

berulous; anthers 3–7 mm long, externally puberulous and apically glabrous or nearly so. Berry (immature?) turbinate to nearly cylindric, not inflated, about 1 cm long and 5 mm in diameter.

This species is known to me only from the holotype as the alleged duplicates seen by me (DUKE, F, MO, NY) are specimens of *B. vulgaris* Wimmer, a very different species in that it possesses a \pm cylindric hypanthium and a glabrous corolla.

7. *Burmeistera tenuiflora* J. Donnell Smith, Bot. Gaz. 25: 147. 1898.

A species made distinctive by its usually elongate and extremely slender calyx lobes and the usual presence of a distinctive band of spreading trichomes along the principal veins on the lower surface. It is known from Costa Rica (Puntarenas, Alajuela, Heredia, San José [La Palma]) and from Panama (Chiriquí and Veraguas).

8. *Burmeistera obtusifolia* Wimmer, Repert. Sp. Nov. 29: 58. 1931.

This species is, as suggested by the key, closely related to *B. almedae*, but seems amply distinct. *Burmeistera obtusifolia* is known to me only from the northern and north-western slopes of the Cordillera de Talamanca at an elevation of about 2000–2500 m in the Costa Rican provinces of Cartago and San José.

9. *Burmeistera almedae* Wilbur, sp. nov.

Planta suffruticosa, terrestris vel epiphytica, subscandens. Rami 5–10 dm longi, hispiduli. Lamina foliorum lanceolata vel lanceolato-ovata, (1.8) 2.5–5.5 cm longa et 1.0–2.2 cm lata, circa 2.5–4(5)-plo longiora quam latiora, acuta vel acuminata, basi truncata, rotundata vel subeordata, margine denticulis 2–4 per cm crenato-serrata; petioli 3–8 mm longi, strigillosi. Flores 4–5 cm longi; pedicelli glabri, 2–4(6) cm longi. Hypanthium obconicum, glabrum; lobi calycis oblongi, obsolete crenato-serrati, \pm glabri, 2.5–8 mm longi et circa 2 mm lati. Corolla glabra, atro-violacea vel virens. Filamenta distaliter puberula inferne glabra, 32–38 mm longa; antherarum tubus 2.5–6 mm longus; 2 antherae inferiores apice villosae.

TYPE: Costa Rica: steep slopes along the Carretera Interamericana about 18 km. SE of El Empalme at an elevation of about 2615 m. *Wilbur & Almeda 17532*

(Holotype: DUKE; Isotype: MICH).

Suffrutescens, terrestri vel epiphytica herb vel straggly sprawling to arching shrublet with terete, solid, rigid stems 5–10 dm long and \pm densely hispidulous with stiff, spreading, hyaline to dark reddish purple, terete, tapering trichomes mostly about 0.2–0.4 mm long. Blades of the principal leaves lanceolate to lance-ovate, mostly (1.8) 2.5–5.5 cm long and 1.0–2.2 cm wide, typically 2.5–4(5) times as long as wide, apically acute to acuminate and often with a pronounced apiculus 3–8 mm long, basally truncate or rounded or even somewhat cordate, marginally \pm crenate-serrate with 2–4 teeth per cm and with the midvein and the secondary veins indistinctly impressed above and elevated beneath, glabrous above and sparingly to moderately puberulous or short-pubescent beneath especially on the principal veins with usually purplish, tapering, terete trichomes mostly 0.1–0.2 mm long; petioles usually 0.3–0.8 cm long, moderately to densely ascendently appressed strigillose with tapering terete, purplish trichomes 0.1–0.2 mm long. Flowers 4–5 cm long on glabrous (or exceedingly sparsely pubescent, i.e. with not more than a few trichomes), spreading to ascendent pedicels mostly 2–4(6) cm long. Hypanthium in anthesis obconic, basally acute, glabrous, 4–6 mm high; calyx-lobes narrowly oblong, apically acute to rather blunt, ascendent to wide-spreading, glabrous to very sparsely short-pubescent, usually bright green, entire or more typically crenate-serrate with often dark purplish teeth, mostly 2.5–8 mm long and about 2 mm wide. Corolla glabrous, dark reddish purple or dull greenish; tube about 17–20 mm long and for most of its length 2–4 mm in diameter but flaring above into a throat 5–8 mm wide; lobes falcate, acute to acuminate, the two uppermost 9–12 mm long, the 2 lateral lobes about 6–9 mm long and the lowermost lobe 5–8 mm long. Filaments distally inconspicuously but moderately puberulent and glabrous below, 32–38 mm long; anthers 2.5–6 mm long, glabrous externally with the 2 shorter anthers apically fringed with a thin row of villous, white trichomes and the 3 longer anthers apically naked. Berry \pm globose to obovoid, not inflated, greenish white, 12–15 mm in diameter; seeds narrowly oblong, flattened, light brown, shal-

lowly pitted with elongate depressions.

DISTRIBUTION: Costa Rica: wet forests and thickets of the eastern Cordillera Central and the Talamancas.

This species is named as a tribute to Frank Almeda, Jr., a frequent field companion whose sharp eye and discriminating collecting has uncovered numerous interesting plants in Central America. The features which are thought to distinguish this species from its nearest relative, *B. obtusifolia*, are emphasized in the key.

Specimens examined: Prov. de Heredia: Volcán Barba, alt. 2900 m, *Valerio NA20* (F); Volcán Barba at 2200–2800 m, about 8 km in a straight line N of San José de La Montana, *Wilbur 14054* (DUKE). Prov. de Cartago: Steep slopes about 15 km S of Tapanti on the E slope above the Río Grande de Orosi at 1500 m, *Burger & Liesner 7526* (F). Primary forest above Río Grande de Orosi 11 km S of Tapanti, alt. 1600 m, *Lent 1215* (CR, F, NY). Primary forest near Río Villegas, valley of Río Grande de Orosi, alt. 1700 m, *Lent 1856* (F, MO, NY). Along Highway 224 about 14–17 km east of Orosi at about 1630 m, *Luteyn 3933* (DUKE). Cordillera de Talamanca mostly on the boundary of Cartago and San José: about 19–20 km NW of Cerro Asunción at 2500–2600 m, *Almeda & Flowers 2087* (DUKE, F). Along the Interamerican Highway at 2500–2600 m about 22 km SE of El Empalme, *Burger 7968* (DUKE). In sphagnum bog along the Pan-American Highway in the mountains S of Cartago at about 2600 m, *Cronquist 8843* (MICH). Edge of sphagnum bog next to Pan Am Hwy. between 18 and 20 km from El Empalme at 2700 m, *Cruz 53* (F, NCU). Pan-American Hwy. between Km 60 and 77, *Molina, Burger & Wallenta 17852* (CR, F). Bog and wooded slopes about 16 km SE of El Empalme, *Wilbur & Teeri 13891* (DUKE). Bog and surrounding wooded slopes about 17.6 km SE of El Empalme at about 2770 m, *Wilbur & Teeri 13909* (DUKE). Bog about 18 km SE of El Empalme, *Wilbur 14614* (DUKE). Wet thickets along the Interamerican Hwy. about 15.3 km SE of El Empalme at 2800 m, *Wilbur & Almeda 16735* (DUKE). Bog 6 km NW of Dos Amigos at about 2700 m, *Wilbur & Luteyn 18319* (DUKE). Bog about 2 km S of El Empalme at an elevation of about 2400 m, *Wilbur & Luteyn*

18341 (DUKE, F, MICH). On floor of cloud forest near El Jardín, alt. 2700 m, *Williams 20192* (MICH). Epiphyte in cloud forest near El Jardín at an alt. of 2800 m, *Williams 20205a* (MICH). Bog in elfin cloud forest area north of Cerro de la Muerte, alt. 2600 m, *Williams, Jimenez M. & Williams 24164* (CR, F).

10. *Burmeistera zurquiensis* Wilbur, spec. nov.

Planta glabra, epiphytica, suffruticosa, 5–8 dm longa; rami glabri. Lamina foliorum glabra, lanceolata vel lanceolato-ovata, circa 5–9.5 cm longa et (1.5)2.5–3.9 cm lata, circa (1.8)2.5–3.7-plo longiora quam latiora, apice acuta et basi cuneata vel rotundata. Flores 4.5–5.5 cm longi; pedicelli glabri, 2–5 cm longi. Hypanthium obovatum, glabrum; lobi calycis lanceolati, serrulati, (6)8–12 mm longi. Corolla glabra, virens vel virens rubiginoso-suffusa vel rubiginosa; tubus 2–2.5 cm longus; lobi superior 15–18 mm longi. Filamenta glabra vel villosa, 40–45 mm longa.

TYPE: Costa Rica: Prov. de Heredia: wet forested slopes and thickets 12 km NNE of San Rafael and about 2 km east of Cerro Chompipe at an elevation of 2300 m, *Wilbur & Almeda 16807* (Holotype: DUKE; Isotypes: F, MICH, MO).

Epiphytic, suffrutescent herb with arching to pendent branches 5–8 dm long with stems glabrous throughout or with only a few scattered trichomes above. Blades of the principal leaves lanceolate to lance-ovate, 5–9.5 cm long and (1.5)2.5–3.9 cm wide, mostly (1.8)2.5–3.7 times as long as wide, apically acute to acuminate-tipped and basally rounded to shortly cuneate, marginally shallowly crenate-serrate with 1–2(3) teeth per cm with each tipped with a darkened callosity, glabrous both on the upper and lower surfaces; petioles (5)7–10(13) mm long, inconspicuously sparsely ciliate basally with trichomes 0.3–0.5 mm long. Flowers 4.5–5.5 cm long on stiffly ascendent to spreading, glabrous pedicels 2–5 cm long. Hypanthium in anthesis obovate, basally acute, glabrous, 5–8 mm long and 4–7 mm wide; calyx-lobes lanceolate, acute, glabrous, inconspicuously serrulate, spreading or even reflexed, (6)8–12 mm long and 1.5–3 mm wide at base. Corolla glabrous, green, green suffused with maroon or maroon; tube 2–2.5 cm long and 3–4 mm in

diameter; upper lobes oblong-linear, 15–18 mm long, the lateral 2 lobes about 8–11 mm long and the lowermost about 6–8 mm long. Filament-tube 4–4.5 cm long, glabrous to densely villosulose distally, pale green; anthers externally glabrous and the upper anthers about 5–6 mm long and the shorter about 3–4 mm long with only the shorter with a thin apical fringe of delicate trichomes. Berry \pm globose, about 9–11 mm in diameter.

DISTRIBUTION: Known only from Heredia Province, Costa Rica, in the range of mountains on the southeastern flank of Volcán Barba from Cerro Chompipe to Cerro Zurquí at an elevation of 1700–2000 m.

Specimens examined: Prov. de Heredia: Cut-over forest between Río Las Vueltas and Quebrada Cabrú, vicinity of Cerro Chompipe, 1700–2000 m, *Luteyn & Wilbur 4416* (DUKE, F, MICH) and *4424* (DUKE). Vicinity of Cerro Chompipe between Río Las Vueltas and the Río

Nuevo between 1800–2000 m about 12 km NNE of San Rafael, *Wilbur & Luteyn 18568* (DUKE, F, MICH).

11. *Burmeistera estrellana* Wimmer, *Repert. Sp. Nov.* 30: 24. *pl.* 123, *f.* 8. 1932.

This little-collected endemic species is known only from Provincia de Cartago on the northern slopes of the Cordillera de Talamanca and on the heavily forested slopes above the Río Grande de Orosi. Its range is hence to the east and south of *Burmeistera zurquiensis*, with which I had confounded it. The differences are pointed out in the key.

Literature Cited

- MCVAUGH, R. 1943. Campanulaceae (Lobelioideae). *N. Amer. Fl.* 32A(1): 1–134.
- WIMMER, F. E. 1943. Campanulaceae-Lobelioideae I. *Das Pflanzenreich.* Heft 106 (IV. 276b): 1–260.
- . 1968. Campanulaceae-Lobelioideae SUPPLEMENTUM. *Das Pflanzenreich.* Heft 108 (IV. 276c): 815–901.