LAPSANA INTERMEDIA IN BRITAIN

By B. L. Burtt.

In July 1945 Mr E. Milne-Redhead found a conspicuously large-flowered colony of *Lapsana* on the chalky railway embankment at Totternhoe, Bedfordshire. He obtained both herbarium specimens and ripe fruits, from which plants were raised the following year in the Herbarium Experimental Ground at Kew. Few cases have demonstrated more clearly the value of this technique, for, whereas the wild-collected specimens might well have passed as a large-flowered form of *L. communis* L., the cultivated plants have proved to be robust perennials, and have developed leaf-differences which are scarcely discernible on the somewhat stunted wild specimens. From this living material a chromosome count was kindly made for us by Dr Janaki Ammal, and it was shown that the Totternhoe plant has a diploid chromosome number of 14, compared with the 12 of *L. communis*. Such distinctive characters suggested that the Totternhoe plant was not a variant of *L. communis* but a distinct, and presumably alien, species.

In western Europe the only native *Lapsana* is *L. communis*, which is widespread as a weed of roadsides, fields and waste places; in stubble it often occurs in a characteristically stunted, but very floriferous, form (see Morse and Palmer, 1925, *British Weeds*, tab. 6). In Britain this species favours the heavier types of land and is generally absent from the light, sandy, acid soils. Although it will stand a fair amount of shading at wood margins and under roadside trees, it is a plant whose habitats usually take it into full sunshine. Some seeds certainly germinate in the summer and the plants then overwinter in the rosette stage; but in the experimental ground, and probably in the wild also, seed germinating in spring flowers freely during the summer.

The centre of distribution of *Lapsana* lies in Asia Minor and the Caucasus and species found there extend into the Crimea and eastern Europe and into Syria and Palestine. In all this area we find a complex of ill-defined species which are, in the present state of our knowledge, exceedingly difficult of definition. To the taxonomist the task of identifying with fragmentary herbarium specimens a plant which has been available for detailed study in the garden is always perplexing, and the present case is no exception. To mention but a single illustrative point, it has been impossible to obtain reliable information about the duration of the oriental species of the genus. The Bedfordshire plant will bloom the first year from seed or it will germinate in the autumn and pass one winter before flowering. In either case it flowers and fruits freely in its first summer, but after the stems have died back lateral leaf rosettes are produced in autumn which carry it through

the winter and from the centre of which flowering stems arise in the following year. This is its normal rhythm and the original plants which germinated at Kew in spring 1946 are still alive (October 1949) and have flowered four times. This perennial habit is in marked contrast to the strictly annual growth of *L. communis*, but its present value as a taxonomic character almost disappears in the light of our ignorance of the life-span of the other species of the genus.

The most distinct of the oriental nippleworts is the Caucasian *L. erysimifolia* (Willd.) Thellung (syn. *L. grandiflora* M. Bieb.), which is the only species reported in the literature as being a perennial. In all other respects, however, the features by which it is distinguished from allied oriental species also serve to distinguish it from the Bedfordshire plant. These characters are: slightly larger flower-heads on longer peduncles, a less-branched stem, more angular-dentate leaves and involucral scales drying black. Individually none of these features is diagnostic, but in combination they do seem to warrant the current treatment of *L. erysimifolia* as a distinct species.

It is with the second Caucasian species, *L. intermedia* M. Bieb., that I have identified the Bedfordshire plant. This species is found in the Caucasus, Crimea (Tauria of old), Hungary (syn. *L. cancellata* Borbás), Thrace, and perhaps in northern Asia Minor. As I have not seen the type specimen it may be as well to quote in full Bieberstein's original description: —

LAPSANA INTERMEDIA M. Bieb., 1819, *Fl. Taur-cauc.*, **3**, 540.

" L. caulescens ramosa, foliis angulato-dentatis; inferioribus lyrato-pinnatifolis, pedunculis calycibusque glabris, florum radio calyce longiore.

In Tauriae et Caucasi in umbratis, sylvosis vulgari alibi specie frequentior. Floret aestate.

Convenit cum *L. communi* glabritie paniculae et calycibus viridibus, sed discedit flore duplo fere majore, quâ notâ *L. grandiflorae* assimilatur. Hirsutie caulis atque foliorum sicût *L. communis* variàt."

It must be admitted at once that no specimens of *L. intermedia* have been seen which can be safely classed as perennials. On the other hand it is to be remembered that first year flowering specimens of the Bedfordshire plants do not look like perennials; in fact, the autumnal appearance of over-wintering rosettes came as a decided surprise when first observed at Kew. Nevertheless, this is a point on which confirmation is necessary before the determination *L. intermedia* can be accepted with complete confidence. If there were any immediate prospect of obtaining seed of true *L. intermedia*, the publication of this note would have been postponed. But the chances of doing so seem so remote under present circumstances that it has been thought better to put the British plant on record without further delay.

L. intermedia has been recorded as an occasional alien from Switzerland and elsewhere (see Thellung, 1911, *Vierteljahrsschr. Nat. Ges.*

Zürich, **56**, 290; and Hegi, 1928, *Ill. Fl. Mitt.-Eur.*, **6** (*2*), 1000) but the specimens have not been available for comparison.

It was at first thought that the Bedfordshire plant should be identified with *L. ramosissima* Boiss. (syn. *L. peduncularis* Boiss., *L. pisidica* Boiss. and *L. cassia* Boiss.), which is found in southern Asia Minor, Syria and Palestine. This view has now been abandoned because of the slighter habit and more glandular indumentum of *L. ramosissima*. There is also a biological point against such a determination, for it seems unlikely that a species with this distribution would be entirely hardy: the Bedfordshire plant, on the other hand, came through the very severe winter of 1946-1947 unscathed. It must be emphasised, however, that there are no clear-cut differences between *L. intermedia* and *L. ramosissima* and it might be better to treat them as a single very variable species. Such a unit would show no greater range of variation than, say, *Crepis capillaris* (L.) Wallr., to quote an example from an allied genus.

As already mentioned, starved first-year plants of the Bedfordshire *L. intermedia* are scarcely distinguishable from *L. communis* except by the larger flower heads. The floral characters for the two species are:—

	L. communis.	*L. intermedia.*
Diam. of capitulum	1.5-2 cm.	2.5-3 cm.
Length of involucre	6-8 mm.	8-9 mm.
Length of achene	2.5-4.75 mm.	2.5-4.5 mm.
No. of flowers in capitulum	15-20.	20-25.

It will be noticed that the larger size of the capitulum in *L. intermedia* is not reflected in a correspondingly larger fruit. The difference between the two species in the fruiting stage is most clearly expressed by the relative lengths of achene and involucre: in *L. communis* the achene is fully half the length of the involucre while in *L. intermedia* it is less than half as long.

The rather wide range of the length of achene in both species is due to the fact that the outer achenes in *Lapsana* are noticeably longer than the inner ones. The receptacle is flat, but is only about 1 mm. in diameter, whereas the diameter of the involucre at the level of the top of the achenes is 3 mm. The achenes form a flat-topped or slightly concave mass and consequently the outer ones are markedly longer than the inner. The outer ones are also distinctly curved whereas those from the centre of the head are straight.

In the experimental ground plants of *L. intermedia* have, in their second year, branched from near the base and have developed a decidedly bushy habit and produced an enormous number of flower heads. In the wild, however, Mr P. Taylor has observed that even the largest plants (up to 3 ft. high) are only branched in the upper part and are thus not dissimilar in habit from *L. communis*. It may be recorded

that the branching habit of *L. communis* is unchanged when grown free from competition in the experimental ground.

As to leaf-differences, the most noticeable is that the upper leaves of *L. intermedia* are almost entire, broadly linear and up to 1 cm. broad. The stem-leaves also differ and those of *L. intermedia* seldom show the almost rhomboid, sharply toothed outline which is characteristic of *L. vulgaris*.

I have not myself seen *L. intermedia* in its Bedfordshire locality, but a special visit there was made by Mr P. Taylor in August 1948, and he has given me the following information about its occurrence; it is particularly interesting that the larger plants were found to be obviously perennial in the wild, as they are in cultivation.

The habitat is a north-facing embankment on a branch railway, the slope of the bank being about 30°; the soil is almost pure chalk, apparently from a cutting further up the line. The closest house is about ½ mile away, in the proximity of which the nearest plants of *L. communis* are found. Openly spaced bushes of hawthorn are present on the bank, together with a rose, bramble and willow. The remaining vegetation is herbaceous and the *Lapsana* occurs in two or three patches over a distance of about 15 yards. Seedlings were present on more or less bare patches of soil and, as already mentioned, the older plants were certainly perennial.

The full list of associated species observed by Mr Taylor is as follows: —

Shrubs—*Rosa canina* L. var. *dumalis* (Bechst.) Dum. (one large straggling plant), *Rubus* sp., *Crataegus monogyna* Jacq., *Salix Caprea* L.

Dominant herbs—*Vicia Cracca* L., *Galium Mollugo* L. and *Arrhenatherum elatius* (L.) J. & C. Presl.

Other herbs—*Ranunculus acris* L., *Polygala vulgaris* L., *Arenaria serpyllifolia* L. and *Cerastium vulgatum* L. (on bare patches with *Lapsana* seedlings), *Silene Cucubalus* Wibel, *Trifolium campestre* Schreb., *Melilotus altissima* Thuill., *Vicia sativa* L. (*sensu lato*), *V. hirsuta* (L.) S. F. Gray, *Potentilla reptans* L., *Heracleum Sphondylium* L., *Pimpinella Saxifraga* L., *Galium verum* L., *Knautia arvensis* (L.) Coult., *Achillea Millefolium* L., *Centaurea nemoralis* Jord., *Chrysanthemum Leucanthemum* L., *Hieracium Lachenalii* Gmelin, *H. Pilosella* L., *Leontodon hispidus* L., *Picris hieracioides* L., *Tussilago Farfara* L., *Primula veris* L., *Clinopodium vulgare* L., *Holcus lanatus* L.

Mosses (covering considerable part of ground beneath *Rosa*)—*Brachythecium purum* Dixon, *Hylocomium splendens* B. & S., *Mnium undulatum* L.

Lichen—*Peltigera canina* Hoffm.

It should be noted that *L. intermedia* is, in its native area, a plant of thickets and shady places. It seems unlikely that it will ever rival *L. communis* as a weed, but it is hoped that any further records of its occurrence in this country will be quickly reported so that a careful check may be kept on any spread which may take place.