

On *Vaccinium Donianum* Wight.

BY

JOHN ANTHONY.

When examining the Forrestian material referable to *Vaccinium Donianum* Wight and allied species it became apparent that there was no clear line of demarcation among the species involved. *V. Donianum* Wight is a well known Indian species distributed in the Himalayas. This name had been applied by the earlier botanists to specimens collected in China. Later authorities have found in the Chinese plants various forms which they have described as species. Diels in 1901 described *V. mandarinorum*¹ and *V. laetum*¹ from Hupeh and in 1912 *V. Forrestii*² from Yunnan. In 1913 Plantae Wilsonianae appeared in which Rehder and Wilson, dealing with this species, remark³ :—" This is an exceedingly variable plant common in woodlands and thickets. The leaves vary in size and shape and the shoots and racemes from glabrous to pubescent ; the pedicels vary in length from 2-10 mm. and are glabrous or pubescent. With the large number of species before us we cannot distinguish between the common Chinese and Indian forms." Accordingly they applied the name *V. Donianum* Wight to the Chinese plants citing *V. mandarinorum* Diels as a synonym and reducing *V. laetum* Diels to a variety. In 1925 Handel-Mazzetti published further species. He raised *V. Donianum* Wight var. *brachybotrys* Franch.⁴ to specific rank, quoting *Pieris longicornu* Lévl. et Vant. as a synonym ; *Pieris Duclouxii* Lévl. he transferred to the genus *Vaccinium* quoting *V. Forrestii* Diels as synonymous.

TABLE I.

Floral part.	<i>V. Donianum</i> Wight.	<i>V. mandarinorum</i> Diels.
calyx - - -	ciliate - - -	non-ciliate
corolla within - -	villose - - -	glabrous
" without - - -	glabrous - - -	glabrous
Staminal appendages -	1'2-1'4 mm. long -	3 mm. long
" horns - - -	½ to ¾ length of anther -	same length as anther

¹ Bot. Jahrb. xxix (1901), 516.

² Notes R.B.G. Edin., v (1912), 294.

³ Pl. Wils. i (1913), 557.

⁴ Anz. Akad. Wiss. Wien, Math.-Nat. (1925), 146.

It was not till 1931, however, that an attempt was made to investigate the limits of these closely related species. This was done by Metcalf¹ who came to the conclusion that there existed two distinct species, one *V. Donianum* Wight confined to the Himalayan region, the other *V. mandarinorum* Diels from China. These species he distinguished by the characters tabulated above. (Table I.)

There is now available for study a long series of specimens collected by George Forrest in Yunnan, many of which come from within a small area—the Shweli-Salwin divide (9 gatherings) and Hills around Tengyueh (12 gatherings). From these it is possible to follow the range of variation in the characters noted above. These are set forth in Table II.

With reference to the calyx an examination of the Indian sheets of *V. Donianum* Wight shows that it is ciliate. In the Chinese material the calyx is found to be ciliate, ciliate only towards the tip, and finally entirely glabrous.

In every instance the corolla was found to be glabrous on the outside. In the inside the corolla may be either glabrous, villose only on the 'ribs' or completely villose. (Most flowers have longitudinally darker lines of colour. On these lines the corolla is thicker. These are the 'ribs'.)

TABLE II.

Forrest No.	Calyx.	Corolla within.	Staminal appendage.	Ratio of length of horn to anther.	Locality
7648 7806 9628	ciliate	villose on ribs villose villose on ribs	2 mm. 2.5 mm. 2.2 mm.	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$	Hills round Tengyueh.
9411 9724 9797	ciliate at tip	glabrous villose on ribs villose on ribs	2.2 mm. 2 mm. 1.5 mm.	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$	
11829 26230 9314 26187 26269 26213	non-ciliate	glabrous glabrous villose on ribs villose on ribs villose on ribs villose	3 mm. 3 mm. (immature) 2.5 mm. 3 mm. 3 mm.	no horns $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$	
13668 24049	ciliate at tip	villose villose	3 mm. 2 mm.	$\frac{1}{2}$ $\frac{1}{2}$	
15650 24020 9852 9879 13604 26390 29572	non-ciliate	villose villose villose on ribs villose on ribs glabrous glabrous glabrous	1.4 mm. 2 mm. 1.8 mm. 1.8 mm. 3.2 mm. 2.5 mm. 3 mm.	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ no horns no horns no horns	
					Shweli-Salwin Divide.

¹ Journ. Arn. Arbor. xii (1931), 272.

From the data tabulated above it can be seen that the characters selected by Metcalf to separate *V. Donianum* Wight and *V. mandarinorum* Diels are of little diagnostic value when applied to the Yunnan material. In addition to his 'calyx non-ciliate' and 'calyx ciliate' there is an intermediate stage 'calyx ciliate at the tip.' With each of the three different types of calyx we find the three variations of the corolla (inside), glabrous, villose on the ribs, and completely villose. There are thus nine different combinations when we consider only the characters of the calyx and corolla.

With regard to the staminal appendages, Metcalf gives the length of these for *V. Donianum* Wight as 1.2-1.4 mm. and for *V. mandarinorum* Diels as about 3 mm. The Yunnan series shows a range of measurements from 1.4 to 3.2 mm. The horns, which in a few cases are absent altogether, vary from $\frac{1}{4}$ to $\frac{3}{4}$ the length of the anther.

In no single example does the combination of characters set out by Metcalf for *V. mandarinorum* Diels occur. On the other hand one specimen of *V. Donianum* Wight is known from Yunnan, viz., Henry 11917A. Forrest 7806 in Table II is, while 7648 and 9628 are almost, in agreement with that species. From this evidence I incline to place the gatherings from Yunnan with *V. Donianum* Wight as forms and varieties.

Finally, with regard to synonymy, the species involved are set out in Table III and the same characters applied as are used in Table I.

TABLE III.

Collector's No.		Species	calyx	corolla within	Staminal appendage	Ratio of length horn : anther
Wight 2129 Henry 11917A		Donianum	ciliate	villose	2 mm.	$\frac{1}{3}$
		"	"	"	2 mm.	$\frac{1}{2}$
Forrest 454	Type	Forrestii	ciliate at tip	villose on ribs	2 mm.	$\frac{1}{5}$
Bodinier 104	Type	Duclouxii	non ciliate	glabrous	2 mm.	$\frac{1}{5}$
Hand. Mazz. 550 8644	Authentic Sheets	brachybotrys	non-ciliate	villose glabrous	2.5 mm. 2 mm.	$\frac{1}{3}$ $\frac{1}{3}$
Cavalier 1009	Type	longicornu	non-ciliate	glabrous	4 mm.	$\frac{1}{2}$
Henry 5807B	Co. Type	mandarinorum	non-ciliate	glabrous	4 mm.	$\frac{3}{4}$
No authentic material available		laetum	-	-	-	-

Each species judged by these characters is distinct. In the case of *V. brachybotrys* Hand.-Mazz., where two specimens determined by the author were available, it will be noted that in one the corolla is glabrous while in the other it is villose. As these characters, as has been shown, are of little diagnostic worth and since other characters (e.g., size, shape and texture of leaf) are likewise very variable I include *V. Duclouxii* Hand.-Mazz., *V. Forrestii* Diels and *V. brachybotrys* Hand.-Mazz. as synonyms of *V. Donianum* Wight.

Pieris longicornu Lévl. et Vant. has very long staminal appendages while the young wood is densely pubescent and so may be allowed, for the present, to retain its specific rank (in the genus *Vaccinium*).

I have seen but little material from Northern China (Hupeh, Kansu), but all the specimens I have examined agree in having non-ciliate calyx, glabrous corolla and long staminal appendages, the characters said by Metcalf to distinguish clearly *V. mandarinorum* Diels. It seems, therefore, that the common plant of Northern China is *V. mandarinorum* Diels. As to *V. laetum* Diels, I have not seen authentic material and therefore cannot express an opinion as to whether the name should be regarded as a synonym of *V. mandarinorum* Diels or not.

The species under discussion are therefore distributed as follows :—*V. Donianum* Wight (and its varieties) extends from the Himalayas to Yunnan where it becomes very variable in form, while *V. mandarinorum* Diels is only found in Northern and Eastern China.

The synonymy and distribution of *V. Donianum* Wight is :—

***Vaccinium Donianum* Wight, Icon. iv (1845-6) 5, t 1191.**

V. Forrestii Diels in Notes R.B.G. Edin., v. (1912), 294.

V. Duclouxii (Lévl.) Hand.-Mazz. in Anz. Akad. Wiss. Wien, Math.-Nat. (1925), 146.

V. brachybotrys Hand.-Mazz. l.c., 146.

CHINA.—Yunnan :

Forrest 454! 4178! 4179! 4182! 5504! 5508! 5525! 5526! 5534!
7645! 7648! 7806! 8274! 8600! 9252! 9314! 9400! 9411! 9628!
9724! 9797! 9852! 9879! 9902! 11829! 12981! 13604! 13653!
13668! 13705! 15656! 18501! 21142! 21535! 23011! 23027! 23031!
23468! 24020! 24049! 25693! 26187! 26213! 26230! 26269! 26390!
28059! 29078! 29351! 29507! 29528! 29565! 29572! 29595! 29831!
Henry 7660! 9847A! 9847D! 10552! 11346! 11917A! 12745!
Simeon Ten 252! Bodinier 104!
Handel-Mazzetti 550! 8644!

UPPER BURMA.

Forrest 29652! 29765! 29788! Ward 1589!
MacGregor 1109! Farrer 897! 1525! 828A!

KHASIA.

Griffith! Hook f. et Thoms!