

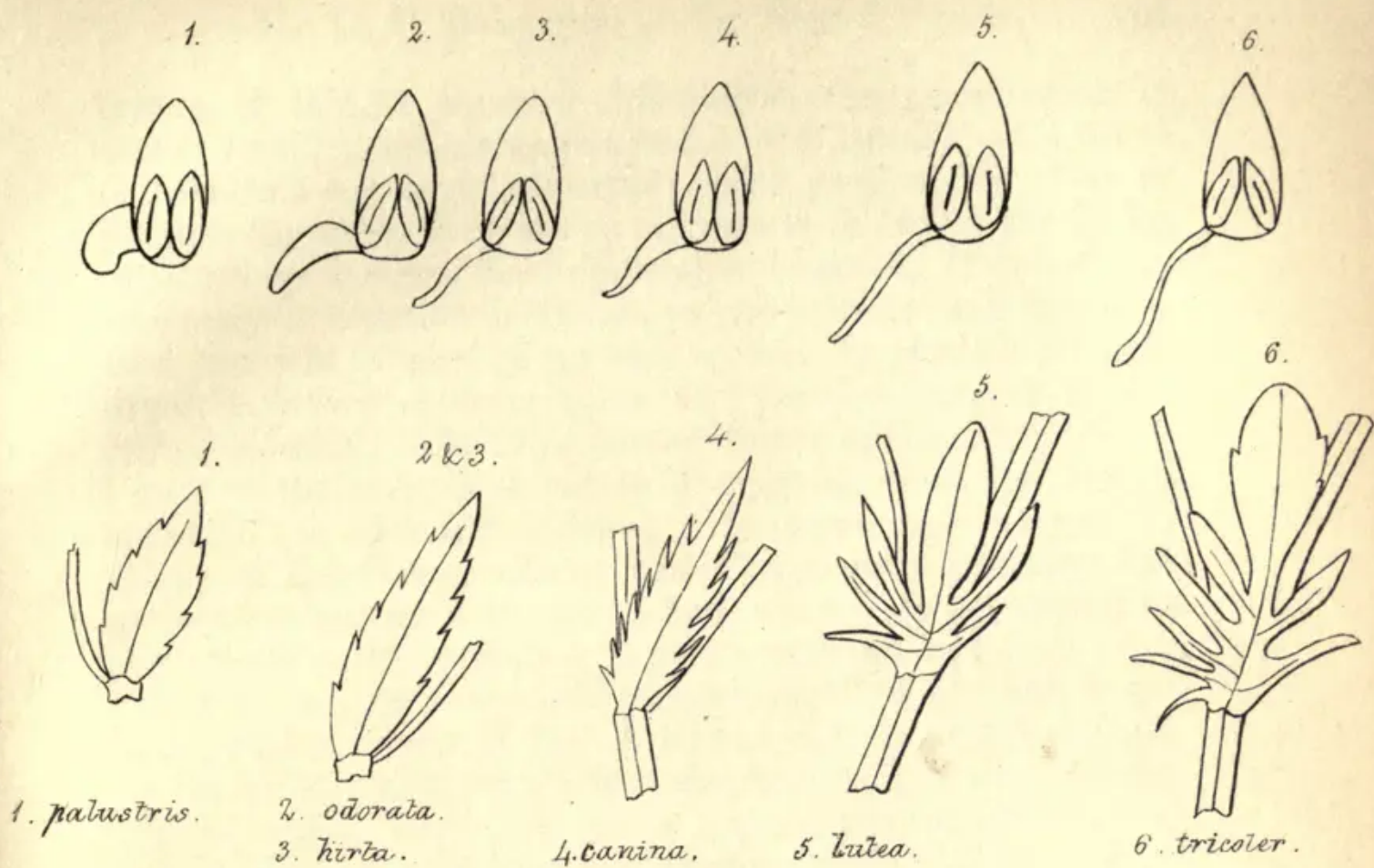
from the union of the indigenæ with the settlers of Asiatic origin, the companions of Manco Capac of traditionary fame. Accordingly in the former we observe the receding forehead, the elongated cranium, and the horizontally-placed occipital bone; and in the latter a modified form, in which, combined with the receding forehead and elongated cranium, there is an elevated vertex and flattened occiput, formed principally by an altered position of the occipital bone; which, instead of lying on a plane with the horizon, rises in a sloping direction upwards and backwards to meet the parietal bones.

Note.—After the reading of this paper, Prof. Owen stated that he entertained an opinion that their peculiar form was given to them by pressure, such as might be applied by a bandage passed round the head; and he suggested that a short fillet (about 16 inches long) found with the younger of the two mummies might have been employed for this purpose. This bandage, however, I consider was used to secure the lower extremities to the trunk, and on consideration I am disposed to maintain the same opinion as I have stated above: 1st, because this fillet is but $1\frac{1}{2}$ inch wide, whereas the flattened portion of the skull is more than 3 inches, extending over the os frontis from immediately above the superciliary ridges to an inch beyond the coronal suture, so as to involve the anterior portion of the parietal bones; 2nd, the line of depression in these skulls has a direction over the middle of the os occipitis, and then over the anterior third of the parietal bones, first where the angle dips down between the frontal temporal bones, and then immediately behind the coronal suture, and not at all over the os frontis; 3rd, because, if pressure had been used in this direction, it would have contracted the great fontanelle, of which there is no mark whatever; indeed in the elder of the two, in which the depressed line is most visible, the fontanelle is most open; and lastly, if a circular bandage had been applied, it would have given a circular form to that portion at least compressed by it; whereas however a transverse section, taken by measurement, shows that the skulls have a compressed pyriform figure, the larger extremity representing the flattened and upper surface, and the smaller corresponding with the contracted aspect of the occipital bone.

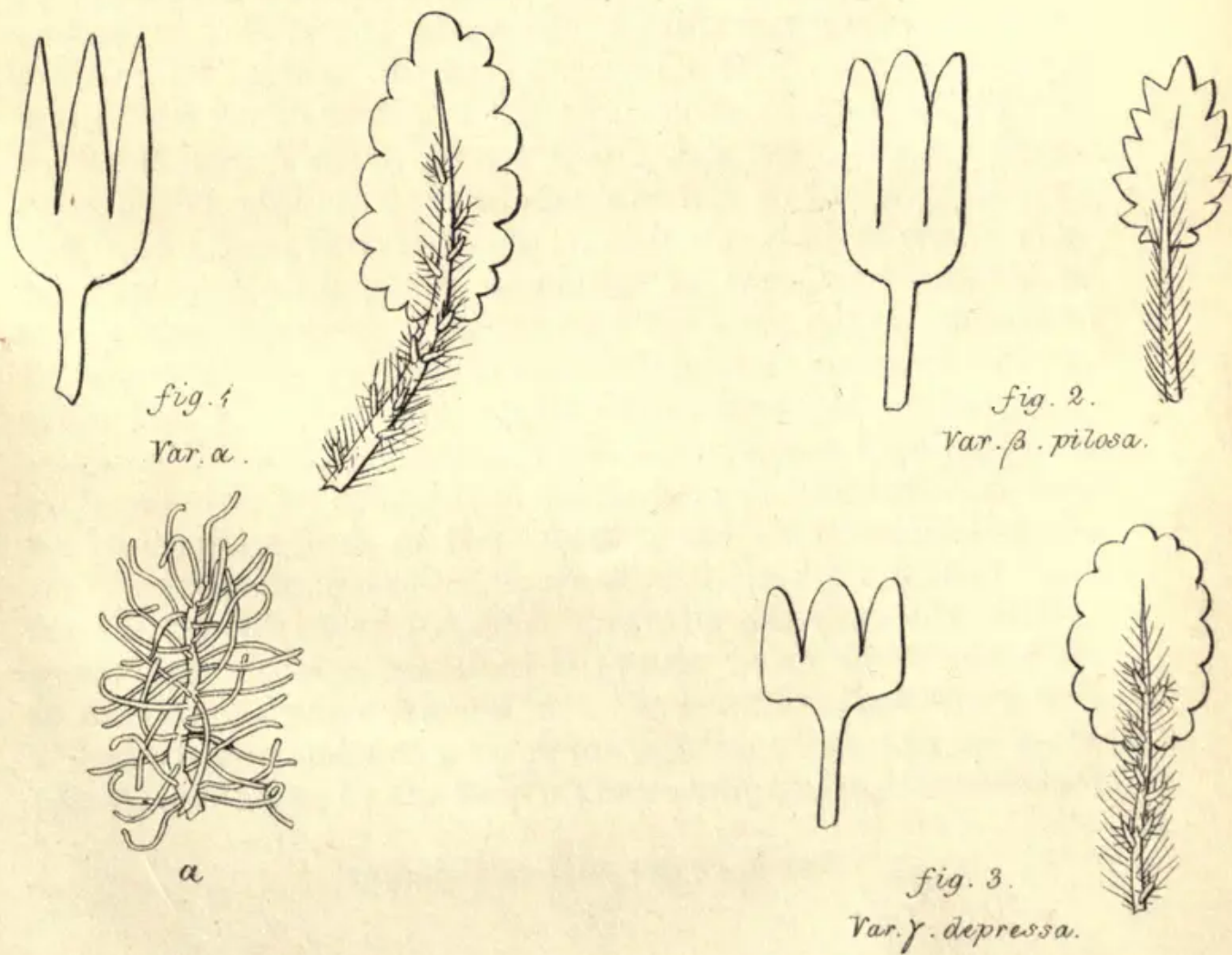
XVII.—*On the characters of the British Violets.* By CHARLES C. BABINGTON, M.A., F.L.S., F.G.S., &c.

[With a Plate.]

THE remarkable difference which exists between the value of characters in different orders of plants, and sometimes even in genera,—the form or structure of any particular organ being of generic value in one order, specific in another, and sometimes not even sufficiently constant to distinguish varieties in a third,—must always give considerable interest to an investi-



Viola.



Dryas octopetala.

gation of minute external differences, the examination of which would probably appear to be little better than a waste of time to a superficial observer; more particularly when, as is often the case, they are so minute as to escape the notice of all except the practised descriptive botanist. It is scarcely necessary to mention instances in proof of so well-known a fact, but still it may be perhaps as well to produce a single example, before entering upon the peculiar subject of this communication. The form and sculpture of the external coat (*testa*) of the seed is found to distinguish some few *orders* amongst the Monocotyledons; it is occasionally of *generic* value; in the *Chenopodiaceæ* and *Polygoneæ* it distinguishes *species*, but amongst the *Caryophyllaceæ* it does not appear to possess sufficient constancy to point out even varieties.

But to proceed to the subject more particularly before us. In a communication to the Botanical Society at Edinburgh, my friend Mr. Edward Forbes has directed attention to the form of certain curious spurs or appendages attached to the base of two of the stamens and extending into the spur of the corolla, as affording excellent characters for the formation of sections in the genus *Viola**, but he has not applied them in the distinction of species. He finds three different forms to pervade all the Violets that have come under his notice, namely, 1st, a rounded spur, such as is found in *V. palustris*; 2ndly, a lancet-shaped spur, which occurs in *V. odorata*, *V. canina*, and *V. hirta*; and 3rdly, a filiform spur, as in *V. tricolor* and *V. lutea*. In the course of a series of observations which had for their object the application of these characters to the British Violets, I soon found that the direction of the cells of the anthers differed considerably in the several species, and I have been led to the conclusion that they also may be employed with great advantage in the discrimination of nearly allied species. I have found the cells of the anthers to be always nearly parallel to each other in *V. palustris*, *V. canina*, and *V. lutea*; and constantly distant below, but converging upwards, until their apices nearly, if not quite, touch each other in *V. odorata*, *V. hirta*, and *V. tricolor*. If now we look to the form of the stipules and the presence or absence of an elongated stem, we shall have four sets of characters by which six species may be satisfactorily distinguished in Britain, nor does it appear to me to be advisable to divide our native Violets into a greater number of species.

I shall now endeavour to point out the characters of these plants, and hope, by the help of the accompanying illustration,

* See Ann. Nat. Hist. vol. vii. p. 157.

to make the subject easily understood. In *Viola palustris* we have a stemless plant with ovate acute stipules, a short rounded spur, and the cells of the anther nearly parallel. Its want of stem and short spur distinguish it from *V. canina* and *V. lutea*, as do also its stipules; the parallel cells and the spur separate it from *V. odorata* and *V. hirta*; and all these characters from *V. tricolor*. In *V. odorata* and *V. hirta* we have stemless plants with lanceolate stipules and diverging cells to the anthers, their antherine spurs also belonging to the lancet-shaped section; but the spur of *V. hirta*, by its near approach to a linear form, satisfactorily distinguishes that plant from *V. odorata*, in which it is truly lancet-shaped. We now come to *V. canina*, under which I include the *V. flavicornis* and *V. lactea* of Smith; here we find lanceolate inciso-dentate stipules combined with a decided stem, parallel antherine cells, and a lancet-shaped spur. This combination of characters clearly separates it from any of the foregoing. The two remaining species, *V. tricolor* and *V. lutea*, are distinguished from all the others by their filiform spurs and palmate-pinnatifid stipules, and are severally characterized by the parallel cells and almost palmate-pinnatifid stipules, of which the terminal lobe is linear-lanceolate, or lanceolate and quite entire, of *V. lutea*; and the diverging cells and lyrate-pinnatifid stipules with a more or less dentate or crenate terminal lobe of *V. tricolor*. Under *V. lutea* I include the *V. Curtisii* of the 'Supplement to English Botany,' as its differences are, according to my views, of but slight value; and I also consider *V. arvensis* as only a variety of *V. tricolor*.

The following is the manner in which I consider that the British species should be characterized and arranged:—

Genus VIOLA, Linn.

A. *Antherine spur rounded, stipules ovate-acute, stems scarcely apparent.*

1. *V. palustris* (Linn.). Cells of the anthers nearly parallel; spurs short, thick, rounded; spur of the corolla very short, obtuse; leaves reniform-cordate, glabrous. Pl. VII. fig. 1.—*Eng. Bot.* 444. *Reich. Icon. Fl. Germ.* f. 4491.

Antherine spurs concave below, convex above. Cells of the anthers slightly separated below. Fl. pale lilac, with purple streaks. Sometimes the petioles are slightly hairy, but usually they are glabrous.—*4*. June, July, bogs and marshes in mountainous districts.

B. *Antherine spurs lancet-shaped, stipules lanceolate, stems scarcely apparent, leaves cordate.*

2. *V. odorata* (Linn.). Cells of the anthers diverging below; spurs lancet-shaped, blunt; spurs of the corolla obtuse, straight; lateral

petals entire, lower one emarginate; leaves cordate, scions creeping. Pl. VII. fig. 2.—*Eng. Bot.* 619. *Reich. f.* 4498.

Antherine spur narrowed to an obtuse point; spur of the petals inflated towards the end, slightly channeled above. Flowers purple, often white. Bracteas above the middle of the flower-stalk. Petioles with deflexed hairs. Lateral petals with a hairy line, which is sometimes wanting (*V. imberbis*, Leight.).— $\mathcal{U}$. March, April, common.

3. *V. hirta* (Linn.). Cells of the anthers diverging below; spurs nearly linear, obtuse; spur of the corolla obtuse, hooked at the point; petals entire or slightly emarginate; leaves cordate, scions wanting. Pl. VII. fig. 3.—*Eng. Bot.* 894. *Reich. f.* 4493.

Antherine spur scarcely broader at the base than the apex; spur of the petals compressed, not channeled; sepals obtuse. Flowers pale blue, sometimes white; lateral petals usually with a hairy line. Bracteas below the middle of the flower-stalk. Petioles with spreading hairs.

Var. β . *calcareae*. Flowers smaller, peduncles much longer than the leaves, sepals oblong-ovate, obtuse.— $\mathcal{U}$. April, May; common on a limestone soil. β . Gogmagog Hills, Cambridgeshire.

C. *Antherine spurs lancet-shaped; stipules lanceolate, an evident stem; leaves cordate or lanceolate.*

4. *V. canina* (Linn.). Cells of the anthers parallel; spurs lancet-shaped, acute, spurs of the corolla obtuse; leaves cordate-ovate or oblong; stipules entire, ciliate or dentate; stems ascending. Pl. VII. fig. 4.—*Eng. Bot.* 620.

Spurs of the petals inflated in their lower half, slightly channeled above. Flowers blue or rarely white.— $\mathcal{U}$. April to August; common on banks, in woods, &c.

The leaves are cordate-ovate, or somewhat oblong-acute, not acuminate; the stipules usually oblong-lanceolate, and the fruit truncate-obtuse or apiculate in the typical variety; leaves cordate-ovate or subreniform-acuminate; stipules lanceolate-attenuate, and the fruit acuminate in var. β . *sylvatica*; leaves roundish-cordate, rather acute, small; flowers large, base of the stem woody in γ . *pusilla* (*V. flavicornis*, Sm.) ‘*Eng. Bot.*’ 2736; similar to the last, but with the leaves cordate-oblong in δ . *montana* (*V. montana*, Linn.?)*; leaves cordate-ovate, subattenuated above, and slightly narrowed into the petiole; stipules large, incised, base of the stems woody in ϵ . *Ruppii*; leaves ovate-lanceolate, narrowed into the petiole, the lowermost cordate; stipules large, incised; flowers cream-coloured in ζ . *lactea* (*V. lactea*, Sm.) ‘*Eng. Bot.*’ 445. Notwithstanding the great difference which exists between the

* The specimens of *V. montana* in the Linnæan Herbarium appear to me to belong to *canina*, being a large upright form of that plant, with immense stipules and cordate-lanceolate leaves.

extreme forms of this plant, I cannot but agree with Bertoloni ('Fl. Ital.' ii. 705) in considering the above as only varieties of one species.

D. *Antherine spurs filiform, stipules* palmate-pinnatifid, stems evident.*

5. *V. lutea* (Huds.). Cells of the anthers nearly parallel; spurs elongated, filiform, spur of the corolla as long or longer than the calycine appendages; sepals acute; leaves crenate-serrate, lower ones ovate-cordate, upper ovate or lanceolate; stipules palmate-pinnatifid, the terminal lobe linear or linear-lanceolate, entire; stems ascending. Pl. VII. fig. 5.—*Eng. Bot.* 721. *Reich.* f. 4519. Flowers wholly yellow, yellow with the two upper petals purple, or wholly purple, varying greatly in size; capsule globose.—*4*. June, July; common in mountainous pastures.

Distinguished from *V. tricolor* by its stipules, which have all their lobes of nearly equal size, the lateral ones (usually one, sometimes two on the side next the stem, and three on the other) all springing from near the base of the stipule and the terminal one, which is sometimes considerably larger than the others, narrow, and always quite entire. *V. Curtisii* (Forst.), 'Eng. Bot.' 2693, appears to me to differ from this only in the lower part of the stipules being more elongated, so as to separate the lateral lobes and give them a more pinnatifid form. In *V. grandiflora* (Linn.!), to which this has been sometimes referred, the spur is twice as long, the corolla much larger, and the sepals bluntish, as in *V. calcarata*; and in the specimens contained in Sir J. E. Smith's Herbarium, and called by him *V. grandiflora*, the stipules are remarkably large, with five acute narrow lobes close to the base on the outside, and a single similar one near the top of that side; on the inner side the lower half is without any lobes, but there are two acute lobes in the upper half, the terminal lobe not being larger than the others. One of the specimens has very peculiar stipules, extremely long and narrow, with three small narrow acute lobes externally at the base, and one rather larger at about the middle of the inner side. The late lamented Prof. Don was disposed to consider *V. grandiflora* (Linn.) as a form of *V. calcarata* (Linn.). The *V. grandiflora* (Vill.), of which I possess specimens from the original locality, namely, the Vosges Mountains (gathered and named by Schultz), is identical with the *V. lutea* (Sm.) and *V. grandiflora* (Huds.) from the Clova mountains; and although the Scottish specimens have usually smaller flowers, still in one or two of them the

* The stipules on or about the middle of the stem should always be examined in determining the species of *Viola*.

corolla is nearly as large as in those from France. *V. sude-tica* (Willd.) I believe to be the same plant. In a communication to the Botanical Society on the 13th of January, 1842, Mr. A. Seton appears to be of opinion that *V. lutea* is not distinguishable from *V. tricolor*, and most correctly states that the characters usually employed to distinguish these plants are not sufficiently constant. I cannot however agree with him in his conclusion that they are forms of one species, as I believe them to be constantly distinguishable by attending to the characters given above; neither can I agree with him in separating *V. arvensis* (Murr.) from the following species.

6. *V. tricolor* (Linn.). Cells of the anthers diverging below; spurs elongate, subclavate-filiform, spur of the corolla about equal to the calycine appendages; leaves crenate-serrate, lower ones ovate-cordate, upper ovate or ovate-lanceolate; stipules lyrate-pinnatifid, the terminal lobe spathulate-crenate; stems ascending. Pl. VII. fig. 6.—*Eng. Bot.* 1287. *Reich. f.* 4517.

Flowers with the upper petals purple, lateral ones bluish, lower one yellow; capsule ovate.

Var. β . *arvensis* (*V. arvensis*, Sibth.), *Eng. Bot.* 2712, has the petals shorter than the calyx and whitish, and the capsules nearly glo-bular.— $\odot$? May, September, common; β . in corn-fields.

A very variable plant, both in the colour and size of its corolla, and the size and outline of the terminal lobe of its sti-pules, which is sometimes copiously crenate, but often with only one or two notches upon each side. I have never seen it quite entire.

The following table will perhaps place in a clearer light those characters to which this paper more particularly refers:

		1. palustris.	2. odorata.	3. hirta.	4. canina.	5. lutea.	6. tricolor.
Antherine spur	rotund	*					
	lancet-shaped ..	....	*	*	*		
	filiform . . . . .	....	....	....	....	*	*
Antherine cells	parallel . . . . .	*	....	....	*	*	
	diverging . . . . .	....	*	*	....	....	*
Stipules	ovate-acute	*					
	lanceolate . . . . .	....	*	*	*		
	palmate-pinnatifid	....	....	....	....	*	*
Stems	obscure	*	*	*			
	apparent . . . . .	....	....	....	*	*	*