

& *Shafer 560* (NY, US), *Krebs s.n.* (C). WEST INDIES.  
WITHOUT LOCALITY: *Martens s.n.* (BR), *Brown s.n.* (K).

***Anthurium simpsonii*** Croat, sp. nov. TYPE: Peru.

Tumbes: Dto. Matapalo, road to Campo Verde, *Simpson & Schunke 392* (holotype, F 1771582). Figure 290.

Planta epiphytica; internodia ca. 1.5 cm diam.; cataphyllum persistens velis fibrarum reticularum; petiolus 6 cm longus, ca. 6 mm diam., D-formatus; lamina oblongo-oblancoolata, 66 cm longa, 8.5 cm lata; pedunculus 23–25 cm longus; spatha oblancoolata, ca. 5 cm longa, ca. 8 mm lata; spadix purpureus, cylindricus, ca. 5 mm diam.

Description based on dried material only. Epiphytic; stem ca. 1.5 cm diam.; roots numerous, dense, gray-brown and shortly woolly-pubescent, moderately thick and elongate, somewhat tapered at apex, 3–5 mm diam.; cataphylls subcoriaceous, 11.5–12 cm long, acuminate at apex, tan, persisting intact, eventually as a reticulum of fibers. *Leaves* erect or somewhat spreading; petioles 6 cm long, ca. 6 mm diam., D-shaped, probably flattened adaxially, rounded or multi-ribbed abaxially; geniculum slightly darker than petiole, ca. 1 cm long; blades subcoriaceous, oblong-oblancoolate, acute at apex (the acumen apiculate), acute at base, 66 cm long, 8.5 cm wide, broadest at or above the middle; upper surface glossy, lower surface semiglossy; both surfaces matte, grayish green; midrib flat to convexly raised above, concolorous with the surface, prominently and convexly raised below, paler than surface; primary lateral veins ca. 22 per side, departing midrib at 50–60° angle,  $\pm$  straight to the collective vein, raised above and below, slightly paler than surface below; interprimary veins prominent below; reticulate veins visible below; collective vein arising from near the base, raised above and below, less prominent than primary lateral veins, 1–3 mm from margin. *Inflorescences* with peduncle 23–25 cm long, ca. 3 mm diam., ca. 5  $\times$  as long as petioles, terete; spathe, yellowish brown, oblancoolate, ca. 5 cm long, 0.8 cm wide, acute at base, the margins meeting at an acute angle; stipe 7 mm long in front, 3 mm long in back; spadix purplish, cylindroid, erect, ca. 5 mm diam.; flowers  $\pm$  square; 5–7 flowers visible in principal spiral, 7–9 in alternate spiral; tepals deep purple with light tips; lateral tepals 0.9–1.2 mm wide, the inner margins straight, the outer margins 2-sided; pistils glossy, wine-red; stigma probably slitlike; anthers 0.4 mm long, 0.4–0.5 mm wide; thecae oblong, 0.2 mm wide, slightly or not at all divaricate. *Infructescence* with spathe persistent; spadix 12.5 cm long, 1.8 cm diam.; berries purple, ovoid, acute at apex, 6.5 mm long, 5.5 mm diam.; me-

socarp translucent, gelatinous, orange; seeds 2 per berry, yellow-brown, flattened, 3.5–3.7 mm long, 2.7 mm diam., 0.9–1 mm thick, enveloped by gelatinous, translucent substance.

*Anthurium simpsonii* is known only from the type collection from the Department of Tumbes in northern coastal Peru, at 600 to 800 m in the subtropical dry forest life zone.

This species is characterized by its small size, very short petioles, and oblong-oblancoolate blades with collective veins arising from near the base, as well as by the long, rather slender spadix, deep purple flowers, and wine-red fruits. It is not likely to be confused with any other species. The only other species of sect. *Pachyneurium* that occurs in this part of Peru is *Anthurium barclayanum*, a much larger plant with leaves drying dark brown (not grayish) and collective veins arising from near the apex.

The new species is named in honor of Donald Simpson, formerly of the Field Museum of Natural History (F), who collected the type when he headed the Flora of Peru Project.

PERU. TUMBES: Prov. Zarumilla, Dto. Matapalo, Bosque Nacional de Tumbes, Campo Verde, 600–800 m, *Simpson & Schunke 392* (F).

***Anthurium solitarium*** (Vell. Conc.) Schott, Prodr. Aroid. 478. 1860. Figures 292, 293, 295.

*Pothos solitarius* Vell. Conc., Fl. Flum. 9: t. 123. 1825 [1829]. TYPE: Brazil. Rio de Janeiro. (The plate cited above serves as the type.)

*Anthurium glaziovii* Hook. f., Bot. Mag. t. 6833. 1885. TYPE: Brazil. Rio de Janeiro, *Glaziou 17333* (holotype, B, photo seen; isotype, K).

*Anthurium nobile* Engl., Bot. Jahrb. Syst. 25: 366. 1898. TYPE: Brazil. Rio de Janeiro, *Glaziou 9039* (holotype, B; MO, photo).

Epiphytic or epilithic; stem 1.5–4 cm diam.; roots descending, velutinous, appearing inflated or with air spaces inside when dried, sharply tapered at apex, 2–9 cm long, 3–10 mm diam.; cataphylls lanceolate, 6–11 cm long, acuminate at apex with subapical apiculum to 5 mm long, drying brown, persisting semi-intact at apex and eventually weathering into coarse, linear fibers. *Leaves* erect-spreading; petioles (2)6–28(32) cm long, 5–9 mm diam., spreading, C-shaped to thicker than broad, narrowly and deeply sulcate with obtuse to acute margins adaxially, rounded abaxially, the surface dark green, pale-speckled; geniculum slightly thicker and paler than petiole, 1–1.5 cm long; sheath 2.5–4 cm long; blades subcoriaceous to

coriaceous, obovate to oblanceolate, often somewhat elliptic, short-acuminate to acute and apiculate at apex, obtuse to semi-rounded or weakly subcordate at base, 26–70(80) cm long, (6)10–23(27) cm wide, broadest at or near the middle, the margins weakly and broadly undulate; upper surface semiglossy, medium green, lower surface weakly glossy, paler below; both surfaces drying matte to semiglossy, yellowish brown; midrib flat to obtusely raised or obtusely sulcate at base, becoming convexly raised, sometimes sharply acute toward the apex above, obtusely to acutely raised, sometimes faintly 1–3-ribbed at base below; primary lateral veins 5–12 per side, departing midrib at (25)40–60(70)° angle,  $\pm$  straight, becoming arcuate near margin, raised in grooves or weakly to prominently raised on upper surface, prominently raised and stout below, paler than surface; interprimary veins weakly raised above and below when visible, darker below; tertiary veins prominent, weakly raised to weakly sunken above, moderately visible or obscure above, very weakly raised below; collective vein arising from near the apex or absent, if present sunken above, raised below, 10–20 mm from margin. *Inflorescences* erect or erect-spreading, or somewhat pendent; peduncle (15)30–102 cm long, 3–5 mm diam., 1.3–16 $\times$  as long as petiole, green sometimes tinged with purple, terete, pale- to dark-speckled; spathe spreading, coriaceous, green tinged with purple adaxially, oblong to lanceolate, 6–25 cm long, 1.5–2 cm wide, broadest near the base, acuminate at apex (the acumen inrolled, 5–10 mm long), obtuse to acute at base, often decurrent; spadix dark maroon or purple, mostly sessile (rarely stipitate to 30 mm), tapered, curved, 12–33 cm long, 4–14 mm diam. at base, 3–7 mm diam. at apex, broadest at the base; flowers rhombic, 1.8–3.6 mm long, 1.2–2.6 mm wide, the sides  $\pm$  straight to sigmoid; 6–10 flowers visible in principal spiral, (6)10–12 in alternate spiral; tepals matte; lateral tepals 1–1.6 mm wide, the inner margins broadly convex, the outer margins 2-sided; pistils not emergent; stigma linear becoming ellipsoid, possibly becoming circular, sometimes appearing somewhat caviform when dried, 0.4–0.7 mm long; stamens emerging in a regular sequence; the laterals preceding the alternates by 13–20 spirals, held at edge of the tepals, inclined over and obscuring the pistil; filaments not exerted; anthers 0.4–0.5 mm long, 0.8–0.9 mm wide; thecae ovoid, 0.3–0.4 mm wide, slightly divaricate; pollen golden. *Infructescence* with spathe persisting; spadix 19–40 cm long, 11–18 mm diam.; berries purple-red, more or less oblong, the basal tepalar fibers strongly

adherent, 5–6 mm long, 2–3 mm diam.; pericarp with raphide cells; mesocarp  $\pm$  dry; seeds 1–2 per berry, covered with raphides, ellipsoid, 4–4.4 mm long, 1.8–2 mm diam., 0.8–1 mm thick, with a gelatinous appendage.

*Anthurium solitarium* is known from the states of Espírito Santo, Goiás, Minas Gerais, and Rio de Janeiro in Brazil from 300 to 1,300 m, where it is epiphytic or epilithic in mainly primary forest habitats.

This species is recognized by its thickly coriaceous, obovate or oblanceolate blades, with the primary lateral veins running straight from the midrib to the margin, and then steeply and arcuately rising along the margin. Also distinctive is the maroon to purple spadix and prominently decurrent spathe.

*Anthurium solitarium* is not easily confused with any other Brazilian species or with species from other areas.

Several collections are noteworthy. *Glaziou 9039*, the type of *Anthurium nobile* (here synonymized), is unusual in having a prominently stipitate (nearly 3.5 cm) spadix, instead of the more common sessile to weakly stipitate condition. *Croat 53794*, a sterile collection from cultivation, may possibly represent a distinct species. It differs in having a thicker blade with less conspicuous tertiary veins, as well as having the primary lateral veins and the midrib drying pale and wrinkled. *Croat 53699*, also of cultivated origin, is unusual in having a collective vein arising from one of the primary lateral veins almost at the middle of the blade. Generally, the collective vein of *A. solitarium* is lacking or strictly apical.

BRAZIL. BAHIA: Santa Cruz de Cabrália (cultivated at Sitio Burle-Marx), 16°18'S, 39°01'W, *Harley et al. 20316* (K). ESPÍRITO SANTO: Domingos Martins, property of Roberto Kautsky, *Croat 57165* (cultivated) (MO), 61808 (MO, R), 61817 (MO, R); Domingos Martins–Santa Maria Jetibá, 31 km N of Domingos Martins, ca. 0°20'S, 40°40'W, *Croat 61893* (MO, R); 0.8 km N of town, 525 m, 20°22'S, 40°40'W, *Croat 61798* (MO, R); Colatina–Vitória, 45 km E of Colatina, *Belem 3833* (NY), *Croat 61894* (MO, R); Domingos Martins–Santa Maria, 845 m, *Plummer 194* (cultivated at Kew, #275-79-02469) (K). GOIÁS: 12 km S of Caiapônia, *Hutchinson 8505* (MO). MINAS GERAIS: Paraibuna, *Herlinger 7660* (RB, UB); 17 km E of Cambuquira, Hwy. 267 to Caxambu, 950 m, *Davies & Ramamoorthy 10670* (MO); north of Caxambu, *Clayton 9/22/1951* (NY). RIO DE JANEIRO: *Glaziou 9039* (B), 17333 (K); cultivated by Burle-Marx, San Carlos, *Croat 53699* (MO, NY, RB), 53708, 53711, 53712, 53713 (MO, RB); Cultivated by Luis Gurken, San Carlos, *Croat 53794*, 53792 (MO); Friburgo, 1,000 m *Croat 53793* (MO); Serra da Carioca, Rio de Janeiro, Macico da Tijuca, 300 m, *Croat 53670* (MO); Serra dos Órgãos, *Luetzelburg 6061* (RB); E of Rio Maio, Teresopolis, *Vidal 953*



(RB); Neves Armond, Carmo, *RB 43978* (RB); Mpo. Petropolis, Rodovia Washington Luis, 420 m, *Martinelli 3080* (RB); Reserva do IBDF, Mata do Fação, estrada Fazenda Inglesa para Pati do Alferes, 1,100–1,200 m, *Cavalcante & Marinelli 541* (K); Mpo. de Santo Antônio de Pádua, BR 393, *Pirani et al. 268* (K, MO, SPF); Mpo. Teresopolis, Parque Nacional da Serra dos Orgãos, 1,300 m, *Vidal 5557* (R).

**Anthurium solomonii** Croat, sp. nov. TYPE: Bolivia. La Paz: Prov. Yungas: 32.1 km N of Yolosa on road to Caranavi, *Solomon & Escobar 12494* (holotype, MO 32475329-30; isotype, LPB). Figures 296, 345, 346.

Planta epilithica aut terrestris; internodia brevina, ad 5 cm diam.; cataphyllum ad 19 cm longum, persistens semi-intactum demum fibris linearis findens; petiolus 7–21 cm longus, 8–10 mm diam., D-formatus, 1-costatus adaxile, 1–2-costatus abaxile; lamina oblanceolata ad oblongo-oblanceolata, (39)65–94 cm longa, (9)18–35 cm lata; pedunculus (4)10–26 cm longus, ca. 5 mm diam.; spatha lanceolata, ultra 6 cm longa, ca. 1.7 cm lata; spadix longeus contractus vel cylindricus, 7.5–19.5 cm longus, 9 mm diam.; baccae laete roseo-purpureae.

Description based on dried material only. Epilithic or terrestrial; stem to 5 cm diam.; roots numerous, gray, finely pubescent, short, 2–4 mm diam.; cataphylls probably subcoriaceous, to more than 19 cm long, brown-gray, persisting semi-intact, eventually as fine linear fibers. *Leaves* with petioles 7–21 cm long, 8–10 mm diam., D-shaped, with an obtuse medial rib and acute, somewhat raised margins adaxially, 1–3-ribbed abaxially; geniculum drying darker than petiole, 0.7–1 cm long; sheath 6 cm long; blades subcoriaceous, oblanceolate to oblong-oblanceolate, acute at apex (the acumen apiculate), narrowly rounded at base, (39)65–94 cm long, (9)18–35 cm wide, broadest above the middle, the margins undulate; both surfaces glossy, matte to glossy, brown to greenish; midrib sharply and prominently acute above, below higher than broad and obscurely 3-ribbed at base, becoming convexly raised toward the apex; primary lateral veins (10)15–19 per side, departing midrib at 40–90° angle, straight, sometimes broadly arcuate, convexly raised on both surfaces; interprimary veins few; tertiary veins raised above and below; reticulate veins raised below; collective vein arising from lower third of the blade or absent in young plants, less prominent than primary lateral veins on both surfaces, 2–7 mm from margin. *Inflorescences* shorter than leaves; peduncle (4)10–26 cm long, ca. 5 mm diam., 0.5–2× as long as petiole; spathe subcoriaceous, presumably lanceolate, more than 6 cm long, ca. 1.7 cm wide, decurrent at base; stipe ca. 2.7 cm long in front, 4 mm long in back; spadix color unknown, long-

tapered to ± cylindroid in small plants, weakly curved, held at 160° angle from peduncle, 7.5–19.5 cm long, 9 mm diam. near base, 4 mm diam. near apex; flowers rhombic, 2.1–2.4 mm long, 1.4–1.7 mm wide, the sides straight to smoothly sigmoid; 9–11 flowers visible in principal spiral, 5–6 in alternate spiral; tepals roughened; lateral tepals 0.9–1.5 mm wide, the inner margins straight to broadly convex, the outer margins 2-sided; stigma linear, 0.5–0.7 mm long; anthers pale yellow, 0.5–0.6 mm long, 0.7–0.8 mm wide, obscuring the pistil; thecae oblong, slightly divaricate. *Infructescence* appearing to be ± erect; spathe deciduous; spadix ca. 21 cm long, 2 cm diam., reddish brown (excluding tepals); berries bright pinkish purple, oblong-ovoid, probably acute and with radial ridges at apex, becoming sunken in on drying, 7.5–8 mm long, 4.6–5 mm diam.; pericarp thickened, with numerous raphide cells; seeds 2 per berry, reddish brown, ± ovoid, flattened, 3.4–3.6 mm long, 2.2–2.4 mm diam., 0.8–1 mm thick, with a gelatinous, translucent, amber appendage at each end.

*Anthurium solomonii* is known only from La Paz Dept. in Bolivia at 1,000 to 1,400 m in wet subtropical or wet lower montane subtropical forest life zones (according to the Holdridge Life Zone Map for Bolivia).

This species is distinctive, with its spadix longer than the peduncle, a character otherwise known in the section only in *Anthurium plowmanii*. The petiole of *A. plowmanii* is narrowly sulcate adaxially with blunt margins, whereas in *A. solomonii* there is a prominent medial rib adaxially and prominently raised, acute margins. In Bolivia, *A. plowmanii* is known only from Pando and Santa Cruz departments and occurs at less than 900 m, mostly less than 300 m.

The species is named in honor of James Solomon, who has collected extensively in Bolivia and was involved in making all known collections of *A. solomonii*.

BOLIVIA. LA PAZ: Prov. Murillo. Valle de Zongo, 45 km below the dam at Lago Zongo, Cahua hydroelectric plant, 1,200–1,400 m, 16°3'S, 68°1'W, *Solomon 13000* (MO); Prov. Nor Yungas, Yolosa-Caranavi, 32.1 km N of Yolosa, 1,000 m, 16°2'S, 67°39'W, *Solomon & Escobar 12494* (LPB, MO); 10 km by road N and above Caranavi, 1,400 m, 15°47'S, 67°32'W, *Nee & Solomon 30311* (NY).

**Anthurium soukupii** Croat, sp. nov. TYPE: Peru. Cuzco: Urubamba, Machupicchu, 0.5 km N of the union of Río Sayamarca and Río Aobamba, 2,370 m, *Peyton & Peyton 1486*