inflorescence is shorter than the leaf. The spathe is highly decorative, deep reddish-purple striped white and ending in a caudate apex. The spadix is pinkish-yellow and fusiform at the base and ends in a purple filament over 50 cm. long. The tuber of this species is cylindrical, elongated and annulated often attaining 15 cm. in length with a diameter of 4 – 10 cm.

The variety ***mirabile*** flowers later than the type and the fusiform spadix base is conspicuously thickened and protrudes from the mouth of the spathe.

A. speciosum inhabits the periphery of forests and shrubberies and is sometimes found in open situations at 2000 – 3000 m.

***A. tortuosum* -- Tortuous Cobra-lily**

The specific name is derived from the twisted spadix appendage which protrudes sigmoidly from the mouth of the spathe-tube and tapers to a long green erect tail-like tip 10 – 25 cm. long. The effect is quite similar to that of the American species *A. dracontium*. The spathe is green, rarely purple, ovate-oblong, gently incurved and measures 4 – 12 cm. in length and 2.5 – 5 cm. in width. It is carried much above the foliage.

Leaves, usually 2, pedately compound and bearing 5 – 17 variable segments. The spadix carries both male and female flowers, the former occupying the base and the latter just below the spadix-appendage, thereby encouraging self pollination. The berries mature from the base upwards and this species looks more beautiful when berries ripen to scarlet-red and persist for a long time. The whitish-green tubers are large, subglobose, 5 – 10 cm in diameter and white when cut.

The variety ***curvatum*** is distinguished by it's leaflets which are no wider than 12 mm.

The species is widely distributed inhabiting forests, shrubberies, and in open situations from Central Nepal to Southern China at 1500 – 2800 m. Some specimens I have found have grown to as much as 180 – 200 cm. and may rank as the tallest in the genus.

Cultivation:

All *Arisaema* species described can be cultivated as pot plants in a greenhouse or grown outdoors in areas having snowfall in winter time. When planted outdoors, they should be situated under shade trees and shrubs — i.e. woodland planting is most suitable.

For potting, a mixture consisting of leaf-mold, garden loam, well decayed farmyard manure, and sand in equal parts to which is added a little bonemeal and sterilized is suitable. Outdoors, the soil is best worked with well decayed farmyard manure and leaf-mold in equal proportion — open drainage is essential.

The bulbs are planted in pots chosen according to he size of the bulbs. For example, bulbs of *A. concinnum* and *A. flavum* are best potted in 10 cm. diameter pots with growing tips facing upwards. The pot is filled 1/3 with broken crocks or charcoal pieces of 2 – 3 cm. diameter and a 1 cm. layer of potting mixture is introduced. The bulb is placed on top of this layer and covered with more potting mix leaving 2.5 cm space from the pot rim. Potting up is done in February — March. As the shoot begins to grow and emerges from the soil, the bulb throws roots around the base simultaneously. This is the time to top-dress with a teaspoon of bonemeal and leaf-mold mixed together, leaving 1 cm. space from the pot rim.

Watering should commence only after the new shoot emerges from the soil. A second top-dressing is given when the inflorescence emerges. When cultivated in pots, the medium should not be permitted to dry out especially during the active growing stage.

The leaves are highly decorative so *Arisaema* can be used as foliage plants. After the leaves turn yellow, the bulbs are lifted, washed, dipped in fungicide (Benlate or Dithane M45), dried, and stored in a cool dry place or in dry sawdust or polystyrene granules.

For larger tubers, proportionately larger pots must be used. In the field, the bulbs of smaller size are planted about 2.5 – 3.5 cm deep, while the larger ones are planted at least 5 – 7.5 cm. deep.

Propagation

Seeds are not quite easy to come by so most of the propagation is done by bulb cuttings and separation of bulblets.

1. **By Seeds:** Seeds, when available, are sown in pure sphagnum in March and covered with a thin layer of moss, in shallow 5 cm. high trays or pans. They are allowed to remain there until the leaves begin to turn yellow. The bulblets are lifted thereafter and stored until next growing season after necessary treatment with fungicide.

2. **By Bulb Cuttings:** A few weeks before planting time, the dormant tubers are cut using a sharp knife leaving at least two growing points, dipped in fungicide, and dried. They are kept over dry sand to callus and then planted like normal tubers.

3. **By Severing Bulblets:** Species like *A. speciosum, A. tortuosum*, etc. often produce tiny bulblets which can be severed from the main bulb and used for propagation.

Sources for Tubers

The firm of Tribeni Plants, 12 Mile, B.P.O. Ecchey, KALIMPONG 734301 (Dist. Darjeeling), West Bengal, India, have been cultivating several species from seeds and bulb propagation and is a reliable source for Himalayan *Arisaema* species.

Acknowledgments

I am grateful to the Director, Royal Botanic Gardens, Kew, England, for granting me permission to reproduce some illustrations from the Botanical Magazine.

Unfortunately, these illustrations are not suitable for reproduction.