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THE GENUS *OECEOCLADES* LINDL.

BY

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In 1832 while describing *Oeceoclades*, as a genus different from *Angraecum*, Lindley offered the following observation: "The genus *Angraecum*. . . is known by its undivided lip, which is neither cucullate, nor articulate with the column; by its spreading perianthium, which never has the segments turned upwards as in *Eulophia*; by its long taper-jointed spur, which is rarely enlarged at the base; and finally, by all these characters being connected with coriaceous leaves that are never ribbed or plaited. Such being the definition of *Angraecum*, it will be apparent that, . . . such as our *Angraecum maculatum* and a few of those of Du Petit Thouars, must be excluded; these form a genus nearly related to *Eulophia*, from which they are to be distinguished by their coriaceous leaves, by the perianthium never being secund, and by the want of a crest upon the lip."

With this introduction Lindley also provided a separate generic description in Latin as well as a list of names—five under *Angraecum* and four under *Limodorum*—which he considered belonged to *Oeceoclades*, but without making the proper nomenclatorial transfers. The following year, in 1833, in his *Genera and Species of Orchidaceous Plants*, he treated *Oeceoclades* in a similar

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fashion, but with a somewhat different content. On both occasions, however, he included the sympodial Eulophia-like *Angraecum maculatum* with the remainder, all monopodial orchids. At that time Lindley remarked: "Oeceoclades will probably comprehend all the Eulophia-like epiphytes. . . ; it is very near Eulophia, from which its coriaceous, not plaited leaves, distinguish it among other things."

Thus, from the very beginning Lindley considered *Oeceoclades* to represent Eulophia-like plants. He emphasized his conviction once more in 1859 (Journ. Linn. Soc. 3: 36) by saying ". . . it is probably that *O. maculata* is the only plant to which the generic name will attach." Since that time the remaining species of *Oeceoclades* have all been transferred to various angraecoid genera. Consequently the genus *Oeceoclades* must be typified by *O. maculata*, the only Eulophia-like plant.

In 1887, Pfitzer in his Entwurf einer natürlichen Anordnung der Orchideen p. 87–88 established the monotypic genus *Eulophidium* which he also based on *Angraecum maculatum*. It is difficult to understand why he chose to follow that particular course when he was fully aware of Lindley's suggestion that the name *Oeceoclades* be applied only to *O. maculata*: "Ich muss *Eulophidium maculatum* entsprechend Lindley's Vermuthung als den Typus einer besondern Gattung betrachten. . . "*.

Since both genera, *Oeceoclades* Lindl. and *Eulophidium* Pfitz. are based on the same type—*Angraecum maculatum* Lindl.—*Oeceoclades* must be reinstated because of the rule of priority.

Summerhayes, in 1957, published a synopsis of the genus *Eulophidium* (Bull. Jard. Bot. Bruxelles 27 (3): 391–403). In that study he argued that Pfitzer and sub-

* In keeping with Lindley's supposition, I must regard *Eulophidium maculatum* as the type of a special genus."

sequently Schlechter, both in their studies emphasized the vegetative aspects of the plants without paying much attention to floral details, which resulted in a rather poor circumscription of the genus.

To augment this one-sided presentation, Summerhayes provides the following observations:

“For some time now I have been struck by the marked similarity in floral structure between typical members of *Eulophidium*, such as *E. maculatum* (LINDL.) PFITZ., on the one hand, and species which have always been retained in *Eulophia* such as *E. saundersiana* RCHB.F. and the Asiatic *E. macrostachya* LINDL., on the other. All these species have a marked quadrilobed labellum with two short parallel or slightly divergent calli at the base and no long keels or hair-like outgrowths such as are so widely distributed in *Eulophia*. The side lobes almost invariably have marked darker veins. . . . Sometime the two lower lobes, or lateral lobes if you prefer to call them that, are much reduced, occasionally so much that the labellum is almost bilobed. The spur is relatively short and often swollen, sometimes it is more or less shortly bilobed at the apex.

“As regards the vegetative structure the aerial pseudobulbs may be heteroblastic with 1–3 leaves at the apex or homoblastic (with several elongated internodes) with one or more leaves at the apex. All intermediates can be found between a clearly heteroblastic condition with no cataphylls or leaves arising along the pseudobulbs, through forms in which the lower swollen internodes are quite short and other forms with only 2 elongated swollen internodes, to typical homoblastic conditions where there are clearly several well-defined elongated swollen internodes with cataphylls arising from the lower nodes and leaves from the uppermost.

“The great majority of species have markedly petio-

late leaves, but in a few cases the petiole is very short. It is almost invariably articulate with a number of sharp or blunt teeth at the joint, this articulation usually being some distance above the base of the leaf, and sometimes in the centre of the long slender petiole. Reichenbach and Schlechter, when dealing with some species, have treated the lower part of the petiole below the articulation as being the rostrate upper internode or prolongation of the pseudobulb, but this is clearly not a possible interpretation in plants like *E. saundersiana* where there are two leaves, both with their petioles articulate some distance above the base. The leaves are usually rather coriaceous and often banded or spotted with paler markings.

“As these variable characters are associated with very similar floral structures I feel that too much emphasis should not be placed on them and that all these species should be placed in an enlarged *Eulophidium*.”

In no way diminishing the value of these important observations, we are compelled to reexamine some of its crucial points. We believe that the distinction between homoblastic and heteroblastic pseudobulbs is not clearly understood by many. Both types of pseudobulbs are derived from the common sympodial stem which consists of a set of nodes and internodes. In the case of the homoblastic pseudobulbs, each internode or most of the internodes are equally developed and enlarged throughout the entire length of the sympodium, at the nodes leaves or sheaths or cataphylls are produced. In the case of the heteroblastic pseudobulbs only one internode is fully developed and enlarged throughout the entire length of the sympodium. The nodes are closely approximate, often so congested that no visible separation is apparent; rarely the leaf-bearing nodes are separated by obvious distances, yet minimal in proportion to the internode that represent the true heteroblastic pseudobulb. The one to three

leaves produced at the top of a heteroblastic pseudobulb are originating independently from separate nodes, which may or may not be closely approximate. The misunderstanding of the nature of the heteroblastic pseudobulb caused Summerhayes to enlarge and alter the generic description of *Eulophidium*, which unfortunately now encompasses several criteria applicable only to *Eulophia*.

Likewise the similarities in floral structure, mentioned by him, we believe are produced through convergent evolution rather than through the processes of speciation.

Although florally *Eulophia macrostachya* is very similar to those found in many plants of *Oeceoclades*, the thin, plicate leaves and the homoblastic pseudobulbs immediately exclude it from that relationship. If *E. macrostachya* is to be admitted to *Oeceoclades*, then *E. graminea*, *E. euglossa*, *E. guineënsis*, and other related species would have to be included also. For additional names see the list of *Eulophia* Sect. *Pulchrae* Krzl. at the end of this paper.

Both Lindley and Pfitzer were explicit about such generic characters as the heteroblastic pseudobulbs, coriaceous, conduplicate leaves and *Eulophia*-like flowers. Consequently we adhere to the original circumscription of the genus in our assignment of the species.

Oeceoclades Lindl. in Bot. Reg. 18: sub t. 1522, Sept. 1, 1832.

Syn.: *Aeceoclades* Duch. in Orbigny, Dict. 9: 170, 1849.

Saccolabium Sect. *Oeceoclades* (Lindl.) Cordem., Fl. Reunion 197, 1895.

Lectotype: **Angraecum maculatum** Lindl.—
Lindl. in Journ. Linn. Soc. 3: 36, 1859.

Eulophidium Pfitz., Entw. Natur. Anordn. Orch. 87–89, 1887.

Eulophia Sect. *Eulophidium* (Pfitz.) H. Perr.
in Bull. Soc. Bot. Fr. 82: 147, 1935.

Lissochilus Subgen. *Eulophidium* (Pfitz.) H.
Perr. in Humbert, Fl. Madag. Orch. 2: 17,
1941.

Type: **Angraecum maculatum** Lindl.—Pfitz. *ibid.*

Sepals and petals variously spreading; lip 3-lobed, basally produced in a spur, midlobe commonly lobulate or emarginate; disc either with a pair of approximate, quadrate or triangular calli at the entrance to the spur or with three variously thickened, parallel ridges which together with the lateral veins are sparsely but distinctly papillose or hirsute; column erect, rather short, oblique at base; stigmata confluent; rostellum short; anther cucullate to cristate; pollinia 2, on a short or rudimentary stipe; viscidium large.

Pseudobulbs more or less approximate, heteroblastic, one- to three-leaved at apex; leaves coriaceous, conduplicate, never plicate, commonly petiolate, rarely sessile, articulate with colliferous apex of pseudobulbs; inflorescence lateral, racemose or paniculate; bracts inconspicuous; flowers rather small and thin in texture, resupinate.

31 species native to tropics and subtropics of Seychelles, Madagascar, the Mascarene Islands, Africa, South America, West Indies and Bahamas.

Type of the genus: **Angraecum maculatum** Lindl.

Key to Species

1. Petals at most $\frac{1}{2}$ to $\frac{1}{3}$ the length of the sepals 2
- 1a. Petals and sepals more or less equal in length 6
2. Pseudobulbs ovoid to cylindrical; leaves lorate [at least 40 cm. long]; inflorescence diffusely branched 3
- 2a. Pseudobulbs globose to pyriform; leaves linear [at most 20 cm. long]; inflorescence racemose or rarely with few short branches 4

3. Pseudobulbs 2-leaved; sepals spathulate to oblanceolate, obtuse; petals elliptic, obtuse; spur of lip forward projecting under lip *O. calcarata*
- 3a. Pseudobulbs 1-leaved; sepals and petals lanceolate-elliptic, acute to subacuminate; spur of lip projecting away from lip *O. Hebdingiana*
4. Sepals spathulate, obtuse; spur globose *O. spathulifera*
- 4a. Sepals obovate-oblanceolate, acute 5
5. Leaves sessile; sepals at least 14 mm. long; petals elliptic, acute; spur cylindric *O. Decaryana*
- 5a. Leaves petiolate; sepals not more than 8 mm. long; petals suborbicular, obtuse; spur subglobose, ventrally compressed *O. angustifolia*
6. Lip ecallose at base; basal halves of 3 parallel veins of disc somewhat carinate-thickened 7
- 6a. Lip with a bilobed callus, or bilamellate at or near base 13
7. Pseudobulbs elongate, slender, fusiform to cylindric, 2-3 leaved, approximately the length of the petiolate leaves or longer 8
- 7a. Pseudobulbs short, ovoid, 2-leaved, much shorter than the petiolate leaves 10
8. Lip broadly elliptic; midlobe of lip rounded at base, overlapping with lateral lobes without a sinus; disc ecallose at junction of lateral and median lobes 9
- 8a. Lip narrowly ovate-oblong to elliptic-oblong; midlobe of lip cuneate at base, forming a distinct sinus with lateral lobes; disc with a pair of fleshy gibbosities at junction of lateral and midlobes *O. ugandae*
9. Midlobe of lip suborbicular in outline, half as long as the entire length of the lip; lateral lobes subfalcate, obtuse at apex *O. lanceata*
- 9a. Midlobe of lip reniform in outline, one-fourth the length of the entire lip; lateral lobes broadly rounded at apex *O. seychellarum*
10. Lip lobate from middle; lateral lobes of lip truncate in front 11
- 10a. Lip lobate one-fourth from apex; lateral lobes of lip oblique in front 12
11. Lip wider than long; midlobe deeply emarginate to divaricately bilobulate in front *O. Lubbersiana*
- 11a. Lip longer than wide; midlobe cuneate or with a distinct claw, at most retuse to indented in front *O. pandurata*
12. Inflorescence laxly racemose; flowers greenish-

- yellow with maroon dots; sepals and petals
ovate-oblong, acute *O. atrovirens*
- 12a. Inflorescence with short branches; flowers white,
sepals and petals linear-oblong, obtuse *O. latifolia*
13. Blades of leaves narrow, linear 14
- 13a. Blades of leaves broad, ovate to elliptic 17
14. Leaves long-acuminate, lorate, 50 cm. or more long,
gradually tapering to pseudobulb without a distinct
petiole *O. Perrieri*
- 14a. Leaves acute or obtuse, linear-oblong, 30 cm. or less
long, petiolate or subpetiolate 15
15. Spur vesicular, longer than lip; median lobe of lip
reflexed; disc in front of callus inornate *O. quadriloba*
- 15a. Spur cylindrical, shorter than lip; median lobe of
lip not reflexed; disc in front of callus 3-carinate 16
16. Pseudobulbs 2-leaved; leaves subpetiolate, 20-30
cm. long; inflorescence racemose; lateral lobes of
lip rounded, larger than median lobe *O. sclerophylla*
- 16a. Pseudobulbs 1-leaved; leaves petiolate, less than
15 cm. long; inflorescence branched; lateral lobes
of lip subquadrate with obtuse angles, equal to, or
somewhat smaller than median lobe *O. analavelensis*
17. Plants caespitose; pseudobulbs aggregate, ecol-
liferous or with hardly any projections; leaves
sessile or with conduplicate, short, petiole-like
base 18
- 17a. Plants rhizomatous; pseudobulbs approximate,
prominently colliferous, leaves distinctly petiolate 25
18. Pseudobulbs 2-leaved 19
- 18a. Pseudobulbs 1-leaved 20
19. Inflorescence profusely paniculate; lateral lobes of
lip falcate, when expanded parallel with, and as long
as midlobe; midlobe of lip wider than long; spur
conical, acuminate *O. gracillima*
- 19a. Inflorescence racemose or rarely with one or few
short branches; lateral lobes of lip triangular to
oblong, when expanded rectangular with midlobe;
midlobe of lip as wide as long, subquadrate; spur
vesicular, obtuse *O. roseovariegata*
20. Leaves ovate, subcordate at base 21
- 20a. Leaves elliptic to oblong-elliptic, cuneate at base 22
21. Sepals and petals similar, elliptic to ovate-elliptic,
obtuse; lateral lobes of lip much larger than mid-

- lobe; column short, erect *O. boinensis*
- 21a. Sepals and petals dissimilar, linear-lanceolate, acute; lateral lobes of lip as large as midlobe; column elongate, arcuate *O. Rauhii*
22. Lip as long as or shorter than wide; terminal lobe separated from the lateral lobes by acute, indented or rounded sinuses 23
- 22a. Lip as long as or longer than wide; terminal lobe separated from the lateral lobes by a distinct isthmus *O. monophylla*
23. Spur subglobose; callus of lip bilobed *O. ambongensis*
- 23a. Spur clavate to cylindric; callus of lip bilamellate 24
24. Sepals and petals acute; lip as long as wide; sinuses in middle of lip; inflorescence always racemose *O. maculata*
- 24a. Sepals and petals obtuse; lip shorter than wide; sinuses one-third from apex of lip; inflorescence racemose or subpaniculate *O. Mackenii*
25. Pseudobulbs narrowly cylindrical, often stem-like, terete, two-leaved; lateral sepals longer than dorsal sepal; lip equally 4-lobed *O. Saundersiana*
- 25a. Pseudobulbs ovoid to conical, 1-leaved; sepals of same length; lip flabellate or unequally 4-lobed 26
26. Lateral lobes of lip larger than median lobe 27
- 26a. Lateral lobes of lip much smaller than median lobe, ear-like 28
27. Leaves lanceolate, long-attenuate, subacuminate; sepals and petals apiculate *O. zanzibarica*
- 27a. Leaves lanceolate-elliptic or narrowly elliptic, acute to subobtuse; sepals and petals obtuse *O. alismatophylla*
28. Callus of lip and the disc in front of it puberulent 29
- 28a. Callus of lip and disc glabrous 30
29. Leaves broadly elliptic, large, 7-nerved, with petiole 30-50 cm. long; column-wing ciliolate-hirsute along margins; lateral lobes of lip rounded *O. cordylinophylla*
- 29a. Leaves narrowly ovate-lanceolate, 1-3 nerved, with petiole 13-20 cm. long; column-wings glabrous along margins; lateral lobes of lip obliquely triangular-falcate *O. analamerensis*
30. Lip constricted in middle, pandurate, basal part suborbicular, apical part divergingly bilobed with rounded lobes; disc bilamellate at base in front of which are 3 thickened veins *O. petiolata*
- 30a. Lip not pandurate, 3-lobed; lateral lobes obtusely

angular, semiovate, terminal lobe divergingly
bilobulate with rectangular-oblong lobules;
disc without thickened veins in front of basal
lamellae *O. lonchophylla*

ENUMERATION OF SPECIES

Oeceoclades alismatophylla (Rchb.f.) Garay & Taylor, *comb. nov.*

Basionym: *Eulophia alismatophylla* Rchb.f. in *Flora* 68: 543, 1885.

Syn.: *Eulophidium alismatophyllum* (Rchb.f.) Summerh. in *Bull. Jard. Bot. Bruxelles* 27: 394, 1957.

Type: Madagascar, Forêt d'Ankaye. Coll. Humblot *s.n.*! (W).

Distribution: Madagascar.

Vegetatively the plants of this species are very similar to *O. analamerensis*, *O. petiolata* and *O. lonchophylla*, but readily distinguishable from them in the floral structure, especially in the shape of the lip with the lateral lobes being larger than the median lobe. We have seen only the type specimen.

Oeceoclades ambongensis (Schltr.) Garay & Taylor, *comb. nov.*

Basionym: *Eulophidium ambongense* Schltr. in *Ann. Mus. Col. Marseille*, ser. 3, 1: 182, t. 17, 1913.

Syn.: *Eulophia Schlechteri* H. Perr. in *Bull. Soc. Bot. Fr.* 82: 154, 1935.

Lissochilus Schlechteri (H. Perr.) H. Perr. in *Humbert, Fl. Madag. Orch.* 2: 27, 1941.

Type: Madagascar, Manongarivo (Ambongo). Coll. Perrier no. 1684! (P).

Distribution: Madagascar.

From the related species of the *O. maculata* alliance, the plants of this species are readily identifiable by the comparatively larger flowers, subglobose spur and the bilobed callus of the lip.

Oeceoclades analamerensis (H. Perr.) Garay & Taylor, *comb. nov.*

Basionym: *Lissochilus analamerensis* H. Perr. in Not. Syst. 8: 42, 1939.

Syn.: *Eulophidium analamerense* (H. Perr.) Summerh. in Bull. Jard. Bot. Bruxelles 27: 394, 1957.

Type: Madagascar, Province de Diégo-Suarez, Analamera, rive droite de la rivière Analabe, affluent du Rodo. Coll. Humbert no. 19247! (P, K).

Distribution: Madagascar.

The two small approximate lamellae near the base of the lip and the hirsute disc of the lip amply separate the plants of this species from the vegetatively similar *O. alismatophylla*.

Perrier gives Humbert no. 19020 as the type number, but the specimens in Paris as well as at Kew bear the number 19247!

Oeceoclades analavelensis (H. Perr.) Garay & Taylor, *comb. nov.*

Basionym: *Lissochilus analavelensis* H. Perr. in Not. Syst. 8: 41, 1939.

Syn.: *Eulophidium analavelense* (H. Perr.) Summerh. in Bull. Jard. Bot. Bruxelles 27: 395, 1957.

Type: Madagascar, Forêt d'Analavelona, au N. du Fiherenana. Coll. Humbert no. 14218! (P, K).

Distribution: Madagascar.

Florally the plants of this species are very similar to those of *O. sclerophylla*, both having three thickened ridges in front of the callus, but they are very dissimilar vegetatively.

Oeceoclades angustifolia (Sengh.) Garay & Taylor, *comb. nov.*

Basionym: *Eulophidium angustifolium* Sengh. in Adansonia ser. 2, 6: 558, 1967.

Type: Madagascar: near Diégo-Suarez. Coll. Rauh & Buchloch no. 7987 (HEID).

Syn.: *Eulophidium angustifolium* ssp. *diphyllum* Sengh. in Adansonia ser. 2, 6: 561, 1967.

Type: Madagascar, near Sakaraha, river Fiherenana.
Coll. Rauh no. 10423 (HEID).

Distribution: Madagascar.

From the related *O. Decaryana*, the plants of this species are distinguished in having petiolate leaves as well as differently proportioned lips.

Oeceoclades atrovirens (Lindl.) Garay & Taylor,
comb. nov.

Basionym: *Eulophia atrovirens* Lindl., Gen. and Sp.
Orch. Pl. 184, 1833.

Syn.: *Graphorchis atrovirens* (Lindl.) O. Ktze., Rev.
Gen. Pl. 2: 662, 1891.

Type: India, without proper locality. Coll. Wallich
s.n.! (K).

Distribution: India orientalis.

This peculiar plant is known from a colored drawing prepared by Wallich in 1828 for the East India Co., now in the Kew Herbarium. Ironically, Lindley originally has written on the drawing "Oeceoclades", then at a later time he crossed it out. So far no specimens are known to exist of this plant. Judging from the drawing, especially the floral details, it is near *O. latifolia* from which it differs in having a simple raceme, rather pointed sepals and petals and a somewhat different lip.

Oeceoclades boinensis (Schltr.) Garay & Taylor,
comb. nov.

Basionym: *Eulophidium boinense* Schltr. in Ann.
Mus. Col. Marseille ser. 3, 1: 182, t. 17,
1913.

Syn.: *Lissochilus boinensis* (Schltr.) H. Perr. in Hum-
bert, Fl. Madag. Orch. 2: 26, 1941.

Type: Madagascar, bords de la rivière Andranofasy
(Boina). Coll. Perrier no. 1834! (P).

Distribution: Madagascar.

This species has its only relative in *O. Rauhii*, both having a more or less cordate base to the leaves. In floral structures they are, however, very different. The type number of *O. boinensis* is Perrier 1834! and not 1384 as given by Schlechter.

Oeceoclades calcarata (Schltr.) Garay & Taylor,
comb. nov.

Basionym: *Cymbidium calcaratum* Schltr. in Ann.
Mus. Col. Marseille ser. 3, 1: 181, t. 16,
1913.

Syn.: *Eulophia calcarata* (Schltr.) Schltr. in Fedde
Rep. Beih. 32: 262, 1925.

Type: Madagascar, Manongarivo (Ambongo). Coll.
Perrier no. 1681! (P).

Eulophia paniculata Rolfe in Gard. Chron. ser.
3, 38: 197, 1905, not *Oeceoclades paniculata*
Lindl.

Lissochilus paniculatus (Rolfe) H. Perr. in
Humbert, Fl. Madag. Orch. 2: 29, 1941.

Eulophidium paniculatum (Rolfe) Summerh.
in Bull. Jard. Bot. Bruxelles 27: 399, 1957.

Type: Madagascar, without precise locality. Collec-
tor unknown. Flowered in cultivation at the
Royal Botanic Garden, Glasnevin in June
1904! (K).

Distribution: Madagascar.

The forward-projecting spur under the lip is unique in the genus.

Oeceoclades cordylinophylla (Rchb.f.) Garay &
Taylor, *comb. nov.*

Basionym: *Eulophia cordylinophylla* Rchb.f. in Flora
68: 541, 1885.

Syn.: *Lissochilus cordylinophyllus* (Rchb.f.) H. Perr.
in Humbert, Fl. Madag. Orch. 2: 20, 1941.

Eulophidium cordylinophyllum (Rchb.f.) Sum-
merh. in Bull. Jard. Bot. Bruxelles 27: 395,
1957.

Type: Comoro Islands, without proper locality. Coll.
Humblot *s.n.* (W).

Eulophia lokobensis H. Perr. in Bull. Soc. Bot.
Fr. 82: 153, 1935.

Lissochilus lokobensis (H. Perr.) H. Perr. in
Humbert, Fl. Madag, Orch. 2: 22, 1941.

Eulophidium lokobense (H. Perr.) Summerh.
in Bull. Jard. Bot. Bruxelles 27: 396, 1957.

Type: Madagascar, Forêt de Lokobe dans l'Ile de
Nossi-Bé. Coll. Perrier no. 19013! (P).

Distribution: Comoro Islands, Madagascar.

The actual specimen of *Eulophia cordylinophylla* is missing. However, there is a sheet among Humblot's collections from the Comoro Islands with an unpublished name by Reichenbach, which agrees well with the original description. This specimen also is identical with the type of *E. lokobensis* from Ile de Nossi-Bé, near the Comoro chain. Perrier's description of the column-wing as being toothed is incorrect. The margins of the column are ciliolate-hirsute.

Oeceoclades Decaryana (H. Perr.) Garay & Taylor,
comb. nov.

Basionym: *Eulophia Decaryana* H. Perr. in Bull. Soc.
Bot. Fr. 82: 154, 1935.

Syn.: *Lissochilus Decaryanus* (H. Perr.) H. Perr. in
Humbert, Fl. Madag. Orch. 2: 32, 1941.

Eulophidium Decaryanum (H. Perr.) Summerh.
in Bull. Jard. Bot. Bruxelles 27: 395, 1957.

Type: Madagascar, without proper locality. Coll.
Decary *s.n.* (P). Type is cultivated in Serres
du Museum d'Histoire Naturelle de Paris
(no. K 467).

Distribution: Madagascar, Mozambique, Rhodesia,
Kenya.

Judging from the assortment of specimens we have examined, the length of the sepals varies with age. It may be separated easily from the related *O. spathulifera* by the shape of the spur. Because of the cylindrical spur, the illustrations published in Die Orchidee 18: 246, 1967, as *Eulophidium spatuliferum* are referable here.

Oeceoclades gracillima (Schltr.) Garay & Taylor,
comb. nov.

Basionym: *Eulophia gracillima* Schltr. in Ann. Mus. Col. Marseille ser. 3, 1: 170, t. 14, 1913, not Ridl. 1886.

Syn.: *Eulophidium gracillimum* Schltr. in Fedde Rep. Beih. 33: 255, 1925, *nom. nov.*

Lissochilus gracillimus (Schltr.) H. Perr. in Humbert, Fl. Madag. Orch. 2: 28, 1941.

Type: Madagascar, bassin du Besafotra, affluent de Menavava (Boina). Coll. Perrier no. 1059! (P).

Distribution: Madagascar.

This species is closely related to *O. roseovariegata*, but the diffusely paniculate inflorescence and the shape of the lip and spur readily keep them apart.

Oeceoclades Hebdingiana (Guillaum.) Garay & Taylor, *comb. nov.*

Basionym: *Lissochilus Hebdingianus* Guillaum. in Bull. Mus. Nat. Hist. Nat. ser. 2, 35: 521, 1963.

Type: Madagascar, sous bois d'Anipanihy, Provenance Montagnac. Flowered in cultivation in Jardin Botanique "Les Cèdres". Collector unknown! (P).

Distribution: Madagascar.

Related to *O. calcarata* from which it differs primarily in the shape of the lip and not having a forward-projecting spur.

Oeceoclades lanceata (H. Perr.) Garay & Taylor, *comb. nov.*

Basionym: *Eulophia lanceata* H. Perr. in Bull. Soc. Bot. Fr. 82: 156, 1935.

Type: Madagascar, bois des pentes occidentales a Manerinerina sur le Tampoketsa, entre l'Ikopa et la Betsiboka. Coll. Perrier no. 16843! (P).

Distribution: Madagascar.

Perrier has reduced this species to a synonym of *Eulophia pandurata* Rolfe, but the two are amply distinct from one another in floral

details, especially in the shape of the lip. Vegetatively it is reminiscent of *O. seychellarum*. The flowers are rose-colored.

Oeceoclades latifolia (Rolfe) Garay & Taylor, *comb. nov.*

Basionym: *Eulophia latifolia* Rolfe in Bol. Soc. Broter. 9: 139, 1891.

Syn.: *Eulophidium latifolium* (Rolfe) Summerh. in Bull. Jard. Bot. Bruxelles 27: 396, 1957.

Type: Island of São Tomé. Coll. Quintas *s.n.*! (K).

Distribution: Africa—Island of São Tomé.

Florally the plants referable to this species are rather similar to *O. ugandae*, but vegetatively they are very different and more reminiscent of *O. atrovirens*. The lateral veins of the lip are papillose-ciliolate in this alliance to which *O. pandurata*, *O. seychellarum* and *O. lanceata* also belong.

Oeceoclades lonchophylla (Rchb.f.) Garay & Taylor, *comb. nov.*

Basionym: *Eulophia lonchophylla* Rchb.f. in Flora 68: 542, 1885.

Syn.: *Eulophidium lonchophyllum* (Rchb.f.) Schltr. in Fedde Rep. Beih. 33: 256, 1925.

Lissochilus lonchophyllus (Rchb.f.) H. Perr. in Humbert, Fl. Madag. Orch. 2: 26, 1941.

Type: Comoro Islands, without proper locality. Coll. Humblot no. 433! (P, W).

Eulophia tainioides Schltr. in Engl., Bot. Jahrb. 26: 339, 1899.

Eulophidium tainioides (Schltr.) Summerh. in Bull. Jard. Bot. Bruxelles 27: 403, 1957.

Type: Mozambique, between Morumben and Massinga, region of Inhambane. Coll. Schlechter no. 12106! (K, Z).

Eulophia dissimilis Dyer in Fl. Pl. Afr. 27: t. 1066, 1949.

Eulophidium dissimile Dyer in Fl. Pl. Afr. 27: t. 1066, 1949, *nom. altern. in obs.*

Type: Mozambique, Lourenco Marques District, Lebombo Mountains. Coll. Daintree *s.n.* (PRE).

Distribution: Mozambique, Comoro Islands.

We cannot find enough distinction between *E. lonchophylla* and *E. tainioides* to maintain them separately.

Humblot no. 433 is a mixture, containing material also referable to *O. cordylinophylla* and to *O. Perrieri*. In the Reichenbach Herbarium no. 6531 the original description and drawings by Reichenbach are mounted with a specimen with long, lorate leaves. This specimen does not belong to *O. lonchophylla*. We have chosen Herbarium Reichenbach no. 5902 as the holotype of Humblot no. 433, *O. lonchophylla*, for it agrees with the specimens under that name in Paris.

Oeceoclades Lubbersiana (De Wildem. & Laurent)

Garay & Taylor, *comb. nov.*

Basionym: *Eulophia Lubbersiana* De Wildem. & Laurent in Rev. Hort. Belg. 26: 4, 1900.

Syn.: *Eulophidium Lubbersianum* (De Wildem. & Laurent) Summerh. in Bull. Jard. Bot. Bruxelles 27: 397, 1957.

Type: Zaïre, Sankur. Coll. Laurent *s.n.*! (BR).

Distribution: Zaïre, Uganda.

Vegetatively the plants of this species are very similar to *O. atrovirens*. The shape of the lip which is wider than long, however, is unique in the relationship to which also *O. latifolia* and *O. pandurata* belong.

Oeceoclades Mackenii (Rolfe ex Hemsl.) Garay & Taylor, *comb. nov.*

Basionym: *Eulophia Mackenii* Rolfe ex Hemsl. in Gard. Chron. ser. 3, 12: 583, 1892.

Syn.: *Eulophidium Mackenii* (Rolfe ex Hemsl.) Schltr. in Ann. Mus. Col. Marseille ser. 3, 1: 183, 1913.

Type: Natal, near Verulam. Coll. McKen no. 11! (K).

Distribution: Natal, Mozambique, Rhodesia.

Superficially the plants of this species are rather similar to *O. maculata*. However, the lip which is shorter than wide and the branched inflorescence afford easy recognition in both the field and the herbarium.

Oeceoclades maculata (Lindl.) Lindl., Gen. and Sp. Orch. Pl. 237, 1833.

Basionym: *Angraecum maculatum* Lindl., Collect. Bot. t. 15, May 1821.

Syn.: *Limodorum maculatum* Lodd., Bot. Cab. 5: t. 496, June 1821.

Aerobion maculatum (Lindl.) Spreng., Syst. Veg. 3: 718, 1826.

Eulophia maculata (Lindl.) Rehb.f. in Walp. Ann. 6: 647, 1863.

Eulophidium maculatum (Lindl.) Pfitz., Entw. Nat. Anordn. Orch. 88, 1887.

Graphorchis maculata (Lindl.) O. Ktze., Rev. Gen. Pl. 2: 662, 1891.

Type: Brazil, without proper locality. Introduced and cultivated by Loddiges no. 34.10.16! (BM).

Geodorum pictum Link & Otto, Ic. Pl. Sel. pt. 3: 35, t. 14, July 1821.

Lectotype: Brazil, without precise locality. Received from British Gardens and cultivated in Berlin. (Probably part of the original introduction by Loddiges). Holotype was destroyed during World War II. The published plate is designated here as the Lectotype.

Eulophia Ledienii Stein ex N.E. Br. in Kew Bull. 90, 1899.

Eulophidium Ledienii (Stein ex N.E.Br.) De Wildem. in Ann. Mus. Congo ser. 5, 1: 115, 1904.

Type: Zaïre, without precise locality. Coll. Ledien *s.n.* (WRSL).

Eulophidium Warneckeanum Krzl. in Engl., Bot. Jahrb. 33: 70, 1902.

Type: West Africa, Togo, near Lome. Coll. Warnecke no. 196! (K).

Eulophidium nyassanum Schltr. in Engl., Bot. Jahrb. 53: 593, 1915.

Lectotype: Tanzania, near Mbaka Kilambo. Coll. Stolz no. 1909! (BM, K).

Distribution: U. S. A.—Florida, Venezuela, Colombia, Guyana, Peru, Bolivia, Argentina, Paraguay, Brazil, Trinidad, Bahamas, Dominican Republic, W. I., Senegal, Guinee Bissau, Sierra Leone, Liberia, Ghana, Togo, Nigeria, São Tomé, Gabon, Zaïre, Congo-Brazzaville, Burundi, Sudan, Uganda, Tanganyika, Zanzibar, Pemba, Zambia, Rhodesia, Angola.

The plants of all three species, *O. maculata*, *O. monophylla*, and *O. Mackenii* are very similar in appearance. Yet the proportions of the lip in all are sufficiently distinct to allow easy recognition. The lip of *O. monophylla* always has a distinct elongate isthmus.

Oeceoclades maculata var. **pterocarpa** (Hauman)

Garay & Taylor, *comb. nov.*

Basionym: *Eulophidium maculatum* var. *pterocarpum*
Hauman in Anal. Mus. Hist. Nat. B. Aires 29: 381, 1917.

Type: Argentina, Formosa, Pilaya. Coll. Kermes no. 507. (BA).

Syn.: *Epidendrum connivens* Vell., Fl. Flumin. 9: t. 44, 1831.

Type: Brazil, Santa Cruz. Coll. Vellozo *s.n.* No specimen is known to exist. Vellozo's original drawing in Flora Fluminensis is regarded here as representing the holotype.

Distribution: Argentina, Paraguay, Brazil.

This variety differs from the typical form in having winged capsules. It is possible that when more material is at hand, especially fresh flowers, this variety may prove to represent a species sufficiently distinct from *O. maculata*. There is also a certain difference in the outline of the lip.

Oeceoclades monophylla (A. Rich.) Garay & Taylor, *comb. nov.*

Basionym: *Angraecum monophyllum* A. Rich. in Mem. Soc. Hist. Nat. Paris 4: 58, t. 9, 1828.

Syn.: *Eulophidium monophyllum* (A. Rich.) Schltr. in Ann. Mus. Col. Marseille, ser. 3, 1: 183, 1913.

Type: Mauritius Island, without proper locality. Coll. Commerson *s.n.*! (P).

Distribution: Mascarene Islands.

The distinction between the plants of this species and those of *O. maculata* have already been stated above. If the distance of articulation of leaves and pseudobulb is of specific importance, as Summerhayes seems to have thought, then *Eulophia Ledenii* now included in *O. maculata*, will probably be recognized on its own as a close relative of *O. monophylla*.

Oeceoclades pandurata (Rolfe) Garay & Taylor, *comb. nov.*

Basionym: *Eulophia pandurata* Rolfe in Journ. Linn. Soc. London 29: 52, 1891.

Syn.: *Lissochilus panduratus* (Rolfe) H. Perr. in Humbert, Fl. Madag. Orch. 2: 29, 1841.

Eulophidium panduratum (Rolfe) Summerh. in Bull. Jard. Bot. Bruxelles 27: 399, 1957.

Type: Madagascar, near Fort Dauphin. Coll. Elliot no. 2546! (K).

Distribution: Madagascar, Rhodesia.

The free, truncate lateral lobes of the lip are very characteristic for this species. The lateral veins on the disc are papillose-ciliolate.

Oeceoclades Perrieri (Schltr.) Garay & Taylor, *comb. nov.*

Basionym: *Eulophidium Perrieri* Schltr. in Fedde Rep. Beih. 33: 256, 1925, not *Eulophidium ambongense* Schltr.

Syn.: *Eulophia ambongensis* Schltr. in Ann. Col. Mus. Marseille ser. 3, 1: 169, t. 13, 1913.

Lissochilus ambongensis (Schltr.) H. Perr. in Humbert, Fl. Madag. Orch. 2: 19, 1941.

Type: Madagascar, Manongarivo (Ambongo). Coll. Perrier no. 1654! (P).

Distribution: Madagascar, Mozambique.

The long-acuminate, lorate leaves without a distinct petiole distinguishes the plants of this species from the related *O. quadriloba*, *O. sclerophylla* and *O. analavelensis*.

Oeceoclades petiolata (Schltr.) Garay & Taylor, *comb. nov.*

Basionym: *Eulophia petiolata* Schltr. in Ann. Mus. Col. Marseille ser. 3, 1: 175, t. 13, 1913.

Syn.: *Eulophidium petiolatum* (Schltr.) Schltr. in Fedde Rep. Beih. 33: 256, 1925.

Lissochilus petiolatus (Schltr.) H. Perr. in Humbert, Fl. Madag. Orch. 2: 25, 1941.

Type: Madagascar, Manongarivo (Ambongo). Coll. Perrier no. 478 bis! (P).

Distribution: Madagascar.

Vegetatively the plants of this species are practically identical with those of *O. alismatophylla*, but the shape of the lip is very different proportionately. From the related *O. lonchophylla* it differs in having a pandurate lip with three thickened veins in front of the calli.

Oeceoclades quadriloba (Schltr.) Garay & Taylor, *comb. nov.*

Basionym: *Eulophia quadriloba* Schltr. in Ann. Mus. Col. Marseille ser. 3, 1: 176, t. 12, 1913.

Syn.: *Eulophidium quadrilobum* (Schltr.) Schltr. in Fedde Rep. Beih. 33: 256, 1925.

Lissochilus quadrilobus (Schltr.) H. Perr. in Humbert, Fl. Madag. Orch. 2: 30, 1941.

Type: Madagascar, Manongarivo (Ambongo). Coll. Perrier no. 1696! (P).

Distribution: Madagascar, Rhodesia.

The unique structure of the lip in these plants is reminiscent of those belonging to the Asiatic genus *Grosourdyia*. The vesicular, hanging spur is longer than the reflexed midlobe of the lip.

Oeceoclades Rauhii (Sengh.) Garay & Taylor, *comb. nov.*

Basionym: *Eulophidium Rauhii* Sengh. in *Die Orchidee* 24: 61, 1973.

Type: Madagascar, south of Anivorano. Coll. Rauh & Senghas no. 22865 (HEID).

Distribution: Madagascar.

Closely related to *O. boinensis* from which it differs in having linear-lanceolate sepals and petals and an equally four-lobed lip.

Oeceoclades roseovariegata (Sengh.) Garay & Taylor, *comb. nov.*

Basionym: *Eulophidium roseovariegatum* Sengh. in *Adansonia* ser. 2, 6: 561, 1967.

Type: Madagascar, near Diégo-Suarez, "Montagne des Français". Coll. Rauh & Buchloch no. 7985 (HEID).

Distribution: Madagascar.

As it was stated above, this species is closely allied to *O. gracillima*. As a matter of fact, the plants were already known to Schlechter through a collection by Perrier no. 16224! (P), and was regarded by him as an undescribed species. The Perrier specimen has Schlechter's original drawings of the floral parts attached to the sheet. It was also collected on "Montagne des Français". Perrier identified it as *Eulophidium gracillimum* var., but cited it without a varietal name in his *Orchids of Madagascar*.

The photographs of *O. roseovariegata* in *Die Orchidee* 18: 24, 1967 show the spur as being distinctly bilobed. This is apparently due to the angle in photographing, revealing the ventrally compressed and slightly grooved tip.

Oeceoclades Saundersiana (Rchb.f.) Garay & Taylor, *comb. nov.*

Basionym: *Eulophia Saundersiana* Rchb.f. in *Bot. Zeit.* 24: 378, 1866.

Syn.: *Graphorchis Saundersiana* (Rchb.f.) O.Ktze., *Rev. Gen. Pl.* 2: 662, 1891.

Eulophidium Saundersianum (Rchb.f.) Sum-

merh. in Bull. Jard. Bot. Bruxelles 27: 401, 1957.

Type: Africa, West Coast, without precise locality. Coll. Mann *s.n.*! (W).

Lissochilus barombensis Krzl. in Engl., Bot. Jahrb. 17: 52, 1893.

Type: Cameroun, Barombi. Coll. Preuss no. 546! (K).
Eulophia Bierleri De Wildem., Not. Pl. Util. Congo 1: 311, 1904.

Type: Zaïre, Coquilhatville. Coll. Bierler *s.n.* (BR).
Eulophia Mildbraedii Krzl. in Engl., Bot. Jahrb. 43: 339, 1909.

Type: Zaïre, Ruwenzori Range, Semliki Plains. Coll. Mildbraed no. 275! (K).

Distribution: Sierra Leone, Liberia, Ivory Coast, Ghana, Nigeria, Cameroun, Gabon, Zaïre, Uganda, Kenya, Tanzania, Zambia, Angola.

The long cylindrical pseudobulbs with two leaves and the equally four-lobed lip of rather large flowers easily identify the plants of this species.

Oeceoclades sclerophylla (Rchb.f.) Garay & Taylor, *comb. nov.*

Basionym: *Eulophia sclerophylla* Rchb.f. in Flora 68: 542, 1885.

Syn.: *Eulophidium sclerophyllum* (Rchb.f.) Summerh. in Bull. Jard. Bot. Bruxelles 27: 402, 1957.

Type: Madagascar, Forêt d'Ankaye. Coll. Humblot *s.n.*! (W).

Eulophia Elliotii Rolfe in Journ. Linn. Soc. London 29: 52, 1891.

Lissochilus Elliotii (Rolfe) H. Perr. in Humbert, Fl. Madag. Orch. 2: 47, 1941.

Type: Madagascar, near Fort Dauphin. Coll. Elliot no. 2424! (K).

Among the plants with long, linear leaves *O. sclerophylla* may be compared with *O. analavelensis*, but the two-leaved pseudobulbs and the differently proportioned lips readily separate the two. Vegetatively it also resembles *O. quadriloba*.

Oeceoclades seychellarum (Rolfe ex Summerh.)

Garay & Taylor, *comb. nov.*

Basionym: *Eulophia seychellarum* Rolfe ex Summerh.
in Bull. Misc. Inf. Kew 363, 1928.

Syn.: *Eulophidium seychellarum* (Rolfe ex Summerh.)
Summerh. in Bull. Jard. Bot. Bruxelles 27:
402, 1957.

Type: Seychelles, Mahé, Cascade Estate. Coll.
Thomasset no. 38! (K).

Distribution: Seychelles.

Vegetatively the plants of *O. seychellarum* are identical with those of *O. lanceata*. The two may be kept apart on account of the differences in the floral structures, especially in the shape and proportion of the lip as shown in the key.

Oeceoclades spathulifera (H. Perr.) Garay & Taylor, *comb. nov.*

Basionym: *Eulophia spathulifera* H. Perr. in Bull.
Soc. Bot. Fr. 82: 157, 1935, as *E. spatulifera*, *sphalm.*

Syn.: *Lissochilus spathulifer* (H. Perr.) H. Perr. in
Humbert, Fl. Madag. Orch. 2: 33, 1941.
Eulophidium spathuliferum (H. Perr.) Summerh. in Bull. Jard. Bot. Bruxelles 27: 403,
1957.

Type: Madagascar, Ambongo-Boina. Coll. Perrier
no. 15930 (P).

Distribution: Madagascar.

The distinctly spathulate sepals and petals combined with a globose spur easily separates the plants of this species from the related *O. calcarata* and *O. Hebdingiana*.

Oeceoclades ugandae (Rolfe) Garay & Taylor, *comb. nov.*

Basionym: *Eulophia ugandae* Rolfe in Bull. Misc. Inf. Kew 339, 1913.

Type: Uganda, Mabira Forest. Coll. Brown no. 443! (K).

Distribution: Zaïre, Ghana, Uganda.

Summerhayes considered this species to be synonymous with *O. latifolia*. As a matter of fact the shape of the lip superficially looks very much alike in both. Yet vegetatively the plants of these two species are closer to other members than to one another. The lip of *O. ugandae* is also provided with a pair of gibbosities at the junction of the lateral and midlobes, this character is absent in *O. latifolia*.

Oeceoclades zanzibarica (Summerh.) Garay & Taylor, *comb. nov.*

Basionym: *Eulophidium zanzibaricum* Summerh. in Bull. Misc. Inf. Kew 417, 1927.

Type: Zanzibar, without precise locality. Coll. Last s.n. ! (K).

Distribution: Zanzibar, Pemba.

The lanceolate, long-attenuate leaf is rather unique in the genus. Florally the plants of this species are closest to those of *O. alismatophylla* from Madagascar, but differ from one another in the shape of the sepals and petals and in the proportions of the lip.

Excluded Species

- O. falcata* (Thunb.) Lindl. = *Neofinetia falcata* (Thunb.) Hu
O. flexuosa Lindl. = *Cleisostoma ramosum* (Lindl.) Hook.f.
O. funalis (Sw.) Lindl. = *Dendrophylax funalis* (Sw.) Benth. ex Rolfe
O. gracilis (Thou.) Lindl. = *Chamaeangis gracilis* (Thou.) Schltr.
O. javanica Teijsm. & Binn. = *Hymenorchis javanica* (T. & B) Schltr.
O. Lindleyana Regel. = *Neofinetia falcata* (Thunb.) Hu
O. Lindleyi Regel = *Neofinetia falcata* (Thunb.) Hu
O. paniculata Lindl. = *Robiquetia succisa* (Lindl.) Seidenf. & Garay
O. parviflora (Thou.) Lindl. = *Angraecopsis parviflora* (Thou.) Schltr.
O. pusilla Lindl. = *Saccolabiopsis pusilla* (Lindl.) Seidenf. & Garay
O. Retzii Lindl. = *Chiloschista pusilla* (Retz) Schltr.
O. tenera Lindl. = *Trichoglottis tenera* (Lindl.) Rehb.f.

The following list of names constitutes the **Section Pulchrae** Krzl. of the genus *Eulophia* (Gard. Chron. ser. 3, 22: 262, 1897). Some of these names have been referred to the genus *Eulophidium* (= *Oeceoclades*) previously.

- Eulophia gracilis* Lindl. in Bot. Reg. 9: t. 742, 1823.
Eulophia emarginata Bl., Fl. Java, n.s. 1: 152, 1858.
Eulophia guamensis Ames in Philipp. Journ. Sci. Bot. 9: 12, 1814.
Eulophia macrostachya Lindl., Gen. and Sp. Orch. Pl. 183, 1833.
Eulophia megistophylla Rehb.f. in Flora 68: 379, 1885.
Eulophia minimiflora Krzl. in Not. Syst. 4: 137, 1928.
Eulophia novo-ebudae Krzl. in Bull. Soc. Bot. Fr. 76: 301, 1929.
Eulophia pulchra (Thou.) Lindl., Gen. and Sp. Orch. Pl. 182, 1833.
Eulophia Rouxii Krzl. in Sarasin & Roux, Nova Caled. 1: 82, 1914.
Eulophia silvatica Schltr. in Engl., Bot. Jahrb. 53: 586, 1915.
Eulophia striata Rolfe in Journ. Linn. Soc. London 29: 53, 1891.
Eulophia Wendlandiana Krzl. in Gard. Chron. ser. 3, 22: 262, 1897.
Lissochilus ambrensis H. Perr. in Not. Syst. 14: 159, 1951.



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