Two new Triuridaceae, with some Remarks on the Genus *Sciaphila*, Blume.

BY

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With Plates IX and X.

BLUME, in 1825, described a plant from Java under the name of *Sciaphila tenella*, the first member recorded of the singular group now known as the Triuridaceae. In 1851 he published an amplified description of the genus with incomplete descriptions of two proposed additional species. Since then botanists have described species, which they have referred to *Sciaphila*, from Ceylon, North-east India, Japan, the Malay Peninsula and Archipelago, New Guinea and New Caledonia, Brazil and Venezuela ; making a total of about thirty species, most of which have been well figured. Studying these figures in connexion with the specimens of a plant of this natural order discovered by Mr. H. P. Thomasset in Mahé, Seychelles, I have been struck by the very great diversity in their floral structure, and I cannot myself accept the view that they all belong to one and the same genus. I do not propose making generic alterations from the figures alone, and I have not time to examine the whole of the materials ; but I will discuss some of the various modifications in the structure or composition of the flowers, and compare the Seychelles plant with *Sciaphila tenella*.

All the members of the Triuridaceae are saprophytes or holosaprophytes, as Johow terms them, mostly having hairy roots, and they are very similar in aspect, being very slender, often almost capillary, and white, yellow, pink, coral-red, purple or violet in colour, with small scales in the place of leaves. They are mostly from 5 to 15 cm. high ; but Spruce notes that *Sciaphila purpurea*, Benth., sometimes attains a height of 1.4 m. The usually unisexual flowers are small, occasionally very small ; that is not more than .5 mm. in diameter. The perianth is always regular, simple or uniseriate, with valvate segments nearly uniform in size and shape.

Taking *Sciaphila*, as limited or accepted by Bentham and Hooker,

Beccari, Engler, Schumann and others, it presents a wide range of variation in floral structure, as here set forth.

Male flowers. Perianth 4- 6- or 8-lobed, rarely 3- or 5-lobed; the number of lobes not quite constant in the same species, nor in the same inflorescence, and sometimes differing in the two sexes. Perianth-lobes entire or rarely toothed at the tip (*S. caudata*, Pouls.), inappendiculate or with terminal clavate, comose, bearded or penicillate appendages. Staminodes none. Stamens 2, 3, 4 or 6, opposite the perianth-lobes; filaments none or very short, usually connate and central in the triandrous species; anthers 2- or 4-celled, dehiscing transversely (or longitudinally?); connective undeveloped or produced in a long, filiform tail above the anther-cells (*S. crinita*, Becc.). Pistillodes or rudimentary carpels none, or three or more, and either similar to the fertile ones or filiform (*S. andaiensis*, Becc.). The external appearance of the male flowers of the species just named and those of *S. crinita* is very similar, but the organs described by Beccari as rudimentary pistils are shorter and less finely pointed than the prolongations of the connective in *S. crinita*. The author does not, however, show them separately, as he does the stamens of *S. crinita*, and Schumann, without discussing the question, cites both species as having caudate stamens. 'Nuperrime autem cl. Beccari species duas *Sciaphilae*, nempe *S. crinitam* et *S. andaiensem*, descripsit, quarum connectivum non solum bene evolutum sed etiam in caudam filiformem apicem staminum longe superantem abiit, quae ante anthesin circa mediam antheram voluta adspectum peculiarem praebet.' I have not been able to check this, but I think Schumann probably judged by the figures only. However, Beccari himself was evidently in doubt as to the nature of these bodies in *S. andaiensis*, although his Latin description runs: '♂ pistilli rudimento in filamentis 3 linearibus e basi tripartito.' On the other hand in the Italian description which follows, he says: 'Questo corpo ha l'apparenza di un rudimento di pistillo; ma forse deve, come nella *S. crinita*, considerarsi come una produzione del connetivito delle antere.' In his key to the species, the two in question are placed under: 'Floris ♂ pistillodia 3 vel 1 tripartitum.' Of course there is the alternative of fusion of pistillodes and stamens¹.

Female flowers. Perianth presenting much the same modifications as in the male flowers, and either similar to or rarely different from that of the male in the same species. Staminodes none, or 3 or 6. Carpels always numerous, usually 30 or more, free, 1-celled, 1-seeded, dry or fleshy, dehiscent or indehiscent, smooth, verrucose, muricate or papillose; style

¹ Sir Joseph Hooker describes the male flowers of *S. khasiana*, as having three subulate pistillodes, but his original drawings, made from the living plant, show these bodies attached to the anthers, as though they were prolongations of the connective. There are no specimens of this plant at Kew, the published description having been made from the drawings.

ventral and basal, medial or subterminal, shorter or longer than the ovary, sometimes much shorter, sometimes much longer; stigma filiform, clavate or globose, naked, papillose or plumose.

Hermaphrodite flowers. In several of the species examined flowers have been found containing both stamens and pistils, and although the anthers sometimes contain pollen-grains and the ovaries ovules, it is uncertain whether both are ever perfect in the same flower. Some flowers may be functionally male; others functionally female. These quasi-hermaphrodite flowers are often irregular as to the number and disposition of the parts.

I think it will be generally conceded that the foregoing review of the range of modifications in the floral structure of plants referred to *Sciaphila* suggests further segregation. Bentham and Hooker, and also Engler, admit of only two genera in the order Triuridaceae, although Miers and others had long previously established five. Schumann more recently restored *Peltophyllum*, Gardn., and *Soridium*, Miers, South American forms.

A comparison of the Seychelles plant with Blume's description and figures of *Sciaphila tenella*, comes out as follows:—

	<i>Sciaphila.</i>	<i>Seychellaria.</i>
Male flowers.		
Perianth-lobes	bearded at the tips	naked
Staminodes	none	three
Stamens	six	three
Filaments	undeveloped	distinct
Anthers	two-lobed, dehiscent longitudinally	four-lobed, dehiscent transversely
Pistillodes	numerous	none
Female flowers.		
Perianth-lobes	bearded at the tips	naked
Staminodes	six	none
Carpels	fleshy	dry
Styles	shorter than the ovary	longer than the ovary

I have some doubt about the correctness of Blume's description and figures of the stamens. His description runs: 'Antherae sessiles, subrotundae, carnosae, paulum papillosoe, loculis disiunctis ad margines sulco longitudinali dehiscentibus.' If this is an accurate description, *Sciaphila tenella* differs, in this respect, from all the other members of the order that I have examined, and all the figures that I have seen; but Beccari, although he does not discuss the point, evidently did not accept it as correct, because he refers several Bornean specimens having the characteristic anthers with transverse dehiscence to this species¹.

¹ Since the foregoing was written I have been able, through the courtesy of Dr. J. P. Lotsy,

Apart from this, however, the differences are sufficient, in my opinion, to justify the generic separation of the Seychelles plant from *Sciaphila*. As I have already stated, I shall not attempt to classify the thirty species, or thereabout, referred by various authors to *Sciaphila*, though, judging from the figures, I do not think it would be a difficult task.

Seychellaria, Triuridacearum novum genus ex affinitate *Sciaphilae*, Blume, a qua perianthii segmentis apice haud barbatis, florum ♂ staminodiis 3, staminibus 3, pistillodiis nullis, florum ♀ staminodiis nullis et stylo quam ovario longiore differt.

S. Thomassetii (species unica).

Planta saprophytica, carnosa, tenella, diaphana, concolor, pallida, praeter radices pilosas glabra, erecta, stricta, rhizomate repente squamoso ramoso, ramis ex squamarum parvarum axillis egredientibus subhorizontalibus pilosulis. *Caules* filiformes, pauciramosi, 10–12 cm. alti, vix 1 mm. crassi, squamis paucis ovato-lanceolatis acutis 2–3 mm. longis instructi. *Flores* carnosae, racemosae, racemis 6–12-floris, breviter pedicellatae, 1–2 mm. diametro, unisexuales, monoici, inferiores feminei, paullo majores, superiores masculi, vel interdum nonnulli subbisexuales. *Perianthium* utriusque sexus saepius 6-partitum, rarius 4- vel 5-partitum; segmenta ovato-lanceolata, obtusa, alterna paullo minora, induplicato-valvata, inappendiculata vel apice obscure papillosa, demum arcte recurva. *Flores* ♂ triandri; staminodia 3, teretia, capitata, staminibus externa, longiora et iis alterna, perianthii segmentis alternis opposita; stamina centralia, perianthii segmentis alternis opposita, filamentis brevibus basi approximatis vel breviter connatis; antherae distincte 4-lobae, rima transversali dehiscentes, connectivo supra loculos haud producto. *Flores* ♀ sine staminodiis; carpella libera, numerosa (30–35), vix carnosa, rugulosa, in receptaculo conico sessilia, unilocularia, uniovulata; stylus ventralis, papillosus, ovarium multo superans. *Ovulum* erectum, anatropum, raphe ventrali. *Fructus* maturus non-visus.

SEYCHELLES: found growing at the base of trees in mountain forest at 600 m., Mare aux Cochons, Mahé, *H. P. Thomasset*, February, 1906. Herb. Kew.

It has already been mentioned that the quasi-hermaphrodite flowers of some of the Triuridaceae are occasionally irregular in structure in relation to the number and position of the parts. Some of the male flowers of *Seychellaria* are abnormal in having an extra, perfect or imperfect stamen or two; sometimes there are two or three stamens on contiguous instead of alternate segments of the perianth, and occasionally there are two or three imperfect carpels in the centre, and the staminodes are wanting. In one flower we found excrescences near the middle of perianth-segments, five of which were sessile and one stalked as shown in Figure 11 on Plate IX. It

Director of the National Herbarium, Leiden, to examine the type of *Sciaphila tenella*, Blume, with the result that I find his description accurate excepting that part relating to the anthers. The stamens of this species are different from those of any other member of the order that I have examined, but whether those seen are normal it is difficult to decide as the whole male flower is only about a millimetre in diameter. Miss M. Smith has drawn what we saw and it is described on p. 75.—W. B. H.

would appear that these small flowers are peculiarly subject to disturbances in their development.

In connexion with the Seychelles plant I have looked through the Triuridaceae at the British Museum, as well as those at Kew, and among the former is a specimen collected in the island of Aneiteum, New Hebrides, by John MacGillivray, in 1853 (or 1854, as labelled, but there is no evidence that MacGillivray visited the island a second time), which is apparently undescribed. With the permission of Dr. A. B. Rendle, the Keeper of the Botanical Department, I have been able to examine this plant and describe it, and excepting in the stamens, and perhaps the absence of staminodes from the female flowers, the floral structure is the same as that of *Sciaphila tenella*, Blume. I therefore place it provisionally in that genus.

***Sciaphila aneitensis*, Hemsl.** species nova a *S. tenella*, Bl., floribus masculis triandris et carpellis numerosioribus haud verruculosus recedit.

Planta saprophytica, gracilis. *Caules* erecti, simplices, circiter 25 cm. alti, squamis paucis minutis instructi. *Flores* numerosi, racemosi, pedicellis brevibus recurvis, unisexuales, superiores masculi. *Perianthium* utriusque sexus 6-partitum, segmentis ovatis apice comoso-barbatis inflexis nunquam reflexis. *Flores masculi* circiter 3 mm. diametro, triandri; stamina perianthii lobis alternis opposita; filamenta brevissima; antherae bilobae, rima transversa dehiscentes; pistillodia numerosa, globosa. *Flores feminei* carpellis fere maturis circiter 5 mm. diametro; staminodia nulla? sed flores iuniores non visi; carpella 30-40, ovoidea, circiter 1 mm. diametro, laevia, quam stylus infra medium ventralis tertia parte longiora, stigmate minuto globoso papilloso.

NEW HEBRIDES: Aneiteum, *MacGillivray*, 1853. Herb. Mus. Brit.

***Sciaphila tenella*, Blume.**

Figures 11 to 17, Plate X, represent two out of four of the plants which Blume apparently had under observation when he wrote his original description, together with their floral structure. All four plants appeared to be the same, though Miss Smith and I did not dissect flowers of all of them, and there is only one label on the sheet, which gives the locality, as near as we could decipher it, as van de Gunnung [i. e. Mount] Mendare. It is possible, however, that Blume had other specimens before him, because he gives more than one locality: 'Crescit in umbrosis Montis Menarae ac sylvarum Insulae Nusae Kambangae.'

The empty anthers of the three or four male flowers examined are 3-lobed, which is probably an abnormal condition, the normal condition being 4-lobed in many of those figured by Beccari and others, and in some cases the dehiscent anthers look as though they were permanently 4-celled, as described by Miers in some other members of the order. And the anthers of *S. tenella* have the appearance of being permanently

3-celled. Be that as it may, there is little doubt that there is an error of observation in Blume's work, and that dehiscence by longitudinal slits does not occur in *Sciaphila*; and his 'fleshy anthers' were probably rudimentary carpels. Such a misconception of facts is not at all improbable where the parts are so extremely small.

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EXPLANATION OF THE FIGURES IN PLATES IX AND X.

Illustrating Mr. Hemsley's paper on two new Triuridaceae.

PLATE IX.

- Fig. 1. An old plant of *Seychellaria Thomassetii*. Natural size.
- Fig. 2. Lower part of the same.
- Fig. 3. A plant of *Seychellaria Thomassetii* in flower. Natural size.
- Fig. 4. Lower part of the same.
- Fig. 5. Portion of inflorescence.
- Fig. 6. A flower-bud.
- Fig. 7. A bract.

Fig. 8. A young male flower forcibly opened.

Fig. 9. A fully expanded male flower.

Fig. 10. A male flower opened out to show the attachment of the staminodes and stamens.

Fig. 11. A male flower with excrescences on the perianth-segments.

Fig. 12. A female flower with a tetramerous perianth.

Fig. 13. A nearly ripe fruit.

Fig. 14. A carpel.

Fig. 15. Section of the same showing the attachment of the young seed.

All the Figures except 1 and 3 much enlarged and some of them are more or less diagrammatic.

PLATE X.

Fig. 1. A plant of *Sciaphila aneitensis* shown in two sections. Natural size.

Fig. 2. A flower-bud.

Fig. 3. A male flower.

Fig. 4. A stamen.

Fig. 5. A young fruit showing the persistent perianth.

Fig. 6. The same seen from the side.

Fig. 7. A perianth-segment.

Fig. 8. Stigma.

Fig. 9. A carpel.

Fig. 10. A young seed.

Fig. 11. Plants of *Sciaphila tenella*. Natural size.

Fig. 12. An old male flower.

Fig. 13. Androecium and pistillodes.

Fig. 14. An old stamen.

Fig. 15. A female flower.

Fig. 16. A young fruit.

Fig. 17. A carpel.

All the Figures except 1 and 11 much enlarged and some of them are more or less diagrammatic.

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