

## NOTES, CHIEFLY NOMENCLATURAL, ON GENTIANACEAE OF PAKISTAN AND INDIA

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THE determination of a few Gentianaceae collected in Pakistan in 1958 brought to light nomenclatural troubles, chiefly in connection with the material of this family collected by J. F. Royle and papers by David Don and George Don. The position needs to be clarified. Records of the Pakistan collections are added as an appendix.

The chief publications that have to be disentangled are as follows:-

1. J. F. Royle, *Illustrations of Himalayan Botany*, tab. 67, 68 (Aug. 1835).

*Gentiana contorta* Royle  
*Gentiana coronata* Royle  
*Gentiana kurroo* Royle  
*Swertia alternifolia* Royle  
*Swertia caerulea* Royle

Royle gave his Gentianaceae to David Don for study, but allowed his own illustrations to appear without waiting for Don's conclusions. As the plates included dissections the names on them are to be considered validly published.

2. J. F. Royle, *Illustrations of Himalayan Botany*, 276-278 (Dec. 1835). This is an extract of David Don's work which Royle mentions as having been read at the Linnean Society on November 3. The only items dealt with in sufficient detail to constitute valid publication are the plants already figured. These now appear under the names accepted by Don:-

*Gentiana contorta* Royle  
*Eurythalia coronata* (Royle) D. Don  
*Pneumonanthe kurroo* (Royle) D. Don  
*Swertia alternifolia* Royle  
*Swertia caerulea* Royle

Royle refers to "*Eurythalia* Don" in his comments, but the genus (which is a pre-Linnaean one from the work of Renealm) had already been taken up by Borkhausen (in Römer, *Archiv für die Botanik*, 1, 128: 1798): it was however illegitimate, having been proposed to include *Gentianella* Moench.

3. An account of the Linnean Society's meeting of November 17, 1835, published in *London & Edinburgh Philosophical Magazine and Journal of Science*, 8: 75-78 (Jan. 1836).

This is a brief account of Don's work on Royle's collection which was later published in full (No. 5 below). It includes latin diagnoses of all the species that Don thought were new, and names of other plants in the collection. As this paper is not quoted in *Flora of British India* and is apparently little known, it has seemed useful to list the genera and species. To the names I have added what I believe to be the correct authorities (none were given in this account). New names validly published for the first time are marked with

an asterisk: some that Don thought he was publishing for the first time had already been included in Royle's own work (Nos. 2 & 3 above).

Some names have been left without any authority. Although these species were given diagnoses the genera were not characterised and they, and in consequence the species attributed to them, are invalid.

p. 76. *Gentiana* L.

*G. contorta* Royle

*Pneumonanthe* Schmidt

*P. kurroo* (Royle) D. Don

\**P. depressa* (D. Don) D. Don

*Ericala* [Renealm] Borckhausen

[Borckhausen actually wrote *Ericoila* but this may best be treated as an orthographic variant or error, for Borckhausen quotes Renealm]

\**E. capitata* D. Don

\**E. argentea* D. Don

\**E. marginata* D. Don

\**E. decemfida* D. Don

\**E. pedicellata* D. Don

\**E. canaliculata* D. Don

*Eurythalia* [Renealm] Borckhausen

*E. coronata* (Royle) D. Don

\**E. pedunculata* D. Don

\**E. carinata* D. Don

*Crawfurdia* Wall.

*C. fasciculata* Wall.

*C. speciosa* Wall.

p. 77. *Swertia* L.

\**S. speciosa* D. Don

\**S. petiolata* D. Don

*S. alternifolia* Royle

\**S. cuneata* D. Don

*S. caerulea* Royle

*Agathotes*

*A. chirayta*

*A. alata*

*Ophelia*

*O. angustifolia* (Ham. ex D. Don)

*O. pulchella*

*O. paniculata*

*O. purpurascens*

*O. cordata*

*O. lurida*

*Halenia* Borckhausen

\**H. elliptica* D. Don

*Erythraea* Borckhausen

\**E. roxburghii* D. Don

p. 78. *Canscora* Lam.

*C. diffusa* (Willd.) R. Br.

*C. decussata*—no description or basionym cited

*C. pusilla*—no description or basionym cited

*Exacum* L.

*E. pedunculatum* L.

*E. tetragonum* D. Don

*Slevogtia* Reichb.

*S. verticillata*—no description or basionym cited

4. G. Don, *General System of Dichlamydeous Plants*, 4: 173-214 (1837).

This work was started under the title *General System of Gardening and Botany*, but a change was made when it was found that the scheduled four volumes would only cover part of the system. The publishers felt unable to finance the extra volumes needed for completion: new title pages were issued with the completion of volume four.

This account has numerous references to "D. Don mss" but there are no references to the abstract published in January 1836, it must therefore be presumed to have been composed before that date.

Burkill (1906, p. 365) suggested that G. Don's version was that delivered by D. Don to the Linnean Society and that David revised his manuscript before his own publication. But Burkill was unaware of the 1836 synopsis, which purports to be an account of the Linnean Society meeting and conforms in nomenclature with D. Don's longer paper.

George Don's account was based on an earlier manuscript of his brother's which David revised before delivering his paper.

*Eurythalia* and *Ericala* are both cited with references to Renealm and Boreckhausen. The valid publication of *Agathotes* and *Ophelia* date from this account and the following species in these genera are validated:-

*Agathotes chirayita*

*alata*

*nervosa*

*Ophelia angustifolia*

*ciliata*

*wallichii*

*Ophelia teres*

*florida*

*chirayta*

*porrigens*

*cordata*

*lucida*

It will be noticed that this list does not include three names, *O. pulchella*, *O. paniculata* and *O. purpurascens* used by D. Don in 1836. On the other hand *O. ciliata*, *O. wallichii*, *O. teres*, *O. florida*, *O. chirayta* and *O. porrigens* were not subsequently maintained by David Don.

5. D. Don, *Descriptions of Indian Gentianeae*, in *Transactions of the Linnean Society of London*, 17 (4): 503-532 (1837).

This paper was read on November 3 and 17, 1835. It is a much fuller paper than the abstract published in January 1836 and includes references to Wallich's Catalogue names and numbers and to the account in G. Don's *General System*. It is still only a treatment of the species collected by J. F. Royle and not a general study of Indian Gentianaceae. Some names attributed to "D. Don mss" by G. Don are repudiated and are ascribed to G. Don alone: the other references to his account are in the form "nob. in G. Don . . .".

In his introductory remarks D. Don refers to some errors in G. Don's *General System of Gardening and Botany* which "have crept into that account in transcribing from my notes and from the circumstances of my not having had an opportunity of seeing the proof sheets". Right at the end of the paper is an additional paragraph: "An abstract of the present paper appeared in the Philosophical Magazine for January 1836, and the nomenclature there given is here adopted. I have added the synonyms from the forthcoming volume of my brother's work".

It is clear that at the date when David was writing, G. Don's account had already been printed off, but was not yet published. The citation of the typographical error *S. lucida* for *S. lurida* shows that it was too late for David Don to make even trivial corrections. D. Don's paper was published in Part 4 of vol. 17 of the Linnean Society's Transactions. Mr. T. O'Grady has kindly consulted Council Minutes for me and reports the following entry dated 20 June 1837: "Resolved that the price of the forthcoming part of the Transactions, Vol. 17, Part 4, be twenty-four shillings". The date of publication was thus in the latter half of 1837. In the absence of evidence to the contrary it seems most reasonable to follow Burkill (1906) and others and to accord priority to G. Don's publication.

In the light of this decision, and taking into account D. Don's paper of 1836, it is necessary to revise the nomenclature in the Flora of British India. This means some unfortunate changes (the well-known *Swertia purpurascens* is lost), but if D. Don (1837) were deemed prior to G. Don (1837) other changes would balance those avoided (e.g. *Swertia cordata* would then have to go). It may be useful to list those species of *Swertia* (which is the genus chiefly affected) in which changes in name or citation are necessary.

The species numbers are those of the Flora of British India. References are by date and page only; titles are given in full in the bibliography at the end of the paper.

1. *Swertia ciliata* (G. Don) B. L. Burtt, **comb. nov.**

Syn.: *Ophelia ciliata* G. Don (1837, p. 178).

*Ophelia teres* G. Don (1837, p. 178).

*Ophelia purpurascens* D. Don (1837, p. 526).

*Ophelia purpurascens* var. *ciliata* (G. Don) D. Don (1837, p. 526).

*Swertia purpurascens* (D. Don) C. B. Cl. (1883, p. 121).

The species has long been known as *S. purpurascens*. The name *Ophelia purpurascens* (D. Don 1836, p. 77) has no standing because the genus had not been validated at that date. G. Don's account (1837, p. 178), which was probably based on an earlier manuscript by D. Don, does not contain *O. purpurascens*, but there are two other names, *O. teres* and *O. ciliata*, both attributed to "D. Don mss". D. Don subsequently (1837, p. 526) reduced the first to *O. purpurascens* and the second to its var. *ciliata*, attributing them to his brother G. Don! But, of course, *O. purpurascens* with these synonyms is an illegitimate name. *Ophelia teres* G. Don is said to be based on *Swertia racemosa* Wall. (Cat. No. 4377), but this number was quoted by D. Don (1837, p. 522) under *Agathotes chirayta* and was later taken up independently as *Ophelia racemosa* by Grisebach (= *Swertia racemosa* (Griseb.) C. B. Cl.). *S. racemosa* is a distinct species with sessile leaves and calyx lobes rather

definitely united at the base. The sheet of Wallich 4377 in the Wallich herbarium at Kew is a mixture of *S. racemosa* and *S. chirayita*, that at Edinburgh is certainly *S. racemosa*; but G. Don's description (at least as to the petiolate leaves) sounds more like *S. purpurascens*. Wallich 4377 is clearly a mixture. Although D. Don (1837) quotes *O. teres* he only cites Wallich 4379, not 4377. Thus there are obvious objections to taking up *Ophelia teres* for *S. purpurascens*. It seems more advisable to take up the epithet from *Ophelia ciliata*, which was based on specimens of Royle's in nowise differing from the type of *S. purpurascens* except in their small size (Royle in herb. Kew).

The species ranges from the borders of Afghanistan to Sikkim. The Chinese *S. purpurascens* var. *violaceo-cincta* Franch. is a quite different plant, *S. cincta* Burkill.

*S. purpurascens* var. *ramosa* Burkill (1907, p. 34) has been raised to specific rank as *S. pedicellata* Banerji (in Kew Bull. 1924, p. 263).

6. *Swertia cordata* (G. Don) C. B. Cl. (1883, 123).

Syn.: *Ophelia cordata* G. Don (1837, p. 178).

D. Don (1836, p. 77) published a diagnosis of *Ophelia cordata* based on a Royle specimen only: but the genus had not yet been validated, and this name like others published under *Ophelia* at the same time, therefore has no standing. *Ophelia* was first published in G. Don's General System (No. 4 above), but whereas the other species were attributed to "D. Don mss" and have diagnoses virtually translated from D. Don's latin ones, *O. cordata* appears without authority, with an original diagnosis and a reference to *Swertia cordata* Wall. (Cat. No. 4378). The type of this can only be the Wallich specimen and not the Royle one studied by D. Don.

In D. Don's longer paper (1837, p. 527) *Ophelia cordata* appears with the diagnoses and description based on Royle's specimen, but with the addition of the synonyms:

"*Ophelia cordata* et Chirayta. G. Don, Syst. Gard. & Bot. iv p. 178  
*Swertia cordata*. Wall. Cat. n. 4378".

The first valid use of *Swertia cordata* was by C. B. Clarke (1883, p. 128), thus:-

"*S. cordata* Wall. Cat. 4378; . . . *Ophelia cordata* Griseb. *Gentian.* 315 and in DC. Prodr. ix 124; Clarke in Journ. Linn. Soc. xiv 445, not of Don. *O. nuda* Klotzsch in Reis. Pr. Wald. Bot. 91, t. 67".

At first sight *S. cordata* appears not to be based on *Ophelia cordata* and therefore to be used illegitimately, where a new combination based on *Ophelia nuda* Klotzsch would have been in order. But it has just been shown that *Ophelia cordata* was published by G. Don with Wallich 4378 as type. Clarke's reference "not of Don" is, as his notes clearly show, to be read as "not of D. Don (1837)". The citation of the Wallich number may reasonably be interpreted as the indirect citation of the valid name of which this number is the type. Therefore Clarke's nomenclature is, albeit inadvertently, correct and the name stands, as *Swertia cordata* (G. Don) C. B. Clarke.

Clarke does not formally assign a position to *Ophelia cordata* D. Don. He says in a note (1883, p. 123) "*Ophelia cordata*, Don, is said by him to have been founded on Wallich's *Swertia Chirata* and *cordata* thrown together:



the description refers mainly (as to petals and glands) to *S. Chirata*". This statement is inaccurate: Don quoted *Ophelia cordata* and *O. chirayta* from G. Don's General System, not Wallich's *Swertia chirata* which appears there as *Agathotes chirayta*.

9. *Swertia racemosa* (Griseb.) C. B. Cl. (1883, p. 124).

Syn.: *Ophelia racemosa* Griseb. Gentian. (1839, p. 319).

NEPAL: Wallich 4377 (type).

This name and Wallich's number have already been mentioned under *S. ciliata* (no. 1). It seems likely that specimens distributed as Wallich 4377 included three species, *S. racemosa*, *S. ciliata* (*purpurascens*) and *S. chirayita*. The example of this number at Edinburgh is true *S. racemosa*.

10. *Swertia chirayita* (Roxb. ex Fleming) Karsten, Deutsche Fl. 1025 (1880-83); ed. 2, 2: 602 (1895).

Syn.: *Gentiana chirayita* Roxb. ex Fleming in Asiat. Res. 11: 167 (1812).

*Gentiana cherayta* Roxb. Fl. Ind. ed. 2, 2: 71 (1832).

*Gentiana chirata* Wall. Pl. As. Rar. 3: 33, t. 252 (1832).

*Agathotes chirayta* D. Don in G. Don (1837, p. 178).

*Ophelia chirata* Griseb. (1839, p. 320).

*Swertia chirata* (Wall.) C. B. Cl. (1883, p. 124).

It is necessary to revert to the first published spelling of this much varied epithet.

11. *Swertia lurida* (D. Don) C. B. Cl. (1883, p. 124).

Syn.: *Ophelia lurida* D. Don in G. Don (1837, p. 179), sphalm. *lucida*; D. Don (1837, p. 527).

12. *Swertia alata* (D. Don) C. B. Cl. (1883, p. 125).

Syn.: *Agathotes alata* D. Don in G. Don (1837, p. 177); D. Don (1837, p. 523).

13. *Swertia nervosa* (D. Don) C. B. Cl. (1883, p. 125).

Syn.: *Agathotes nervosa* D. Don in G. Don (1837, p. 177).

*Ophelia nervosa* Griseb. (1839, p. 317).

C. B. Clarke only quoted *Ophelia nervosa* as a synonym; but he attributes the name to Wallich, Cat. No. 4383, and as this is the number cited by Don the indirect reference may be accepted. I think that in this case the reason that *Agathotes nervosa* does not appear in D. Don's Linnean Society paper is that this was concerned with Royle's species: *A. nervosa* had only been collected by Wallich.

14. *Swertia angustifolia* Ham. ex D. Don (1825, p. 127).

Burkill (1906) studied this species and its allies in some detail and reduced the next two following species of Flora of British India (*S. pulchella* and *S. affinis*) to a variety of it. There is much to be said for this view botanically,

and nomenclaturally it avoids the necessity of taking up the earliest epithet from *Ophelia porrigens* for *S. pulchella*.

Burkill's varietal names may be revised thus:-

var. **angustifolia**

Syn.: *S. angustifolia* var. *hamiltoniana* Burkill (1906, p. 374).

var. **wallichiana** Burkill (1906, p. 374).

var. **florida** (G. Don) Burkill (1906, p. 374).

Syn.: *Ophelia florida* G. Don (1837, p. 178).

Burkill cites only *S. florida* Wall. but this *nomen nudum* (Cat. No. 4382) is the basis of G. Don's species.

var. **pulchella** Burkill (1906, p. 375).

Syn.: *Ophelia porrigens* G. Don (1837, p. 178).

*Ophelia pulchella* D. Don (1837, p. 525).

*Swertia pulchella* C. B. Cl. (1883, p. 125).

*Swertia affinis* C. B. Cl. (1883, p. 125).

This stands as a new varietal epithet in Burkill's paper, since *Ophelia pulchella* D. Don was illegitimate and cannot be used as the basis for the combination. If this variety is reinstated as a species the epithet *porrigens* will have to be adopted.

If it is desired to retain var. *elegans* (C. B. Cl.) Burkill (1906, p. 375) as a further variety the earliest varietal epithet will have to be taken up from *Ophelia pulchella* var. *minor* D. Don (1837, p. 525). The combination should not be made, however, until the taxonomy has been confirmed.

24. **Swertia speciosa** D. Don (1836, p. 77).

Syn.: *S. perfoliata* G. Don (1837, 176); Gilmour in Bot. Mag. t. 9393 (1935).

This is a case where D. Don's 1836 paper is vital. In ignorance of it Gilmour has recently changed from *S. speciosa* to *S. perfoliata*: this is now seen to be incorrect.

26. **Swertia petiolata** D. Don (1836, p. 77).

28. **Swertia cuneata** D. Don (1836, p. 77).

C. B. Clarke (1883, p. 129) attributes this to "Wall. Cat. 4380" but that was, of course, a *nomen nudum*. Don's paper is clearly stated to be an account of Royle's species: there is no reference to Wallich at this stage and a Royle specimen must be the type. Sprague's statement (1925, p. 314) that this is one of Wallich's species validated by G. Don (1837, p. 176) is incorrect.

29. **Swertia caerulea** Royle (1835, tab. 68).

This is to be transferred to *Lomatogonium* and becomes:-

**Lomatogonium caeruleum** (Royle) H. Sm. **comb. nov.** The combination is already to be found on Dr. Smith's determinavit labels in some herbaria and I have his permission to publish it here.

## APPENDIX OF RECORDS FROM PAKISTAN

The plants recorded here were collected during a period of attachment to the Pakistan Forest College and Research Institute in 1958. While on holiday in the Tribal Area of NW Hazara I was the guest of Nosim Khan of Nilishang (34°37' N, 73°5' E) and I am greatly indebted to him and his nephew Sajjad Haidar for their hospitality, and, through them, to the Nawab of Hill for permission to collect in his territory a little to the north. I would also like to record my thanks to my colleagues in the field, adding an apology that so few results of our collectings have been published. One set of specimens is at Edinburgh, another in the Forest College herbarium at Peshawar.

Some of these records seem to form westward extensions of the known range of the species, others link isolated records from the Kuram Valley to the main species area. It is likely that many of the species also occur in Swat.

***Gentiana cachemirica*** Decaisne; H. Sm. in Kew Bull. 15: 43 (1961).

NW HAZARA (Tribal area): Hill territory, Chail Sar to Ganja Kandao, c. 2700 m, in rock crevices on open hillside, "gentian-blue" flowers, 17 ix 1958, *B. L. Burtt & S. M. A. Kazmi* B. 1244.

Recorded farther west on the Lowari Pass into Chitral (Duthie, 1895, p. 162).

***Gentiana kurroo*** Royle

NW HAZARA: Between Oghi and Battal, near Kathai Gali, large blue trumpets, the base of the spreading lobes spotted greenish, 21 ix 1958, *B. L. Burtt* B. 1349.

Perhaps the westernmost record for this species.

***Jaeschkea oligosperma*** (Griseb.) Knoblauch

Syn.: *J. gentianoides* Kurz; C. B. Cl. (1883, p. 119).

N HAZARA: Kagan valley, above Naran, c. 2240 m, by stream, 26 vi 1958, *B. L. Burtt & M. Arshad Ali*, B. 940.

C. B. Clarke (1883, p. 119) wrote "corolla expanding when 1/6 in., but gradually enlarging till in fruit (on the same stem) more than 1/2 in.". Although this plant has been collected many times I have not noticed any published comment on this statement. Looking at my dried specimens there would seem to be ample justification for Clarke's remarks. Yet I remember the collecting of this species very well, for I could find only one or two plants with just the terminal flower open: apart from these every flower was in bud. As they develop the buds become inflated and bladder-like; when pressed the bladders burst open and the corolla-lobes separate so that it looks just as though the flower had been open when collected. This happens even to quite young buds, and clearly accounts for Clarke's statement.

***Lomatogonium caeruleum*** (Royle) H. Sm.

NW HAZARA (Tribal area): Hill territory, Chail Sar to Ganja Kandao, 2400 m, mauve petals with darker veins, fimbriate tuft at base, pale blue filaments white at base, dark anthers, yellow pollen, upper part of gynoeceum blue, flower widely open, 17 ix 1958, *B. L. Burtt & S. M. A. Kazmi*, B. 1250.



**Swertia ciliata** (G. Don) B. L. Burtt.

NW HAZARA (Tribal area): Hill territory, Chail Sar to Ganja Kandao, c. 2550 m, open hillsides, flowers open flat and pendent, purple at base of petals and staminal cone, 17 ix 1958, *B. L. Burtt & S. M. A. Kazmi* B. 1236.

Ranges from the borders of Afghanistan (Kuram Valley, Aitchison, 1880, p. 80—as *Ophelia dalhousiana* Griseb.) eastwards to Sikkim.

**Swertia cordata** (G. Don) C. B. Cl.

NW HAZARA (Tribal area): Hill territory, south slopes of Chail Sar, c. 2700 m, on open slopes, white flowers with yellow patch at base of each corolla-lobe, 16 ix 1958, *B. L. Burtt & S. M. A. Kazmi* B. 1207.

Other western records are from the Kuram Valley (Aitchison, 1880, p. 80 as *Ophelia cordata*) and from Laram, W of Malakand (Duthie, 1895, p. 163). Eastwards it reaches Bhutan and Assam.

**Swertia alata** (D. Don) C. B. Clarke.

NW HAZARA: Between Oghi and Battal, roadside bank, 21 ix 1958, *B. L. Burtt* B. 1352.

This is probably the westernmost record for the species.

**Swertia angustifolia** Ham. ex D. Don.

NW HAZARA (Tribal area): Nilishang, nullah west of fort, c. 1200 m, wet ground, sandy micaceous soil, 22 ix 1958, *B. L. Burtt* B. 1380.

This is probably the westernmost record for the species.

**Swertia speciosa** D. Don.

NW HAZARA (Tribal area): Hill territory, Chail Sar to Ganja Kandao, 2550 m, damp ground on hillside, pale greenish blue flowers, 17 ix 1958, *B. L. Burtt & S. M. A. Kazmi* B. 1248.

In flower colour this specimen suggests *S. petiolata* D. Don, but it definitely has winged seeds, the feature said to be diagnostic of *S. speciosa*. The form of *S. speciosa* now in cultivation at Edinburgh has a cream-coloured corolla.

The species has been recorded farther west on the Lowari Pass leading into Chitral (Duthie, 1895, p. 163). There are records of *S. petiolata* from Swat and the Kuram Valley which, if made from flowering material only, may need revision.

## REFERENCES

- AITCHISON, J. E. T. (1880). On the flora of the Kuram Valley, etc., Afghanistan. *Journ. Linn. Soc. (Bot.)*, 18: 1-113.  
 BURKILL, I. H. (1906). On *Swertia angustifolia* Ham., and its allies. *Journ. & Proc. As. Soc. Bengal*, N.S. 2: 363-381.  
 — (1907). A note on *Swertia tongluensis* and on a new variety of *Swertia purpurascens*. *Journ. & Proc. As. Soc. Bengal*, N.S. 3: 33-35.  
 CLARKE, C. B. (1883). Gentianaceae in J. D. Hooker, *Flora of British India*, 4: 93-132.

DON, DAVID. (1825). *Prodromus Florae Nepalensis*.

— (1836). *London & Edinburgh Phil. Mag. & Journ. Sci.* 8: 75-78.

— (1837). Descriptions of Indian Gentianeae. *Trans. Linn. Soc. London*, 17: 503-532.

DON, GEORGE. (1837). *A general history of dichlamydeous plants*, 4: 173-214.

DUTHIE, J. F. (1895). Botany of the Chitral Relief expedition. *Rec. Bot. Surv. India*, 1: 139-181.

GRISEBACH, A. H. R. (1839). *Genera et species Gentianearum*.

ROYLE, J. F. (1835). *Illustrations of Himalayan Botany*.

SPRAGUE, T. A. (1925). Additions to Index kewensis, V. *Kew Bull.*, 311-315.