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XXV.—On some species of Epilobium

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made upon the ova of the Batrachia by many authors* have not led to the discovery of the micropyle in them?

3. Penetration directly into the naked vitellus. It is certain, in fact, that the mode of origin of the ova described by Meissner in *Mermis albicans*, *M. nigrescens*, and several *Ascarides*, is not general even amongst the Nematoïd worms. A great many ova only obtain an envelope at a very late period, and are probably fecundated before they possess one, so that they do not require the presence of a micropyle. Meissner himself has seen the spermatozoa penetrate directly, and in crowds, into the ova of the Earthworm, at a period when they are completely destitute of an envelope. As regards these, Meissner supposes that they originally possess a membrane which disappears before fecundation. This is very possible, as we know that a similar disappearance takes place, although at a later period, with the vitelline membrane of the ova of Gasteropoda and Insects (Rathke, Kölliker, Zaddach, Leuckart †).

[To be continued.]

XXV.—On some species of *Epilobium*.
By CHARLES C. BABINGTON, M.A., F.R.S. &c.

[Concluded from p. 247.]

WE will now turn our attention to the species allied to *E. alpinum*, which present some difficulty, from there being probably two plants which pass by that name. Of this Dr. Godron was well aware when preparing the account of this genus for the

* Swammerdamm, *Biblia Naturæ*. Leeuwenhoeck, *Arcana Naturæ*. Roesel, *Hist. Nat. Ranarum nostratum*; Nürnberg, 1758. Spallanzani, *Diss. relatives à l'Hist. Nat. des Animaux et des Végétaux*, 1789. Prevost and Dumas, *Ann. des Sci. Nat.* tome ii. Rusconi, *Développement de la Grenouille commune*; Milan, 1828; and *Amours des Salamandres*, 1821. Baer, *Lettre sur la Formation de l'Oeuf*, 1829; *Repertorium*; Müller's Archiv, 1834. Reichert, *Entwickelungsleben im Wirbelthierreich*; Berlin, 1840. Vogt, *Untersuchungen über die Entwicklungsgeschichte von der Geburtshelferkröte*; Solothurn, 1842. Bell, *British Reptiles*. Newport on the Impregnation of the Ovum in the Amphibia, *Phil. Trans.* 1851 and 1853.

† We might add to these a fourth mode of fecundation, if we admitted, with Remak (Müller's Archiv, 1854), that the spermatozoa are only destined to transport a substance serving to effect fecundation (*die Träger einer samenähnlichen Substanz*). This substance being capable of passing through the little canals of the external membrane of the ova of Fishes, it would not be necessary that the spermatozoid itself should penetrate into the ovum in these animals. But we are already acquainted with the micropyle in many fishes, and it will probably be discovered in the others, which renders this theory very useless.

'Flore de France.' He observes, "L'*E. alpinum* (Fries, Nov. Mant. ii. 20) est, sans aucun doute, une espèce distincte de celle de France et de Suisse. Car la plante de Fries . . . porte à la base de ses tiges, au lieu de stolons filiformes, des rosettes sessiles de feuilles fasciculées, qu'il compare aux rosettes de l'*E. tetragonum*." (Fl. de Fr. i. 578.) It is a cause of surprise to me that, knowing so much, he did not inquire further into the subject, but has left the French plant in possession of the name of *E. alpinum*, which belongs to that of Lapland. It was the intention of Linnæus to include under that name the plant of the Alps; but it is clear, from his quoting Scheuchzer's work with doubt, that he was not quite satisfied of their identity. In his later writings he has removed the mark of doubt from that reference, and added other synonyms belonging to the alpine plant and also to *E. alsinifolium*. The *E. alpinum* therefore of the 'Species Plantarum' included three plants: namely (1) *E. alpinum* of Fries, which must be accepted as the type of the Linnæan species; (2) *E. alsinifolium* of Villars; and (3) *E. anagallidifolium* of Lamarck, which is the *E. alpinum* of Godron.

Botanists appear to be now pretty unanimous in distinguishing Nos. 1 and 2, but seem to have known nothing concerning the *E. alpinum* of France and the Alps until Godron published the remark that has just been quoted. Had not that accurate and observant botanist directed attention to the subject, it is probable that we might long have continued to be ignorant of the fact that the *E. alpinum* of the north differs materially from that of the south of Europe. It will have been seen from the quotation from the 'Flore de France,' that the chief difference between them is, according to Godron, to be found in the presence or absence of stoles or rosettes. If such a difference of habit really exists, it is probable that botanists will not see much reason for refusing to adopt Dr. Godron's opinion. That this southern plant, if distinguished, ought to bear the name given to it by Lamarck cannot admit of question; for there seems to be no reason for doubting that he had it in view when he published the description and figure of his *E. anagallidifolium*. He states that it is closely allied to the *E. alpinum* of Linnæus, but doubts their identity*.

After stating what I believe to be the characters of the three plants, a few observations will be made upon them.

E. anagallidifolium (Lam.); joints of the barren stems all long with small obovate leaves, flowering stem erect from a long rooting

* In the paper already noticed, Dr. Grisebach has arrived at conclusions concerning the allies of *E. alpinum* similar to those independently formed by me, and Dr. Schultz appears to adopt them in his review of it.

base, leaves oblong blunt narrowed below not acuminate stalked, upper leaves lanceolate, buds nodding, *sepals oblong blunt*, seeds obovate pointed below apiculate.

E. anagallidifolium, *Lam. Dict.* ii. 376. t. 278. f. 3; *Griseb. l. c.* 853.

E. alpinum, *Gren. et Godr. Fl. de Fr.* i. 577; *Reichenb. Fl. exsicc.* 1061.

Stem filiform, mostly simple, with two slightly raised lines, usually 3-4 inches long; or prostrate, branched, densely leafy, rooting. Leaves resembling those of *E. alpinum*, glabrous or downy. Flowers pale reddish. Capsules like those of *E. alpinum*, glabrous or downy. Seeds brown, rounded at the top, but with a minute point formed by a slight prolongation of the testa: there appears to be a furrow down the middle of the flat side.

It inhabits the lofty mountains of Scotland. My specimens are from Morne and Lochnagar, Aberdeenshire; Clova, Forfarshire; Ben Vorlich, Dumbartonshire. In Smith's Herbarium there are specimens from Ben Lomond, Stirlingshire; Craig Chaillich and Ben Lawers, Perthshire.

E. alpinum (Linn.); *barren stems short their upper leaves closely placed*, flowering stem erect from a short rooting base, leaves oval or oblong blunt narrowed below not acuminate, upper leaves lanceolate, buds nodding, *sepals linear-lanceolate acute*, seeds lanceolate-obovate pointed below apiculate.

E. alpinum, *Linn. Sp. Pl.* ed. 1. 348; *Eng. Bot.* 2001; *Fries, Herb. Norm.* viii. 44.

Stem filiform, simple, with two slightly raised lines, usually 3-4 inches long. Leaves pale green. Flowers pale. Capsules relatively smaller than those of *E. alsinifolium*, but resembling them. Seeds rather pale, bluntly rounded at the top, but with a minute central point formed by a slight prolongation of the testa, with a keel along the middle of the flat side; but the keel in this plant and the furrow in *E. anagallidifolium* is not ascertained.

It inhabits the lofty mountains of Scotland. All the British specimens that I have seen belong to the smaller of the two forms distributed by Fries; they are from Ben Wyvis, Ross-shire; Drumouchter, Inverness-shire; Ben na Buird, Aberdeenshire; Clova, Forfarshire; Ben Lawers, Perthshire.

E. alsinifolium (Vill.); *stoles (yellowish) with small roundish distant scales, stem erect from a long rooting base, leaves ovate-acuminate repand-dentate* shortly stalked, buds nodding, *sepals linear-oblong, seeds subfusiform*.

E. alsinifolium, *Vill. Dauph.* ii. 511; *Deakin's Florig. Brit.* f. 626.

E. origanifolium, *Reichenb. Fl. exsicc.* 775.

E. alpinum, *Fries, Herb. Norm.* v. 41.

Stem usually simple, rather thick, with two raised lines, 3-12

inches long. Leaves shining, subpellucid, glabrous. Lowest leaves blunt. Flowers large, purplish, few. Capsules very long, upright, long-stalked. Seeds narrowed at both ends, and continued gradually into a great prolongation of the testa at the top, causing the beard (pappus) to appear to be stalked.

It inhabits the lofty mountains of Scotland; the Great Cheviot in Northumberland; Cronkley Fell, Teesdale, Yorkshire; Fairfield, Westmoreland; at and above Aber Waterfall, Caernarvonshire.

It is not easy to describe the great difference in appearance that exists between *E. alpinum* and *E. anagallidifolium*, and therefore they will doubtless seem to the reader to be far more alike than is really the case. I have never seen in *E. alpinum* the remarkable prostrate rooting flowerless shoots which are characteristic of *E. anagallidifolium*, and which are as different from the rather loose rosettes of *E. alpinum* as they are from the stoles of *E. palustre*. The short leafy stems forming the loose rosettes of *E. alpinum* do not become creeping stems nor true stoles. The sepals may perhaps afford a certain distinction between them.

It must be added, that I have no acquaintance with the supposed differences between *E. alpinum* and *E. anagallidifolium* as they appear in the living plant, and that it is often difficult to tell accurately to which of them dried specimens ought to be referred. Well-developed and complete specimens are so very different, that there is little ground for hesitation in admitting two plants as natives of the Scottish mountains which have such markedly different modes of growth as to render it highly probable that they are distinct species. The identification of these plants with the *E. alpinum* of Scandinavia and of the Alps, respectively, does not, I think, admit of doubt. Botanists will do well if they direct their attention to the interesting question of their specific distinctness.

Scottish botanists should look carefully for the *E. lineare* (Mühl.) which is found on the mountains of Scandinavia, and may very probably inhabit those of Scotland. It closely resembles both *E. alpinum* and *E. palustre*. From the former, to which it appears to be the most nearly allied, it may be distinguished by its linear obtuse denticulate leaves; its sepals, although of the same shape, are apparently blunt; its flowers are "white," or "cream-coloured." From *E. palustre* it is at once known by "vegetatio cæspitosa ob rosulas ad basin sessiles," and the total want of the slender stoles of that species.

It is hardly necessary to expend many words upon the differences of *E. alsinifolium* from the two plants above mentioned,

for its very differently shaped seeds afford a good distinction, and the appearance of its foliage is very dissimilar. But it is necessary to direct attention to the singular fact, that the plate devoted to the illustration of this species in 'English Botany' represents another plant. Mr. Borrer has kindly favoured me with the use of authentic specimens, named *E. alsinifolium* by the late Mr. Winch, and stated to have been gathered by him on Cheviot. One of them was communicated by the late Mr. Sowerby as the plant figured by him in 'English Botany' (t. 2000); another is stated to be Mr. Winch's plant by the lamented Mr. Edward Forster; and a third is similarly ticketed by Mr. D. Turner. These three specimens all accord well with the plate (Eng. Bot. 2000); but neither they nor it have, as I believe, any claim to the name of *E. alsinifolium*. They are probably only small states of *E. montanum*; indeed, the cultivated specimen from Mr. Turner can scarcely be called small. Mr. Turner was well acquainted with this rather singular fact, for in the 'Botanist's Guide' (ii. 470) he states, under the heading of *E. alpinum*, the name originally applied to the plant by Winch, that he, in common with other botanists, believed the specimens sent to him to be "only a starved state of *E. montanum*." I am inclined to agree with Mr. Turner; but Mr. Borrer, than whom there is no person better qualified to give an opinion on such a subject, thinks that "the clubbed stigma and the angles of the stem tend to a contrary conclusion. These angles are still visible on the specimens, as lines at least, even on the large garden fragment." One thing is clear to both Mr. Borrer and myself, viz. that the specimen sent to Sowerby, and figured by him, was not *E. alsinifolium*. In Winch's Herbarium there is a "small mountain variety of *E. montanum*," which has faint decurrent lines upon its lower joints. The Cheviot plant appears to be chordorhizal, judging from one of the specimens preserved in that Herbarium; and the plate in 'English Botany' represents an underground stole similar to those of *E. alsinifolium*. If we are obliged to allow that hybrids are easily produced between *Epilobia* in a wild state, then we might probably escape from the difficulty by supposing this plant to be one; viz. between *E. alsinifolium* and *E. montanum*, both of which are, I believe, to be found upon the same part of that mountain. On that supposition, the habit and the leaves would result from the latter plant; and the stole, the slight angles upon the stem, and the club-shaped stigma, from the former. Nevertheless there is great reason to think that Winch did gather the true *E. alsinifolium* on Cheviot, for his description of the plant found there, when in cultivation, accords well with that species. His words are, "In winter it is not deciduous, but forms wide-

spreading, matted tufts of small leaves, among which the fibrous roots shoot out, as in proliferous plants. The flower-stems are partially decumbent, cylindrical, at first simple, *afterwards much branched*, and furnished with numerous elliptical, slightly toothed, soft leaves; the flowers are few, and the style undivided." (Bot. Guide to Northumb. and Durham, ii. p. v.) One or two points in this description, such as that which I have italicized, refer to the plant which Winch had by some mischance mixed with the true *E. alsinifolium*; but I think, for the most part, it cannot have been taken for that plant. I also think that the *Lysimachia siliquosa glabra minor latifolia* of Ray is really *E. alsinifolium*. It is most unfortunate that the wrong plant should have been figured in 'English Botany,' as that error has probably tended to encourage those who desired to disprove the specific distinctness of *E. alsinifolium*; and it is wonderful how botanists who have had occasion to quote figures of that species, myself amongst the number, have continued to refer to 'Eng. Bot. tab. 2000' as representing it. Dr. Deakin describes and figures the true *E. alsinifolium* (Florig. Brit. ii. 549. f. 626); but part of his remarks seems to have resulted from an inspection of 'English Botany,' for they do not accord with the description that precedes them. The lamented Dr. G. Johnston stated (Bot. of East. Borders, 81), that he found *E. alsinifolium* in the Dunsdale Ravine on the Great Cheviot; and as he most liberally presented his specimens to me, I am enabled to confirm his determination of the plant, thus proving that that species really does inhabit those hills. The specimens more nearly resemble those which I gathered upon Cronkley Fell in Yorkshire than the plant usually found in Scotland, and seem to be what Fries mentions under the name of *E. anceps* as a variety of this species (Mant. ii. 20). I am inclined to refer the specimen gathered and named *E. alpinum* by Dr. Douglas (see Bot. E. Bord. 82) to a small state of *E. alsinifolium*, but its imperfect state renders this determination doubtful.

In the valuable and recently published 'Supplement to the Flora of Yorkshire' (p. 67), Mr. J. G. Baker notices a plant which he found on the "south bank of the Swale near Topcliffe," and describes it as having "sessile leaves narrowing gradually below . . . a bisulcate stem, erect buds and dark purple flowers," and states his belief that it is probably the *E. purpureum* of Fries. If his description is correct, and I have no reason to think it otherwise, it seems highly probable that his determination of its name is also right. Mr. Baker kindly presented me with specimens of it, but unfortunately they are only lateral branches of what seems to have been a much-branched plant; they accord well with the descriptions given by Fries

(Mant. iii. 185, and Summa, 178). Mr. Baker's plant appears to have had a hollow "bisulcate" stem (but I do not know that the furrows descend from the dorsal ribs of the leaves, as Fries states to be the case in his plant), much branched and clothed with fine scattered hairs; leaves ovate-lanceolate, suddenly narrowed below into a very short winged petiole, finely and distantly denticulate; lower leaves probably opposite; floral leaves large and more or less alternate; flowers apparently rather large, "dark purple," constantly erect; sepals hairy, broad, oblong, acute or perhaps cuspidate; capsules very long, thick, hairy when young, rising conspicuously above the top of the stem. I have thought it right to introduce this short notice of the suspected *E. purpureum* into the present paper from its appearing to deserve the attention of botanists.

Before closing this communication, it is proper to bring more prominently forwards than has been done by its discoverer, the fact that the *E. rosmarinifolium* (Haenke) is a native of Scotland. Mr. John Robertson, a very intelligent gardener and botanist, has had a 'Flora of Perthshire' in preparation for some years, and would have published it before this time if he had succeeded in obtaining sufficient subscribers to cover the expense*. With the prospectus of this book he circulated in 1852 a "few scraps from the work" itself, and amongst them there is the announcement of his having found this plant upon almost "inaccessible rocks that overhang the Tarf, a mountain-stream in Glen Tilt." He adds, that "it may be readily overlooked from the frequent nibbling of sheep and other animals. . . . It has also been observed in one or two situations by the Tay, where doubtless it has been carried . . . by the impetuosity of the mountain torrents." The characters for distinguishing it from *E. angustifolium* are—

E. rosmarinifolium (Haenke); stem erect round, leaves linear not veined, petals elliptic-oblong not clawed, style equalling the stamens.

E. rosmarinifolium, "Haenke in" Jacq. collect. ii. 50.

E. Dodonæi, Sturm, Deutsch. Fl. fasc. 72. t. 5.

Creeping moderately. Stem often decumbent below. Leaves shortly attenuate at both ends, entire or denticulate, with revolute margins. Flowers rose-coloured or white.

This is a very interesting addition to the flora of Britain, for, as far as I can learn, it had not with certainty been ascertained to grow further north than the Cevennes. Messrs. Hooker and

* Subscribers' names are received by Messrs. A. and C. Black, publishers, Edinburgh. Price 10s. 6d.

Arnott seem to throw some doubts upon its having been found in Glen Tilt, but do not state the cause of them. My inquiries and those of Mr. Borrer lead us to believe the statement of Mr. Robertson.

In the 'Botanist's Guide' there are two stations given for a plant there called *E. angustissimum*, both of which rest upon the high authority of the late Mr. J. W. Griffith. These places are, "Rocks near Twll dû in Cwm Idwel," and "Rocks of Arran Pen Llyn." It has been generally taken for granted that the plants noticed by Mr. Griffith were small states of *E. angustifolium*, but no botanist has, I believe, recorded his having recently met with the plant of the latter station, and we have therefore no means of knowing what it is. In the autumn of 1855 I gathered what seems to be a small form of *E. angustifolium* upon the rocks rising from the lake called Llyn y Cwn, which is close to Twll dû. It had not flowered, nor did it show any buds, and grows in the narrow crevices of the rock in such a manner that I was unable to obtain a root for cultivation. It should be remembered that the station called "Rocks near Twll dû in Cwm Idwel" by Griffith, is stated by him (Bot. Guide, i. 82) to be the spot named "Hysvae" by Richardson in the 3rd edition of Ray's 'Synopsis' (310), where he found the *Lysimachia Chamenarium dicta, flore Delphini* of Parkinson, and that there is every reason to suppose that Richardson, Griffith and myself have successively gathered the same plant in the same or closely contiguous spots. It is curious that Smith should have taken no notice of these mountain stations.

The true name of the plant found by Mr. Robertson is rather difficult to determine, not from any doubt concerning the species to which it belongs, but on account of some confusion which has happened in the use of the several names of the allied plants. The Perthshire plant is—

E. Dodonæi, Villars (in part), Allioni, Gaudin (in part), Koch ;
E. rosmarinifolium, Haenke, Reichenbach, Godron ;

E. angustissimum, Willdenow (in part), Bertoloni (not Curtis nor Aiton), Waldstein and Kitaibel.

Bertoloni and Godron appear to be justified by the description given by Villars (Fl. Dauph. iii. 507) in considering that he included under the name of *E. Dodonæi* both the small species which are allied to *E. angustifolium*, and therefore have probably exercised a sound judgement in rejecting that name. But the former author seems to me to have fallen into an error in thinking that the plant now under consideration is the *E. angustissimum* of Aiton (Hort. Kew. ed. 1. ii. 5), and of Curtis (Bot. Mag. 76), for the figure given by the latter author seems to fix that name upon the other species, to which also Reichenbach

applies it. If therefore we think it proper to drop Villars's name, the next in antiquity is *E. rosmarinifolium* given by Haenke in 1788. Mr. Borrer has pointed out to me that Dodoens does not deserve the honour of being commemorated in connexion with this plant, the figure of which in his work (Pempt. 85) is only a reprint of L'Obel's cut (Stirp. Hist. 226), and all that he says about it is contained in a single sentence which conveys no valuable information. It is probable that he never saw the plant. It cannot therefore be said that we are depriving him of any credit, justly due to him, when we neglect a name of only partial applicability to our plant and adopt another which belongs to it alone.

P.S.—The time which has elapsed since the communication of this paper to the Botanical Society has allowed plants raised from seeds of *E. Lamyi*, taken from the specimens sent by M. Lenormand, to develop their winter form. The seeds were sown in a pot in the early part of the summer of 1855; they flowered in the autumn, and the flowering stems are now (Feb. 22, 1856) quite dead. Around the base of the old stems there is now a dense mass of rosettes, exactly resembling in all respects those of *E. tetragonum*. The plants have not been defended from the frost, but nevertheless the rosettes are in a healthy condition. Dr. Schultz remarks of the rosettes, that “si la plante n'est pas garantie contre le froid dans une chambre chauffée” (Arch. ii. 53), they perish in the winter; but that if so defended they produce plants that flower, but do not develop any more rosettes. It remains to be seen if such will be the case with the plants in the Cambridge Botanic Garden.

Mr. Borrer informs me that “a plant of *E. Lamyi*, raised from seed sent by Schultz, is (Feb. 9, 1856) showing tufts of leaves as strong as, and (as far as I can see) scarcely distinguishable from, those of *E. tetragonum*, at this time in a north border in my garden, where it must have borne 24 degrees of frost [8° Fahr.].” These facts tend to the conclusion that *E. Lamyi* is not distinct from *E. tetragonum*.

XXVI.—*Note on the Genus Scissurella.*

By J. GWYN JEFFREYS, Esq., F.R.S.

It would be a boon to science if Dr. Gray, or some other naturalist who is well versed in general conchology, would enlighten me and probably many more of your readers by assigning a proper position and resting-place to this singular genus. I am