

TYPIFICATION OF THREE LINNAEAN NAMES IN *PASSIFLORA* (PASSIFLORACEAE)

JOHN M. MACDOUGAL

Department of Mathematics and Natural Sciences
Harris-Stowe State University
3026 Laclede Avenue
St. Louis, Missouri 63103
threebrane@sigmaxi.net

TATIANA ERIKA BOZA E.

Institute of Systematic Botany
University of Zurich
Zollikerstrasse 107
808 Zurich, Switzerland
tatianaerika@gmail.com

PETER MØLLER JØRGENSEN

Missouri Botanical Garden
P.O. Box 299
St Louis, Missouri 63166-0299
peter.jorgensen@mobot.org

ABSTRACT

Lectotypes and epitypes are designated for three previously untypified Linnaean names: *Passiflora rubra* L., *P. capsularis* L., and *P. rotundifolia* L.

Linnaeus described 24 species in the genus *Passiflora* (1753), of which 11 have been effectively typified. Preparation for publication of a monographic thesis study by Boza (2010) in part of the genus, sect. *Xerogona* (Raf.) Killip, requires the clarification and typification of two similar and closely related species, *P. capsularis* L. and *P. rubra* L. These two species were first described from the Caribbean islands by various pre-Linnaean authors, and the recent monographic study has suggested that in that area there are indeed two distinct biological entities, considered by Boza to be two species. One has a very pale red, or white and red flower, the other an all-white or white and cream flower and a more acutely pointed fruit (Boza 2010). Historically the names *P. capsularis* and *P. rubra* have been applied to both these very similar species, with much confusion in the literature of the 17th through 19th century in application of the names and polynomial synonyms of earlier authors (Lamarck 1789: 35–36; Killip 1938: 217, 221).

Typification of a species not studied by Boza, *Passiflora rotundifolia* L., is included here because its story and original materials are nearly the same as *P. capsularis* and were examined concurrently.

All original elements in Linnaeus' protologues of these species were studied, and although original material in the form of icons was found for each of the three species treated here, no specimens could be located that were seen by Linnaeus prior to 1753. Therefore, lectotypes were chosen from the illustrations available to Linnaeus as original material (McNeill et al. 2012), and fortunately, those were accompanied by detailed documentation of provenance. The lectotypifications given below preserve the common usage of the names in modern monographs and floras over the last century (e.g., Masters 1872; Killip 1938; Estrada & Rodríguez 2009). Epitypes were chosen from among specimens originating from the specific geographical area associated with the original material, which is more specific than the general statements of habitat given by Linnaeus in the respective protologues.

TAXONOMIC TREATMENT

Passiflora rubra L., Sp. Pl. 2: 956. 1 May 1753. ≡ *Granadilla rubra* (L.) Moech, Suppl. Meth. 15. 1802. ≡ *Decaloba rubra* (L.) M. Roem., Fam. Nat. Syn. Monogr. 2:153. 1846.

LECTOTYPE (designated here): [icon] An illustration, Plumier, Descr. Pl. Amer., t. 83. *Clematitidis indica flore clavato suaverubente, fructu hexagono, coccineo, folio bicorni*. 1693.

EPITYPE (designated here): West Indies. Windward Islands: Dominica. Carib trail from Salybia to Hatton Garden, promontory overlooking Salybia church, 30 Apr 1940, *W.H. Hodge 3284* (NY [barcode] 01921803, image seen).

The only material associated with this name in the LINN herbarium (Herb. Linn. 1070.8) was collected by Patrick Browne and was not received by Linnaeus until 1758 (Stearn 1957: 122; Jarvis 2007; Linnaean Plant Name Typification Project), so it cannot be original material for the name. The type must therefore be sought among the cited elements and original material.

Linnaeus describes *Passiflora rubra* in *Species Plantarum* as "*Passiflora foliis bilobis basi emarginatus petiolatis*" and first cites his *Amoen. acad. 1. p. 222. [t. 10] f. 9* (Linnaeus 1745, 1749). The simple illustration of a single leaf found here in Hallman's dissertation can be considered original material, but we find it to be too simple to adequately fix precise taxonomic application of the name.

The next element of the protologue includes additional original material in the form of the plate t. 83 published by Plumier in 1693 in his *Description des plantes de l'Amérique* of the species "*Clematitidis indica flore clavato suaverubente, fructu hexagono, coccineo, folio bicorni*." The plate is of good quality and shows the diagnostic shape of the fruit and leaves (Figure 1). We therefore choose t. 83 to be the lectotype. Plumier (1693: 68–69) distinguished this species from the closely related species [*P. capsularis*] by stems smaller, rounder and dark; flowers tinged light red with corona part purplish, part white; petals white tinged with red, or just white; and fruits a little shorter and not as elongated at the ends.

Other elements and references in the protologue are compatible with the first elements and contain no original material in the form of icons. Linnaeus gave the provenance of *Passiflora rubra* as "Jamaica, Dominica, Martinica, Cayenne." Plumier (1693: 69) stated that the species illustrated by the lectotype plate is from Martinique, where it is abundant. Britton (1917) correctly surmised the type locality to be Martinique but cited no specimen.

Killip (1938: 219), Bornstein in Howard (1989: 382), and Holm-Nielsen et al. (1988: 48) all wrongly indicated the type or lectotype to be the Browne collection Herb. Linn. 1070.8 (LINN), which is not an original element.

Modern photographs of this species from different Caribbean islands show notable variation in floral characteristics such as orientation, color, and number of the outer coronal filaments, so in choosing an epitype to assist in application of the name, we considered provenance of the lectotype to be important. The Browne collection, Herb. Linn. 1070.8, although fertile, has only two flowers that are pressed closed, and is from Jamaica. Unable to locate adequate fertile specimens from Martinique, we have chosen a well-prepared modern collection with buds, flower, and immature fruits from the neighboring island of Dominica.

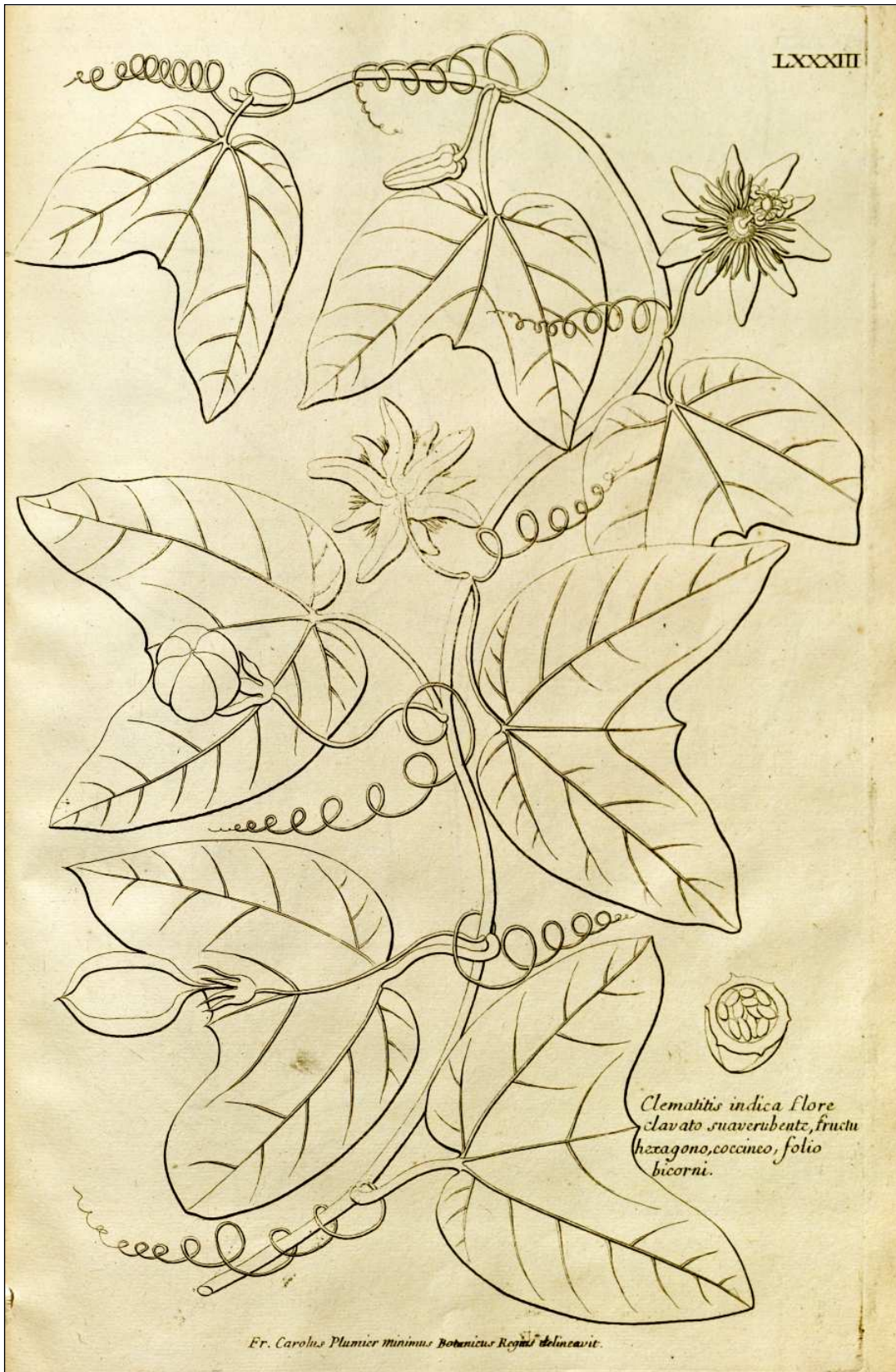


Figure 1. Tabula 83 from Plumier's *Description des plantes de l'Amérique*, 1693, *Passiflora rubra* L.

Passiflora capsularis L., Sp. Pl. 2: 957. 1 May 1753. ≡ *Granadilla capsularis* (L.) Medik., Malvenfam. 96. 1787. ≡ *Xerogona biloba* Raf., Fl. Tellur. 4: 103. 1838, nom. illegit-superfl. ≡ *Decaloba capsularis* (L.) M. Roem., Fam. Nat. Syn. Monogr. 2: 154. 1846.

LECTOTYPE (designated here): [icon] the engraved illustration, fig. 1, on the left side of the frontispiece title page of Barrelier, Pl. Galliam Hisp. Ital. Obs. Icon. Æneis Exhib. 1714.

EPITYPE (designated here): Haiti. [Ouest:] Vic. Pétionville, 350 m, 15–28 Jun 1920, E.C. Leonard 4882 (US-1077426, barcode 00770192, image seen). Isoepitypes: B (not seen), NY (not seen).

There is no material associated with this name in the LINN herbarium (Jarvis 2007, <http://www.nhm.ac.uk/research-curation/research/projects/linnaean-typification/index.html>) so the type must therefore be sought among the cited elements and original material. The protologue in *Species Plantarum* for *Passiflora capsularis* is short: Linnaeus described it as "*Passiflora foliis bilobis cordatis oblongis petiolatis*" then quoted "*Granadilla fructu rubente, folio bicorni*" referencing "*Plum. spec. 6*" and "*Barr. obs. praef. 1. titul. f. 1.*" He gave the location as "*Habitat in Gallia aequinoctiali*".

The first reference is to the polynomial on page 6 of Plumier's *Catalogus Plantarum Americanum* which appeared at the end of his *Nova Plantarum Americanarum Genera* (1703). The second is to the frontispiece title page of Barrelier's work (1714) completed and edited posthumously by Antoine de Jussieu, and to the associated caption/ description in the preface. Two of Plumier's previously unpublished drawings are redrawn as embellishments to the left and right sides of the frontispiece of that book, and the two species are described a few pages later in the *Admonitio* foreword, taken from Plumier's manuscript notes. The foreword (translated) by the editor Ant. Jussieu begins:

There are some things, gentle reader, of which I want to caution you about this edition. First I have presented in the frontispiece, which was to be redolent of everything botanical, two *Granadilla* species selected from Plumier's collected manuscripts and nowhere else depicted. I thought that no ornament on the previous page would be more welcome to you than this, which should please the mind as well as the eyes by its novelty and that you will recognize more completely from the following descriptions of these plants.

Plumier's original drawings and descriptions would have been available to Jussieu at the Bibliothèque nationale in Paris, and apparently were made available to the engraver of the frontispiece. The drawing on the left is labeled "1" and is listed in the foreword notes as "*I. Granadilla fructu rubente, folio bicorni.*" This illustration shows the diagnostic elongated capsular fruits and bilobed leaves of *P. capsularis* (our Figure 2).

Plumier had discerned and written about this species several years earlier in a discussion of another similar species, but had not given it a polynomial (1693). In that discussion about what has since been named *P. rubra* L. (see above under that species), Plumier stated that there was another very similar species that differed by having an almost totally white flower, a more triangular stem, with a more elongate fruit pointed at both ends, and was found at the "*l'Isle S. Domingue, au quartier de Leogane vers une terre nommée Marsenou, appartenante à feu M. Cussi-Tarin, pour lors Gouverneur de ladite Isle*" (1693: 68–69). Plumier published the polynomial in 1703, page 6. The caption in the preface of Barrelier's work retains that polynomial and expands greatly on the description and diagnosis of the species; the locality is again given as "*Leoganae in Insulâ Sandominicanâ.*" Léogâne is in what is now Haiti, about 30 km west of Port-au-Prince.

The drawing after which these illustrations in Barrelier (1714) were modeled would be published several decades later by Burman in his *Plantarum americanarum (Pl. Amer.)*, fascicle 6, t. 138 (see Plumier 1755 in bibliography). For the preparation of the *Pl. Amer.*, Burman used a set of

tracings of Plumier's original drawings made by Claude Aubriet in 1733, the "Gronigen (University Library) set" (Stafleu & Cowen 1983). This set was seen by Linnaeus during his stay in Holland (Stafleu & Cowen 1983) and can be considered original material for the typification of Linnaean species (Jarvis 2007 and pers. comm.). However, in this case, Linnaeus undoubtedly saw the depictions and detailed descriptions of these same drawings in Barrelier (1714) long before he went to Holland. Therefore, the icon in Barrelier (see Fig. 1, here) is chosen as the lectotype of *Passiflora capsularis* over the other original material.

Deginani (2001: 66) indicated unspecified, unseen material in LINN as the holotype. However, there is no material associated with this name now in LINN.

Holm-Nielsen et al. (1988: 46) listed the type as "not seen" and from "French Guiana," their cited location being their interpretation of the habitat from the protologue. Linnaeus' statement of provenance for *Passiflora capsularis*, "*Gallia aequinoctiali*," is slightly misleading because the origin is clearly stated in the preface of Barrelier (1714), as well as in Plumier 1693, to be the "island" of Saint-Domingue, the western French-controlled portion of Hispaniola. Perhaps he was influenced by the appearance of this species on the title page of the book, *Pl. Galliam*.

We have chosen as epitype a specimen with a well-pressed white flower, buds, and immature fruit collected very near the original collection locality.

Passiflora rotundifolia L., Sp. Pl. 2: 957. 1 May 1753. ≡ *Decaloba rotundifolia* (L.) M. Roem., Fam. Nat. Syn. Monogr. 2: 159. 1846.

LECTOTYPE (designated here): [icon] the engraved illustration, fig. 2, on the right side of the frontispiece title page of Barrelier, *Pl. Galliam* *Hisp. Ital. Obs. Icon. Æneis* Exhib. 1714.

EPITYPE (designated here): West Indies: Martinique [without further locality], Nov 1867, *L. Hahn* 177 (K [herb. Hooker]). Isoepitypes: BM [barcode BM000915306], P [barcode P00562590].

Passiflora rotundifolia had its origin in the reference "*Granadilla folio Hederaceo, flore albo, fructo globoso, villosa* Plum." in a list of granadillas published by Tournefort (1700), with the polynomial repeated in Plumier's 1703 catalog. There is no material associated with this name in the LINN herbarium. The protologue for *P. rotundifolia* is short: Linnaeus described it as "*Passiflora foliis subtrilobis obtusis subrotundis*" then quoted "*Granadilla folio hederaceo, flore albo, fructo globoso villosa*" citing "*Plum. spec. 6*" and "*Barr. obs. praef. 1. titul. f. 2.*" He gave the location as "*Habitat in America australiori.*"

The first reference is to the polynomial on page 6 of Plumier's *Catalogus Plantarum Americanum* which appeared at the end of his *Nova Plantarum Americanarum Genera* (1703). The second is to the frontispiece title page of Barrelier (1714), to the icon on the right side, of the plant labeled "2", and to the associated description in the preface, although in the preface this species is listed as "II". Linnaeus' citation of "praef. 1" would seem to be a minor error of citation. The icon (see our Figure 2) is a rendition of an unpublished drawing by Plumier, and the species is described a few pages later in the *Admonitio* foreword. See under *Passiflora capsularis* above for a complete discussion of the context and authorship of Barrelier's 1714 opus.

The engraving on the right labeled "2" shows the diagnostic pubescent ovary and leaf shape of *P. rotundifolia*, and is captioned in the foreword notes as "II. *Granadilla folio hederaceo, flore albo, fructo globoso villosa* Plum. Cat. [1703] & Inst. R. Herb. 241 [Tournefort 1700: 241]." The notes give a long description and diagnosis of the species; the locality is given as "*circa montem vulgò dictum le morne de la Calebasse in insulâ Martinicanâ*," a name used for that mountain peak even until today.

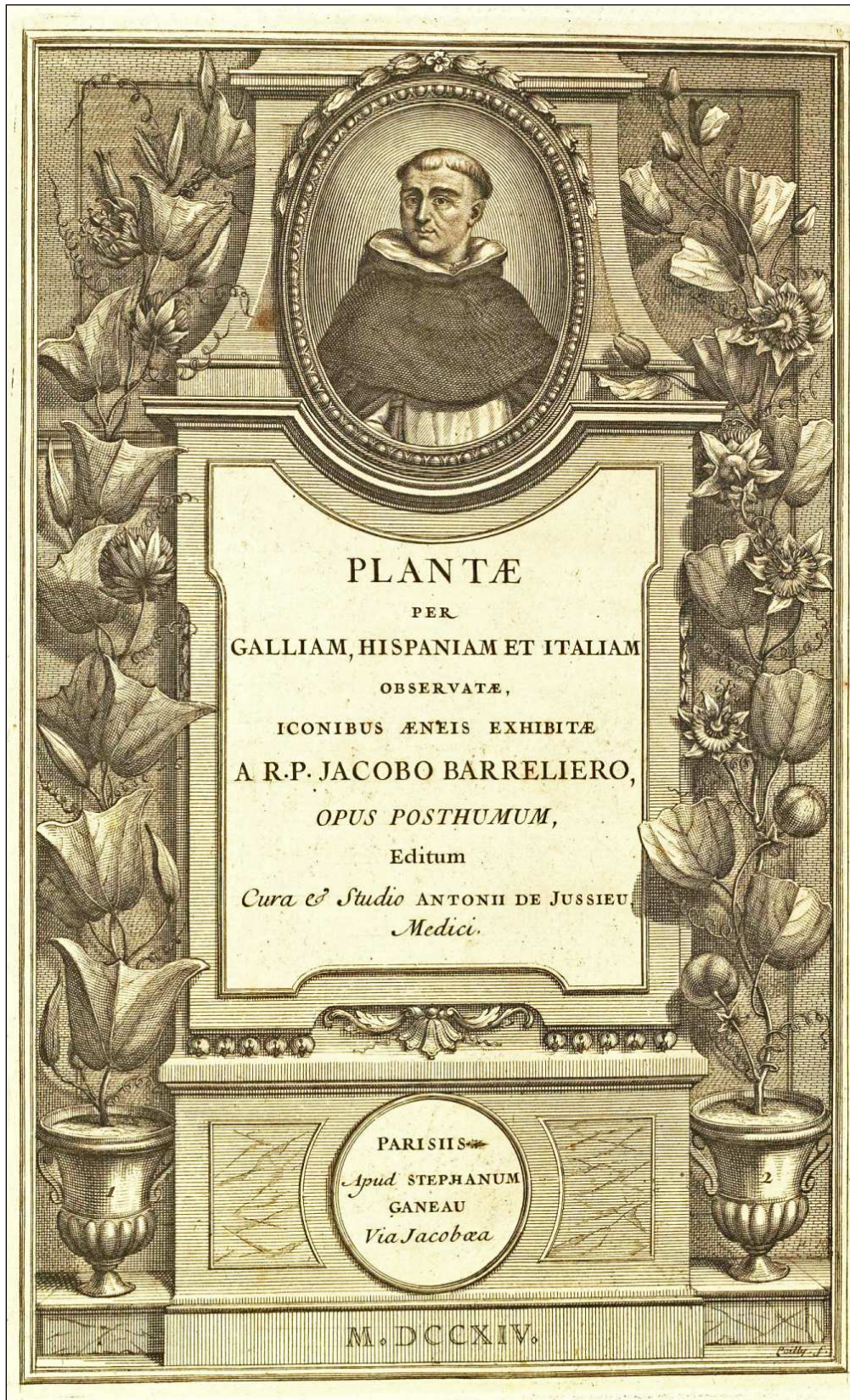


Figure 2. The frontispiece title page of Barrelier, *Pl. Galliam Hisp. Ital. Obs. Icon. Æneis Exhib.* 1714. *Passiflora capsularis* L. is shown on the left, *P. rotundifolia* L. on the right.

Additional original material, as in the case of *Passiflora capsularis*, can be found in Burman (1755 [1757], see Plumier) in his *Plantarum americanarum (Pl. Amer.)*, fascicle 6, t. 138, f. 2, "*Passiflora foliis sub-trilobus obtusis*." But again, as in the case argued above, Linnaeus undoubtedly saw the depictions and detailed descriptions of the drawings in Barrelier (1714) long before he saw the tracings upon which Burmann based his book. Therefore, the icon in Barrelier (see Fig. 1, here) is chosen as the lectotype of *P. rotundifolia* over the other original material.

Linnaeus' statement of provenance for this species as "America australiori" is inaccurate because it is clearly stated in the preface of Barrelier (1714) to be the island of Martinique.

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