

A Description of Some Asiatic Phanerogams.

BY

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With One Figure in the Text.

In the following short paper there are described eight new species of Phanerogams from the material gathered by Mr. George Forrest in N.E. Upper Burma and S.W. China (Yunnan, Szechuan and S.E. Tibet) between the years 1913 and 1925.

The species here described are:—

<i>Chelonopsis Forrestii</i> , Anth. (p. 239)	. . .	Labiatae.
<i>Cynanchum yunnanense</i> , Anth. (p. 240)	. . .	Asclepiadaceae.
<i>Hibiscus aridicola</i> , Anth. (p. 241)	. . .	Malvaceae.
<i>Pieris macrocalyx</i> , Anth. (p. 241)	. . .	Ericaceae.
<i>Rhamnus velutinus</i> , Anth. (p. 244)	. . .	Rhamnaceae.
<i>Saurauja subspinosa</i> , Anth. (p. 244)	. . .	Ternstroemiaceae.
<i>Styrax tibeticus</i> , Anth. (p. 245)	. . .	Styracaceae.
<i>Vaccinium setosum</i> , Anth. (p. 246)	. . .	Vacciniaceae.

Chelonopsis Forrestii, Anth. sp. nov.

Species affinis *C. odontocheilae*, Diels sed foliis lanceolatis margine ciliatis, floribus maioribus omnibus solitariis albis nec flavis inter alia dignoscitur.

Fruticulus 1-2 m. altus. Rami sparsim pilosi. Folia lanceolata 3-6 cm. longa 1-2 cm. lata pilosa costis albo-pilosis, margine serrata atque ciliata, apice acuminata, basi in petiolum 5 mm. longum attenuata. Flores solitarii axillares pedunculo 1-2 cm. longo suffulti. Calyx campanulatus 5-dentatus 10-nervius, tubus 15 mm. longus, dentes triangulares 10 mm. longi subaequales apiculati margine ciliati. Corolla 3 cm. longa, extra pilosa; limbi labium superius circ. 10 mm. longum, 12 mm. latum, labii inferioris lobi laterales circ. 8 mm. lati medianus 6 mm. longus 10 mm. latus. Stamina filamenta setosa; antherae ciliatae. Stylus glaber bifidus 25 mm. longus.

WEST CHINA. *Szechuan*. "Shrub of 3-5 ft. Flowers creamy white flushed purple exterior. Thickets by streams. Litang Ho valley. Lat. 28° 12' N.; Long. 100° 54' E. Alt. 8-9000 ft. June 1922." Forrest 21356. Type!

[Notes, R.B.G., Edin., No. LXXIV, March 1927.]

This species is quite distinct within the genus but is nearest to *C. odontocheila*, Diels. It may be recognised by its lanceolate leaves with the margin strongly ciliated. All the flowers are solitary and in colour white. In *C. odontocheila*, Diels the flowers occur either singly or in threes and differ in having the median lobe of the lower lip toothed. The remaining Chinese species have numerous flowers borne in the leaf axils. Lanceolate leaves are found in *C. moschata*, Miq. but these leaves are very much larger and deeply cordate at the base.

It was observed that the Japanese species differed from those found in China in the shape of the calyx. The calyx of the former is distinctly bilabiate in addition to being 5-toothed while in the latter the calyx is subequally 5-toothed.

***Cynanchum yunnanense*, Anth. sp. nov.**

Species affinis *C. Roylei*, Wight a quo magnitudine parva, foliis multo minoribus, corolla glabra inter alia signa facile distinguenda.

Herba 8–20 cm. alta ramosissima pubescens. Folia opposita triangularia 5–10 mm. longa 2–6 mm. lata, costis hirsutis, pagina inferiore excepta glabra, margine integra vel remote et minute denticulata, apice sensim acuminata, basi cordata vel subcordata; petioli hirsuti 1–3 mm. longi. Inflorescentia umbelliformis axillaris pedunculo 20–25 mm. longo suffulta. Flores parvi circ. 6 mm. diametro; pedicelli graciles 3 mm. longi. Calycis lobi lineari-lanceolati 1.5 mm. longi acuti. Corolla subrotata glabra, colore variabilis, lobis lanceolatis ad 4 mm. longis. Corona cupuliformis 3 mm. longa membranacea, 10-lobata dente inter lobos instructa, intus squamis quinque praedita. Antherae sessiles apice membranaceae. Stigma breviter conicum.

WEST CHINA. *Yunnan*. "Shrubby plant of 4–8 inches. Flowers ruddy green. Open dry situations. Mountains in the N.E. of the Yangtze bend. Lat. 27° 45' N. Alt. 10,000 ft. July 1913." Forrest 10501!

"Plant of 2–4 inches. Flowers grey tinged rose exterior. Open stony pastures on the Tong Shan in the Yangtze bend. Lat. 27° 20' N. Alt. 10,000 ft. Sept. 1913." Forrest 11132!

"Plant of 3–7 inches. Flowers white. Dry stony slopes. Bey-ti Shan. Lat. 27° 45' N.; Long. 100° 18' E. Alt. 7,000 ft. July 1921." Forrest 20542!

"Shrubby plant of 4–6 inches. Flowers white. Sandy rocky slopes. Western flank of the Lichiang Range. Lat. 27° 40' N.; Long. 100° 18' E. Alt. 6–7,000 ft. June 1922." Forrest 21209. Type!

This species, allied to *C. Roylei*, Wight, is a dwarf much branched herb. This habit and the glabrous corolla separate it from that species.

Hibiscus aridicola, Anth. sp. nov.

Species sectionis *Ketmieae* DC. ; foliis late ovatis vel orbicularibus, bracteolis sex spathulatis, floribus magnis albis recognoscitur.

Fruticulus 2-4 m. altus. Folia ovata vel rarius orbicularia 3-7 cm. longa 3-8 cm. lata, utrinque stellato-tomentosa margine serrata apice obtusa basi truncata vel subcordata petiolo 2-4 cm. longo suffulta. Flores axillares solitarii, pedunculus 4-8 cm. longus apicem versus articulatus ; bracteolae 6, spathulatae 15-20 mm. longae basi coalitae. Calyx 5-dentatus, tubo circ. 12 mm. longo, lobis triangularibus acutis circ. 12 mm. longis. Corolla 8-12 cm. diametro alba. Ovarium 5-loculare, loculis 4-6-ovulatis, styli ramis 5 apice patentibus. Capsula ovoidea 5-valvis calyce fere inclusa ; semina reniformia 7 mm. longa, 4 mm. lata, setosa.

WEST CHINA. *Yunnan*. "Shrub of 8-12 ft. Flowers white. Open dry situations. On the Tong Shan. Lat. 27° 20' N. Alt. 7,000 ft. July 1914." Forrest 12736!

"Shrub of 6-9 ft. Flowers white tinged yellowish at base, anthers brick-red. Dry open situations amongst rocks. Chungtien plateau. Lat. 27° 30' N. Alt. 7,000 ft. Aug. 1914." Forrest 13120!

"July 1917." Forrest 15140! "Sept. 1918." Forrest 16931!

"Shrub of 2-4 ft. Flowers white. Dry situations amongst rocks. Bey-ti Shan. Lat. 27° 45' N.; Long. 100° 18' E. Alt. 7,000 ft. June 1921." Forrest 20541. Type!

"Se Kia près Kiuo Kia. Plante cueillie par le père T. Cey. 8.bre., 1909." Ducloux 1490!

Szechuan. "Sept. 1922." Forrest 22540!

Pieris macrocalyx, Anth. sp. nov.

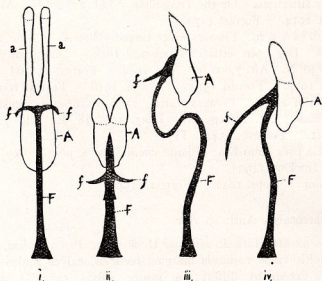
Species ex affinitate *P. villosae*, Hook. f. et *P. ovalifoliae*, Don a quibus foliis valde coriaceis margine recurvis, calyce multo maiore corollam excedente differt ; a priore valvis capsulae margine incrassatis divergit, ab altero filamentis staminum exappendiculatis dignoscitur.

Fruticulus 1-2 m. altus. Folia ovata 6-10 cm. longa 3-5 cm. lata valde coriacea supra glabra atro-viridia subtus pallidiora hispida venis rubidis conspicuis, margine integra recurva basi rotundata vel cordata apice acuminata ; petioli circ. 1 cm. longi. Inflorescentiae axillares racemosae circ. 5 cm. longae ; pedicelli crassi angulosi circ. 1 cm. longi. Calyx alte 5-fidus lobis late ovatis 5-8 mm. longis 3 mm. latis coriaceis persistentibus basi gibbosis apice acuminatis. Corolla urceolata circ. 6 mm. longa, calyce inclusa, 5-dentata, dentibus parvis recurvis, decidua. Stamina 10. Filamenta 3 mm. longa medio geniculatim flexa basi dilatata setosa corollae cohaerentia exappendiculata. Antherae oblongae 2 mm. longae apice poris dehiscentes. Ovarium globosum apice depressum 5-loculare. Stylus

5 mm. longus crassus 5-angulosus. Capsula globosa circ. 6 mm. diametro valvis margine incrassatis. Semina lineari-oblonga circ. 1 mm. longa brunnea numerosa.

WEST CHINA. *Yunnan*. "Shrub of 3-5 ft. Flowers pale creamy yellow. Amongst scrub on rocky hillsides. Hills N. of Lung-fan. Lat. 25° 54' N. Long. 98° 33' E. Alt. 9,000 ft." In flower, June, 1925. Forrest 26800! In fruit, November 1925. Forrest 27741!

This species has been placed in the genus *Pieris*, Don in preference to *Xolisma*, Rafin. As has been pointed out by Rehder* the latter genus differs from the former not only in the thickened sutures of the capsule but also in the awnless anthers. He further considers the appendages of the filaments a less constant character—not of sufficient importance for generic distinction—while the awned anthers constitute a constant and important character.



Stamens (diagrammatic) to illustrate appendages. i and ii, back view; iii and iv, side view.

- i *P. bracteata*, W. W. Sm., anther awned, filament appendaged.
- ii *P. compita*, W. W. Sm. et J. F. Jeff., anther awnless, filament appendaged.
- iii *P. ovalifolia*, Don; anther awnless, filament appendaged.
- iv *P. Forrestii*, Harrow, anther awnless, filament appendaged.

A = anther.
F = filament.

a = awn of anther.
f = appendage of filament.

In the description of the genus *Pieris*, Don in the *Genera Plantarum*† the capsular valves are described as having margins often thickened. It would therefore appear that the thickened sutures of the capsule is a character common to both genera, not a point of distinction as thought by Rehder.

* Journ. Arnold Arbor. v (1924), p. 50.

† ii (1876), p. 588.

Concerning the staminal appendages it is very important to distinguish between awns of the anther and appendages of the filament. The former are outgrowths from the antherine portion of the stamen usually forming a sterile prolongation of anther and have at the apex the pores for dehiscence. The appendages of the filament may arise at any point on the filament. When these are produced below the point of attachment of the anther there is no difficulty in distinguishing them as filament appendages. When, however, these appendages are formed on the filament near its apex they appear at first sight to be antherine appendages which, in fact, is not the case. This latter condition Rehder has apparently interpreted as appendaged or awned anthers. The accompanying diagrams illustrate the point.

In the table below there is indicated the nature of the staminal appendages present on the stamens. The last column gives a note on the margins of the capsular valves.

Species.	Anther.	Filament.	Margin of capsular valves.
<i>P. bracteata</i> , W. W. Sm.	awned.	appendaged.	not seen.
<i>P. compta</i> , W. W. Sm. et J. F. Jeff.	not awned.	appendaged.	not thickened.
<i>P. doyonensis</i> , Hand.-Mzt.	not awned.	appendaged.	not thickened.
<i>P. Forrestii</i> , Harrow	not awned.	appendaged.	not thickened.
<i>P. ovalifolia</i> , Don	not awned.	appendaged.	thickened.
<i>P. polita</i> , W. W. Sm. et J. F. Jeff.	not awned.	appendaged.	not seen.
<i>P. villosa</i> , Hook. f.	not awned.	not appd.	not thickened.
<i>X. sphaerantha</i> , Hand.-Mzt.	not awned.	not appd.	not seen.

These facts suggest that the staminal appendages are not a sufficiently constant character for taxonomic purposes. This conclusion is further supported by the results obtained from an investigation* concerning the staminal appendages covering many genera of the Ericaceae in which it was found that the presence or absence of staminal appendages was a very variable character—even in a single genus.

From the evidence examined one is led to conclude that the two characters stated by Rehder to separate the genus *Xolisma* from *Pieris* are of little diagnostic value. The point is well illustrated by his diagnoses.† He places *P. compta*, W. W. Sm. et J. F. Jeff. (and infers that *P. bracteata*, W. W. Sm. should also be placed) with *Xolisma*, this despite the fact that the fruits in *P. compta* have not a thickened margin to the capsular valves. *P. Forrestii*, Harrow and *P. polita*,

* J. R. Matthews and E. M. Knox in Trans. Bot. Soc. Edin., xxix pt. 3 (1926), p. 243.

† Journ. Arnold Arbor. v (1924), p. 54.

W. W. Sm. et J. F. Jeff. are stated to be the true *Pieris*. Nevertheless an examination of the stamens from the types of these species shows that they are similar in structure to those found in the type specimen of *P. compla*, W. W. Sm. et J. F. Jeff.

I have therefore no hesitation in placing the present species in the genus *Pieris*. A peculiar character which it possesses is the very large calyx, just longer than the corolla and by this it may easily be distinguished from all the other Chinese species. The foliage also is unique, the stiff leathery leaves with recurved margins are unlike that of closely allied forms. It is separated from *P. ovalifolia*, Don by the unappendaged stamens and from *P. villosa*, Hook. f. by the strongly thickened margin of the capsular valves.

***Rhamnus velutinus*, Anth. sp. nov.**

Species ex affinitate *R. purpurei*, Edgew. a quo foliis utrinque dense et breviter velutino-puberulis (primo intuitu glabris) margine integris inter alia differt.

Fruticulus 1 m. altus. Rami glauco-cinerei, ramulis dense puberulis. Folia ovata vel elliptica 2-4 cm. longa 1-2 cm. lata coriacea utrinque minute velutino-puberula margine integra basi rotundata apice obtusa. Petioli circ. 1 cm. longi puberuli. Flores 2-3-fasciculati e foliorum superiorum axillis orientes; pedicelli graciles puberuli. Calyx 4-5-partitus sepalis late triangularibus 1.5 mm. longis 2 mm. latis trinerviis. Petala nulla. Stamina filamenta circ. 1 mm. longa, antherae circ. .75 mm. longae. Ovarium 2-3-loculare. Fructus obovoideus circ. 4 mm. longus ater, pyrenis 2-3.

WEST CHINA. *Yunnan*. "Shrub clinging closely to the limestone cliffs, exposed face. Flowers chocolate red. Leaves reddish-purple beneath. Fruit a black berry. Yungning. Alt. 10,000 ft. 20-4-22." Ward 5059. Type!

Szechuan. "Shrub of 2-4 ft. In fruit. Fruits black. On ledges of cliffs and on rocky slopes. Mountains west of Mu-li. Lat. 28° 18' N.; Long. 100° 42' E. Alt. 10,000 ft. July 1922." Forrest 22159!

This species is peculiar in that the leaves are covered with very minute soft hairs, visible only with a powerful lens. These give to the leaf a smooth soft velvety feeling. The specimen collected by Mr. Forrest differs slightly from the type as the leaves are not so thick but agrees in other respects. The floral characters are similar to *R. purpureus*, Edgew., but the foliage is quite distinct, particularly in the older leaves.

***Saurauja subspinosa*, Anth. sp. nov.**

Species affinis *S. macrotrichae*, Kurz a qua setis longioribus stramineis, foliis minoribus magis coriaceis serrulatis haud ciliatis, floribus duplo maioribus inter alia facile distinguitur.

Fruticulus 1-2 m. altus setis stramineis rigidis 6 mm. longis basi dilatatis dense vestitus. Folia lanceolata 10-15 cm. longa 4-5 cm. lata coriacea, costa nervisque secundariis 8-10-paribus supra sparsim subtus dense setosis, margine serrulata cartilaginea, serrulis mucronatis curvatis crassis, apice acuminata basi gradatim attenuata. Petioli 2-3 cm. longi. Cymae axillares ramulorum apices versus gestae; pedunculi 5-6 cm. longi; flores pedicello circ. 15 mm. longo suffulti. Sepala quinque suborbicularia concava obtusissima circ. 8 mm. longa. Petala suborbicularia circ. 6 mm. longa et lata pallide rosea. Stamina numerosa inaequalia; filamenta circ. 3 mm. longa; antherae circ. 1 mm. longae. Ovarium globosum 3 mm. diametro glabrum 5-loculare. Styli quinque 3 mm. longi basi adhaerentes apice patentes. Semina numerosa.

N.E. Upper Burma. "Shrub of 3-5 ft. Flowers rose-pink. On the margins of thickets and amongst scrub in the side valleys. Hills around Htawgaw. Lat. $26^{\circ} 10' N.$; Long. $98^{\circ} 25' E.$ Alt. 6-7,000 ft. Sept. 1924." Forrest 25084!

"Same locality and altitude. Nov. 1924." Forrest 25970. Type!

"Shrub of 4 ft. Flowers pale rose. Margins of thickets. Hills around Ku-lu. Lat. $26^{\circ} 15' N.$; Long. $98^{\circ} 35' E.$ Alt. 7-8,000 ft. May 1925." Forrest 26579!

"Fruiting specimen. Oct. 1925." Forrest 27366!

The present species resembles *S. macrotricha*, Kurz in that it is densely clothed with long stiff bristly hairs, but these are straw-coloured and much longer and stouter than in that species, where they are rusty-brown to black in colour. The leaves are much shorter, more coriaceous and less spiny, the serrations have a broad curved mucro and are not ciliated, while there are only from 8-10 pairs of secondary nerves. The petioles are longer even though the leaves are much shorter. The flowers are pale rose, at least twice as large, and have a glabrous ovary in contrast to the small red flowers with a hairy ovary of Kurz's species. Thus though undoubtedly closely allied, the numerous minor differences serve to make these species easily distinguishable from each other.

***Styrax tibeticus*, Anth. sp. nov.**

Species valde affinis *S. biaristato*, W. W. Sm. a quo glabritate, foliis margine integris, floribus minoribus differt.

Frutex 6-10 m. altus. Folia lanceolata 7-10 cm. longa 2-3 cm. lata glabra margine integra apice valde acuminata basi in petiolum 1 cm. longum attenuata. Inflorescentia paniculata 3-5 cm. longa; pedicelli glabri. Calyx cupuliformis 1 mm. longus, 5-lobus margine ciliatus. Corolla 7 mm. longa alba, extra pubescens intus glabra. Stamina filamenta 2 mm. longa, antherae 2 mm. longae; connectivus apice biaristatus. Ovarium sphaericum 3-loculare multiovulatum

glabrum; stylus trifidus circ. 8 mm. longus gracilis. Fructus 3 mm. longus calyce inclusus.

WEST CHINA. *Tibet*. "Shrub of 20-30 ft. Flowers fragrant white. In open thickets by streams. Salween-Kiu-Chiang divide N.W. of Si-chi-to. Tsarong. Lat. 28° 35' N.; Long. 98° 30' E. Alt. 10-11,000 ft. June 1922." Forrest 21648!

"Fruiting specimen. Oct. 1922." Forrest 22882!

This species is closely allied to *S. biaristatus*, W. W. Sm. but in appearance is more graceful. The flowers are only half as large and the leaves have an entire margin.

***Vaccinium setosum*, Anth. sp. nov.**

Species valde affinis *V. fragili*, Franch. a quo racemis omnibus terminalibus, floribus et foliis duplo maioribus praeter alia signa differt.

Fruticulus 1 m. altus setis longis dense vestitus. Folia lanceolata 3 cm. longa 1.5 cm. lata coriacea serrulata serrulis mucronatis rigidis utrinque setosa, apice subacuta mucrone crasso, basi in petiolum brevissimum attenuata. Racemi terminales; flores pedicello brevi suffulti. Calycis tubus brevis, dentes triangulares. Corolla urceolata 8-10 mm. longa 5-dentata pallide rosea costis quinque saturate roseis et dense setosis. Stamina 10 libera, filamenta 3 mm. longa dense setosa apice bicornia, antherae 2 mm. longae in tubulos 2 mm. longos prolongatae. Ovarium globosum 5-loculare, loculis 2-3-seminiferis. Stylus 6 mm. longus.

WEST CHINA. *Yunnan*. "Shrub of 2-3 ft. Flowers pale rose, lined a shade darker. In dry shady pine forests. Mekong-Salween divide. Lat. 27° 36' N.; Long. 98° 56' E. Alt. 9,000 ft. July 1921." Forrest 19807. Type!

This species is closely allied to *V. fragile*, Franch. The plant, however, is densely covered with very long setae, the leaves and flowers are twice as large, the leaves setose on both sides and the racemes terminal, which points easily distinguish it from that species.