DRESSLERIA AND *CLOWESIA:* A NEW GENUS AND AN OLD ONE REVIVED IN THE CATASETINAE (ORCHIDACEAE)

*C. H. Dodson**

Since the early era of confusion concerning the *Catasetum* group, which was resolved by Darwin in 1864, it has been customary to consider the Catasetinae as consisting of three genera: *Catasetum* L. C. Rich., *Cycnoches* Lindl., and *Mormodes* Lindl. Two additional genera deserve recognition.

Three species of *Catasetum, C. dilectum* Rchb.f., *C. eburneum* Rolfe, and *C. suave* Ames & Schweinf., have been described which are dissimilar from the other catasetums in basic features. These species share the characteristics of having the lip adnate to the column, but the pollinia are discharged by lifting the apex of the anther cap as in the genus *Cycnoches* rather than by pressure on projections from the edge of the column alongside the anther as in *Catasetum* (Dodson, 1962). They also differ from the other catasetums in always having bisexual flowers.

Lindley originally described *Catasetum roseum* in a monotypic genus, *Clowesia.* Since then, four allied species with similar characteristics have been described in the genus *Catasetum.* These species, *C. glaucoglossum* Rchb.f., *C. thylaciochilum* Lem., *C. russellianum* Hook., and *C. warczewitzii* Lindl. & Paxt., also differ from the other catasetums in always having bisexual flowers. In addition, the pollinia are not discharged as in other catasetums, but rather the viscidium is rotated downward after pressure is applied to the stipe of the pollinarium.

The differences of these two groups seem to be of fundamental nature in the evolution of the members of the subtribe. Therefore, I believe that both are sufficiently distinct to be elevated to generic level. The relations of the five genera are detailed in the following key.

Key to the Genera of the Catasetinae

A. Flowers bisexual, both pollinarium and stigma always functional.
  B. Inflorescence usually from median nodes of the pseudobulb; column slender (much longer than broad) with a finger-like process from under the anther cap which triggers the pollinarium discharging mechanism. ..... *MORMODES*
  BB. Inflorescence from basal nodes of the pseudobulb; column short, (about as long as broad), the triggering mechanism involved with the anther cap or stipe of the pollinarium.
    C. Lip free from the column; inflorescence pendant; flower parts membranaceous, viscidium released by pressure on the stipe. ..... *CLOWESIA*
    CC. Lip adnate to the column; inflorescence erect; flowers very fleshy; viscidium released by lifting the apex of the anther cap. ..... *DRESSLERIA*
AA. Flowers normally unisexual (rare instances of bisexual flowers occur), pollen apparatus aborted

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in pistillate flowers, stigma nonfunctional in staminate flowers.

B. Inflorescence from the apical nodes of the pseudobulb; column extremely elongate in staminate flowers, less so in pistillate flowers and swollen into hooks at the apex; pollinarium discharged by lifting the apex of the anther cap. ..... *CYCNOCHES*

BB. Inflorescence from the basal nodes of the pseudobulb; column two to three times as long as broad in staminate flowers, very short and broad in pistillate flowers; pollinarium discharged by movement of projections of the column alongside the anther in staminate flowers (in most species, antennae-like). ..... *CATASETUM*

DRESSLERIA

Dressleria Dodson, gen. nov.

Pseudobulbi cylindracei, vaginis foliorum distichis imbricantibus omnino obtecti. Folia anguste ovato-elliptica, foetida, inferne sensim petiolata, membranacea, nervis minime conspicuis in subtribu. Scapus basalis, diffusus, pluriflorus. Flores perfecti carnosi. Labellum valde saccatum. Columna crassissima, perbrevis, labello adnato. Anthera terminalis, marginibus decurvatis rotundatis; polliniis 2.

TYPE SPECIES: *Catasetum dilectum* Rchb.f.

The generic name honors Dr. Robert L. Dressler whose considerable knowledge and experience, much of it derived from living in the neotropics, has provided a contribution to the knowledge of the Orchidaceae far exceeding that of other contemporary taxonomists.

KEY TO THE SPECIES OF *Dressleria*

A. Inflorescence subcapitate; lip nearly as broad as long (1.4-2.5 cm long, 1.1 to 2.2 cm broad). ..... 1. *D. dilecta*

AA. Inflorescence racemose; lip conspicuously longer than broad.

B. Flowers large (lip 3 to 4 cm long); upper surface of the lip without a protruding callus structure around the sides or apex of the cavity. ..... 2. *D. eburnea*

BB. Flowers medium (lip 1.5 to 2 cm long); upper surface of the lip with an obvious callus or an erect thin margin around the sides of the cavity of the lip.

C. Callus of the lip formed by thickening of the sides of the cavity; lip adnate for only half the length of the column. ..... 3. *D. suavis*

CC. Callus of the lip formed by thin flaps of tissue on each side of the cavity; lip adnate for the full length of the column. ..... 4. *D. helleri*

1. **Dressleria dilecta** (Rchb.f.) Dodson, comb. nov. (Figure 1A.)
Catasetum dilectum Rchb.f., Beitr. Orchideenkunde Central-Amer. 73. 1866.

This species has been reported from Nicaragua to Panama. It has been confused by most authors with *D. sauvis* and *D. eburnea.* The subcapitate inflorescence and nearly round lip of the small flowers easily distinguish *D. dilecta.* The illustrations titled *Catasetum eburneum* and *C. suave* in Allen's *Flora of Panama* are of *D. suavis* and *D. dilecta* respectively.

Pollination of this species by *Euglossa hansoni* was observed at San Vito de Java, Costa Rica (Dodson unpubl.).

2. **Dressleria eburnea** (Rolfe) Dodson, comb. nov. (Figure 1B.)
Catasetum eburneum Rolfe, Kew Bull. 86. 1906.

This species has been reported from Colombia and Ecuador. In Ecuador it is infrequent on both sides of the Andes at elevations of about 1,000 meters. The plants from western Ecuador may prove to be a distinct but very similar species. The flowers are light yellow-green in color and larger than those of the other species, and the cavity of the lip lacks a callus or other adornment.

Pollination by *Eulaema cingulata* was observed at Balzapamba, Ecuador (Dodson & Frymire, 1961).

3. **Dressleria suavis** (Ames & Schweinf.) Dodson, comb. nov. (Figure 1C.)
Catasetum suave Ames & Schweinf., Sched. Orch. 10:81. 1920.

Dressleria suavis has been reported from Nicaragua, Costa Rica and Panama where it occurs with *D. dilecta.* The species is distinguished by the lip being adnate to the column for only one half the length of the column, and by the thickened lateral sides of the lip cavity.

Pollination by *Euplusia ornata* and *Euglossa tridentata* was observed by Dr. Dressler at Cerro Campana, Panama (Dressler, pers. comm.).

4. **Dressleria helleri** Dodson, sp. nov. (Figure 1D.)

Herba epiphytica caespitosa. Pseudobulbi ovoideo-oblongi, 8-12 cm longi, vaginis imbricatis membranaceis tecti. Folia petiolata, oblong-ovata, breviter acuminata, plicata, 20-30 cm longa, 6-10 cm lata. Scapi erecti, circa 20 cm longi. Bractae triangularae, circa 1.2 cm longae. Sepala petalaque ovata recurva. Labellum crasse carnosum, saccatum 1.7 cm longum, 1.1 cm latum, margine cavitato elevato. Columna crassissima, perbrevis, labello omnino adnata.

Plant similar vegetatively to plants of *Catasetum* but with slightly thicker, fleshier leaves which produce a musty, disagreeable smell when crushed. The smell remains on herbarium specimens for many years. Inflorescence erect, racemose, from the base of the pseudobulb, 20-25 cm long, concealed at the base by several loose imbricating distichous sheaths. Raceme loosely 5- to 12-flowered. Floral bracts narrowly triangular, 1.2 cm long, 0.6 cm broad, shorter than the ovary; ovary 2 cm long. Flowers ivory; dorsal sepal narrowly ovate, fleshy, apiculate, 2 cm long, 0.5 cm broad; lateral sepals slightly oblique, narrowly ovate, fleshy, apiculate, 2 cm long, 0.5 cm broad. Petals obliquely ovate, fleshy, 1.8 cm long, 0.8 cm broad. Tepals strongly reflexed. Lip deeply saccate, simple, ovate from a dorsal view, 1.7 cm long, 1.1 cm broad, broadly ovate from a lateral view, the blade of the

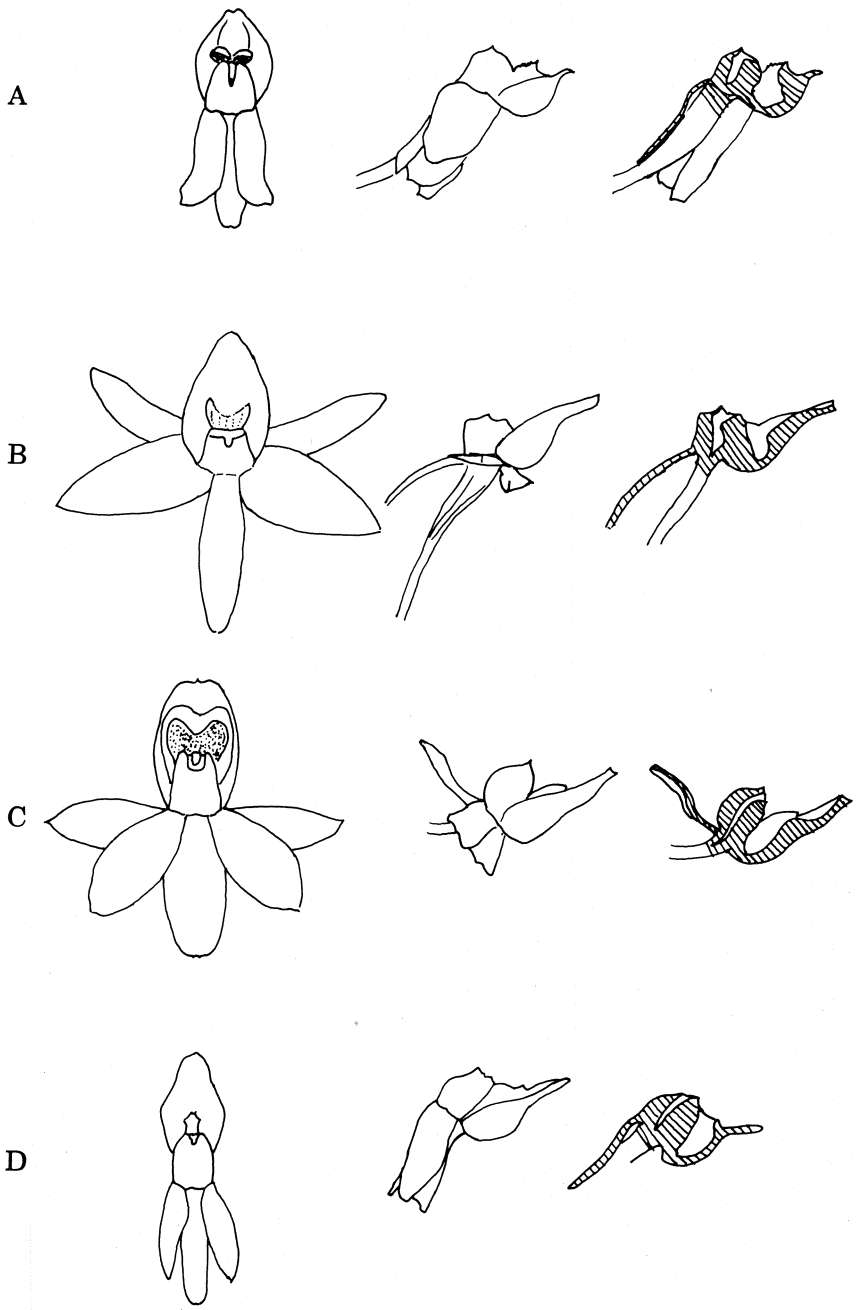

FIGURE 1.

A. *Dressleria dilecta* B. *D. eburnea*
C. *D. suavis* D. *D. helleri*

lip originating from the base of the lip, cavity of the lip surrounded by a thin erect margin which is slightly erose on the edges. Column short and stout, 0.7 cm long, 0.6 cm broad, entirely adnate for its length to the lip. Anther oblong, apex rounded with an apicule and with decurved processes projecting from each edge below the apex. Pollinia 2, obliquely pyriform, attached to a narrowly rectangular stipe which is attached to a transverse viscidium.

TYPE: *NICARAGUA:* Coffee plantation at base of Peña Blanca, elev. 3,050 ft., flowering 1 June 1965, *A. H. Heller 8422* (HOLOTYPE in SEL).
PANAMA: Cerro Jefe, 12 Jan. 1968, *C. H. Dodson & R. L. Dressler s.n.* (SEL).

This species is easily confused with *D. suavis*. It is similar in most respects but differs in the smaller cavity of the lip which has a thin, erect flap of tissue on each side rather than a thickened callus. The column is adnate to the lip to its apex in this species, whereas in *D. suavis* it is free from the lip for part of its length.

Dr. Dressler (pers. comm.) has reported visitation to the flowers of this species by *Eulaema nigrita, Euplusia schmidtiana, Euplusia* sp. (RD 296), *Euplusia* sp. (RD 935), *Euglossa asarophora* and *Euglossa championi* at Cerro Jefe, Panama.

CONCLUSIONS

The species of *Dressleria* are not only structurally distinct but each is pollinated by different kinds of euglossine bees. *Dressleria helleri* and *D. dilecta* were collected from the same coffee plantation in Nicaragua (Heller in notes). It would be reasonable to expect two or even three of the species to be sympatric over much of their present ranges. They are clearly reproductively isolated through differential pollinator attraction. Figure 1 compares flowers of the species.

CLOWESIA

Clowesia Lindl., Edwards Bot. Reg. 29: misc. 39; t. 39. 1843.

KEY TO THE SPECIES OF *Clowesia*

A. Lip and petals fringed; flowers light pink. ..... 1. *C. rosea*
AA. Lip and petals not fringed; flowers light green.
  B. Side lobes of the lip strongly developed and held erect on each side of the column; lip constricted within so as to form a cavity below the column and another cavity leading to the saccate portion of the lip. ..... 2. *C. warczewitzii*
  BB. Side lobes of the lip not strongly developed; lip not constricted inside the cavity.
    C. Lip not deeply saccate. ..... 3. *C. thylaciochila*
    CC. Lip very deeply saccate.
      D. Mid-lobe of the lip extending over the saccate portion, 2 cm long, oblong, truncate at the apex. ..... 4. *C. russelliana*
      DD. Mid-lobe of the lip short, less than 1 cm long, triangular. ..... 5. *C. glaucoglossa*

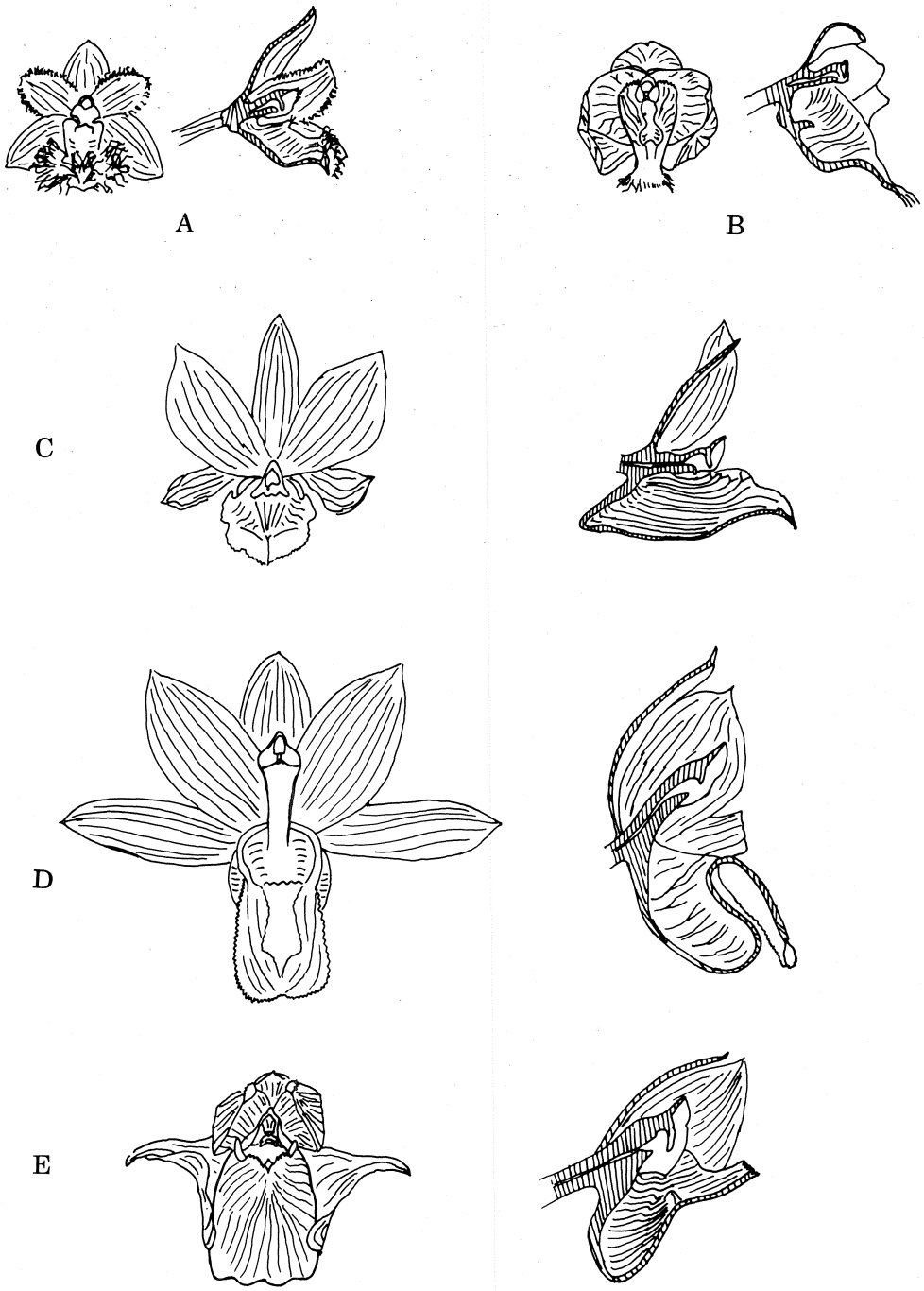

FIGURE 2.

A. *Clowesia rosea* B. *C. warczewitzii*
C. *C. thylaciochila* D. *C. russelliana* E. *C. glaucoglossa*

1. **Clowesia rosea** Lindl., Edward's Bot. Reg. 29: misc. 25 & t. 39. 1843. (Figure 2A.)

Catasetum roseum (Lindl.) Rchb.f., Gard. Chron. 1003. 1872.

This species was originally cited from Brazil by Lindley. The only authenticated specimens are from western Mexico. The plants are occasionally encountered on the Pacific slope of the mountains west of Oaxaca, Mexico at elevations of about 700 meters. Reports from Central and South America are probably erroneous.

The species is distinguishable from the other members of the genus by the pink flowers with frilled side- and mid-lobes of the lip. The flowers produce a strong fragrance dominated by cinnamon (analyzed as methyl cinnamate, Hills 1968). The pollinator is unknown.

2. **Clowesia warczewitzii** (Lindl. & Paxt.) Dodson, comb. nov. (Figure 2B.)
Catasetum warczewitzii Lindl. & Paxt., Paxton's Fl. Gard. 1:45. 1850.
Catasetum scurra Rchb.f., Gard. Chron. 1003. 1872.

This is one of the more widely distributed species in the genus. It occurs from Costa Rica, through Panama to Venezuela at elevations below 400 meters. This species can be distinguished from other members of the genus by the constricted cavity of the lip which forms two deep cavities, one directly under the column and the other below it. The flowers smell strongly of lemon (analyzed as Nerol, Dodson, unpubl.). Pollination of this species was observed in the company of Dr. Dressler at San Vito de Java in Costa Rica (Van der Pijl and Dodson 1966). Male bees of *Eulaema bombiformis* and *Eulaema nigrita* were observed to thrust both forelegs into the two cavities of the lip after orienting themselves at an angle from the lip of the flower. While rubbing their legs together the bees dislodged the pollinarium with the femur of the fore leg and the viscidium became attached just above the articulation. This has been termed "bees-knees pollination" (N. H. Williams, pers. comm.). No other known orchid utilizes this system.

3. **Clowesia thylaciochila** (Lem.) Dodson, comb. nov. (Figure 2C.)
Catasetum thylaciochilum Lem., Ill. Hort. 3: misc. 90. 1856.

This species occurs on the coastal plain of western Mexico in the states of Guerrero and Michoacan. It has also been reported from western Nicaragua by Heller (in notes). The latter report may represent an escaped cultivated plant. *Clowesia thylaciochila* can be distinguished from the other members of the genus by the lack of a deeply saccate base of the lip. The pollinator is unknown. The flower produces 2-phenyl ethyl acetate as more than 90% of its fragrance (Hills 1968).

4. **Clowesia russelliana** (Hook.) Dodson, comb. nov. (Figure 2D.)
Catasetum russellianum Hook., Bot. Mag. t. 3777. 1840.
Catasetum calceolatum Lem., Jard. Fleur. 1: misc. 45. 1851.
Cycnoches viride Koch, Allg. Gartenzeitung 25: 291. 1857.

Clowesia russelliana occurs naturally from southern Mexico in the state of Chiapas south to Nicaragua. It has also been reported from Venezuela by Dunsterville and Garay (1966), which should be verified.

This species can be distinguished by its deeply gibbous-saccate lip with an ovate, truncate mid-lobe which expands over the sac of the lip. The fragrance is dominated by cineole (odor of Vicks Vaporub) (Hills, 1968).

Pollination by male bees of *Euplusia mexicana* was observed by Dodson and N. H. Williams near Tuxtla Gutierez, Chiapas, Mexico (Hills, 1968).

5. **Clowesia glaucoglossa** (Rchb.f.) Dodson, comb. nov. (Figure 2E.)
Catasetum glaucoglossum Rchb.f., Gard. Chron. 552. 1885.

This species is known only from one locality in the state of Michoacan in western Mexico where it was rediscovered by Mr. Glenn Pollard of Oaxaca, Mexico. It is distinguished from the other species by the barely opening floral segments, and the small triangular mid-lobe of the lip. The lip is saccate but not gibbous as in *C. russelliana.*

The pollinator is unknown and the fragrance has not been analyzed.

Figure 2 compares the flowers of the species of *Clowesia.*

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