

A REVISION OF TRICHANTHA (GESNERIACEAE)

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The small genus *Trichantha* Hooker, composed of small, epiphytic herbs or subshrubs with red or red and yellow striped, conspicuous flowers, grows in the mountains of Panama, Colombia, and Ecuador. A member of the African violet family, it was described in 1844 based on two new species, each known from single collections made by Thomas Lobb from unspecified localities in Colombia. The genus has remained one of the least known of the Gesneriaceae. It was originally distinguished from *Columnea* and *Alloplectus* primarily by the presence of small, clavate appendages borne on the corolla tube at the base of the sinuses of the lobes of the limb. These appendages, conspicuous in the living plants but not always obvious in dried material, are of unknown function.

Hanstein¹ reduced *Trichantha* to a synonym of *Columnea* sect. *Stenanthus*. Bentham and Hooker retained it as a distinct genus, placed between *Columnea* and *Alloplectus*, noting that in some characters it was closer to *Alloplectus* than *Columnea*. Fritsch in 1897 (in Engler and Prantl, *Die Natürlichen Pflanzenfamilien*) expressed the same opinion.

No other species have ever been described in *Trichantha*. However, in 1959 I described a cultivated plant as *Columnea moorei*,² placing it in the section *Systemostema* rather than *Stenanthus* because of the leaves being in equal rather than unequal pairs. I did not observe any appendages on the corolla tube, although there is a tuft of hairs in the sinuses where the appendages would be, but Dr. H. E. Moore, who has material growing in the Bailey Hortorium did observe minute appendages in living plants. He subsequently sent me some fresh flowers and I was able to see them too, although it must be admitted that they are extremely minute, almost aborted, and might be overlooked by anyone not definitely searching for them. The presence of appendages indicated a probable relationship between *C. moorei* and *Trichantha*.

¹ *Linnaea* 34:387. 1865.

² *Baileya* 7:55. 1959.

Subsequently, Dr. Moore described another cultivated plant as *Columnea illepada* Moore.³ This species, quite unlike any previously known species of *Trichantha*, was also placed in sect. *Trichantha* on the basis of the presence of appendages on the corolla tube.

A search through the vast quantity of unnamed Gesneriaceae in the U.S. National Herbarium brought to light eight additional species of the most varied nature in regard to the habit, leaves, calyx, and corolla but all with appendages on the corolla. My opinion as to whether all these plants are properly associated by this one character has regularly varied. It is conceivable that these appendages have originated independently in several unrelated groups. On the other hand after now having written careful descriptions of all of them and having thought deeply about them, I believe that they do belong together. Although they are varied I cannot find that any one of them seems to be more closely related to any species of another group of *Columnea* or *Alloplectus* than to each other.

I have veered from this way to that also in regard to the question of including *Trichantha* in *Columnea*. The difficulty is that the sections of *Columnea* are based partly on the character of whether the leaves of a pair are equal or strongly unequal. But in my species of *Trichantha* both kinds of leaves occur, and its species would therefore have to be distributed between two sections, of *Columnea* (sect. *Stenanthus* and *Systelostoma*) or else *Trichantha* retained as a section based on the single character of corolla appendages with leaf characters varying as they do not in other sections of *Columnea*, an uncomfortable situation. It may be that the leaf characters used in *Columnea* are not fundamental and should be abandoned as sectional characters, but I am not as yet prepared to go that far.

Another objection to retaining *Trichantha* as a section of *Columnea* is that it really does have relationships with *Alloplectus*, especially in the character of the quadrate or broader than long anthers. The anthers of *Columnea* are, at least typically, oblong. Some species of *Alloplectus* sens. lat. to be sure do also have oblong anthers, but investigation may show that these species are referable to *Drymonia* or perhaps represent a distinct genus *Erythranthus*.

Inasmuch as the question of generic limits in this group of Gesneriaceae is still controversial, it seems to me wisest to retain *Trichantha* as a genus, with the full realization that further research will very likely bring some realignments. The number of essentially unknown described species and the number of undescribed species, particularly from Colombia, is so large that any attempt at generic or sectional readjustment would be premature.

³Balleja 8:56. 1960.

Genus *Trichantha*

Trichantha Hook. Icon. Plant. 3: t.666. 1844.

Columnea sect. *Trichantha* Kuntze in Post & Kuntze, Lex. Pl. Phan. 136. 1904.

Small more or less scandent epiphytic subshrubs or succulent, shrublike herbs, with slender, usually hirsute stems, these often radican, unbranched above the base; leaves of a pair equal or unusually very unequal, the smaller often stipule-like and often soon deciduous, the larger rather short-petiolate, the blades lanceolate to ovate or even suborbicular, acuminate or cuspidate or rarely obtuse, usually cuneate at the unequal base, rarely rounded, herbaceous in texture, remotely and minutely denticulate above the middle, or (in *T. moorei*) just slightly crenulate, dull green above, rarely shining (in *T. moorei*), green or usually tinged with red beneath, hirsute above with many-celled, yellowish or reddish elongate hairs, hirsute beneath (or rarely strigose), often also sparsely strigillose with minute, straight, appressed, 2-celled, "bayonet"-shaped hairs, the basal cell minute, yellowish or dark, the terminal cell milky-white, very sharp at apex, pinnately veined, the lateral veins mostly 4-7 pairs, obscure above and slightly raised beneath; bracts at base of peduncles minute, hirsute, usually subulate, deciduous; flowers solitary, axillary, or sometimes geminate or ternate, the peduncles elongate, often thickened toward apex, hirsute, often pendulous; calyx 5-lobed to base or nearly, the lobes very slightly unequal, the posterior a little shorter and narrower, usually red but sometimes green or green at base and red at apex, entire (in *T. aliena*), merely deeply toothed (in *T. illepidata*), or deeply, pectinate-dissected with narrow central portion and 2-4 pairs of elongate, linear-filiform lateral lobes, hirsute externally with multicellular, usually red-walled hairs and often also with minute appressed 2-celled hairs, often with sessile glands also, inside glabrous, strigose, hirsute, or densely sericcous, often with numerous sessile glands toward base; corolla slightly oblique in calyx, essentially tubular but sometimes a little ventricose in the middle and slightly contracted in the throat, saccate at the posterior base, hirsute with multicellular hairs externally or sometimes densely long-tomentose (in *T. rosea* and *T. aliena*), glabrous within except for the glandular-pilosulous throat, the limb usually narrow, the lobes erect or rarely spreading, slightly or obviously bilabiate, the two upper lobes partly or almost wholly united into an erect galea, the two lateral lobes mostly deltoid, the lower lobe shorter and narrower, hirsute or tomentose externally, glabrous within except for the glandular bases, the tube clear red or usually striped, the base color yellow with dark maroon stripes beginning at the base of the corolla or near the middle and running to the sinus of the lobes or occasionally stopping short

of the limb, the lobes all yellow, yellow with dark margins, red with yellowish margins, or the galea all dark red-maroon, the sinuses of the limb provided with elongate, linear or clavate appendages, these spreading horizontally, yellow or red, hirsute (especially at apex) or long-red-tomentose (in *T. rosea*), or the appendages obsolete and hardly to be observed in dried material (*T. moorei*); stamens 4, connate at base into a sheath up to 1 cm. long, adnate to the very base of the corolla tube, the filaments glabrous, slender, elongate; anthers glabrous, quadrate, or broader than long, at first lightly connate into a square, briefly exerted, later withdrawn into the corolla tube by contortion of the filaments, becoming free; staminodium none; ovary sericeous; style elongate, glabrous or usually pilosulous; stigma bilobed, exerted after the anthers are withdrawn; disk reduced to a large or small, bilobed or entire, glabrous, fleshy, posterior gland, or occasionally (in *T. aliena*) 2 small free, posterior glands; fruit a white spherical berry (in *T. teuscheri*, the only fruit known).

Lectotype: *Trichantha minor* Hook. Of the two original species, *T. minor* is the first one listed and the one combined by Hooker with the generic description.

Key to the Species

Corolla tube densely hirsute-tomentose, the surface completely concealed; corolla lobes fleshy and thick, erect, small, subequal; corolla completely glabrous within throat; style glabrous.

Leaves of a pair subequal, green beneath; calyx lobes entire, ca. 2.8 cm. long, green at base and red at tips; appendages of the corolla 4–6.5 mm. long, red-hirsute 1. **T. aliena**

Leaves of a pair strongly unequal, the smaller stipule-like and soon deciduous, strongly tinged with rose beneath, or rarely green; calyx lobes not more than 1.5 cm. long, deeply pectinately dissected, with 2–4 pairs of linear lateral lobes, red throughout; appendages of the corolla extremely conspicuous, 15–20 mm. long, densely rose-tomentose 2. **T. rosea**

Corolla tube merely hirsute, much of the surface visible; corolla lobes, at least the lower three, thinner, spreading, the upper two lobes at least partially united into an erect galea; corolla glandular-pilosulous within throat, at least at the base of the galea; style pilosulous.

Calyx lobes spatulate, entire; leaf-blades lanceolate, 5–6 times as long as wide. Leaves of a pair subequal 3. **T. formosa**

Calyx lobes toothed or dissected; leaf-blades oblanceolate, lanceolate, elliptic, or suborbicular, relatively broader.

Leaves of a pair equal, very small, 14–16 mm. long; internodes very short only about 1 cm. long; appendages minute, hardly observable in dried material; calyx lobes green, with conspicuous red hairs . . . 4. **T. moorei**

Leaves of a pair strongly unequal, the small less than half as long as the larger, often stipule-like and deciduous, the larger at least 30 mm. long or usually much more; internodes at least 2.5 cm. long (except in *T. illepida*); appendages well developed; calyx lobes red (green in *T. illepida*).

Calyx lobes green, pectinate-toothed but not dissected, the teeth 4-6 pairs on each side of the lobes, not more than 2 mm. long; internodes short (1-2.5 cm. long) and stout (the upper ca. 3 mm. in diameter); leaf-blades red-blotched beneath or red all over 5. **T. illepidia**

Calyx lobes red, deeply dissected, the linear-filiform lateral lobes 2-4 pairs, 4-15 mm. long; internodes longer and more slender; leaf-blades green beneath or sometimes tinged with reddish but not red-blotched or deep red all over.

Leaf-blades elliptic or broadly elliptic, short-acuminate or cuspidate, large, the larger 14-15 cm. long and 5 cm. wide or more, hirsute; internodes elongate, mostly 7-12 cm. long (or shorter in *T. tropicalis*); appendages yellow with maroon apex (or clear yellow in *T. tropicalis*).

Corolla clear red, not striped except for 2 inconspicuous dark stripes near the apex on the upper side, these running to the margins of the galea 6. **T. tropicalis**

Corolla yellow or "citron green," with broad vertical stripes of dark maroon.

Leaf-blades foveolate above, not bullate, beneath without minute, white, 2-celled, appressed, "bayonet"-shaped hairs mixed with the long, pluricellular hairs; galea and lateral and lower lobes apparently all dark maroon. 7. **T. major**

Leaf-blades bullate above, the long hairs borne on tubercles, not foveolate, beneath with some minute "bayonet"-shaped hairs among the long ones; galea yellow with maroon margins, apparently the lateral and lower lobes all yellow 8. **T. bullata**

Leaf-blades lanceolate or elliptic-lanceolate, long-acuminate, the larger not more than 5.5-9 cm. long and 3.7 cm. wide; internodes less than 7 cm. long; appendages clear yellow (red in *T. clara*).

Leaf-blades glabrous above except near margin, not at all hirsute beneath but sparsely strigillose with minute, white, appressed, 2-celled, "bayonet"-shaped hairs. Galea dark maroon, the lateral and lower lobes yellow 9. **T. minor**

Leaf-blades hirsute above, hirsute beneath or strigillose.

Corolla clear light red throughout, not at all striped, the galea darker red, the lateral and lower lobes red with very narrow yellowish margins; appendages red 10. **T. clara**

Corolla obviously striped with dark maroon, with narrow yellow stripes, the galea maroon and the other lobes yellow or all lobes yellow; appendages yellow.

Corolla tube with broad maroon stripes running to the sinuses of the lobes or up into the galea; galea dark maroon, the other lobes yellow 11. **T. teuscheri**

Corolla tube with broad maroon stripes and narrow yellow stripes, the maroon stripes fading out before reaching the sinuses of the corolla; galea and other lobes all yellow. 12. **T. elegans**

1. *Trichantha aliena* Morton, sp. nov.

Caules rubri internodiis elongatis crassis rubro-hirsutis; folia decussata, per paria subaequalia, breviter petiolata, laminis oblongis vel oblanceolatis, utrinque viridibus, apice breviter acuminatis, basi late cuneatis obliquis, utrinque hirsutis subtus non strigillosis; flore

solitarii longe pedunculati; calycis lobi magni integri lanceolati basi angustati apice longe et acriter acuminati, deorsum virides sursum rubri externe hirsuti intus albo-sericei et glandulosi; corolla magna rubra tubulosa basi saccata, tubo externe valde ubique rubro-hirsuto, intus glabro et eglanduloso, limbo vix bilabiato, lobis subliberis subaequalibus crassis erectis posterioribus marginibus inflexis, intus glabris, appendicibus linearibus magnis hirsutis; stylus glaber, sursum ampliatus.

Stems not radicant at the nodes, the internodes elongate, 5–7 cm. long, red, thick, 4 mm. in diameter, hirsute, the hairs spreading, reddish, many-celled, the cross walls dark red, ca. 1.5 mm. long; leaves of a pair subequal, decussate, short-petiolate, the petiole 6–7 mm. long, densely yellow-hirsute, 1–1.5 mm. in diameter, the blades oblong to oblanceolate, 5×2 cm. to 8.5×3.4 cm., short-acuminate, broadly cuneate and slightly unequal at base, remotely denticulate, green on both sides, hirsute above with yellowish, several-celled hairs, whitish hirsute beneath, the hairs many-celled, ca. 3–4 mm. long, small “bayonet”-shaped hairs absent, the lateral veins 6 or 7 pairs, obscure above, slightly raised beneath; flowers solitary in the leaf-axils, long-pedunculate; bracts minute, subulate, ca. 2 mm. long, hirsute and also sparsely yellow-glandular; peduncles 1.7–2 cm. long, ca. 1.2 mm. in diameter, green, reddish-hirsute; calyx lobes free, very slightly unequal, lanceolate, ca. 2.8 cm. long, ca. 2.5 mm. wide at base, 6.5–7 mm. wide above base, gradually long-sharp-acuminate, entire, herbaceous, green toward base, the upper third conspicuously red, sparsely red-septate-hirsute without, lacking appressed “bayonet”-shaped hairs, thin-white-sericeous within and also glandular; corolla red, ca. 3.8 cm. long, 4 mm. wide at base, 7 mm. wide in the saccate portion above base, then contracted to 4.5 mm., the tube without visible stripes due to the dense pubescence, cylindric, ca. 7 mm. wide, densely hirsute with long, red, multicellular hairs covering the whole surface, glabrous and eglandular within even in throat, the limb small, only slightly irregular, the lobes fleshy, all free, erect, dark red with narrow lighter margins, the two posterior the largest, 4.5–5 mm. long, thick, with incurved margins, densely septate-hirsute externally, glabrous within, the lateral and anterior smaller, ca. 3.5 mm. long, obtusish with incurved apex, the appendages conspicuous, 4–6.5 mm. long, very slender, dark red, conspicuously red-hirsute; stamen sheath ca. 3 mm. long, the filaments very slender, glabrous; anthers included; ovary white-sericeous at apex; style glabrous, strongly thickened upwardly; disk composed of 2 small (1 mm. long), free, posterior glands.

Type in the herbarium of the Royal Botanic Garden, Kew, collected at Altaquer, Department of Nariño, Colombia, May 1876, by E. André (no. 3311).

2. *Trichantha rosea* Morton, sp. nov.

Caules radicanter, internodiis brevibus gracilibus hirsutis; folia paria inaequalia, minora stipuliformia; folia majora breviter petiolata, lamina elliptica, longe acuminata, basi obliqua, inconspicue denticulata, supra hirsuta, subtus rosea, hirsuta et strigosa; flores solitarii, bini vel terni; calyx roseus, lobis dissectis, lobis lateralibus 2-4-jugis, linearibus, externe roseo-hirsutus, intus albo-sericeus; corolla pulchella, tubo cylindrico externe dense et perspicue ubique roseo-hirsuto, superficie non visibili, intus in fauce glabro et eglanduloso, limbo regulari, lobis crassis atrorubris parvis erectis, appendicibus valde valde elongatis, 1.5-2 cm. longis, densissime roseo-hirsutis; stylus glaber.

Stems radicant at the nodes, the internodes short, 2-4 cm. long, somewhat zigzag, 3-4 mm. in diameter, shining, somewhat ridged in drying, hirsute, the hairs reddish, spreading, many-celled, borne on slight tubercles; leaves of a pair strongly unequal; larger leaves short-petiolate, the petiole 5-10 mm. long, hirsute, 1 mm. in diameter, the blades narrowly elliptic, 7×2.4 cm. to 9×3.4 cm., herbaceous, gradually long-acuminate at apex, rounded and strongly unequal at base, inconspicuously denticulate, green and sparsely hirsute above, the hairs 5-7 celled, the basal cells paler yellowish and enlarged, the others pale reddish with dark red cross-walls, beneath rose-red all over, hirsute with spreading multicellular reddish hairs and also sparsely strigose with closely appressed, white 2-celled, "bayonet"-shaped hairs about 0.4 mm. long, the lateral veins about 6 pairs, obscure above, elevated beneath; smaller leaves of a pair stipule-like, not over 2.2 cm. long and 1 cm. wide; flowers 1-3 in an axil; bracts minute, linear, scarcely 2 mm. long, hirsute, eglandular; peduncles 7-9 mm. long, hirsute; calyx rose-red, the lobes free, subequal, 13-15 mm. long, the central portion lanceolate-attenuate, ca. 2 mm. wide at base, ca. 3 mm. wide above base, the apical half filiform and scarcely 0.5 mm. wide, dissected, with 2-4 pairs of linear lateral lobes, these up to 5 mm. long and 0.25 mm. wide, conspicuously red hirsute without and on lobes, densely white-sericeous within and also with sessile yellow glands; corolla brilliant rose-red, without visible stripes due to the dense pubescence, ca. 4 cm. long, 4 mm. wide at base, 6.5 mm. wide at the saccate portion above base, above base 3 mm. wide gradually increasing to 6 mm. wide at middle, scarcely if at all contracted in the throat, conspicuously and densely hirsute externally, the hairs red, long, multicellular, completely covering the corolla surface, glabrous within, the limb scarcely bilabiate, narrow, not wider than the tube, the lobes fleshy, dark red within with very narrow yellowish thinner margins, erect, subequal, all free, subtriangular, ca. 4 mm. long and 3 mm. wide at base, acutish, red-hirsute at base externally, white-hirsute at apex,

glabrous and eglandular within, even in throat, the appendages red, extremely conspicuous, 1.5–2 cm. long, very densely hirsute with long red, multicellular hairs; filaments united for 6 mm. at base, extremely slender, ca. 0.25 mm. thick, glabrous; anthers not exerted, connate quadrately at first, broader than long, ca. 1.5 mm. long, 1.7–2 mm. wide, glabrous; ovary small, glabrous at base, sparsely white-pilose at apex; style stoutish, ca. 3.5 cm. long, glabrous; disk reduced to a small, bilobed, thick, glabrous, posterior gland.

Type in the U.S. National Herbarium (no. 2370204), collected at Río Catripe, Intendencia del Chocó, Colombia, at 100 m. elevation, in wet forest, Jan. 17, 1947, by Oscar Haught (no. 5437).

Paratype: Colombia: Between La Oreja and Quibdó, Chocó, Apr. 1, 2, 1931, *W. A. Archer* 1677 (US).

Additional specimen examined: Quibdó, January, 1872, *R. B. White* (K). A note by White reads: "Of the enclosed fragment I can only say that it is an herbaceous plant 9 to 12 inches high, alternate lanceolate velvety leaves. Seed? Habitat, Quibdó woods of Atrato Valley. Most lovely colour. It would seem as if all these hairy plants were placed in wet regions to intake the most of the moisture. Nothing can be more lovely than these bedewed flowers. Illness prevented me from attending to the drying of my specimens collected in some parts of my Quibdó journey and thus many were spoilt and lost." Certainly referable to *T. rosea*, but leaves are absent and so the forma is uncertain.

2a. *Trichantha rosea* forma *viridis* Morton, f. nov.

A f. *typica* foliis subtus viridibus costa basi excepta differt, foliis forsan majoribus usque ad 17×6.5 cm. longis.

Type in the U.S. National Herbarium (no. 1771980), collected on the ridge along Yeracüi Valley, upper Río San Juan, Corcovado region, Intendencia del Chocó, Colombia, at 200–275 m. elevation, Apr. 24, 25, 1939, by E. P. Killip (no. 35239).

Paratype: Colombia: Córdoba, Dept. El Valle, 50–100 m., Feb. 17, 1939, *Killip & Garcia* 33418 (US).

2b. *Trichantha rosea* forma *latifolia* Morton, f. nov.

A f. *typica* foliis brevioribus et latioribus, maximis 6×3 cm., subtus viridibus vel vix roseo-tinctis differt.

Type in the herbarium of the Royal Botanic Garden, Kew, collected in the Department of Antioquia, Colombia, 7700–8800 ft. elevation, June 16, 1880, by W. Kalbreyer (no. 1793).

Paratype: Colombia: Cultivated by Veitch, from seeds sent by Kalbreyer, probably collected at the same time as the type cited above, with which this specimen is mounted (K).

The two leaf variations described above are given only the rank of "forma," since it is uncertain just how taxonomically significant they are. The brilliant rose-colored leaves of f. *rosea* certainly contrast strongly with the green leaves of f. *viridis*, but these two grow in the same geographic and climatic area, the Pacific lowlands (50–275 m.). The small-leaved f. *latifolia* may be more distinct since it comes from the highlands (ca. 2400 m.) of a different department. This species is one of the most distinctive by its regular (not bilabiate), densely rose-tomentose corollas, with extraordinarily long and conspicuous appendages.

3. *Trichantha formosa* Morton, sp. nov.

Caules graciles, internodiis brevibus roseo-hirsutis; folia non valde inaequalia, petiolata, lamina lineari-oblonga, acuminata, basi cuneata, remote denticulata, utrinque hirsuta, subtus viridi, pilis minutis appressis nullis; flores 1–3 axillares, longe pedunculati, pedunculo roseo-hirsuto; calycis lobi subaequali spathulati integri virides vel rubri, basi angustati, apice acuti, utrinque hirsuti; corolla tubulosa, tubo luteo, perspicue atrorubro-lineato, externe glanduloso-hirsuto et minute pilosulo, limbo parvo bilabiato, lobis rubro-marginatis, intus glabris.

Stems radicant at the nodes, the internodes normally ca. 3 cm. long, 2.5–3 mm. in diameter, densely rosy-hirsute, the hairs many-celled, with reddish lateral walls and dark septae, 2–2.5 mm. long, widely spreading; leaves of a pair slightly but not conspicuously unequal, the smaller more than half as long as the larger, the upper short-petiolate (ca. 7 mm.), the lower longer petiolate (18 mm.), the petiole densely red-hirsute, slender, 0.5–0.8 mm. thick, the leaf-blades linear-oblong, 6×1.2 cm. to 10×1.6 cm., broadest near middle, acuminate, equally cuneate at base, herbaceous, remotely and inconspicuously denticulate, green above, hirsute, the hairs several-celled, pale, ca. 1.5 mm. long, green beneath, the midrib red, densely pale-hirsute or the hairs along the midrib reddish, minute, white, "bayonet"-shaped hairs lacking, the lateral veins ca. 6 pairs, obscure above, slightly elevated beneath; flowers 1 to 3 in an axil, long-pedunculate; peduncles up to 4.2 cm. long, densely rosy-hirsute; calyx lobes green or red, subequal, 9–11 mm. long, spathulate, narrowed at base and ca. 1.5 mm. wide, broadened upwardly, 2.5–3.3 mm. wide, acute at apex, entire, densely hirsute externally, the hairs pale or reddish, several-celled, 1.5–2 mm. long, and also sparingly strigillose with appressed, minute, white, 2-celled, "bayonet"-shaped hairs, densely hirsute within and also with a few, sessile, yellow glands toward the base; corolla ca. 4.3 cm. long, ca. 2 mm. wide at base, ca. 4 mm. wide in saccate portion above base, the tube cylindrical, becoming 6 mm. wide

above the middle, very slightly contracted in throat, dull yellow with conspicuous maroon stripes running from near the base to the sinuses, sparsely hirsute externally, the hairs spreading, ca. 2 mm. long, many-celled, the terminal cell glandular, and also with numerous spreading unicellular eglandular hairs 0.25 mm. long or less, glabrous within, except for the obviously glandular-pilosulous throat at the base of the galea, the limb obviously bilabiate, the upper 2 lobes united into a slightly bilobed galea 4 mm. long, this almost entirely maroon, the 2 lateral lobes broadly deltoid, ca. 3 mm. long and wide, broadly margined with maroon, the lower lobe narrower and relatively longer, all lobes sparsely hirsute without, glabrous within, the appendages inconspicuous, 1-2 mm. long, yellow throughout or dark maroon at base and yellow at apex, long-hirsute at apex; filaments united in a sheath ca. 2 mm. long at base, very slender, glabrous; anthers included, lightly connate but soon free, ca. 2.5 mm. long and broad, the cells somewhat separated by the thickened connective; ovary strongly white-villous; style slender, densely hirsutulous upwardly; stigma bilobed; disk reduced to a minute, dark, scarcely emarginate posterior gland.

Type in the U.S. National Herbarium (no. 1518165), collected at Umbría, Comisaria del Putumayo, Colombia, at 325 m. elevation, January-February 1931, by G. Klug (no. 2114).

Paratype: Colombia: Umbría, October-November 1930, *Klug* 1822 (US).

This species, the only one known from the Amazonian watershed, may be related to *T. illepipa*, which has a corolla quite similar in shape and color, but lacks the numerous, small unicellular hairs and gland-tipped longer ones of *T. formosa*. The spatulate, entire calyx lobes are unique in this section.

4. *Trichantha moorei* (Morton) Morton, comb. nov.

Columnea moorei Morton, *Baileya* 7:55, fig. 15. 1959.

Stems succulent, scandent, at least 30 cm. long and probably much longer, unbranched (except probably at base), probably not radicanat at the nodes, the internodes very short, about 1 cm. long, fleshy, glabrescent, minutely strigillose with 2-celled "bayonet"-shaped hairs and also with a few multicellular hairs toward the apex, bearing 2 pairs of conspicuous glands (these often coalescent in pairs) at each node between the leaves and just below the stipular line, the internodes short and regular, 10-12 mm. long; leaves thick-fleshy, dark green and shining above, light green beneath, obviously decussate, those of a pair equal, short-petiolate (the petiole 3 mm. long, 1 mm. thick, glabrate), the blades broadly elliptic,³ very uniform in size, 14-16 mm. long, 10-12 mm. wide, obtuse at base and apex, almost

entire but with one or two low broad inconspicuous crenations on each side, almost glabrous, bearing a few minute appressed hairs beneath especially on the midrib, the margins obviously ciliolate with several-celled hairs; flowers solitary in an axil, bibracteate, the bracts minute, linear, 1–2 mm. long, deciduous, pilosulous; peduncles arching, curved at apex, 3–4.5 cm. long, slender, 1 mm. thick at base, becoming enlarged and 2–3 mm. thick at apex, red, conspicuously long-setose-pilose, the hairs red, 2–3 mm. long, many-celled, spreading at right angles; calyx green, 5-parted, the lobes erect, equal, 12–15 mm. long, 8–11 mm. wide including the teeth, conspicuously and deeply pectinately parted, the central portion of the lobe lanceolate, about 3 mm. wide, the teeth 4–6 pairs, linear, spreading horizontally, the basal ones about 3–4 mm. long, the uppermost about 2 mm. long, all 0.8–1 mm. wide just above the base, conspicuously red-gland-tipped, the body and teeth externally conspicuously long-red-hirsute, the hairs 2–4 mm. long, many-celled, sharp-pointed, and also with a few, appressed, white, 2-celled, “bayonet”-shaped hairs, internally nearly glabrous but with a few stiff red hairs and also slightly glandular; corolla suberect in calyx, red (except the lobes), 5–5.5 cm. long, gibbous at the posterior base, the gibbosity 3 mm. wide, the tube 3–4 mm. wide just above the gibbosity, gradually enlarged upwardly but only slightly ventricose, 10–11 mm. wide near the apex, sparsely but conspicuously hirsute externally, the hairs 4–6 mm. long, red, many-celled, sharp-pointed, horizontally spreading, and also with minute spreading hairs, glabrous within except toward the throat, where conspicuously glandular-pilosulous, the throat only slightly contracted, the limb slightly bilabiate, the two upper lobes red, with narrow yellow margins, erect, partly connate, rounded, 4 mm. long, connate for about 2 mm., sparsely ciliolate, glabrous within at apex but strongly capitate-glandular lower down, the three lateral lobes clear yellow, not red-margined, slightly plicate at the angles between the lobes, erect, subequal, subdeltoid, about 5–6 mm. wide at the base and 5 mm. long, sparsely hirsute externally, more or less ciliate, glabrous within and not capitate-glandular, the appendages yellow, extremely minute and hardly observable in dried specimens; stamens attached to the corolla at the very base, the filaments pale yellowish-white, connate at the base for 4–5 mm., free upwardly, somewhat curved but not contorted, glabrous, the anthers slightly exserted, all four permanently connate, subquadrate, about 1 mm. long and wide, the cells oblong, fully dehiscent longitudinally, glabrous; staminodium none; ovary oblong in outline, 4–4.5 mm. long, densely white-sericeous; style white, straight, 5–5.5 cm. long, exserted, pilosulous; stigma bilobed; disk reduced to a solitary posterior gland, this white, thick, fleshy, not bilobed, ca. 1–1.5 mm. wide, 1.5–2 mm. long.

Type in the U.S. National Herbarium (no. 2216847), from material cultivated in the greenhouses of Bailey Hortorium, Ithaca, N.Y., collected by H. E. Moore, Jr., in 1958, originally received from an unspecified locality in Panama through Mr. Paul Arnold of the House of Plants, Binghamton, N.Y. This plant had been sent to Mr. Arnold by Mrs. Catherine B. Shepherd of Arlington, Va., who in turn received it from Mr. Martin S. Sawyer, of Gatun, Canal Zone. Another specimen has been received directly from Mr. Arnold.

5. *Trichantha illepida* (Moore) Morton, comb. nov.

Columnnea illepida Moore, *Baileya* 8:56, fig. 19. 1960.

Stems stout, probably not radicanat at the nodes, the internodes short, 1–2.5 cm. long, very stout, the upper ones ca. 3 mm. in diameter, somewhat zigzag, strongly ridged when dry, hirsute, the hairs spreading, yellow, multicellular, eglandular, 2–3 mm. long, borne on tubercles; leaves subdistichous, not bullate, those of a pair strongly unequal; larger leaves short-petiolate, the petiole 0.3–2 cm. long, hirsute, the blades variable in shape from ovate-lanceolate to oblanceolate, up to 13 cm. by 5 cm., acuminate or subcuspidate at apex, broadly cuneate and strongly unequal at base, minutely and remotely denticulate, green above, hirsute, the hairs colorless, several-celled, 1.5–2 mm. long, beneath green with conspicuous red blotches or red all over, septate-hirsutulous all over, with also a few, appressed, 2-celled, “bayonet”-shaped hairs, the lateral veins 5 or 6 (to 9?) pairs, slightly elevated on both sides; smaller leaves of a pair early deciduous, like the larger but sessile, not over 2.5 cm. long; flowers several in an axil, slender pedicellate; bracts minute, ca. 4×0.75 mm., hirsute and with sessile yellow glands; peduncles red, 1 mm. thick or less, hirsute; calyx green, herbaceous, 1.5–2 cm. long, the lobes free, slightly unequal, the posterior shorter and narrower, the central portion 2.5–3.5 mm. wide, strongly pectinate-toothed, the teeth 4 or 5 (6) pairs on each side, linear, the larger 2 mm. long and 0.5 mm. wide, hirsutulous on both sides with colorless hairs, some long and many-celled, some short and 2-celled, both surfaces also with sessile yellow globular glands; corolla ca. 5 cm. long, slightly oblique in the calyx, slightly spurred at the posterior base, the tube dull, clear yellow, conspicuously striped with maroon from just below the middle to the base of the sinuses between the lobes, the stripes 0.5–1 mm. wide, the tube 7.5–10 mm. in diameter near the middle, slightly contracted in the throat, externally sparsely hirsute and provided also with some small spreading unicellular hairs, glabrous within except for the glandular-pilosulous throat, the limb bilabiate, ca. 15 mm. wide, the galea (posterior lip) 5.5–6 mm. high, bilobed, conspicuously spotted with maroon, the two lateral lobes deltoid, ca. 5 mm. long,

5–6 mm. wide at base, margined with maroon, the anterior lobe ca. 4.5 mm. long and 4 mm. wide at base, margined with maroon, all the lobes hirsute externally and with short, white, thick-based unicellular hairs also, the appendages yellow, inconspicuous when dry and not over 1 mm. long; stamens included; anthers quadrately connate; ovary green, pilose; style puberulous; stigma bilobed; disk reduced to a whitish, bilobed posterior gland.

Type: A cultivated specimen in the Bailey Hortorium, of unknown provenience.

Additional specimen examined: Cultivated: Fantastic Gardens, South Miami, Fla., Feb. 25, 1954, *R. G. Wilson*.

The specimen from Fantastic Gardens was determined as a new species by me in 1954. It was guessed to be either from Tingo Maria, Peru, or from the Panama Canal Zone. Later inquiries for more and better material brought the news that the plant had been lost. The plant that later turned up in the Bailey Hortorium without accession data was supposed to be from either Tingo Maria, Peru, or Ecuador. It is almost certainly from seeds or a plant sent from Fantastic Gardens to the Bailey Hortorium sometime around 1954, rather than a new introduction, as shown by the mention of Tingo Maria, Peru, in both cases. The determination of the real locality will have to await a collection of the species in the wild. The locality Tingo Maria is not likely, because no other species of *Trichantha* is known from Peru and because the climatic conditions in Tingo Maria are different from those where the other species grow. The Panama Canal Zone does not seem likely either, because this area has been well collected and it does not seem likely that this conspicuous plant would have been overlooked by others. The locality Ecuador is much more likely, but there seems no evidence in its favor.

This species does not show any close relationship with the others. It differs especially in its broader, toothed rather than dissected calyx lobes from *T. elegans*, *T. teuscheri*, and others.

6. *Trichantha tropicalis* Morton, sp. nov.

Caules elongati, radicantes, internodiis elongatis gracilibus hirsutis; folia per paria inaequalia, minora stipuliformia, majora magna, elliptica acriter acuminata basi rotundata remote denticulata, supra hirsuta, subtus viridia hirsuta et appresso-strigillosa; pedunculi penduli apice valde incrassati; calyx ruber dissectus, lobis lateralibus 2-vel 3-paribus linearibus rubro-hirsutis; corolla basi gibbosa, tubo rubro non lineato, apice superiore excepto, hirsuto, limbo bilabiato, galea atrorubra pallide marginata, lobis lateralibus flavis rubro-marginatis, lobo inferiore flavo basi rubro-maculato.

Stems ca. 40 cm. long, radicant at the nodes, the internodes 4–5 cm. long, reddish, rugose, slender, only 2.5 mm. in diameter near base, coarsely hirsute, the hairs persistent, borne on small tubercles, 7–9-celled, red, 4–5 mm. long; leaves of a pair strongly unequal; larger leaves short-petiolate, the petiole 8–10 mm. long, stout, 1–1.5 mm. in diameter, hirsute, the blades elliptic, 10×4.8 cm. to $14 \times 5.2\frac{1}{2}$ cm., the apex sharply and rather abruptly long-acuminate, rounded and slightly unequal at base, herbaceous in texture, inconspicuously and remotely denticulate, uniformly hirsute above, the hairs ca. 5 mm. long, many-celled, hyaline, beneath paler green, similarly hirsute with elongate, spreading, dark, many-celled hairs with dark cross-partitions, and also with small (0.5 mm. long), appressed, 2-celled hairs, the basal cell small, yellow, the terminal cell elongate, white, sharp; smaller leaves of a pair early deciduous, short-petiolate, the blades lanceolate, not over ca. 1 cm. long and 3 mm. wide, hirsute like the larger leaves; flowers solitary or geminate; bracts deciduous; peduncles pendulous, 2.5–3.5 cm. long, ca. 1 mm. thick at base, strongly enlarged and 3 mm. thick at apex, densely red-hirsute; calyx red, the lobes free, slightly unequal, the 4 dorsal and lateral about 16 mm. long in flower, the posterior one shorter, ca. 14 mm. long, all deeply dissected, the central portion ca. 3 mm. wide at base, 0.3 mm. wide upwardly, with 2 or 3 pairs of linear lateral lobes, these 8–10 mm. long, 0.3 mm. wide, the central portion red-hirsute without and also with some inconspicuous, “bayonet”-shaped, white, appressed hairs, slightly strigillose within, hirsute at apex, bearing sessile yellow glands toward base, the lobes long-ciliate with red, several-celled spreading hairs; corolla ca. 5.5 cm. long, oblique in calyx, ca. 6 mm. wide at the conspicuously saccate base, the tube narrowed above base to 3 mm., the tube clear red nearly throughout, not striped except for 2 inconspicuous dark stripes near the apex, these running to the margins of the galea, becoming 7–8 mm. wide at the middle, sparingly reddish-septate-pilose externally, lacking small whitish unicellular hairs, glabrous within except in the glandular-pilosulous throat, slightly contracted in throat and 5.5–6 mm. wide, the limb bilabiate, the galea ca. 5 mm. long and 7 mm. wide, rounded and bilobed at apex, dark red with a paler border, the lateral lobes broadly deltoid, ca. 4 mm. long and 4 mm. wide at base, yellow in middle, with dark red margins, the posterior lobe 3.5 mm. long and 2.5 mm. wide, yellow with a dark red basal spot, the appendages conspicuous, yellow, 3–3.5 mm. long, 0.5 mm. thick, clavate, glabrous except the conspicuously red-pilose apex; filaments united at base into a sheath 1 cm. long, glabrous, extremely slender; anthers not exerted, borne near corolla throat, united into a square about 4 mm. long and wide; ovary

conic, sparsely white-sericeous; style slender, slightly pilosulous; disk reduced to a coarse, slightly bilobed, posterior gland.

Type in the U.S. National Herbarium (no. 2370203), collected in the San Juan de Micay Valley, Department of El Cauca, Colombia, at 100 m. elevation, Dec. 28, 1946, by Oscar Haught (no. 5406).

By its clear red, unlined corollas, and red, deeply dissected calyces related only to *T. clara*, which differs in the size, shape, and pubescence of the leaves.

7. *Trichantha major* Hook. Icon. Plant. 7: t. 667. 1844.

Columnnea major Hanst. Linnaea 36:388. 1865-6.

Stems 15-20 cm. back from the apex 3-4 mm. thick, the internodes elongate (9-12 cm.) or shorter (4.5 cm.), obviously hirsute with long (5 mm. long or more), many-celled pale-brown hairs, these numerous but still distant and not obscuring the surface; stems radicant, the adventitious roots thread-like, borne near the nodes; leaves of a pair strongly unequal; longer leaves petiolate, the petioles 6-13 mm. long, hirsute, the blades broadly elliptic, 6.5 × 4.5 cm. to 14 × 7 cm., abruptly cuspidate at apex (ca. 1 cm.) rounded and strongly unequal at base, inconspicuously and remotely toothed upwardly, thin-herbaceous the upper surface not bullate, at maturity obviously foveolate, slightly paler beneath, strongly hirsute on both sides, the hairs 4.5 mm. long, many-celled, distant and not obscuring the leaf surface, "bayonet"-shaped hairs absent, the principal veins 4 to 6 pairs, strongly curved, obscure above, apparent and slightly raised beneath, the veinlets obscure; smaller leaves short-petiolate, the blades subrotund, about as wide as long, slightly cuspidate, mostly 1.5-2.5 cm. long, hirsute; flowers axillary, geminate (always?); bracts subulate, 5 mm. long, 0.5 mm. wide, hirsute, eglandular; peduncles 3-3.5 cm. long, apically thickened, long-hirsute, the hairs many-celled, with dark reddish cross-walls; calyx red, 2.5-3 cm. long, the lobes free, subequal, deeply lacinate, with the lobes ca. 3 cm. wide but the central lanceolate portion only 2-2.5 mm. wide, the lateral lobes 2 pairs, subequal, mostly ca. 1.5 cm. long, ca. 1 mm. wide at base, long-attenuate, the central lobe ca. 2 cm. long, strongly long-hirsute externally, and also strigillose with "bayonet"-shaped hairs, within hirsute toward apex and with sessile glands toward base; corolla erect in calyx, ca. 4.5 cm. long, yellow with conspicuous dark red or maroon vertical stripes running to the sinuses of the limb, tubular, scarcely ventricose, the tube becoming ca. 5.5 mm. wide about the middle, slightly long-hirsute externally, with also a few short, colorless, 1-celled, spreading hairs, hardly contracted in the throat, glandular-pilosulous within throat, the limb just slightly irregular, the lobes hirsute externally and with sessile glands, all dark colored, subrotund, 3-4 mm. long, entire,

not ciliate, the appendages yellow with dark apices, clavate, spreading, ca. 4 mm. long, long-hirsute at apex only; anthers barely exerted from the corolla tube, persistently connate, broadly oblong, ca. 1.5 mm. long, 0.9 mm. wide; ovary white-sericeous; style pilosulous; disk reduced to a bidentate, fleshy, glabrous posterior gland ca. 2 mm. high.

Type in the herbarium of the Royal Botanic Gardens, Kew, collected in Colombia by William Lobb (no. 117). No definite locality is given, but since the species has been twice collected in the region of Barbacoas and since Lobb is known to have collected there, it is likely that the type came from there.

Additional specimens examined: Colombia: Province of Barbacoas, Dept. of Nariño, 800 m. alt., *J. Triana* (US). Corregimiento Santander (Buena Vista) to Barbacoas, vertiente del Río Telembí, Nariño, 840–200 m., Aug. 3–5, 1948, *H. Garcia-Barriga* 13176 (HNC).

8. *Trichantha bullata* Morton, sp. nov.

Caules elongati, internodiis elongatis; folia per paria inaequalia, minora lanceolata, majora elliptica, remote denticulata, supra bullata, valde hirsuta, subtus rubescentia, hirsuta et strigosa, basi inaequalia, apice acuminata; calycis lobi rubri, externe perspicue hirsuti, intus apice hirsuti, deorsum parce strigillosi, lobis valde pinnatisectis, lobulis lateralibus 4 vel 5 utrinque latere; corolla in tubo flava et atrobrunneo-rubro-lineata, lineis faucem non attingentibus, lobis paullo inaequalibus, flavis, rubro-marginatis, appendicibus validis, hirsutis.

Stems elongate, up to 2 m. long (sec. Lehmann), the internodes elongate, normally 7–12 cm. long, very slender, 2–3 mm. in diameter, dark red, shining, radican at the nodes, usually somewhat zigzag, hollow, densely yellow-hirsute, the hairs 3–4 mm. long, spreading, coarse, borne on prominent tubercles, multiseptate (7–9-celled), the septae dark; leaves of a pair strongly unequal, the smaller ones often deciduous, thus making the leaves appear alternate; internodes elongate, those below the apex 7–9 cm. long; larger leaf-blades elliptic, 15×6 cm. to 6×2.3 cm. (uppermost), gradually and sharply acuminate, remotely denticulate, the base rounded, slightly unequal, above green, not foveolate, slightly bullate, strongly hirsute, the hairs borne on prominences, elongate, 3–4 mm. long, spreading, yellow with dark cross-walls, 7–9-celled, beneath green or usually reddish or deep dark red, not bullate or foveolate, strongly hirsute as upper surface, with some short "bayonet-hairs" intermixed, short-petiolate, the petiole red, 7–14 mm. long, thick, hirsute; smaller leaf of a pair narrowly lanceolate, not more than 3.5×1 cm., long-attenuate, the base cuncate, hirsute; flowers solitary or 2 to 4 in an axil; bracts subulate, minute, scarcely 5 mm. long, hirsute, deciduous;

peduncles 2.5–3.5 cm. long, exceptionally thick, long-red-hirsute; calyx 5-lobed to base, the lobes approximately equal, ca. 2.5 cm. long, deeply pinnately parted, the central portion linear-lanceolate, ca. 3 mm. wide at base, tapering gradually to the acute apex, the lateral lobes 4 or 5 on each side, linear, the lower about 13 mm. long, about 1 mm. wide at the base, gradually tapering to the acuminate apex, conspicuously hirsute without, the hairs very long (4–5 mm.). they (as well as the calyx lobes themselves) Bordeaux red when fresh (sec. Killip), violet-carmine when dry, simple, pluricellular, the cell wall obvious even to the naked eye, very numerous on the margins, and also strigose with “bayonet”-shaped hairs, within hirsute at apex, sparsely strigillose below; corolla ca. 6 cm. long, narrowly tubular, conspicuously saccate at the dorsal base, about 7 mm. wide at the base, 4.5 mm. wide above the saccate portion, gradually expanding clavately toward the apex and slightly curved toward the ventral side, reaching 10 mm. in diameter, slightly contracted at the throat (9 mm. wide), the total length of the corolla tube approximately 5.5 cm., the limb scarcely expanded, glandular-pilosulous within throat, not much wider than the tube, the three ventral lobes ovate or almost semicircular, obtuse, 4 mm. wide at base, 2.5 mm. long, the two dorsal united at base, bearing clavate or oblong appendages in the sinuses, these yellow with maroon apices, reflexed, about 2 mm. long and 1 mm. wide (the lowest ventral one narrower and longer, about 3 mm. long, when dry), the dorsal one borne on the back of the two united dorsal lobes, the tube externally densely pubescent with two kinds of hairs, some very short, few-celled, colorless, sharp-pointed, numerous all over the surface although not prominent on the saccate base, the others similar to the red calyx-hairs, confined to the upper half of the tube, extremely long and conspicuous toward the apex and especially on the appendages, the tube “citron-green” (sec. Killip) with broad stripes of burnt-lake, these often about 3 mm. wide or even more, stopping about 5 mm. below the throat except the broad one running to the middle of the galea, the lobes light cadmium-yellow margined with red, the appendages conspicuous clavate, ca. 2 mm. long, yellow with maroon apex, long-hirsute and also with numerous, sessile, yellow glands; filaments longer than the corolla but twisted and curved so as not to be exerted, very slender, ca. 0.2 mm. wide, didynamous, broadening toward the base, finally uniting with each other into a tube (broken on the dorsal side) about 6 mm. above the base, this tube becoming adnate to the corolla tube at about 1 mm. above the base; anthers borne about 5 mm. below corolla throat, glabrous, quadrately united, the four forming a rectangle 5 mm. high and 4 mm. wide, the cells parallel, not confluent, opening from base to apex, the connective square,

fleshy, glabrous; ovary oblong, 5 mm. long, conspicuously villous at apex, the hairs colorless, pluricellular; style ca. 5 cm. long, slightly exserted, flattened and about 1.5 mm. wide at the almost glabrous base, becoming narrower above and densely glandular-puberulous; stigma bilobed, bearing a few long, white, villous hairs; disk reduced to one large, transversely oblong, glabrous, unlobed, dorsal gland 1 mm. long and 1.5 mm. wide.

Type in the U.S. National Herbarium (no. 1142440), collected at "La Gallera," Micay Valley, Department of El Cauca, Colombia, at 1800–1900 m. elevation, July 1, 1922, by E. P. Killip (no. 7928). Isotype in the New York Botanical Garden.

Paratypes: Colombia: Near Río San Joaquin, "La Gallera," Micay Valley, Department of El Cauca, 1100–1300 m., *Killip* 7803 (NY). West Andes of Popayán, Department of El Cauca, 1200–1600 m., *Lehmann* 6000 (K, US). La Costa, near El Tambo, Department of El Cauca, 900–1200 m., *von Sneidern* 467, 622, 704 (all S).

This species, evidently confined to moist virgin forest of the Western Cordillera of the Department of El Cauca at middle elevations, is obviously related to *T. major*, which is still surely different in its minutely foveolate upper leaf-surfaces, its cuspidate rather than acuminate leaf-blades, its rotund rather than lanceolate smaller leaves of a pair, and its longer and more slender lobes of the calyx lobes.

9. *Trichantha minor* Hook. Icon. Plant. 7: t. 666. 1844. (But not Bot. Mag. Curtis: t. 5428. Cfr. *T. elegans*.)

Columnea minor Hanst. Linnaea 34:387. 1865–6.

Stems slender, not radicans (?), the internodes 3–3.5 cm. long, 2.5–3 mm. thick 20 cm. back from the tips, densely hirsute, the hairs more numerous, closer, shorter (ca. 3 mm.) than in *T. major*, mostly clearly antrorse rather than spreading; leaves of a pair unequal (?); larger leaves petiolate, the petiole 5–7 mm. long, antrorsely hirsute, the blades lanceolate, 3.5×1.2 to 5.5×2 cm., gradually acuminate at apex, broadly cuneate and oblique at base, inconspicuously and remotely denticulate, thick-herbaceous, glabrous above at maturity, except near the margins, these with numerous, conspicuous, 4–6-celled brownish ascending hairs 3 mm. long or more, dark-green above, paler beneath, reddish, inconspicuously strigillose with straight sharp 2-celled white hairs on the surface, antrorsely hirsute on the midrib and especially on the margins with straight, many-celled hairs, the veins about 6 pairs, inconspicuous above, slightly elevated beneath, the veinlets obscure on both sides; flowers axillary, solitary or geminate; bracts inconspicuous, linear, ca. 5 mm. long, hirsute and also with sessile glands; peduncles 1.5–2 cm. long, thickened toward apex,

strongly hirsute, the hairs spreading, slender, 3–4.5 mm. long, with red cross-walls; calyx red, 2–2.5 cm. long, deeply laciniate, the central undivided portion only 2–2.5 mm. wide, the lateral lobes 2 pairs, linear, 1.3–1.6 cm. long, 0.6–0.8 mm. wide, long-attenuate, hirsute on both sides and margins and also bearing some appressed minute sharp white 2-celled hairs; corolla erect in calyx, ca. 4 cm. long, tubular, hirsute externally with long many-celled hairs and also short-pilosulous with spreading, unicellular hairs, the tube somewhat ventricose, becoming 8 mm. wide at the middle, slightly contracted in the throat, probably glandular-pilosulous within at base of galea, the limb slightly bilabiate, the galea 5 mm. long, dark red, the other 3 lobes 3 mm. long, probably yellow, the appendages clavate, ca. 3.5 mm. long, ca. 0.8 mm. thick, long-hirsute at apex.

Type in the herbarium of the Royal Botanic Garden, Kew, collected by William Lobb (no. 175). According to Killip (Smiths Misc. Coll. 87(1): 5. 1932) no. 175 was collected at "Barbacosa," Colombia, which is undoubtedly a slip for Barbacoas, in the Department of Nariño, Colombia.

Additional collections examined: Colombia: Alto de Armada, Department of Nariño, 1458 m. alt., May 22, 1876, *E. André* K 36 (K, NY, US). The ability to place this locality in Nariño is due to the kindness of Dr. L. B. Smith in making available his unpublished paper on André's itinerary.

The character of having the leaves entirely glabrous on the upper surface except at the margins easily separates *T. minor* from other species with which it might be confused, e.g. *T. elegans* or *T. teuscheri*.

A confusion is introduced by the plant illustrated in Curtis' Botanical Magazine plate 5428 as *T. minor*. A specimen authenticating the plate is preserved in the herbarium at Kew, mounted on the same sheet as the type of *T. minor*; it was received from the Veitch Nursery in April 1864, just at the time the plant was illustrated. Although this plant is similar to *T. minor*, it cannot really be the same, differing in the size and pubescence of the calyx, the coloration of the corolla limb and the pubescence of the upper leaf surface. This horticultural specimen, of unknown provenience, belongs to the species here described as *T. elegans*.

10. *Trichantha clara* Morton, sp. nov.

Caules radicanes, penduli, tenues, parce hirsuti; folia per paria inaequalia, minora stipuliformia, majora lanceolata vel oblongo-lanceolata, supra medium denticulata, supra parce hirsuta, subtus strigosa; calyces rubri, lobis alte laciniatis, lobulis lateralibus 2-paribus, externe rubro-hirsuti et etiam strigosi, intus apice parce hirsuti basi glabri parce glandulosi; corolla rubra, non lineata, limbo

paullo bilabiato, lobis 3 inferioribus rubris marginibus angustis flavescentibus, 2 superioribus basi maculam atrem externe gerentibus, appendicibus perspicuis rubris.

Stems radicant at the nodes, the terminal branchlets pendulous, slender, sometimes flexuous, the internodes short (1.5 cm.) or usually longer (up to 6 cm.), ca. 2 mm. thick 20 cm. below tip, reddish, sparsely hirsute, the hairs stiff, antrorse, ca. 4.5 mm. long, many-celled; leaves of a pair strongly unequal; larger leaves short-petiolate (ca. 5 mm.), the blades lanceolate to oblong-lanceolate, 4.5×1.5 cm. to 5.7×2.7 cm., gradually and sharply acuminate at apex, oblique at base and broadly cuneate to subrounded, remotely but sharply toothed above the middle, the minute teeth recurved in drying and visible only from the lower side of the leaves, light green above, the surface not foveolate, sparsely long-hirsute all over, paler and sometimes reddish beneath, sparsely strigose, the hairs stiff, appressed, 2-celled, the basal cell short, dark-colored, the terminal cell white, bayonet-shaped, the veins 4 or 5 pairs, arcuate, obscure above, very slightly prominulous beneath, the veinlets obscure on both sides; smaller leaves stipule-like, 5–14 mm. long, ovate to linear-lanceolate, with pubescence above and beneath like the larger leaves; flowers geminate, borne in the axils of the larger leaves; bracts 2, minute, hirsute, eglandular, deciduous, linear, ca. 5×0.5 mm.; peduncles slender, 2–2.5 cm. long, thickened toward apex, long-red-hirsute, the hairs slender, widely spreading, many-celled, 3.5–4.5 mm. long; calyx red, ca. 15 mm. long, the whole calyx with the lobes ca. 2 cm. wide, the 5 lobes free, deeply laciniate, the central portion ca. 1.5 mm. wide, the lateral lobes (2 pairs) subulate, 9–10 mm. long, 0.4–0.5 mm. wide, conspicuously long-red-hirsute, and also sparingly strigose like the lower surface of the leaves with white, bayonet-shaped hairs, glabrous within (except at the hirsute apex), and with a few, sessile glands at base; corolla all clear red, without stripes, erect in calyx, 4.5–5.5 cm. long, slightly saccate at posterior base, 3 mm. wide just above base, ventricose upwardly, becoming 8 mm. wide above middle, slightly contracted in throat, where 6 mm. wide, externally long-hirsute with many-celled, red, flaccid hairs with dark cross walls, also a few small, spreading sharp-pointed, 2-celled hairs, the limb slightly bilabiate, the two upper lobes partly connate, 2–2.5 mm. long, red with a dark spot at base externally, glandular-pilosulous at base, the three lower ca. 1.5 mm. long, clear red, with narrow, yellowish margins, the appendages conspicuous, clavate, red, 3–4 mm. long, 1 mm. thick at apex, apically long-hirsute; filaments connate at base for 5 mm. or more, glabrous; anthers perhaps exerted briefly, but normally borne about medially in the tube by curling of the filaments, connate at first but finally free, broader than long, ca. 1.5 mm. long

and 2 mm. wide, the cells contiguous but separated by a fleshy connective; style minutely glandular-pilosulous; stigma 2-parted, pilosulous; ovary white-sericeous; disk reduced to a small posterior gland, this dark colored, inconspicuously 2-lobed, ca. 1 mm. long.

Type in the U.S. National Herbarium (no. 1853860), collected at Piedra de Moler, Hoya del Río Digua, Cordillera Occidental, Department of El Valle, Colombia, at 900–1180 m. elevation, Aug. 19–28, 1943, by J. Cuatrecasas (no. 14922).

Paratypes: Colombia: La Elsa, Hoya del Río Digua, Dept. of El Valle, 1000–1200 m. alt., Nov. 9, 1943, "enredadera herbácea; ramas purpureas; hoja herbácea crasa, verde en el haz, gris clara en el envés; pedúnculo cárdeno; caliz con pelos cárdenos; corola cárdena," *Cuatrecasas* 15312 (US). Between La Oreja and Quibdó, Intendencia del Chocó, Apr. 1, 2, 1931, *Archer* 1687, 1688 (US). La Costa, near El Tambo, Dept. of El Cauca, 1000–1400 m. alt., 1935–1936, *von Sneidern* 469, 497, 498 (S).

A species of wider distribution than most, probably being not uncommon in its special, undisturbed habitats.

11. *Trichantha teuscheri* Morton, sp. nov.

Planta epiphytica, caulibus elongatis vix ramosis, leviter rubro-hirsutis; folia per paria valde inaequalia, minora saepe stipuliformia, majora lamina lanceolato-elliptica, longe acuminata, basi vix obliqua, remote denticulata, supra hirsuta, subtus viridi vel rubro-tincta, septato-hirsuta, pilis unicellularibus nullis; flores penduli, longe pedunculati, pedunculo valde rubro-hirsuto; calycis lobi dissecti, parte centrali lineari-lanceolati externe rubro-hirsuti et parce strigillosi, intus basi glandulosi, lobis lateralibus 2-vel 3-paribus linearibus utrinque hirsutis; corolla tubulosa late rubro-lineata, vix flavo-lineata, lineis flavis angustissimis, externe hirsuta, intus in fauce glanduloso-pilosula, limbo bilabiato, lobis superioribus in galea rubra connatis, lobis lateralibus et inferioribus flavis, appendicibus flavis conspicuis apice hirsutis; stylus apice glanduloso-pilosulus.

Stems elongate, 70 cm. long or more, the internodes elongate, 3–6.5 cm. long, very slender, ca. 1.5 mm. in diameter, red, sparsely but conspicuously red-hirsute, the hairs spreading, 1–2 mm. long, several-celled, the lateral walls pale rosy, the cross-partitions dark red; leaves of a pair strongly unequal; larger leaves petiolate, the petiole 6–13 mm. long, slender, ca. 0.8 mm. in diameter, hirsute like the stems, the blades lance-elliptic, mostly ca. 5×2 cm., the largest 8.5×3.7 cm. varying to 9×2.7 cm., the apex gradually or rather abruptly long-sharp-acuminate, the base broadly cuneate or slightly rounded, only slightly unequal at base, herbaceous in texture, the margins remotely and minutely denticulate, above dark green, not bullate or foveolate,

conspicuously hirsute, the hairs spreading, yellowish, 2-5 celled, 1-2 mm. long, beneath green with red veins or more or less suffused with red all over, deciduously hirsute, the hairs yellowish (or reddish along the veins), several-celled, 1-2 mm. long, and also with a few small, white appressed "bayonet"-shaped hairs, the lateral veins 5 or 6 pairs, obscure above, slightly raised beneath; smaller leaves of a pair often minute and stipule-like, 5 mm. long or less or sometimes larger and up to 3 cm. long by 11 mm. wide, on petioles ca. 5 mm. long; flowers solitary or commonly 2 or 3 in an axil; bracts minute, subulate, 1.5-2 mm. long, hirsute, and also yellow-glandular; peduncles 2-3 cm. long, curved, red-hirsute, conspicuously thickened toward apex; calyx 5-lobed nearly to base, the lobes 16-18 mm. long, red, deeply dissected, the central portion linear-lanceolate, 2.5-3 mm. broad at base, attenuate and only 0.5 mm. wide at apex, conspicuously red-hirsute externally, the hairs spreading, many-celled, 2-3 mm. long, with red lateral walls and dark red cross-partitions, and also with a few appressed "bayonet"-shaped hairs, not hairy within but at base densely glandular, the glands globular, yellow, sessile, the lateral lobes 2 or 3 pairs, linear, 4.5-6.5 mm. long, ca. 0.5 mm. wide, conspicuously red-hirsute on both sides; corolla pendulous, 4-4.5 cm. long, 4 mm. wide at base, 7 mm. wide in saccate portion above base, then narrowed to 3.5 mm., the tube slightly ventricose, becoming 7-8 mm. wide about the middle, gradually narrowed to 5 mm. in throat, dark red with very slender and inconspicuous yellow lines running to the base of the middle of the lobes, the yellow areas broader toward base of corolla tube, hirsute externally, the hairs spreading, rather sparse, ca. 2 mm. long, several-celled, colorless, with colorless cross-partitions, eglandular, small unicellular hairs present but few, glabrous within except for the densely glandular-pilosulous throat, the limb bilabiate, the 2 upper lobes united into an emarginate galea, this ca. 4 mm. long and 6-7 mm. wide, dark red, glandular-pilosulous at base, the lateral lobes all yellow, deltoid, ca. 3 mm. long and 4 mm. wide at base, the lower lobe yellow elliptic, ca. 4 mm. long and 2.5 mm. wide, the appendages yellow, conspicuous, ca. 4 mm. long, clavate, ca. 1 mm. wide at apex, conspicuously hirsute at apex, the hairs colorless or slightly tinged with red; filaments united into a sheath ca. 7 mm. high at base, slender, glabrous; anthers lightly connate at first, soon free, 1.5 mm. long, 2 mm. wide, the connective prominent, dark; ovary conic, puberulous at base, lightly white-sericeous at apex; style ca. 3.8 cm. long, sparsely pilosulous at base with unicellular hairs, at apex glandular-pilosulous, the hairs several-celled; stigma conspicuously bilobed; disk reduced to a bilobed thick fleshy glabrous posterior gland ca. 2 mm. high and wide; fruit a globular, white berry 1 cm. in diameter (sec. Teuscher).

Type in the U.S. National Herbarium (no. 2370201), collected in the Montreal Botanical Garden, by M. Raymond and M. Gougeon (no. 2135-56), from material originally collected by Henry Teuscher in Ecuador in a wet moss-covered forest at an altitude of ca. 3400 ft. near the road from Cuenca to Quayaquil, on the Pacific slope of the Andes, about 20 to 25 road-miles beyond Ducur coming from Cuenca in the spring of 1956.

Paratypes: All grown from cuttings of the type plant in the Montreal Botanical Garden: Bailey Hortorium, June 1959, *Moore* 7745 (US); University of California Botanical Garden, July 27, 1959, *Hutchison* (U.C. 58. 263).

This plant has been identified erroneously with *Trichantha minor*, under which name it is well illustrated in the *Delectus Seminum et Sporarum*, no. 22, 1957-58, of the Montreal Botanical Garden (frontispiece). An article concerning its discovery and characteristics was published by Henry Teuscher in the *National Horticultural Magazine* (vol. 37, no. 3, pp. 172-174. July 1958), along with a full-page illustration of the plant in fruit. Another mention is by Paul Arnold in an article entitled "American Gesneriad Reintroduced from Canada" (*Gesneriad Journal*, vol. 7, no. 2, p. 3. 1959).

Mr. Raymond submitted a specimen to me in 1957 of Mr. Teuscher's plant, asking about the determination as *Trichantha minor*, but I was unable to verify it, in the absence of the type or any authentically named material or even of any detailed and adequate description. I now have the holotype of *T. minor* before me, kindly sent on loan from Kew, and it shows a related but obviously different species. The two can be distinguished as follows:

Leaf-blades glabrous above except at the margins, beneath sparingly strigillose on the surface with appressed minute (0.5-0.6 mm. long), 2-celled, white sharp hairs, the midrib appressed-pilose with long, many-celled hairs; calyx large, more than 2 cm. long, the lobes externally with some minute appressed white hairs as well as long, many-celled hairs	T. minor
Leaf-blades hirsute all over above, hirsute beneath, minute, white, 2-celled hairs few or absent; calyx 1.6-1.8 cm. long, or sometimes smaller, hirsute, lacking minute, white hairs	T. teuscheri

12. *Trichantha elegans* Rose, sp. nov.

Caules graciles, rubescentes, internodiis brevibus dense rubro-hirsutis, pilis tenuibus; folia per paria inaequalia, minora saepe stipuliformia, majora elliptica vel ovato-elliptica, acuminata, basi rotundata et obliqua, supra hirsuta, subtus parce strigillosa; calyces mediocres, roseo-rubri, lobis valde laciniatis, laciniis lateralibus 2-paribus, linearibus, externe rubro-hirsutis; corolla in tubo late purpureo-rubro-lineata, anguste flavo-lineata, faucem versus flava, limbo

flavo, non lineato, viridi-marginato, appendicibus magnis flavis clavatis hirsutis.

Small succulent epiphytic herb, the stems radicant at the nodes, little branched, the internodes short (1.5 cm.) or moderately elongate (to 4 cm.), somewhat zigzag, 2 mm. thick or less 10 cm. back of the apex, densely hirsute, the hairs 3-4 mm. long, red, flaccid, many-celled, and also strigose with appressed, bayonet-shaped 2-celled hairs, the basal cell small, red, the apical white, sharp-pointed; leaves of a pair strongly unequal; larger leaves short-petiolate, the petiole 3-4 mm. long, densely hirsute, the blades elliptic, or ovate-elliptic, 2.8×1.2 to 8×3.5 cm., gradually and sharply acuminate, rounded and oblique at base, inconspicuously and remotely toothed, light green above, the surface not foveolate, long-hirsute, the hairs colorless, flaccid, many-celled, beneath paler and reddish, sparingly and inconspicuously strigose, the hairs bayonet-shaped, appressed, 2-celled, the basal cell short, the apical cell elongate, white, sharp-pointed, with longer, several-celled, straight, yellowish hairs along the midrib and sometimes principal veins, the veins 4 or 5 pairs, not prominent above, obvious and very slightly elevated beneath, strongly red-colored along the veins, the veinlets obscure on both surfaces; smaller leaves mostly stipule-like and not over 8 or 9 mm. long, but occasionally better developed and almost half as long as the larger, similarly pubescent; flowers geminate in the axils of the larger leaves; bracts minute, linear, densely hirsute; peduncles 1.8-2.3 cm. long, densely hirsute, and also antroresely strigose with bayonet-shaped hairs like those of the lower leaf surfaces; calyx all dark rose-red, ca. 2 cm. long and wide (incl. the lobes), 5-parted to the base, the sepals deeply lacinate, the central portion 2.5-3 mm. wide, the lateral lobes 2 pairs, linear, 8-11 mm. long, 0.5-0.6 mm. wide, externally strongly red-hirsute, and also with white, appressed, "bayonet"-shaped hairs, within sparsely hirsute and also slightly strigose with "bayonet"-shaped hairs; corolla 3-4 cm. long, erect in calyx, rose-red at base, with broad dark purplish-red stripes upwardly running toward the sinuses of the lobes but stopping short of them, and narrow yellow lines, the yellow becoming general toward the throat, the tube 4 mm. wide at base, ventricose upwardly and becoming 7-8 mm. wide at middle, obviously long-hirsute, and bearing also minute, spreading, acute, 1-celled hairs and globular sessile yellow glands, slightly contracted to throat, this with numerous glandular hairs within at the base of the galea, this ca. 6 mm. wide, the limb yellow with greenish margins, slightly irregular, 2 lobes ca. 3 mm. long, 3 lobes ca. 2 mm. long, the appendages yellow, obvious, clavate, 2.5-3 mm. long, long-hirsute apically; filaments long-connate at base, glabrous; anthers barely exerted from the corolla tube at anthesis, connate, eventually

free, quadrate, ca. 1.6 mm. long and 2 mm. wide, the cells not contiguous, separated by the enlarged connective; style glandular-pilous; stigma obviously bilobed; ovary white-sericeous; disk reduced to a dark-colored, glabrous, truncate, entire posterior gland ca. 1.5 mm. high.

Type in the U.S. National Herbarium (no. 2370202), collected on the road between Quito and Santo Domingo, Province of Pichincha, Ecuador, at 1300 m. elevation, Apr. 3, 1942, by Oscar Haught (no. 3215). Portion of holotype deposited in the herbarium of the New York Botanical Garden.

Paratypes: Ecuador: Vicinity of Ayabamba,⁴ Province of El Oro, Oct. 15, 16, 1918, *Rose & Rose* 23462 (NY, US). Rich, moist luxuriant forest along trail from Sambotambo, following headwaters of Río Moro Moro, south to Buenaventura at and along highway to Portovelo, Province of El Oro, 1035–1800 m. alt., Aug. 29, 1943, "pendent epiphyte from branches; leaves subcoriaceous, dark dull green above with sulcate midrib, pale gray green below with lavender nerves; pedicels and calyx deep rose; corolla purple, the lobes with yellow appendages and green tips, their margins covered with rose-colored hairs," *Steyermark* 54202 (US). Dense rich jungle between Río Blanco and Río Norcay, on road between Chacanceo and Molleturo, Province of Azuay, at 1520 m. alt., June 4, 1943, "pendent epiphyte; calyx rose-orchid; corolla tube purple for $\frac{3}{4}$ part, then greenish-yellow for upper $\frac{1}{3}$, the appendages on corolla lobes yellow; leaves silvery green, below suffused with lavender," *Steyermark* 52820 (F, US). Another, slightly doubtful, collection is *Lehmann* K 273 (K), without locality; the sheet bears a penciled word which may be "Guechi," "Gueshi," or "Guesbi," but it is uncertain if this is a common name or a locality.

As indicated above in the discussion under *T. minor*, this is the species illustrated in Curtis' Botanical Magazine t. 5428 (1864) as *T. minor*.

⁴ Ayapamba on the label, but this is an error, as shown by Rose's field notebook.

Index

[Synonyms in italics. New species, new names, and combinations in **boldface**.
Page numbers of principal entries in italics.]

- | | |
|----------------------------------|---|
| Alloplectus, 1, 2 | Trichantha —Continued |
| Columnnea, 1, 2 | clara , 5, 15, 19 |
| <i>illepida</i> , 2, 12 | elegans , 5, 13, 18, 19, 23 |
| <i>major</i> , 15 | formosa , 4, 9, 10 |
| <i>minor</i> , 18 | illepida , 3, 4, 5, 10, 12 |
| <i>moorei</i> , 1, 10 | major , 5, 15, 18 |
| sect. <i>Stenanthus</i> , 1, 2 | minor , 4, 5, 18, 19, 23, 25 |
| sect. <i>Systelostema</i> , 1, 2 | moorei , 3, 4, 10 |
| sect. <i>Trichantha</i> , 2, 3 | rosea , 3, 4, 7, 8 |
| Drymonia, 2 | f. <i>latifolia</i> , 8, 9 |
| Erythranthus, 2 | f. <i>rosea</i> , 9 |
| Trichantha, 1, 2, 3, 13 | f. <i>viridis</i> , 8, 9 |
| <i>aliena</i> , 3, 4, 5 | teuscheri , 4, 5, 13, 19, 21, 23 |
| <i>bullata</i> , 5, 16 | tropicalis , 5, 13 |