

NOTES ON NEW WORLD ZINGIBERACEAE*

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SUMMARY

12 New species of *Costus* and 22 new species of *Renealmia* are described and various new combinations are made. All these species will be more intensively dealt with by the author in his forthcoming treatment of the genera *Renealmia* and *Costus* for *Flora Neotropica* (to be published in 1976).

It is already over one year ago since I finished my revision of *Renealmia* and *Costus* for *Flora Neotropica*. All herbarium specimens were annotated and returned to the various herbaria. After returning them I undertook a four months' trip to tropical America and collected a quantity of new material, which proved to contain many as yet undescribed species. As the illustration-part of the revision is not yet finished and as I wish to publish all new taxa as soon as possible the taxonomic and nomenclatural novelties are dealt with below. The species of *Costus* are arranged according to their arrangement in Maas (1972)**; e.g. 8A is a species related to species 8 in my revision of 1972. The species of *Renealmia* are arranged alphabetically.

1. *Costus subsessilis* (Nees & Martius) Maas *comb. nov.* Basionym: ? *Globba subsessilis* Nees & Martius, Nov. Acta Ac. Nat. Cur. 11: 29. 1823.

This is an older name for *Costus warmingii* O. G. Petersen.

2. *Costus cuspidatus* (Nees & Martius) Maas *comb. nov.*

Basionym: *Globba cuspidata* Nees & Martius, Nov. Acta Ac. Nat. Cur. 11: 28. 1823.

This is an older name for *Costus igneus* N. E. Brown and therefore, unfortunately, must replace it.

- 8A. *Costus leucanthus* Maas *sp. nov.*

Herba ad 2.5 m alta. Vagina, ligula, petiolus, lamina et appendices bractearum dense ad sat dense hirsutae. Ligula 55-70 mm longa. Lamina anguste elliptica, 40-55 cm longa, 11-16 cm lata. Inflorescentia ovoidea ad cylindrica, 10-17 cm longa (sub fructificatione ad 35 cm), 9-10 cm in diametro (sub fructificatione

* Mededelingen van het Botanisch Museum en Herbarium van de Rijksuniversiteit te Utrecht No. 431.

** Maas, P. J. M., Costoideae (Zingiberaceae) in *Flora Neotropica* 8: 1-140, 1972.

ad 12 cm). Bracteae rubrae, late ovatae, 30–50 mm longae, 25–40 mm latae, callo 3–8 mm longo; appendices foliaceae, virides, inferiores horizontaliter patentes, superiores verticaliter ascendentes, anguste triangulares ad triangulares, 40–80 mm longae, 15–30 mm latae (3–4 inferiores exclusae). Bracteola 28–31 mm longa. Calyx 16–20 mm longus. Corolla alba, 80–85 mm longa. Labellum album, centro leviter luteo-tinctum, expansum late obovatum, (60–)65–70 mm longum, (40–)60–65 mm latum. Stamen 50–55 mm longum.

TYPE. *Maas & Plowman 1920* (holotype, U; isotypes COL, F, GH, K, US), Limón, near km 71 of new road from Cali to Buenaventura, 150 m, El Valle, Colombia.

9b. *Costus asplundii* (Maas) Maas *stat. nov.*

Basionym: *Costus guanaiensis* Rusby var. *asplundii* Maas, Fl. Neotrop. 8: 52. 1972.

12A. *Costus glaucus* Maas *sp. nov.*

Herba 1.5–4 m alta, praesertim juventute glauca. Ligula 17–55 mm longa. Lamina anguste ovata ad anguste obovata, 20–43 cm longa, 5–14 cm lata, glabra. Inflorescentia ovoidea ad cylindrica, 6–16 cm longa (sub fructificatione ad 22 cm), 3–8 cm lata. Bracteae in parte aperta glaucae vel pallide virides, ovatae, 45–60 mm longae, 30–40 mm latae, ecallosae, parte tecta scabrae. Bracteola 22–27 mm longa. Calyx 7–14 mm longus. Corolla luteo-rubra, 70 mm longa. Labellum album, rubro-striatum, expansum late obovatum, 70 mm longum, 50 mm latum. Stamen 50 mm longum.

TYPE. *Maas 1535* (holotype, U; isotypes CR, F), Río Reventazón Valley, near grounds of IICA, Turrialba, 600 m, prov. Cartago, Costa Rica.

12B. *Costus vinosus* Maas *sp. nov.*

Herba 1.3–2 m alta. Vagina vinosa, inferiores manifeste infundibuliformes. Ligula vinosa, 70–100 mm longa. Lamina anguste elliptica ad anguste obovata, 38–55 cm longa, 14–18 cm lata, facie inferiore vinosa. Inflorescentia ovoidea, 8–13 cm longa, 4–7 cm lata. Bracteae in parte aperta atrorubrae, late ovatae, 35–50 mm longae et latae, callo 3–6 mm longo. Bracteola 18–20 mm longa. Calyx 9–10 mm longus. Corolla crenea vel rosea, 75–80 mm longa. Labellum vinosum, centro aurantiaco-luteum tinctum, expansum late obovatum, 70 mm longum, 60 mm latum. Stamen 50 mm longum.

TYPE. *Dressler 4406* (holotype, U; isotypes, F, MO), lower Río Guanache, Colón, Panama.

14 bis A. *Costus plowmanii* Maas *sp. nov.*

Caulis foliosus ad 3 m altus. Ligula 1–10 mm longa, sat dense hirsuta. Lamina anguste elliptico-obovata vel elliptico-obovata, 8–9-plicata, 25–47 cm longa, 11–18 cm lata, facie inferiore dense hirsuto-villosa. Caulis floriger difformis, ca 75 cm altus. Inflorescentia ovoidea ad cylindrica, 9–25 cm longa, 5.5–8.5 cm lata. Bracteae rubrae, late ovatae, 35–50 mm longae, 25–40 mm latae, callo obsoleto,

2–7 mm longo. Bracteola 23–29 mm longa. Calyx 10–14 mm longus. Corolla lutea, ca. 45 mm longa. Labellum luteum, tubulosum, expansum oblongo-ellipticum, 30–35 mm longum, 17–19 mm latum. Stamen 33–40 mm longum.

TYPE. *Maas & Plowman 1900* (holotype, U; isotypes, AAU, COL, E, F, GH, K, MO, NY, P, US, VEN), Cordillera Occidental, Queremal, 1350 m, El Valle, Colombia.

18A. *Costus varzeorum* Maas *sp. nov.*

Herba humilis, 0.3–1 m alta. Ligula purpureo-tincta, 20–30 mm longa. Lamina elliptico-obovata, 13–25 cm longa, 5–10.5 cm lata, facie inferiore rubropurpurea, sat dense puberula. Inflorescentia ovoidea, 4–9 cm longa, 3–4 cm lata, cauli florente 3–7-foliato, foliis ad apicem congestis. Bractee roseo-rubrae, ovatae, 20–25 mm longae, 10–18 mm latae, callo 1–3 mm longo; appendices bractearum foliaceae, virides, horizontaliter patentis (in vivo), triangulari-ovatae, 5–15 mm longae, 8–16 mm latae (4 inferiores exclusae). Bracteola 15–18 mm longa. Calyx 8–10 mm longus. Corolla lutea vel rosea, 47–55 mm longa. Labellum album vel luteum, rubro-striatum, expansum obovatum, 40–45 mm longum, 25–28 mm latum. Stamen 35–38 mm longum.

TYPE. *Maas, Steward & Ramos 12860* (holotype, INPA; isotypes, COL, K, NY, U, US, W), Igarapé Treize de Maio, Rio Juruá, Acre, Brazil.

20A. *Costus cupreifolius* Maas *sp. nov.*

Herba 1 m alta, fere tota villosa-sericea. Ligula ca 15 mm longa. Lamina anguste obovata ad obovata, 25–28 cm longa, 8–10 cm lata, facie inferiore cuprea. Inflorescentia cylindrica, 11 cm longa, 4 cm lata. Bractee rubrae (?), late ovatae, 10–20 mm longae et latae, callo obsoleto, ca 1 mm longo; appendices bractearum rubrae (?), in sicco reflexae, deltatae, 7–15 mm longae et latae. Bracteola 13 mm longa. Calyx 10 mm longus. Corolla juvenilis 20 mm longa. Labellum tubulosum, juvenile ca 12 mm longum, 10 mm latum. Stamen juvenile ca 11 mm longum.

TYPE. *Ewan 16748* (holotype, US; isotype, NY), San Diego de Colorado, tributary of Río Putumayo, above Puerto Asís, 650 m, Putumayo, Colombia.

22a. *Costus productus* Gleason ex Maas *sp. nov.*

Herba 0.3–1.5 m alta. Vagina membranacea, fragilissima (in sicco). Ligula 20–40 mm longa. Lamina anguste elliptica, anguste obovata ad obovata, 16–32 cm longa, 5.5–9 cm lata, utrinque strigosa vel glabra. Inflorescentia ovoidea, 6–11 cm longa, 3.5–4 (–6) cm lata. Bractee rubrae vel aurantiacae, late ovatae, usque ad 25 mm longae at 30 mm latae, callo 6–12 mm longo; appendices bractearum foliaceae, in sicco reflexae, vivide rubrae, latissime obovatae ad deltatae, 5–20 mm longae et latae (inferiores ad 60 mm longae et 25 mm latae). Bracteola 17 mm longa. Calyx 10–15 mm longus. Corolla pallide lutea vel aurantiaca, 35–42 mm longa. Labellum tubulosum, expansum oblongo-obovatum, 25–35 mm longum, 8–15 mm latum. Stamen 25–30 mm longum.

a. *Costus productus* Gleason ex Maas var. **productus**.

Costus juruanus var. *juruanus*, not of K. Schumann: Maas, Fl. Neotrop. 8: 90. f. 41. 1972 (excl. type).

Vagina et ligula sparse ad dense puberulae. Lamina glabra vel marginibus sparse puberula, costa subtus sat dense villosa-hirsuta, apice sparse puberulo-sericea.

TYPE. *Killip & Smith 25317* (holotype, US; isotype, NY), Perene Bridge, Río Paucartambo Valley, 700 m, Junín, Peru.

b. *Costus productus* Gleason ex Maas var. **strigosus** (Maas) Maas *comb. nov.*

Costus juruanus K. Schumann var. *strigosus* Maas, Fl. Neotrop. 8: 90. 1972.

Differt a varietate typica lamina, ligula et vagina sat dense strigosis.

TYPE. *Cuatrecasas 10684* (holotype, US; isotype, COL), Puerto Ospina, towards La Loma, Putumayo, 230–250 m, Putumayo, Colombia.

24a. *Costus wilsonii* Maas *sp. nov.*

Costus scaber Ruiz. & Pavón x *Costus lasius* Loesener?, Maas, Fl. Neotrop. 8: 96. 1972.

Herba 0.5–4 m alta. Ligula 2–6 mm longa. Lamina anguste elliptica, 8–25 cm longa, 1.5–7 cm lata, acumine marginibus involutis. Inflorescentia cylindrica ad ovoidea, 3–10 cm longa (sub fructificatione ad 15 cm), 1.5–4.5 cm lata. Bracteae saepe luteae, an rubrae, auranticae vel virides, late ovatae, 20–40 mm longae et latae, in sicco venis prominentibus, callo 2–5 mm longo. Bracteola 12–17 mm longa. Calyx 5–7 mm longus. Corolla lutea, 40–47 mm longa. Labellum tubulosum, luteum, saepe apice rubro-striatum, expansum late oblongo-obovatum, 33–35 mm longum, 25–28 mm latum. Stamen 32–33 mm longum.

TYPE. *Maas & Mc. Alpin 1383* (holotype, U; isotypes, COL, CR, F, K, MO, NY), Fila las Cruces, near San Vito de Java, ca. 1400 m, prov. Puntarenas, Costa Rica.

26A. *Costus cordatus* Maas *sp. nov.*

Herba 2 m alta. Ligula 15–20 mm longa. Lamina anguste elliptica, 8–10-plicata, basi cordata, 35–39 cm longa, 13 cm lata, facie inferiore sat dense sericea. Inflorescentia cylindrica, 10 cm longa, 4.5 cm lata. Bracteae atrorubrae, late ovato-triangulares, 30–35 mm longae, 25–30 mm latae, callo 7–9 mm longo. Bracteola 20–23 mm longa. Calyx 10–13 mm longus. Corolla pallide lutea, 63–70 mm longa. Labellum luteum, tubulosum, expansum oblongo-obovatum, 40–42 mm longum, 25–27 mm latum. Stamen 37–40 mm longum.

TYPE. *Maas & Plowman 1965* (holotype, U; isotype, COL), Boquerón, near km 85 of new road Cali-Buenaventura, 150 m, El Valle, Colombia.

30A. *Costus plicatus* Maas *sp. nov.*

Herba 0.5–2.5 m alta. Ligula 25–60 mm longa. Lamina sat asymetrica, anguste elliptica ad anguste obovata, manifeste 6–8-plicata, 25–31 cm longa, (7–) 8.5–13 cm lata. Inflorescentia cylindrica ad ovoidea, acuta, 5–15 cm longa, 3–4.5 cm

lata. Bracteae roseae vel rubrae, late ovatae ad deltatae, 25–40 mm longae, 20–30 mm latae, callo 5–11 mm longo. Bracteola 17–18 mm longa. Calyx 7–10 mm longus. Corolla lutea, 45 mm longa. Labellum luteum, tubulosum, expansum oblongo-ovatum, 32 mm longum, 20 mm latum. Stamen 37 mm longum.

TYPE. *Maas & Dressler 1619* (holotype, U), near Río Segundo Brazo, 700 m, Veraguas, Panama.

30B. *Costus nitidus* Maas *sp. nov.*

Herba ad 4 m alta, in vivo manifeste nitida. Ligula 20–40 mm longa. Lamina anguste elliptica, 30–43 cm longa, 7–10 cm lata, in vivo utrinque nitida, in sicco castanea. Inflorescentia ovoidea ad cylindrica, 7–16 cm longa, 4–5.5 cm lata. Bracteae in parte tecta albae, in parte aperta roseae, late ovatae, 30–50 mm longae et latae, callo 12–15 mm longo. Bracteola 18–20 mm longa. Calyx 7–10 mm longus. Corolla lutea, ca 70 mm longa. Labellum luteum, tubulosum, expansum oblongo-ovatum, 30–33 mm longum, 17–20 mm latum. Stamen ca 35 mm longum.

TYPE. *Maas & Cramer 1345* (holotype, U), Río Reventazón Valley, near grounds of IICA, 600 m, prov. Cartago, Costa Rica.

35A. *Costus curvibracteatus* Maas *sp. nov.*

Costus sp. A Maas, Fl. Neotrop. 8: 124. 1972.

Herba 1–3 m alta. Vagina hirsuta, rare glabra. Ligula 5–10 (–15) mm longa. Lamina anguste elliptica ad anguste obovata, (13–)20–35 cm longa, (4–)6–10 (–12) cm lata, facie inferiore sparse ad dense hirsuto-strigosa. Inflorescentia ovoidea ad late ovoidea, 6–18 cm longa, 3–9 cm lata. Bracteae aurantiacae, rubrae vel luteae, ovatae ad ovato-triangulares, apicibus leviter excurvatis, in sicco saepe erosis, (2.5–) 4–5.5 cm longae, (1–)2–3.5 cm latae, callo obsoleto vel absente. Bracteola 18–28 mm longa. Calyx 10–15 mm longus. Corolla lutea (vel aurantiaca), 37–40 mm longa. Labellum luteum, aurantiaco-tinctum, tubulosum, expansum oblongo-ovatum, 25–30 mm longum, 20–22 mm latum. Stamen 28–35 mm longum.

TYPE. *Maas & Cramer 1371* (holotype, U; isotypes, COL, CR, E, F, GH, K, MO), Tapantí, 1200 m, prov. Cartago, Costa Rica.

Renealmia acreana* Maas *sp. nov.

Herba 1.5–2.5 m alta. Vagina striata. Ligula ad 1 mm longa. Petiolus 0–20 mm longus. Lamina anguste elliptica, (11–)20–28 (–37) cm longa, (1.5–) 3–7 (–8.5) cm lata. Scapus prostratus, 13–25 cm longus. Inflorescentia basalis, racemosa, 5–25 cm longa, 3–5 cm lata. Bracteae roseo-rubrae, sat longe persistentes, anguste triangulares, 10–40 mm longae, 2.5–6 (–12) mm latae. Pedunculi 2–5 mm longi, pedicelli ca 1 mm longi. Calyx roseo-ruber, tubulosus, 11–22 mm longus. Corolla lutea, 37 mm longa. Labellum luteum, 15 mm longum. Anthera 12 mm longa. Capsula viridis, maturitate rubra, ellipsoidea, 23–25 mm longa, ca 40-seminalis.

TYPE. *Prance, Maas, Kubitzki, Steward, Ramos, Pinheiro & Lima 12430* (holotype, INPA; isotypes, K, NY, U), Serra da Moa, Acre, Brazil.

***Renealmia alpinia* (Rottboell) Maas comb. nov.**

Basionym: *Amomum alpinia* Rottboell, Soc. Med. Havn. Coll. 2: 245, 248, t.l. 1775.

This is an older name for *Renealmia exaltata* L.f.

***Renealmia alticola* Maas sp. nov.**

Herba statura ignota. Vagina leviter tuberculata. Ligula 1–3 mm longa. Petiolus 5–15 mm longus. Lamina anguste elliptica, 27 cm longa, 9.5 cm lata. Scapus erectus, 57 cm longus. Inflorescentia basalis, thyrsioidea, 6–7 cm longa, 3.5 cm lata, cincinnibus 3-floris. Bracteae rubrae, anguste ovato-oblongae, 20–30 mm longae, 6–10 mm latae. Pedunculi 5–7 mm longi, pedicelli 5–8 mm longi. Calyx ruber, turbinatus, 8–9 mm longus. Corolla pallide lutea, 15–16 mm longa (in alabastro). Labellum 7–8 mm longum (in alabastro). Anthera 5 mm longa. Capsula rubra, ellipsoidea, 12–13 mm longa, 5-seminalis.

TYPE. *Killip & Smith 16052* (holotype, NY; isotype, US), near Las Vegas, 2600–3000 m, Santander, Colombia.

***Renealmia asplundii* Maas sp. nov.**

Herba 0.5–0.75 m alta. Vagina striata. Ligula 1–3 mm longa. Petiolus (5–) 20–60 mm longus. Lamina anguste elliptica ad anguste ovata, 20–47 cm longa, 4.5–9.5 cm lata. Scapus 7–13 cm longus. Inflorescentia basalis, thyrsioidea, 8–12 cm longa, 4–10 cm lata, cincinnibus 2–5-floris. Bracteae rubrae, mox deciduae, anguste triangulari-ovatae ad triangulari-ovatae, 7–25 mm longae, 4–7 mm latae. Pedunculi 5–8 mm longi, pedicelli 3–10 (–15) mm longi. Calyx purpureus, urceolatus ad tubulosus, 4–6 mm longus. Corolla alba, ca 10 mm longa. Labellum ignotum. Anthera 3.5–5 mm longa. Capsula rubra, globosa ad ellipsoidea, 6–9 mm longa, 4–6-seminalis.

TYPE. *Asplund 9376* (holotype, S), between Napo and Tena, prov. Napo, Ecuador.

***Renealmia aurantifera* Maas sp. nov.**

Herba 1.5–3 m alta. Vagina striata. Ligula 4–10 mm longa. Lamina sessilis, anguste elliptica, 32–48 cm longa, 7.5–14 cm lata. Scapus erectus, 30–70 cm longus. Inflorescentia basalis, thyrsioidea, 16–27 cm longa, 7–9 cm lata, cincinnibus 5–6(–9)-floris. Bracteae persistentes, anguste oblongo-ovatae ad oblongo-ovatae, 15–75 mm longae, 7–10 mm latae. Pedunculi 1–3 mm longi, pedicelli 8–15 mm longi. Calyx aurantiacus, tubulosus ad turbinatus, 8–11 mm longus. Corolla alba vel lutea, 18–19 mm longa. Labellum album, ca 10 mm longum. Anthera 3–4 mm longa. Capsula aurantiaca vel aurantiaco-rubra, maturitate nigra, globosa ad ellipsoidea, 7–12 mm longa, 7–12-seminalis.

TYPE. *Asplund 17423* (holotype, S), El Volante, on road from Chiriboga to Sto. Domingo de los Colorados, 1900 m, prov. Pichincha, Ecuador.

***Renealmia caucana* Maas sp. nov.**

Herba ca 3.75 m alta. Vagina striata. Ligula ca 1 mm longa. Petiolus 5–15 mm

longus. Lamina anguste elliptica, 40–68 cm longa, 12–19 cm lata, utrinque pilis simplicibus dense vestita. Scapus erectus, 5–15 cm longus. Inflorescentia basalis, thyrsoida, 10–15 cm longa, 3–5 cm lata, cincinnibus 5–9-floris. Bractea rubra, demum decidua, anguste triangulares ad triangulares, 1.5–4 cm longae, 0.5–1.8 cm latae. Pedunculi 3–8 mm longi, pedicelli 5–8 mm longi. Calyx roseo-ruber, tubulosus, 18–21 mm longus. Corolla alba, 30 mm longa. Labellum album, 16 mm longum. Anthera 8 mm longa. Capsula rubra, depresso globosa, 12–20 mm in diametro, 30–60-seminalis.

TYPE. *Maas & Plowman 2153* (holotype, U; isotypes, COL, F, GH, K, NY), Cordillera Occidental, between Timbío and Veinte de Julio, 2100 m, Cauca, Colombia.

Renealmia congesta* Maas *sp. nov.

Herba 1–3 m alta. Vagina striata. Ligula 1–2 mm longa. Lamina sessilis, anguste obovata ad anguste elliptica, 25–50 cm longa, (6–)9–14 cm lata. Scapus erectus, 10–40 cm longus. Inflorescentia basalis, congesta, thyrsoida, (5–)8–28 cm longa, 2–5 cm lata, cincinnibus 3–5-floris. Bractea virides, persistentes, late ovatae ad ovatae, 20–35 mm longae, 15–30 mm latae. Pedunculi 2–4 mm longi, pedicelli 5–12 mm longi. Calyx viridis, urceolatus, 6–11 mm longus. Corolla alba, 9–11 mm longa. Labellum album, luteo- et purpureo-striatum, 7.5–9 mm longum. Anthera 3–3.5 mm longa. Capsula nigra, globosa, 7–8 mm in diametro, 6–9-seminalis.

TYPE. *Maas & Mc. Alpin 1390* (holotype, U; isotypes, COL, CR, F, GH, K, MO, NY, US), Fila Las Cruces, near San Vito de Java, ca 1400 m, prov. Puntarenas, Costa Rica.

Renealmia cuatrecasasii* Maas *sp. nov.

Herba 1–4 m alta. Vagina leviter reticulata. Ligula 1–2 mm longa. Petiolus 35–85 mm longus. Lamina anguste elliptica, 50–83 cm longa, (7–)9–16 (–19) cm lata. Scapus erectus, 15–35 cm longus. Inflorescentia basalis, thyrsoida, 25–60 cm longa, 6–13 cm lata, cincinnibus 2–10-floris. Bractea virides, demum decidua, triangulari-ovatae ad anguste triangulari-ovatae, 7–55 mm longae, 4–16 mm latae. Pedunculi 7–30 mm longi, pedicelli 5–30 mm longi. Calyx pallide viridis, turbinatus, 4–7 mm longus. Corolla alba vel pallide lutea, 19–20 mm longa. Labellum luteo-album, 14–16 mm longum. Anthera 5.5 mm longa. Capsula lutea, maturitate aurantiaca ad rubra, ellipsoidea, 10–26 mm longa, 60–100-seminalis.

TYPE. *Killip & Cuatrecasas 38707* (holotype, US; isotypes, COL, F, VALLE), Córdoba, N-shore of Buenaventura Bay, 5–15 m, El Valle, Colombia.

Renealmia dolichocalyx* Maas *sp. nov.

Herba 2–3 m alta. Vagina striata. Ligula ca 5 mm longa. Petiolus 10–30 mm longus. Lamina anguste elliptica, 33–60 cm longa, 7–12.5 cm lata. Scapus erectus, ultra 40 cm longus. Inflorescentia basalis, thyrsoida, 12–18 cm longa, 5–8 cm lata, cincinnibus 3–8-floris. Bractea virides vel cinnamomeae, sat longe per-

sistentes, ovatae, 20–35 mm longae, 12–20 mm latae. Pedunculi ad 3 mm longi, pedicelli 5–7 mm longi. Calyx albidus, tubulosus, 16–22 mm longus. Corolla alba, 26–28 mm longa. Labellum album(?), 10 mm longum. Anthera 5 mm longa. Capsula ellipsoidea, clare rubra, 10–15 mm longa, 3–9-seminalis.

TYPE. *Sparre 14028* (holotype, S), near Tandapí (along road from Aloat to Sto. Domingo de Los Colorados), 1500 m, prov. Pichincha, Ecuador.

Renealmia dressleri* Maas *sp. nov.

Herba 0.75–2 m alta. Vagina striata. Ligula ad 1 mm longa. Lamina sessilis, anguste elliptica, 35–80 cm longa, 3.5–11 cm lata. Inflorescentia thyrsoida, 5–35 cm longa, 2–4 cm lata, terminalis an basalis, scapo 15–30 cm longo, cincinnibus 3–7-floris. Bractee virides vel albidae, demum deciduae, anguste triangulares ad triangulares, 10–35 mm longae, 5–15 mm latae. Pedunculi 3–5 mm longi, pedicelli 5–10 mm longi. Calyx ruber vel rubro-aurantiacus, tubulosus, maturitate urceolatus, 5–8 mm longus. Corolla pallide lutea vel albida, 11–12 mm longa. Labellum cremeum, 7 mm longum. Anthera 3–3.5 mm longa. Capsula rubra vel rubro-aurantiaca, globosa ad ellipsoidea, 4–8 (–10) mm longa, 3–4-seminalis.

TYPE. *Maas & Dressler 675* (holotype, U; isotypes, MO, US), La Eneida, Cerro Jefe Region, 750 m, prov. Panama, Panama.

Renealmia ferruginea* Maas *sp. nov.

Herba ad 3 m alta. Vagina striata. Ligula (3–)8–14 mm longa. Lamina sessilis, anguste elliptica, (20–)37–55 cm longa, (4–)8–12 cm lata. Scapus erectus, 17–30 cm longus. Inflorescentia basalis, thyrsoida, 22–32 cm longa, 5–10 cm lata, pilis ferrugineis dense vestita, cincinnibus 3–4-floris. Bractee aurantiacorum rubrae, persistentes, ovato-triangulares, 25–75 mm longae, (15–)25–40 mm latae. Pedunculi 4–10 mm longi, pedicelli 5–7 mm longi. Calyx ruber, tubulosus, 15–32 mm longus. Corolla alba, 35 mm longa. Labellum album, 17 mm longum. Anthera 6–8 mm longa. Capsula rubra, pilis ferrugineis vestita, ellipsoidea, 25–40 mm longa, ca 50-seminalis.

TYPE. *Maas & Plowman 2074* (holotype, U; isotypes, COL, GH), km 55 of road from Timbio to Veinte de Julio, 2500 m, Cauca, Colombia.

Renealmia fragilis* Maas *sp. nov.

Herba 0.8–2 m alta. Vagina striata. Ligula 2–3 mm longa. Lamina sessilis, anguste elliptica, 7–31 cm longa, 2.5–8.5 cm lata. Scapus 15–85 cm longus. Inflorescentia basalis, thyrsoida vel racemosa, 6–16 cm longa, 4.5–8 cm lata, cincinnibus 1–2-floris. Bractee rubrae, fragiles et mox deciduae, anguste obovatae, 16–45 mm longae, 3–10 mm latae. Pedunculi 3–14 mm longi, pedicelli 5–15 mm longi. Calyx ruber, tubulosus, fragilis, 9–20 mm longus. Corolla alba vel lutea, 22–24 mm longa. Labellum ca 12 mm longum. Anthera 5–6 mm longa. Capsula rubra(?), globosa, 6–10 mm in diametro, 9-seminalis.

TYPE. *Wiggins 10448* (holotype, US), along trail to San Pedro, on ridge S of Río Clavadero, E of Cayambe, 2500 m, prov. Imbabura, Ecuador.

Renealmia guianensis* Maas *nom. nov.

Basionym: *Renealmia gracilis* O. G. Petersen in Martius, Fl. Bras. 3(3): 47. 1890, not of Blanco, Fl. Filip. ed. 1.1. 1837.

Renealmia helenae* Maas *sp. nov.

Herba 0.4–0.8 (–1) m alta. Vagina striata. Ligula 1–2 mm longa. Petiolus 0–10 mm longus. Lamina linearis ad anguste elliptica, 6–20 cm longa, 1.5–3.5 cm lata. Inflorescentia terminalis, congesta, thyrsoida, 2–5 cm longa, 1.5–2 cm lata, cincinnibus 2-floris. Bracteae virides, persistentes, anguste triangulari-ovatae ad triangulari-ovatae, 5–16 mm longae, 3–6 mm latae. Pedunculi ad 0.5 mm longi, pedicelli 1–2 mm longi. Calyx viridis vel aurantiacus, tubulosus, 3–6 mm longus. Corolla pallide lutea vel alba, 8 mm longa. Labellum album, luteo- et rubro-tinctum, 5 mm longum. Anthera 2.5 mm longa. Capsula atropurpurea, globosa, 4–10 mm in diametro, 3–4-seminalis.

TYPE. *Helen Kennedy 424* (holotype, U; isotypes F, K, MO, NY), Cerro Jefe, prov. Panama, Panama.

Renealmia jamaicensis* (Gärtner) Horaninow var. *puberula* (Gagnepain) Maas *comb. nov.

Basionym: *Renealmia antillarum* (Roemer et Schultes) Gagnepain var. *puberula* Gagnepain, Bull. Soc. Bot. France 50: 203.1903.

Renealmia krukovii* Maas *sp. nov.

Herba 0.50–1.25 m alta. Vagina reticulata. Ligula ca 1 mm longa. Petiolus 15–45 mm longus. Lamina anguste elliptica, 20–45 cm longa, 2.5–7 cm lata. Scapus erectus vel prostratus, 15–25 cm longus. Inflorescentia basalis, racemosa, 17–40 cm longa, 2.5–6 cm lata. Bracteae rubrae, longe persistentes, anguste obovato-ellipticae, 15–70 mm longae, 4–13 mm latae. Pedunculi 2–10 (–20) mm longi, pedicelli 1–8 mm longi. Calyx ruber, tubulosus, 11–18 mm longus. Corolla lutea, 30–32 mm longa. Labellum luteum, 13 mm longum. Anthera 10 mm longa. Capsula rubra, ellipsoidea, 15–22 mm longa, 8–10-seminalis.

TYPE. *Krukoff 8594* (holotype, S; isotypes, F, GH, K, NY, U), near Palmares, Mun. São Paulo de Olivença, Rio Solimões, Amazonas, Brazil.

Renealmia ligulata* Maas *sp. nov.

Herba 0.5–4 m alta. Vagina striata. Ligula 4–8 mm longa. Petiolus 5–25 mm longus. Lamina anguste elliptica, (18–)30–54(–70) cm longa, (3.5–)5–12(–15) cm lata. Scapus erectus vel prostratus (sub fructificatione), 5–15 (–20) cm longus. Inflorescentia basalis, thyrsoida, 17–50 cm longa, 3–8 cm lata (sub fructificatione ad 15 cm lata), cincinnibus (1–)2–3-floris. Bractea rubrae, mox deciduae, triangulari-ovatae, 10–65 mm longae, 5–30 mm latae. Pedunculi 8–25 (–30) mm longi, pedicelli 10–25 (–35) mm longi. Calyx ruber, tubulosus, 11–15 mm longus. Corolla alba vel lutea, (18–)22–27 mm longa. Labellum album, leviter rubro-tinctum, 12–18 mm longum. Anthera 6–7 mm longa. Capsula rubra, globosa vel ellipsoidea, 17–35 mm longa, 50–100-seminalis.

TYPE. *Maas, Plowman & Escobar 1826* (holotype, U; isotypes, COL, F, GH, K, MO, NY, VALLE), Cordillera Central, Río Nima, above Tenjo, 1850 m, El Valle, Colombia.

Renalmia lucida* Maas *sp. nov.

Herba 2–3 m alta. Vagina leviter striata, in sicco lucida. Ligula 5–8 mm longa. Petiolus 0–30 mm longus. Lamina anguste elliptica, (16–)56–93 cm longa, 14–21 cm lata. Scapus 40–75 cm longus. Inflorescentia basalis, thyrsioidea, 40–75 cm longa, 7–10 cm lata, cincinnibus 2–6-floris. Bracteae rubrae, in sicco lucidae, chartaceae, longe persistentes, ovato-triangulares ad anguste ovato-triangularis, 25–125 mm longae, 8–40 mm latae. Pedunculi 5–45 mm longi, pedicelli 10–55 mm longi. Calyx ruber, tubulosus vel leviter turbinatus, 20–26 mm longus. Corolla roseo-alba vel alba, ca 35 mm longa (in alabastro). Labellum ca 20 mm longum (in alabastro). Anthera 9–13 mm longa (in alabastro). Capsula rubra, globosa vel ellipsoidea, 30–40 mm longa, ca 100-seminalis.

TYPE. *Cuatrecasas 23724* (holotype, F), Cordillera Occidental, mouth of Río Digua, Río San Juan, Queremal, 1350–1400 m, El Valle, Colombia.

Renalmia matogrossensis* Maas *sp. nov.

Herba 0.6–1.1 m alta. Vagina striata vel leviter reticulata. Ligula ca 1 mm longa. Lamina sessilis, anguste elliptica, 11–25 cm longa, 2.5–7 cm lata. Scapus 5–15 cm longus. Inflorescentia basalis, congesta, thyrsioidea, 3.5–9 cm longa, 2–3.5 cm lata, cincinnibus 3–5-floris. Bracteae virides, rubro-marginatae, sat longe persistentes, anguste triangulari-ellipticae ad triangulari-ellipticae, 7–19 mm longae, 4–8 mm latae. Pedunculi 2–3 mm longi, pedicelli 2–7 mm longi. Calyx tubulosus, 3–6 mm longus. Corolla cremea vel alba, 7 mm longa. Labellum 5–6 mm longum. Anthera 2–2.5 mm longa. Capsula rubra, globosa, 5–8 mm in diametro, 2–10-seminalis.

TYPE. *Philcox & Ferreira 4192* (holotype, U; isotype, K), 270 km N of Xavantina, Mato Grosso, Brazil.

Renalmia occidentalis* (Swartz) Sweet var. *pacifica* Maas var. *nov.

Scapus + thyrus 60–80 cm longus, cincinnibus 2–4(–5)-floris. Bracteae rubrae. Pedunculi 6–20 mm longi, pedicelli 3–15 mm longi. Corolla 19–21 mm longa. Labellum 9–10 mm longum. Capsula ellipsoidea, (9–)12–18 mm longa.

TYPE. *Alexander 498* (holotype, NY), Finca El Carmen, Oaxaca, Mexico.

Renalmia oligotricha* Maas *sp. nov.

Herba 1–2 m alta, praeter pilos rarissimos glabra. Vagina striata. Ligula ca 1 mm longa. Lamina sessilis, anguste ovata, 13–22 cm longa, 3–5 cm lata. Scapus 45–50 cm longus. Inflorescentia basalis, thyrsioidea, 13–17 cm longa, 8–10 cm lata, cincinnibus 4–5-floris. Bracteae persistentes, anguste triangulares, 17–40 mm longae, 4–7 mm latae. Pedunculi 7–20 mm longi, pedicelli 5–15 mm longi. Calyx leviter turbinatus, 9–12 mm longus. Corolla 13 mm longa (in alabastro). Labellum 8 mm longum (in alabastro). Anthera 6 mm longa (in alabastro).

Capsula ellipsoidea, 9–11 mm longa, 6-seminalis.

TYPE. *Bell 431* (holotype, BM), Chaupi-Sagcha, Pululagua, 2000 m, prov. Pichincha, Ecuador.

Renealmia pallida* Maas *sp. nov.

Herba ca 6 m alta. Vagina striata. Ligula ca 1 mm longa. Lamina sessilis, anguste elliptica, 99 cm longa, 17 cm lata. Scapus prostratus, 150 cm longus. Inflorescentia basalis, racemosa, 40 cm longa, 9 cm lata. Bractee pallide virides, rubro-tinctae, longe persistentes, anguste ovato-triungulares ad ovato-triungulares, 30–55 mm longae, 12–19 mm latae. Pedunculi et pedicelli 1–2 mm longi. Calyx pallide roseus, tubulosus, 12–15 mm longus. Corolla pallide lutea, 24–25 mm longa. Labellum pallide luteum, 13 mm longum. Anthera 10 mm longa. Capsula pallide cremea, maturitate atropurpurea, ellipsoidea, 21–25 mm longa, 125–140-seminalis.

TYPE. *Plowman & Davis 5046* (holotype, U; isotype, GH), between Atalaya and Salvación, 650 m, prov. Manu, dep. Madre de Dios, Peru.

Renealmia pluriplicata* Maas *sp. nov.

Herba 0.75–1.80 m alta. Vagina manifeste reticulata. Ligula ca 1 mm longa. Petiolus ad 90 mm longus. Lamina anguste elliptica, 25–56 cm longa, (5–)7–16 cm lata, manifeste 20–35-plicata. Scapus erectus, 10–30 cm longus. Inflorescentia basalis, congesta, thyrsoida, (2.5–)8–22 cm longa, (1.5–)3–5 cm lata, cincinibus 2–4-floris. Bractee pallide vel atropurpureae, sat longe persistentes, ovato-triungulares ad late ovato-triungulares, 10–35 mm longae, 10–20 mm latae. Pedunculi et pedicelli ad 5 mm longi. Calyx pallide ruber vel atropurpureus, turbinatus vel urceolatus, 4–10 mm longus. Corolla cremea vel lutea, 12 mm longa. Labellum cremeo-album, luteo-tinctum, 10 mm longum. Anthera 3 mm longa. Capsula rubra, maturitate nigra, ellipsoidea vel globosa, 5–10 mm longa, 1–7-seminalis.

TYPE. *Maas & Dressler 1679* (holotype, U; isotypes, CR, F, K, MO, NY), El Llano-Carhi Road, 8–10 km from El Llano, 400 m, prov. Panama, Panama.

Renealmia pyramidalis* (Lamarck) Maas *comb. nov.

Basionym: *Amomum pyramidale* Lamarck, Encycl. Method. Bot. 1: 137. 1783 (= *Alpinia racemosa* Linnaeus).

Renealmia scaposa* Maas *sp. nov.

Herba 2.5–5 m alta. Vagina striata. Ligula 1–3 mm longa. Petiolus 0–15 mm longus. Lamina anguste elliptica, 42–61 cm longa, (8–)11–14 (–23) cm lata. Scapus erectus vel prostratus (sub fructificatione), 30–45 cm longus. Inflorescentia basalis, thyrsoida, 5–20 cm longa, 2.5–8 cm lata, cincinibus 2–3 (–6)-floris. Bractee roseae, mox deciduae, ovatae, 25–60 mm longae, 15–35 mm latae. Pedunculi 2–5 mm longi, pedicelli (3–)10–20 mm longi. Calyx roseus, tubulosus, 10–18 mm longus. Corolla alba, 23–25 mm longa. Labellum album, 12 mm longum. Anthera 6–7 mm longa. Capsula roseo-rubra, globosa vel ellipsoidea,

15–30 mm longa, ca 100-seminalis.

TYPE. *Maas 1332* (holotype, U; isotypes, CR, F, K), Cinchona, 5 km S of Cariblanco, 1350 m, prov. Heredia, Costa Rica.

Renealmia thyrsoides (Ruiz & Pavón) Poeppig & Endlicher ssp. ***chrysantha***
Maas ssp. nov.

Scapus 15–30 cm longus. Bracteeae chrysanthae, mox deciduae, ovato-triangularis, 15 mm longae, 8 mm latae. Pedunculi 5–10 mm longi, sub fructificatione ad 15 mm, pedicelli 1–4 mm longi. Calyx chrysanthus, tubulosus, 20–21 mm longus. Corolla 20 mm longa (in alabastro). Labellum 10 mm longum (in alabastro). Anthera 9–10 mm longa. Capsula ellipsoidea, 17–20 mm longa, ca 50-seminalis.

TYPE. *S.S. & C. L. Tillett 44996* (holotype, U; isotypes, NY, US), Mt. Ayan-ganna, Upper Mazaruni River, Guyana.

Renealmia vallensis *Maas sp. nov.*

Herba 1–1.5 m alta. Vagina manifeste reticulata. Ligula ca 1 mm longa. Petiolus 40–60 mm longus. Lamina anguste elliptica ad elliptico-obovata, 25–40 cm longa, 10–14 cm lata, facie superiore pilis simplicibus, facie inferiore pilis stellatis dense vestita. Scapus 12–22 cm longus. Inflorescentia basalis, congesta, thyrsoides, 5–17 cm longa, 2.5–3 cm lata, cincinnibus 1–3-floris. Bracteeae viridirubrae, longe persistentes, late ovato-obovatae, 10–20 mm longae, 10–25 mm latae. Pedunculi ad 1 mm longi, pedicelli 2 mm longi. Calyx ruber vel atroseus, tubulosus, 6–7 mm longus. Corolla alba vel lutea, 13 mm longa. Labellum album vel luteum, rubro-tinctum, 11 mm longum. Anthera 3 mm longa. Capsula rubra, globosa, 4–6 mm in diametro, monosperma.

TYPE. *Cuatrecasas 19855* (holotype, F), mouth of Río Dagua, near Córdoba, 39–60 m, El Valle, Colombia.

Renealmia wurdackii *Maas sp. nov.*

Herba 2 m alta. Vagina striata. Ligula ca 1 mm longa. Petiolus 0–20 mm longus. Lamina anguste elliptica, 40–57 cm longa, 6–9.5 cm lata. Scapus ca 15 cm longus. Inflorescentia basalis, congesta, thyrsoides, 6–12 cm longa, 3.5–8 cm lata, cincinnibus 4–5-floris. Bracteeae rubrae vel aurantiaco-rubrae, sat longe persistentes, ovatae ad late ovatae, 20–35 mm longae, 15–23 mm latae. Pedunculi 4–10 mm longi, pedicelli 3–5 mm longi. Calyx clare ruber, tubulosus vel leviter turbinatus, 12–16 mm longus. Corolla lutea, 19–22 mm longa, Labellum 9 mm longum. Anthera 5–6 mm longa. Capsula nigra, ellipsoidea, 13–15 mm longa, 10–20-seminalis.

TYPE. *Wurdack 1045* (holotype, US), 1–5 km SSE of Yamborasbamba, prov. Bongará, 2100–2400 m, Amazonas, Peru.

ACKNOWLEDGEMENT

The author wishes to thank Prof. Dr. K. U. Kramer for the correction of the latin diagnoses and many valuable suggestions.