

EPIPACTIS HELLEBORINE, A PROBLEM OF NOMENCLATURE

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In the Netherlands two forms of the Broad-leaved Helleborine occur, the form of the sand-dunes, which is called *Epipactis helleborine* var. *neerlandica* and the inland-form *E. helleborine* var. *helleborine*. Mr. J. H. Stock, biol. cand., established the differences between these two in a statistical way and his studies prompted me to write this article. First Mr. Stock asked the Linnean Society for the photographs of the species of *Serapias Helleborine latifolia* from the Linnean herbarium and the secretary was kind enough to send the pictures. Our amazement on receiving these may be imagined, for it appeared that *Serapias Helleborine latifolia* of LINNAEUS was not the Broad-leaved Helleborine but the Marsh Helleborine! With this a problem arose: Would it be necessary in future to use the epithet *helleborine* for the Marsh Helleborine and to change the name of the Broad-leaved Helleborine? This would be very undesirable and I have tried to avoid this change of names.

This was the beginning of a historical review of the opinions of the authors of the old herbals, and of LINNAEUS and his contemporaries on *Serapias*, (*H*) *Elleborine* and *Epipactis* and on other names used for these plants. When pictures were given in their works it was easier to pass judgment on their opinion. It appeared, however, that in different herbals pictures were given copied from one original, sometimes mutilated, and so different figures copied from plates of the same species were cited for different species. Not all the pictures were equally good and sometimes a figure was compiled from two different plants. This is the case with *Epipactis latifolia* from BESLER's Hortus Eystettensis (1613). The habit of the plant is a Helleborine but the spike may be that of *Platanthera bifolia* for the flowers have long slender spurs! We find the same picture copied in MORISON's Plant. Hist. Oxoniensis, 1699, (section 12, tab. II, Fig. 1 or 11) with the name *Helleborine latifolia montana* used by Caspar BAUHIN in his Pinax.

The plant depicted by CAMERARIUS in his De plantis Epitome utilissima, 1586, which is a good Marsh Helleborine, is copied in MORISON's work as Fig. 4 of the same tab. sub *Helleborine montana angustifolia spicata* but the figure is not satisfactory. A good picture of

the Marsh Helleborine is also found in Pemptades of DODONAEUS under the name *Helleborine* and we find the same woodcut in CLUSIUS' *Historia* but here the lower half only of the lower leaf is shown, the upper part has disappeared! In MORISON's work the same figure is copied again but now the whole lower leaf is missing (Tab. II, Fig. 7). The Marsh Helleborine has a hairy stem but in the wood-cut of DODONAEUS no hairs are shown, whereas in the copper-plate of CAMERARIUS they are. This is the reason why in MORISON's work the same species, the Marsh Helleborine, is pictured as a hairy plant (copied from CAMERARIUS) and as a smooth plant (copied from DODONAEUS) with two different names: *Helleborine montana angustifolia spicata* and *Helleborine angustifolia palustris sive pratensis*. This causes confusion!

It is a striking fact that most of the figures depicted give the Marsh Helleborine. An exception is found in BAUHINO & CHERLERO *Historiae Plantarum Universalis*, in which in tom. III (1651) p. 516 under *Elleborine dodonaei* the Broad-leaved Helleborine is figured and under *Damasonium alpinum sive Elleborine, floribus albis*, we see the Marsh Helleborine again. The figure in the French translation of DALECHAMPS is a Helleborine as to the habit, but the flowers are badly represented and are not determinable.

In the work of VAILLANT (1727) not a single figure of *Helleborine* is given but the descriptions are good and give the impression that VAILLANT knew the plants very well.

In LINNAEUS' work we find the first description of a plant of the group of the Helleborines in *Hortus Cliffortianus* (1737) without a figure. The herbarium as made by LINNAEUS is now in the British Museum. It contains a single herbarium specimen of *Serapias* which is a Marsh Helleborine. The diagnosis is very short but several synonyms are enumerated and four varieties are distinguished:

SERAPIAS g. pl. 683.

p. 429:

SERAPIAS caule multifolio multifloro.

Helleborine latifolia montana. *Bauh. pin.* 186. *Moris. hist.* 3. p. 486 s. 12, t. II. f. 11 (*male*) 12. 4. 7.

Helleborine recentiorum. 3. *Clus. hist.* 1. p. 273.

Helleborine. *Dod. pempt.* 384.

Elleborine dodonaei. *Bauh. hist.* 3. p. 516.

Sigillum sanctae mariae. *Caesalp. syst.* 431.

p. 430:

α Helleborine angustifolia palustris sive pratensis. *C. B.*

β Helleborine flore carneo. *C. B.* 187.

γ Helleborine altera, atro-rubente flore. *C. B.* 186.

δ Helleborine palustris nostras. *Raj. hist.* 1231.

Crescit in locis sterilibus opacis & desertis sat frequens per *Europam*. Species haec a Botanicis maxime multiplicata est, hinc qui species plures desiderant, ut eas structura vera diversa florum demonstrant

necesse est; huc usque certe nulla nota specifica in hoc genera descripta est.

The first synonym, that of C. BAUHIN, includes not only the bad figure of the Broad-leaved Helleborine with the flowers with spurs but also fig. 12, which is *Cephalanthera*, and the figs. 4 and 7 which represent the Marsh Helleborine. The synonym of CLUSIUS also stands for this plant and so does *Helleborine* of DODONAEUS, but the *Elleborine dodonaei* is the Broad-leaved Helleborine. *Sigillum sanctae mariae* of CAESALPINUS is a plant with a few white flowers and may be a *Cephalanthera*.

Of the four varieties the first is the name of fig. 7 of MORISON and the Marsh Helleborine and this is also var. δ . The vars β and γ are forms of the Broad-leaved Helleborine.

It seems that the varieties are borrowed from literature and are not based on personal observation. This also goes for the eleven vars enumerated in *Acta Upsaliensis*, 1740 (edited in 1744), in which LINNAEUS gives a survey of the Species Orchidum:

SERAPIAS

Serapias bulbis fibrosis, nectarii labio obtuso, petalis brevior.

Serapias caule multifolio multiflora. Hort. Cliff. 429.

Helleborine latifolia montana, Bauh. pin. 186. *Moris. hist.* 3. p. 486 s. 12. t. II. f. 1.

Helleborine barba rubra. Riv. irr.

Helleborine recentiorum II. Clus. hist. I. p. 272. *descr.*

Helleborine. Dod. 380. *Dalech. hist.* 1321.

Helleborine s. Epipactis recentiorum. Lob. ic. 312.

Elleborine Dodonaei. Bauh. hist. 3. p. 516.

Epipactis s. Elleborine. Cam. epit. 889. *fig. bona.*

Epipactis latifolia. Besl. Eyst.

α *Helleborine flore albo. 1. Damasonium montanum latifolium.*

Bauh. pin. 187. *Moris. hist.* 3. p. 488. s. 12. t. II. f. 12.

Helleborine albo flore. Tabern. ic. 724.

Damasonium alpinum s. Elleborine floribus albis. Bauh. hist. 3. p. 516.

Damasonium. Riv. irr.

Epipactis angustis foliis. Besl. Eyst. 130. *fig. bon.*

β *Helleborine latifolia, flore albo clauso. Raj. syn.* 3. p. 384.

γ *Helleborine ex albo sublutea. Bauh. hist.* 3. p. 517. *Moris. hist.* 3. p. 487.

δ *Helleborine flore carneo. Bauh. pin.* 187.

Elleborine III. Clus. pan. 275. *vel. IV. Clus. hist.* I. p. 273.

ϵ *Helleborine montana angustifolia spicata. Bauh. pin.* 187. *Moris. hist.* 3. p. 487. s. 12. t. II. f. 4.

Helleborine IV. Clus. pan. 275. *vel. V. Clus. hist.* I. p. 273.

ζ *Helleborine montana angustifolia purpurascens. Bauh. pin.* 187. *Moris. hist.* 3. p. 487. s. 12. t. II. f. ult.

Helleborine recentiorum V. Clus. pan. 276.

Damasonium purpureum dilutum s. Elleborine IV. Clusii. Bauh. hist. 3. p. 516.

- Damasonium alpinum. *Dalech. hist.* 1058.
 Damasonium flore rubro. *Rupp. Jen.* I. p. 277.
 Sigillum S. Mariae. *Caesalp. syst.* 341.
 η Helleborine altera, atrorubente flore. *Bauh. pin.* 186.
 θ Helleborine foliis praelongis angustis, floribus candidis. *Vaill. Paris.* 97.
 Helleborine angustifolia, flore niveo. *Comm. hort.*
 ι Helleborine palustris, angustifolia, flore albo. *Moris. hist.* 2. p. 468.
 κ Helleborine palustris nostras. *Raj. hist.* 1231.
 Helleborine palustris s. pratensis nostras, radice repente. *Moris. hist.* 3. p. 487.
 λ Helleborine angustifolia palustris s. pratensis. *Bauh. pin.* 187. *Moris. hist.* 3. p. 487. s. 12. t. II. f. 7.
 Helleborine recentiorum II. *Clus. pan.* 275. vel III, *Clus. hist.* I. p. 273.
 Damasonium flore herbaceo intus non nihil candicante. *Bauh. hist.* 3. p. 517.
 μ Helleborine pratensis angustifolia, flore herbaceo Lutetianorum. *Tournef. inst.* 436.
 Helleborine herbaceo flore. *Moris. blaes.* 270.
 Habitat in Europae collibus asperis graminosis duris, vel humentibus.

Serapias has now an other diagnosis: *Serapias bulbis fibrosis, nectarii labio obtuso, petalis brevior.* The labellum is indicated by LINNAEUS as a "nectarium" and the lip of the nectarium is probably the epichilium; actually this is obtuse in the Marsh Helleborine and shorter than the other petals. After *Helleborine latifolia montana* of C. BAUHIN only one fig. of MORISON is given: fig. (1 or) 11, that is the compiled figure.

The var. *a* comprises *Helleborine flore albo* and here fig. 12 of MORISON is given, that is *Cephalanthera*; the two synonyms of BAUHIN's *Historia*, however, *Damasonium alpinum* s. *Helleborine floribus albis* are the Marsh Helleborine again and according to VAILLANT *Epipactis angustis foliis* Besl. *Eyst.* 130, fig. *bon.* is a *Cephalanthera*. I did see the figure from the copy of BESLER's work at Leiden (library of the University, ed. 2) and it is a good figure of *Cephalanthera damasonium* (Mill.) Druce. The Amsterdam copy, ed. 1, however, does not contain this figure.

Later on in *Species Plantarum*, 1753, we met with the var. *δ Helleborine foliis praelongis angustis, floribus candidis* of VAILLANT, which is a *Cephalanthera* and with *Helleborine palustris nostras* and *Helleborine angustifolia palustris s. pratensis* which are the Marsh Helleborine.

From the enumeration of the varieties and the synonyms arranged under them, it follows that the genera *Epipactis* and *Cephalanthera* in the modern sense are reckoned among *Serapias*. Here we have therefore a collective species!

During the journeys to Oeland and Gotland in 1741 which are described in his itinerary LINNAEUS renewed the acquaintance with the Helleborines.

On June 18, 1741 (June 29 by modern standards, for the Gregorian calender was introduced in Sweden as late as 1753 and this makes a difference of 11 days, as Mr. Bengt Pettersson wrote to me) LINNAEUS

found a plant at the Northwestern point of Oeland, which he had not seen before and of which he writes that it had not been found in Sweden: *Serapias Helleborine radicibus fibrosis, nectarii labio obtuso petalis brevior, foliis ensiformibus*, which was growing in the forest. In this place, according to Rikard STERNER's *Flora der Insel Öland* (1938) fig. 101, *Cephalanthera longifolia*, as the name of the species is now, still occurs and it seems probable that LINNAEUS found it there in 1741. The plant is described on p. 144 and this citation is found in all LINNAEUS' later works! On June 28 (July 9) LINNAEUS was in Gotland (p. 196) and there he finds *Serapias, quae Helleborine latifolia montana* with noded flowerspikes and with the flowers not yet opened. Later on, on July 2nd (July 13), LINNAEUS describes the flowers of the same species and now the flowerspikes were stretched. Of the two innermost petals the colour was pink and the lip was divided into three parts, the lateral parts of which were upright, somewhat pointed and with red stripes, whereas the middle part of the lip was heartshaped, not incised, white with a spot at the base which was heartshaped elevated and with three tips. It is not easy to decide what plant is meant here, but it seems most likely that the description suits the Marsh Helleborine best, especially because of the two lateral parts of the lip, for only this species has red stripes on these parts. On July 3rd (July 14) on p. 230 of the itinerary LINNAEUS mentions still an other *Serapias* with a single flower: *Serapias flore rubro* but perhaps this was a plant of which only a single flower was open and was really the Dark Red Helleborine (or the Red Helleborine?). The five petals had the same size and colour and the lip forms a sphere, which was somewhat contracted at the outside and with an elevated heartshaped spot. Because the place where this plant was found (Torsburg) is a limestone mountain, the Dark Red Helleborine could be expected there. The plant was rather different from that found on July 2nd because all the petals had the same size and colour. Mr. Bengt Pettersson wrote to me that the Swedish botanists believe that this plant was indeed the Dark Red Helleborine. On July 8 (19) and 20(31) resp. on p. 253 and p. 299 of the itinerary *Serapias* is found again but later on these pages are not cited by LINNAEUS as opposed to the former three.

In 1745 LINNAEUS published his *Flora suecica*, in which on p. 263-264 sub no 734 we find:

Serapias bulbis fibrosis, nectarii labio obtuso petalis brevior. Act. ups. 1740 p. 21.

Serapias caule multifolio multifloro. Hort. cliff. 429.

α Helleborine floribus ex viridi & purpureo variis, labello acuminato, foliis brevissimis. Hall. helv. 275.

Helleborine latifolia montana. Bauh. pin. 186.

Epipactis sive Helleborine. Cam. epit. 889.

β Serapias radicibus fibrosis, nectarii labio obtuso petalis brevior, foliis ensiformibus. Act. stockh. 1741. p. 208. It. oel. 144.

Helleborine foliis praelongis angustis acutis. Raj. syn. 3. p. 384.

Helleborine longifolia, floribus magnis paucis albisque. *Hall. helv.* 275. *Habitat a in collibus pratorum Roslagiensium Borstelae, Høkhufwud etc. rarius; β in Oelandia, paroecia Boda, inter pagum Torp & septentrionalem terrae angulum, in densa sylva.*

Obs. *Nectarii labellum cordatum, reflexum.*

It seems that LINNAEUS here divided the species into two varieties of which *α* comprises the Broadleaved Helleborine and the Marsh Helleborine as well. Var. *β* seems to represent the genus *Cephalanthera*. While LINNAEUS described the lip of the species as "obtusum", HALLER speaks of "labello acuminato"!

In LINNAEUS' most important work, where he uses the binary nomenclature for the first time, his *Species Plantarum*, LINNAEUS gives the following diagnosis (see vol. II, p. 949):

Helleborine 1. *Serapias bulbis fibrosis, nectarii labio obtuso crenato petalis brevior. Act. ups. 1740. p. 21. Fl. Suec. 734. It. oel. 144. It. Goll. 225, 197, 230. Dalib. paris. 276.*

latifolia. Serapias caule multifolio multifloro. Hort. Cliff. 429. Gmel. sib. p. 8.

Helleborine latifolia montana. Bauh. pin. 186.

Epipactis s. Helleborine. Cam. epit. 889.

Helleborine flore carneo. Bauh. pin. 187.

Helleborine montana angustifolia spicata. Bauh. pin. 187.

Helleborine montana angustifolia purpurascens. Bauh. pin. 187.

Helleborine altera, atrorubente flore. Bauh. pin. 186.

longifolia ζ Serapias radicibus fibrosis, nectarii labio obtuso petalis brevior, foliis ensiformibus. It. oel. 144.

Helleborine foliis praelongis angustis, floribus candidis, Vaill. paris. 97.

palustris η Serapias angustifolia tomentosa, floribus herbaceis intus albis. Sauv. monsp. 42.

Helleborine palustris s. pratensis nostras. Moris. hist. 3. p. 487. Raj. hist. 1231.

Helleborine angustifolia palustris s. pratensis. Bauh. pin. (1)87.

Habitat in Europae asperis. 4

Limites inter latifoliam & longifoliam & palustris non reperi, diversitatem vidi.

The second species of this genus is *Serapias lingua* from the Mediterranean area.

Besides the use of the epithet *Helleborine* with which the collective species is indicated, there is still another fact that strikes us: while in *Acta Upsal.* many varieties are enumerated, here LINNAEUS lumps a great many of them and only leaves three! There is a difference between the epithet of the species *Helleborine*, which is *italicized* and the names of the varieties which are not.

If we try to determine with the help of the earlier work of LINNAEUS

and the works cited, which plants are meant by the three varieties, we are helped by the characters, which LINNAEUS used for the latter two: the same which we found in *Acta Upsaliensis* but lumped with others.

The variety *latifolia* comprises not only the Marsh Helleborine from the Hort. Cliff., *Epipactis* of CAMERARIUS and *Hell. montana angustifolia spicata* Bauh., which are all the same, but also *Helleb. latifolia montana*, *Hell. flore carneo* and *Hell. altera, atrorubente flore* all indicating the Broad-leaved Helleborine or its allies.

Longifolia indicates *Cephalanthera* in its present meaning.

The third var. *palustris* is based on the work of SAUVAGE, which in my opinion is again the Marsh Helleborine and so are the other two quotations.

In spite of the fact that LINNAEUS saw different plants on his journeys he does not see the dividing lines between the varieties, but he sees differences! All together form one single species: *Serapias Helleborine* but even of the three varieties LINNAEUS has not got a good idea, for the var. *latifolia* comprises both the Marsh Helleborine and the Broad-leaved H. and the first is again represented by the var. *palustris*.

If we look at the herbarium specimens of LINNAEUS this is demonstrated again, for *Serapias Helleborine latifolia* is the Marsh Helleborine as the photograph showed (Fig. 1.) The second sheet is the same but LINNAEUS wrote the word *alba* on it, I suppose because it was a white flowering plant. LINNAEUS does not see the difference between *latifolia*, *longifolia* and *palustris* on the level of genera, or even on that of species. He will later on when he is forced to do so under the influence of other authors.

In 1755 follows the second edition of *Flora suecica*, in which on p. 318 we find a treatise of the genus *Serapias* with a single species again (see no 819):

SERAPIAS (*Helleborine*) bulbis fibrosis, nectarii labio obtuso petalis brevior. *Act. Ups.* 1740, p. 21. *Fl. suec.* 734. *Spec. plant.* 949.

Serapias caule multifolio multifloro. Hort. cliff. 429. *Gmel. sib.* 1. p. 8.

Helleborine latifolia montana. Bauh. pin. 186.

Epipactis sive Helleborine. Cam. epit. 889.

β *Serapias radicibus fibrosis, nectarii labio obtuso petalis brevior, foliis ensiformibus. Act. stockh.* 1741 p. 208, *It. oel.* 144.

Helleborine foliis praelongis angustis acutis. Raj. angl. 3. p. 384.

Helleborine longifolia, floribus magnis paucis albisque.

Hall. helv. 275.

Habitat a in collibus Rostlagensium Borstelaë, Hokhufwud etc. rarius, inque Gotlandia 299, Scania 301; β in Oelandia 145, paroecia Boda, inter pagum Torp & septentrionalem terrae angulum, in densa sylva. 4. Nectarii labellum cordatum, reflexum.

Diversae plantae descriptae videantur. Gotl. 225, 196, 230. *Oel.* 145
non mihi constant notae internae per quas distinguantur.

Caulis in hisce nutat ante florescentiam; in β folia ovata, in α ensiformia & huic flos petalis longioribus.



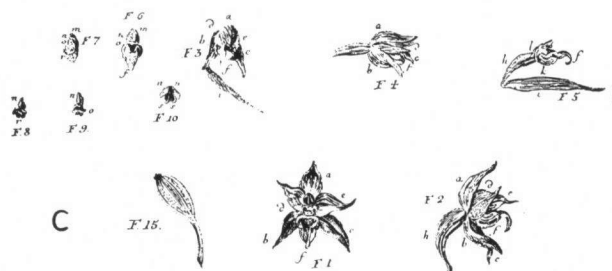
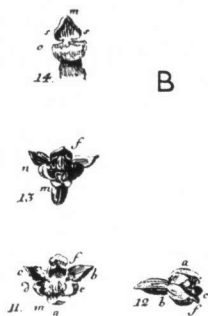
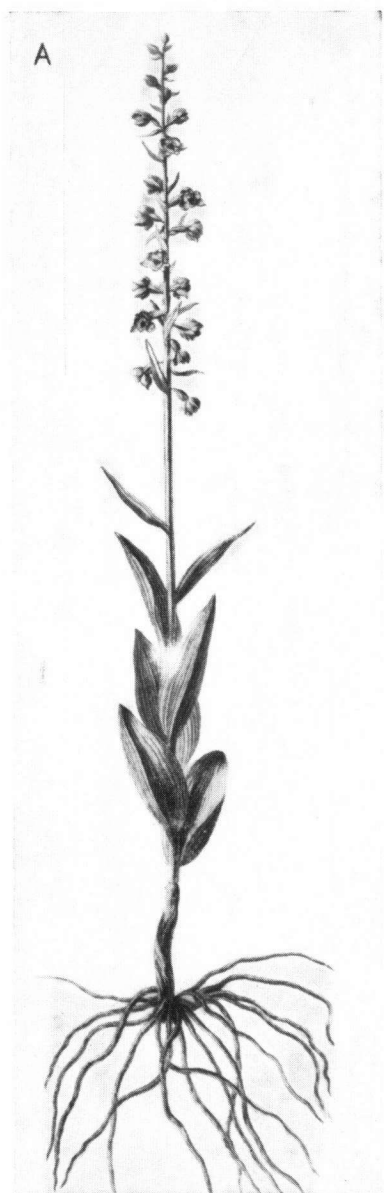
Fig. 1. *Serapias Helleborine latifolia*. Sheet with two specimens out of LINNAEUS' herbarium.



Fig. 2. *Serapias longifolia* L. (non *S. longifolia* Huds.). Sheet from the Hortus Cliffortianus Herbarium, British Museum, London.



Fig. 3. Flora danica, tab. 267.
Type of *Epipactis palustris* (Mill.) Crantz.



Epipactis folus amplexi caudibus
ovato lanceolatis labello lanceolato

Fig. 4. HALLER's *Historia Stirpium Helvetiae*, Vol. II, tab. 40.

Type of *Epipactis helleborine* (L. em. Mill.) Crantz.

The letter *a* is probably erroneously omitted for it is mentioned in the text, but perhaps LINNAEUS meant to say with this that var. *a* is the species itself, for in *Viola* (tricolor) the *a* is not mentioned either. It is a remarkable fact that the leaves of *a* are called "ovata" while those of *Cephalanthera* are "ensiformia". By "ovata" are meant the leaves of the Marsh Helleborine, I suppose, but the leaves of this species are often rather narrow, as we can see in the specimens of LINNAEUS' herbarium.

In this work too *Serapias Helleborine* is a single, collective species but the work of HUDSON, *Flora anglica*, strikes a new note. In 1762 this author distinguishes two species in *Serapias*:

1. *latifolia* SERAPIAS bulbis fibrosis, nectarii labio obtuso petalis aequali, fructibus pendulis.
2. *longifolia* SERAPIAS bulbis fibrosis, nectarii labio obtuso petalis brevioribus, fructibus erectis.

With this the epithet *longifolia* Huds. is established for *Cephalanthera* for this genus has the fruits upright. In this work var. *grandiflora* is mentioned but does not reach the level of a species.

Obviously LINNAEUS read HUDSON's work and appreciated it for in the second edition of *Species Plantarum*, 1763, he follows HUDSON's lead. In this work LINNAEUS describes also two species of the Mediterranean area, which we still know as belonging to the genus *Serapias*, as altered by SWARTZ.

Four species are distinguished now:

- 1 *Serapias Helleborine*:
 bulbis fibrosis, floribus erectis bractea brevioribus.
Serapias bulbis fibrosis, nectarii labio obtuso crenato petalis brevioribus. *Act. ups.* 1740 p. 21. *Fl. suec.* 734; 819. *It. oel.* 144. *It. gotl.* 225, 197, 230. *Dalib. paris.* 276.
latifolia a *Serapias* caule multifolio multifloro. *Hort. cliff.* 429. *Gmel. sib.* I p. 8.
Helleborine latifolia montana. *Bauh. pin.* 186.
Epipactis s. Helleborine *Cam. epit.* 889.
 β Helleborine flore carneo. *Bauh. pin.* 187.
 Habitat in Europae asperis. 4.
- 2 *Serapias lingua*, which still has the same name nowadays, and so has:
- 3 *Serapias cordigera*, but then follows
- 4 *Serapias longifolia*:
 bulbis fibrosis, floribus erectis, bractea longioribus. *Serapias* radicibus fibrosis, nectarii labio obtuso brevioribus foliis ensiformibus. *It. oel.* 144.
 β Helleborine angustifolia palustris s. pratensis. *Bauh. pin.* (1)87.
 γ Helleborine palustris s. pratensis nostras. *Raj. hist.* 1231. *Moris. hist.* 3. p. 487.
 δ Helleborine flore albo s. Damasonium montanum latifolium. *Bauh. pin.* 187.
 Helleborine montana angustifolia spicata. *Bauh. pin.* 187.
 Helleborine montana angustifolia purpurascens. *Bauh. pin.* 187.

Habitat in Europa.

Affinis maxime *S. Helleborinae*, sed huic petala lanceolata: nec ovata. Spica ante florescentiam nutans; corolla major coloration. Bracteae flore longiores; illi vero exceptis sibiricis, vix ac vix.

From this we may conclude that LINNAEUS was not able at the time to distinguish the species of our genera *Epipactis* and *Cephalanthera*. The only difference between the diagnoses of nos. 1 and 4 is the length of the bracts. While var. *a* (the species) of no. 4 is our *Cephalanthera* (*It. oel.* 144), var. *β*, a synonym taken from BAUHIN, is a Marsh Helleborine and var. *γ* is the same species but var. *δ* is *Cephalanthera* again. The noded flowerspike applies in the case of Marsh- and Broad-leaved Helleborine but not in the case of *Cephalanthera*. Here parts of different species are combined into one. Only if we exclude the vars *β* and *γ* the rest would suit this genus except for the noded flowerspike!

LINNAEUS was inaccurate also in citing *It. oel.* under the first species, whereas it belongs under *longifolia* where it is found too. Only the var. *latifolia* remains, the var. *β* is not named. Not only does the var. *longifolia* cease to exist but also the var. *palustris*, probably because both are incorporated in the new species *Serapias longifolia*. However, we see that in *S. Helleborine* and in *S. longifolia* as well synonyms are cited, which belong to the Marsh Helleborine. Summarizing we can say that:

- 1 *Serapias Helleborine* is Marsh- and Broad-leaved Helleborine and
- 2 *Serapias longifolia* is *Cephalanthera* and Marsh Helleborine!

From this it appears again that LINNAEUS was not able to distinguish the species as we do now!

In the meantime, in 1760, Albert von HALLER, the famous Swiss botanist, published a paper in *Acta Helvetica*, vol. IV, pp. 82-166, entitled: *Orchidum Classis Constituta*, in which he gives a clear description of the species in the genus *Epipactis*, as he now called it, and here we find as no 2 the species now known as *Cephalanthera rubra* and sub no 3 a species is mentioned: *Epipactis caule folioso pauciflora, lineis in obtuso labello levibus* with the var. *a Latifolia foliis ovato lanceolatis* and var. *β Foliis angustis lanceolatis, quales in rubra sunt, floribus candidis, labello luteolo, qua parte lineatum est*, both forming together our white flowering *Cephalanthera*. As a synonym is given LINNAEUS' *Oel. resa* p. 144. Under no 4 we find (pp. 108-109): *Epipactis foliis amplexicaulibus ovato lanceolatis, labello lanceolato*, and translated the description runs as follows:

the three outer, somewhat greenish, petals on a smaller flower, firmer than with the foregoing species, ovate-lanceolate, somewhat hairy on the outside. The two innermost a little bit shorter and narrower, white with a greenish tint. The hood is longer than the sixth petal, so that the lip does not project and therefore is not any longer than the two outermost lower petals. Of the lip the first part is a small boat, hollow below, resembling a spur and covered by a greenish glue substance and with white margins.

The rest (couler) is separated from the boat (*cymba*) by a constriction on both sides. Couler (*vomer*) descending, nearly heart-shaped, short with the margin reflexed, with its base connected with the boat. In the beginning of this "bract" a heart-shaped figure is found with a sharp margin upright; the other part of the couler has no undulating lines, it ends pointed, usually bent upwards. It is white and the lip is reddish and the whole flower and the colour of the boat become, as they get older, more and more purple and brown as in *Orchis* . . . and when out of flower reddish lines appear on the tip of the lip.

This description is clear enough to establish that it suits the Broad-leaved Helleborine. The hypochilium is indicated as boat (*cymba*), the epichilium somewhat unusually as couler (*vomer*). Three varieties are distinguished:

α Flore viridi & albescente, plante nempe junior.

Elleborine recentiorum genus II CLUS. *Pann. L. II c. 33. p. 275.*

Helleborine latifolia montana C. BAUHIN. *Pin. Basil.*

β Flore purpureo & carneo dilutiori.

Elleborine recentiorum genus III. CLUS. *Pannon. p. 276.*

γ Flore & inprimis unguine, quod in *cymba* est labelli, atrorubente; serotina, atque praelongo spica.

Helleborine altera flore atrorubente, C. B. *Phytopin. p. 342. Pin. Basil.*

All three are nearly the same, without large differences. The latter is the Red-Brown Helleborine, but this species, as we distinguish it now, is earlier in flower than the Broad-leaved species, not later.

No. 5 of HALLER is: *Epipactis foliis ensiformibus, floribus pendulis, labello obtuso, per oras plicato* with, as to the flower, the following description (p. 111/112):

Striking, wide opened flower. The three outer petals, ovate-lanceolate, somewhat hairy, green mixed with purple or purple, and dull on the outside. The two inner petals shorter, more blunt and finer, white with light-purple. The sixth petal more extending than in the other species of *Epipactis* and the longer part of the lip extends like a couler. There is a boat on both sides with an appendix like upright oval wings adorned with purple lines, yellow spots and separated from the other couler-shaped part by deep incisions. On this "bract" at the beginning of the couler two yellow knobs. This part itself is heart-shaped, but obtuse, incised on both sides, which is characteristic for this species only, white, folded and as it were serrated.

As synonyms we find on p. 113:

Helleborine angustifolia palustris vel pratensis C. B. *Phytopin. p. 342, Basil. p. 55. Pin.*

Helleborine angustifolia RAII *Cantabrig. p. 72. Prima bona descriptio.*

Especially the upright wings of the hypochilium are very characteristic for the Marsh Helleborine and also the rest of the description leaves no doubt which plant was meant by HALLER.

LINNAEUS' reaction on this clever work followed in 1767 in the 12th edition of *Systema Naturae*. In vol. II pp. 593/594 we read:

1012 SERAPIAS. *Nectarium* ovatum, gibbum, labio ovato.

latifolia. 1. *S. bulbis fibrosis*, fol. ovatis amplexicaulibus, flor. pendulis. *Fl. suec.* 819. *Serapias bulbis fibrosis*, nectarii labio obtuso crenato petalis aequali, fructibus pendulis. *Huds. angl.* 341. *Serapias bulbis fibrosis*, floribus secundis, labello planiusculo, petalis ovatis. *Scop. carn.* 255. *Serapias bulbis fibrosis*, caule multifloro, floribus spicatis, nectarii labio petalis brevior. *Ger. prov.* 132. *Epipactis foliis amplexicaulibus ovato-lanceolatis*, labello lanceolato. *Hall. act. helv.* 4. p. 108. *Epipactis* s. *Helleborine*. *Cam. epit.* 187. *Helleborine floribus e viridi & purpureo variis labello acuminato*, foliis brevissimis. *Hall. helv.* 275. *Helleborine latifolia montana*. *Bauh. pin.* 186. *Folia amplexicaulia. Spica multiflora, longa. Petioli longi. Flores fructusque penduli. Nectarium lineis nullis.*

longifolia. 2. *S. bulbis fibrosis*, fol. ensiformibus sessilibus, flor. pendulis. *Serapias bulbis fibrosis*, nectarii labio obtuso longitudine petalorum. *Ger. prov.* 132. *Serapias bulbis fibrosis*, floribus sparsis patulis, labello concavo petalis longiore. *Scop. carn.* 256. *Epipactis foliis ensiformibus*, floribus pendulis labello obtuso oris plicatis. *Hall. act. helv.* 4. p. 111. *Helleborine angustifolia palustris* s. *pratensis*, *Bauh. pin.* 87. *Caulis altior. Spica longa multiflora. Flores fructusque penduli. Flores duplo majores petalis latioribus. Nectarium reliquis petalis cohaerens: cymba lineis purpureis.* H.

grandiflora. 6. *S. bulbis fibrosis*, fol. ensiformibus, flor. erectis, nectarii labio obtuso petalis brevior. *It. oel.* 144. *Huds. angl.* 341. *Serapias bulbis fibrosis*, caule paucifloro, flor. distantibus, nectarii labio petalis brevior. *Ger. prov.* 132. *Epipactis caule folioso paucifloro*, lineis laevibus labelli obtusi. *Hall. act. helv.* 4. p. 105. *Flores albi, magni. Fructusque erectus; Labellum breve minus acutum lineis eminentibus.* H.

rubra. 7. *S.* etc.

LINNAEUS accepted four species of HALLER's genus *Epipactis*. HALLER did not use the binary nomenclature and his names cannot be used.

There are no difficulties with *Serapias rubra*=*Cephalanthera rubra*. We see that HUDSON's *Serapias longifolia* is renamed *S. grandiflora* by LINNAEUS, but this is not allowed in modern nomenclature and *grandiflora* is a younger synonym and must be rejected for reasons of priority. The right name for the white flowering *Cephalanthera* must be *S. longifolia* Hudson.

The other two species together form the *Serapias latifolia* Hudson, which is divided into two.

Serapias latifolia Hudson is a name which is not legitimate, because, according to art. 63 of modern nomenclature, "when a species is

divided into two or more species, the specific epithet must be retained for one of them, or (if it has not been retained) must be reinstated", so that the name had to be *Serapias Helleborine* for our modern genus *Epipactis*. Now this species is divided again: 1) *S. latifolia* and 2) *S. longifolia*. Of course one of these must have the name *S. Helleborine* again.

If we read the diagnoses, we see that in *S. latifolia* Huds. emend. L. the quotation *Fl. suec.* 819 suggests that this diagnosis was already found in the *Flora Suecica*, but this is not true, for "fol. ovatis amplexicaulibus" is from HALLER. No varieties are distinguished! As to the synonyms it is clear that this species agrees with the Broad-leaved Helleborine (exc. *Cam. epit.*!)

From the diagnosis and the synonyms of *S. longifolia* L. (non Huds.!) we conclude that by this species the Marsh Helleborine is meant, especially from HALLER's diagnosis, which is quoted. Here this name is used for a different plant than the one HUDSON meant and also for a different one than LINNAEUS had in mind in his *Spec. Plant.* ed. 2, for in this book the plant of Oeland was named *longifolia*. Therefore *S. longifolia* L., 1767, is a younger homonym of *S. longifolia* Huds., 1762, and therefore LINNAEUS' *longifolia* must be rejected.

Three facts prove that LINNAEUS did indeed mean the Marsh Helleborine by his *S. longifolia* (1767):

- 1) the synonym of HALLER *act. helv.* 4. p. 111.
- 2) LINNAEUS' *Mantissa altera* (1771) and
- 3) the sheet of *Serapias* in the herbarium of Hortus Cliffortanus in the British Museum, of which I received a photo by the kindness of Dr. G. Taylor. On this sheet we see in LINNAEUS' handwriting "*Serapias longifolia*" apparently because LINNAEUS revised the sheet and wrote the right name on it (Fig. 2.). This determination cannot have been put on the paper any earlier than 1762, but I suppose in 1767 or later. This determination irrefragably fixes the epithet *longifolia* L. to the Marsh Helleborine. With this determination the *Serapias longifolia* L. (1767) is typified. However, it will not be possible to use this name in this sense because of its older homonym *S. longifolia* Huds. (1762).

Now Linnaeus divided *Serapias latifolia* Huds. which name should be *Serapias Helleborine* into two species, one of which is *S. longifolia* L., the Marsh Helleborine, and it will be necessary to reinstate or to retain the name *S. Helleborine* for the rest, the species which is named *S. latifolia* by LINNAEUS and this is the Broad-leaved Helleborine! The most important fact is now that the epithet *Helleborine* can be retained for the species which has had this name the last few years. We see therefore that *Serapias latifolia* Huds. emend. L. must be called *Serapias Helleborine* L. MILLER was the first to use this name in this sense.

In 1768 Philip MILLER published the eighth edition of the *Gardeners Dictionary* and here four species are distinguished in the genus *Serapias*, the second and the fourth of which, *Serapias Damasonium* and *S. Latifolium*, have white flowers and belong to our *Cephalanthera damasonium*. The first name *S. Helleborine* is used here in a limited sense for the Broad-leaved Helleborine:

1. SERAPIAS (*Helleborine*) bulbis fibrosis floribus erectis bractea brevioribus. *Serapias with fibrous bulbs, and erect flowers with short bractea*. *Helleborine montana, latifolia* C. B. P. 186. *Broad leaved, Mountain, Bastard Hellebore*.

and the description of the flowers runs:

The stalk is adorned with flowers toward the top, which have some resemblance to those of Orchis: they are composed of two whitish, and three herbaceous petals, which expand; and in the middle appears the nectarium, which has a resemblance of a disbowed body of a fly, of a purplish colour.

The third species is *S. palustre* and this is the Marsh Helleborine, the epithet *palustre* is used by MILLER in the same meaning as we do it now:

SERAPIAS (*Palustre*) bulbis fibrosis. *Serapias with fibrous bulbs, reflexed petals, the lip of the nectarium obtuse, and sword-shaped veined leaves*. *Helleborine angustifolia palustris, sive pratensis*. C. B. P. 187. *Narrow leaved Marsh, or Meadow Bastard Hellebore*.

and the description of the flowers is:

.... (The third sort has) faded purplish-coloured flowers, disposed in a loose spike; they have five petals, inclosing a large nectarium like the body of a fly, with a yellowish head striped with purple and a white body; the lip which hangs down, is white and fringed on the edge. This sort flowers in July.

So the species are *Serapias Helleborine* L. emend. Miller and *S. palustre* Miller. The names are validly published and legitimate.

The genus *Serapias* of LINNAEUS was not accepted by all the botanists. In 1769 Henrici Ioa. Nepom. CRANTZ in his *Stirpium austriacarum*, fasc. VI, publishes *De Orchidum ordine, generibus discursus* and in this work the author uses the binary nomenclature! The genera are quite different from LINNAEUS'. We read on p. 462 sub 3:

Epipactis palustris.

Epipactis caule folioso multifloro, labello articulato vomeriformi, floribus pendulis. Icon. T. I. F. 5.

Epipactis foliis ensiformibus, floribus pendulis labello obtuso, per oras plicato. HALL. Orch. p. 111. *Epipactis*. 5.

Helleborine angustifolia palustris. C. B. *pin.* 187.

Helleborine palustris nostras RAI. Hist. II. certo.

Helleborine angustifolia RAI. *cantabr.* p. 72?

Helleborine latifolia, OEDERI Dan. Fasc. V. T. CCLXVII, bona & locus natalis consentit.

The figure is a good one and so is that of OEDER in *Flora Danica* and there is no doubt that here we have the same epithet as used by MILLER for the species Marsh Helleborine, which is validly published and legitimate.

On p. 467 we find *Epipactis Helleborine* sub no 5:

Epipactis Helleborine.

Epipactis cymba cartilaginea depressa, vernice splendente inuncta; flore minore. F. 6. c.

Epipactis foliis amplexicaulibus ovato-lanceolatis labello lanceolato. HALL. Orch. Epip. 4. non bene.

With: a) *Epipactis rubiginosa* etc.

b) *Epipactis viridans* etc.

c) *Epipactis varians* etc.

From this it is clear that CRANTZ used the epithet *Helleborine* for the first time in connection with the genus *Epipactis* and so the right name is: *Epipactis Helleborine* (L. em. Mill.) Crantz. The figure given by CRANTZ is the Broad-leaved Helleborine or one of its allies, but only a single flower is depicted. According to JANCHEN a and c are promoted species and so only var. b is now our *E. helleborine*.

In LINNAEUS' last work *Mantissa altera* he follows HALLER's views and this was easy enough after HALLER's book: *Historia Stirpium Helvetiae*, vol. II, 1768, in which two beautiful plates are given: tab. 39 *Epipactis foliis ensiformibus*, which is Marsh Helleborine and tab. 40 *Epipactis foliis amplexicaulibus*, which is the Broad-leaved Helleborine. The work had a great influence on LINNAEUS' *Mantissa altera*: p. 490:

SERAPIAS.

longifolia excludatur tota, substituat e Syst. nat. 593 integra.

Hall. flor. 1296. t. 39.

Helleborine. *Riv. hex. t. 3. Oed. dan. t. 267.*

Petala pubescentia, purpurascentia: interiora 2 alba.

Labium cordatum, obtusum, subserratum e marginatum.

Cyma lineis purpureis et flavis.

latifolia Hall. *flor. 1297. t. 40.*

Damasonium flore mixto, *Riv. hex. t. 6.*

Helleborine altera, flore atro-rubente. *Bauh. pin. 187.*

Petala pubescentia, virentia: interiora 2 alba.

Labellum cordatum, mucronatum, reflexum.

Cyma lineis nullis.

Obs. *S. latifolia* et *longifolia*, rubra et grandiflora differunt quidem, sed minus quam nonnulli exclamarunt.

The capitulation is total! Here LINNAEUS accepts Haller's opinion and he waives his own. But here too *Serapias longifolia* is a later homonym of HUDSON's name and the epithet *longifolia* for the Marsh Helleborine must be rejected. The first name which was legitimate is *Serapias palustre* Miller and the name is now *Epipactis palustris* (Mill.) Crantz. The plate of OEDER's *Flora danica* sub *Epipactis latifolia*, tab. 267, is mentioned by Crantz as a synonym and this plate can be considered to be the type (Fig. 3) of *Epipactis palustris*.

What is the type of *Serapias Helleborine*? There is no herbarium-specimen from LINNAEUS in the new meaning. But there is a good figure of this species in HALLER's *Historia Stirpium Helvetiae*, vol. II, tab. 40, and it seems best to choose this as the type (Fig. 4).

SUMMARY

1. *Serapias caule multifolio multifloro* published by LINNAEUS in 1737 is a collective species comprising the species of the genera *Epipactis* and *Cephalanthera* in their modern meaning. The diagnosis is changed in LINNAEUS' later works but his opinion does not change until 1763.

2. In 1753 *Serapias Helleborine* is still the same collective species. LINNAEUS' herbarium specimen, which is determined as *Serapias Helleborine latifolia* is the Marsh Helleborine.

3. Under the influence of the work of HUDSON (1762) LINNAEUS changes his mind and in *Species Plantarum* ed. 2 (1763) the collective species is divided into *Serapias latifolia* Hudson for the species of the genus *Epipactis* and *S. longifolia* for those of the genus *Cephalanthera*. Both species are collective ones.

4. After the publication of HALLER's paper in *Act. helv.* IV, 1760, in which the binary nomenclature is not yet followed, LINNAEUS in 1767 in *Syst. nat.* ed. 12 divides *Serapias latifolia* Huds. into two species *Serapias latifolia* Huds. emend. L. for the Broad-leaved Helleborine and *Serapias longifolia* L. for the Marsh Helleborine. The epithet *longifolia*, however, had already been used by HUDSON and therefore *S. longifolia* L. is a later homonym and must be rejected.

5. *Serapias longifolia* Huds. is renamed *S. grandiflora* by LINNAEUS and therefore this name is a later synonym for *S. longifolia* Huds. and for reasons of priority must be rejected. *S. rubra* is now also mentioned.

6. Apparently LINNAEUS revised the herbarium sheet of the *Hortus Cliffortianus* about 1767 (*Syst. nat.* ed. 12). This was a Marsh Helleborine and LINNAEUS determines it as *Serapias longifolia* L. This plant can be seen as the type of *S. longifolia* L. (non *S. longifolia* Huds.!) but this name is not legitimate.

7. If a species is divided into two, the original epithet has to be kept or reinstated. Dividing *Serapias Helleborine* L. into two species the epithet had to be kept for *S. latifolia* Huds. In dividing this species again into two, one of the two retains the name *S. Helleborine*.

8. LINNAEUS typifies the Marsh Helleborine with his determination *Serapias longifolia* L. as one part. For the other part, the Broad-leaved Helleborine, the name *S. latifolia* Huds. emend. L. is used but also in this case the epithet *Helleborine* must be reinstated and so the name is *S. Helleborine* according to current usage. In this sense the name was used by MILLER: *S. Helleborine* L. em. Mill.

9. The oldest legitimate epithet for the Marsh Helleborine is that of MILLER *palustre* (1768) and combined with the genus name *Epipactis* the name for this species has to be *Epipactis palustris* (Mill.) Crantz (1769) and the type for this is the plant depicted in *Flora danica*, tab. 267, because this is given as a synonym by CRANTZ.

10. The oldest legitimate epithet for the Broad-leaved Helleborine is *Helleborine* and the name of the species in the genus *Epipactis* is now *Epipactis Helleborine* (L. em. Mill.) Crantz. The type of the species is the plant depicted by HALLER in *Historia Stirpium Helvetiae*, vol. II, tab. 40.

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