

## CONTINUING STUDIES IN THE GUTTIFERAE

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During a recent field trip in Ecuador, made on behalf of my studies in the Guttiferae, my wife and I observed many individuals of an extraordinarily remarkable and handsome species of the large and complex genus Clusia. We made no fewer than six collections, including both sexes, represented in each collection by a rather extensive series of this fine epiphyte, because of its inherent interest and because at that time we believed it to be undescribed.

Upon return to New York in December (last) we immediately, with the assistance of Mr. Charles Clare, staff artist at The New York Botanical Garden, and Mr. Yung-chau Huang, technologist working with us, began detailed studies of the species in question. Then only, under the authorship of Elbert Little in volume 19 of Phytologia, published in January 1970, we read the description and discussion and saw illustrations of this "new" Clusia.

Dr. Little provided a most adequate diagnosis and description, accompanied by illustrations (Phytologia 19: 262-267, January, 1970) for it, under the name of Clusia venusta. There is not now appreciable to add except some additional record, observation, and the presentation of the excellent plates prepared by Mr. Clare and photographs of pollens prepared by Mr. Huang.

Dr. Little has been good enough to share his valuable collections, and I now have before me specimens of his No. 20450, an isotype of C. venusta, and Little & Dixon 21054 of that species. These together with the following exsiccatae seem to represent the now known collections:

ECUADOR. Bolívar: arbol de flores llamativas, petalos blancos, pero al apice rosado, hojas elipsoidales, Limon, estrivaciones inferiores de la Cord. Occ., 800 m, 22 Obre 1943, Acosta Solis 6469 ? (F). Esmeraldas: Bejuco leñoso comun en los arboles, petalos rosados o rojizos, bosque humedo primario, Río Hoja Blanca con Río Hualpi, alt 75 m, 14 Sept 1965, Little & Dixon 21054 (NY); parasite liana strangler becoming a tree, common, Agua Clara, Ronca Tigrillo, between Río Esmeraldas and Río Canandé, 21 Aug 1967, Jativa & Epling 2253 ? (NY); liana

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to 10 m, Estero Capuli, 150 m, 3 July 1966, Jativa & Epling 1058 ? (NY). Pichincha: flowers white, at 1000 ft, 20 km w of Santo Domingo, 1 Nov 1961, Cazalet & Pennington 5233 ? (NY); epiphytic (very large) shrub on small tree, Rio Baba, 28 km s Santo Domingo, 3 Nov 1961, Dodson & Thien 1179 ♂ (NY, WISC); bejuco lenoso 6 m, 8 cm diam, bosque humedo, Santo Domingo de los Colorados, 620 m, 27 Feb 1965, Elbert L. Little 20450 (isotype, NY); large shrubby epiphyte lodged at 10 m on trunk of tall palm, latex clearish white, flowers white, solitary, axillary or terminal, 12 km below Santo Domingo at 700 m alt, 29 Sept 1969, Maguire & Maguire 61786 ?; as above, but with red flowers, androecium convex-discoid, 7-8-subacutely lobed, Maguire & Maguire 61787 ♂; large shrubby epiphyte on broad-leaved trees, latex clearish white, petals white, 7, urnulately expanded, in pasture 9 km below Santo Domingo on road to Quininde, at 650 m, 2 Oct 1969, Maguire & Maguire 61790 ?; as above, but 10 km below Santo Domingo on road to Quininde, Maguire & Maguire 61791 ?; large shrubby epiphyte on palm at 10 m, latex scanty, clearish white, androecium pentagonal, 5 cm at largest diam, petals fleshy, 5-6, very deep rose, not expanded in anthesis, margins strongly crisped, in pasture, km 11, Santo Domingo-Quininde road, 650 m alt, 2 Oct 1969, Maguire & Maguire 61795 ♂.

The Maguire & Maguire collections were distributed under the epithet "acostana."

With the more ample material now available, it is possible to amplify to some extent Dr. Little's report.

**Ecology and Geography:** The present record of C. venusta from the Province of Bolívar extends its range southward in the amount of 150 km, thus establishing a natural range along the Pacific slopes between approximately 100 and 700 meters altitude, in areas of ample rainfall, from northern Esmeraldas to central Bolívar, Ecuador.

Some of the data on specimen labels ascribe the species to primary forest. I have seen it only in secondary areas, predominantly open pastures where maximum light is available. Hosts in such habitats may be palms or a variety of exposed broad-leaved trees.

**Habit:** It would seem that Clusia venusta invariably establishes itself as an epiphyte, becoming vigorous, robust, and bushy, often overgrowing the host. At length, after the destruction of the host, the epiphyte may and often does become independently established, and then may become a large, multi-stemmed, round-crowned tree 10-15 m high.

**Morphology and Anatomy:** Little's full description of this fine species is entirely adequate, there being few minor



discrepancies between his observations and my own. As example, he describes the latex yellow, the petals of the staminate flower to be 8, of the pistillate flower 10-11, and the carpels and stigmas 17-21. My findings respectively are: latex consistently clear becoming sugary on drying; staminate petals 5-6; pistillate petals 7-8; and carpels and stigmas 16-18. The ovary is surrounded at the base by a fleshy staminodial ring about 1 cm high. These differences are trivial and in no way impair the original circumscription. The character of the latex, however, is important as a sectional distinction.

Pollen: Pollens in Clusia venusta are, as commonly in the genus as a whole, 3-colporate, suboblate-prolate. The sporoderm is alveolate-reticulate. Polar view diameter is 30-37 u, equatorial measurements are 27-31 u.

The more useful contribution of this report is the presentation of Mr. Clare's fine drawings and Mr. Huang's excellent photographs of the competently prepared pollens.

Clusia dixonii Little, Phytologia 18: 469-470, fig. 15, 1969. This splendid tree Clusia, previously reported by the type collection Dixon 263, Rio Guayllabamba, Pichincha, Ecuador, may now be further recorded as follows:

ECUADOR. Pichincha: Tree 15 m high, latex scanty, cream, stigmas normally 8, appressed, concave, each carpel longitudinally several-sulcate, inflorescences 1-3-fruited, at 1600 m alt in pueblo of Tandapi, overhanging Rio Toachi, 54 km above Santo Domingo de los Colorados, 26 Sept 1969, Maguire & Maguire 61778; tree to 10 m high, 20 cm diam, ♀, flowers normally solitary or inflorescence of 3, latex scanty, whitish, at 1050 m alt, overhanging Rio Toachi, 10 km below Pueblo Tandapi, along road to Santo Domingo de los Colorados, 27 Sept 1969, Maguire & Maguire 61781; tree 15 m high, latex scanty, cream-white, sepals 7-8, not opposite, carpels normally 8, deeply sulcate, each carpel in turn vertically 3-4-sulcate, stigmas appressed, lanceolate, concave, on rocky slopes at 1550 m alt, 20 km above Santo Domingo de los Colorados, 27 Sept 1969, Maguire & Maguire 61785; tree 10 m high, ♀, latex cream, moderate, fruit - stigmas commonly 8, carpels deeply sulcate, each carpel dorsally additionally 3-sulcate, frequent at 1300 m alt, 50 km above Santo Domingo along Rio Toachi, 4 Oct 1969, Maguire & Maguire 61799; tree 10 m high, latex cream, moderate, ♀, petals cream-tan, oblanceolate, fruit - stigmas commonly 8, carpels deeply sulcate, each carpel dorsally additionally 3-sulcate, frequent at 1350 m alt, 50 km above Santo Domingo along Rio Toachi, 4 Oct 1969, Maguire & Maguire 61800.



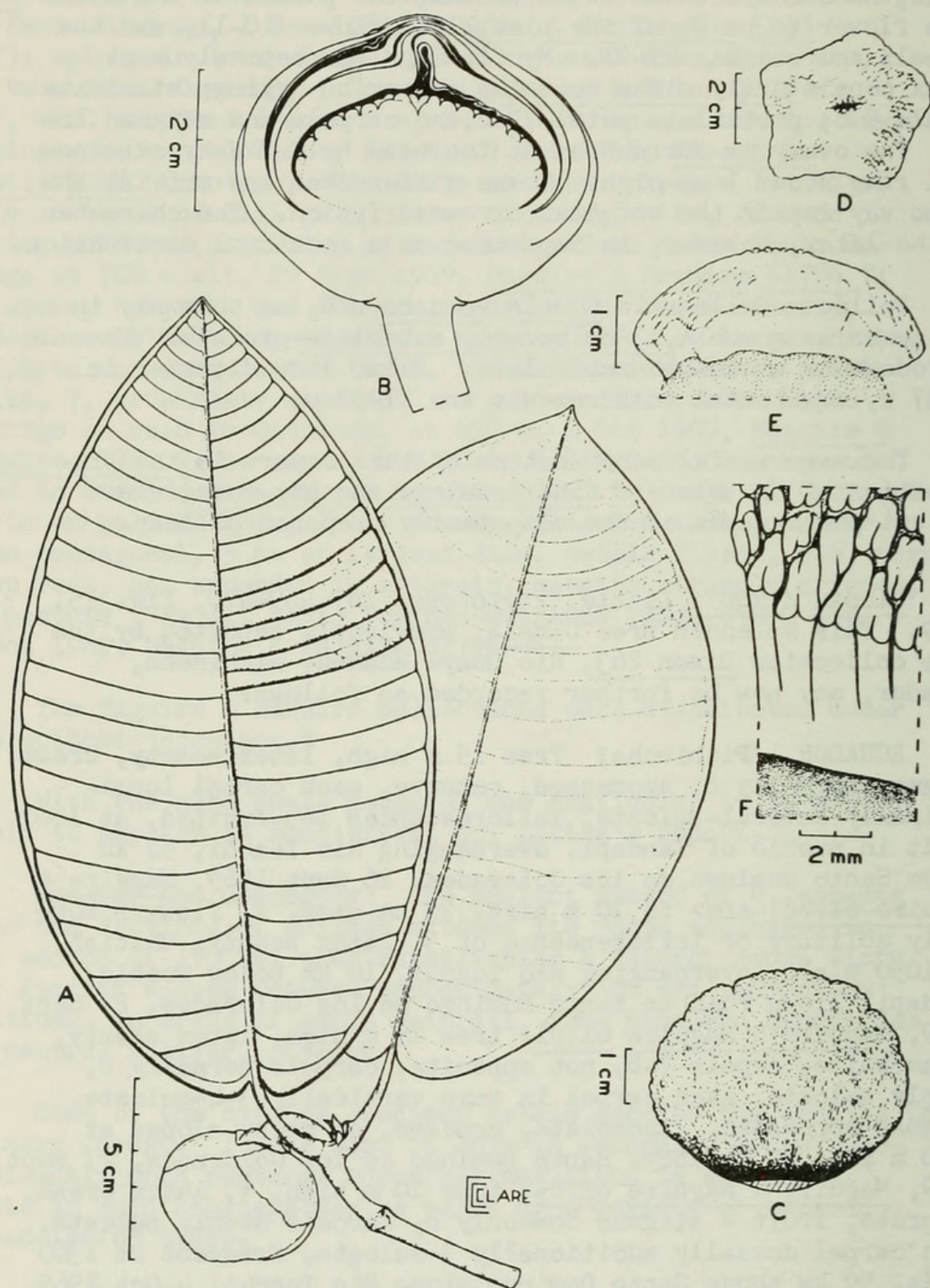


Fig. 1. *Clusia venusta*. A, Habit, Maguire & Maguire 61687; B, Median long-section of staminate flower bud, Maguire & Maguire 61795; C, Petal, Maguire & Maguire 61795; D, Top view of androecium, Maguire & Maguire 61795; E, Side view of androecium, Maguire & Maguire 61795; F, Section of marginal portion of androecium, Maguire & Maguire 61795.



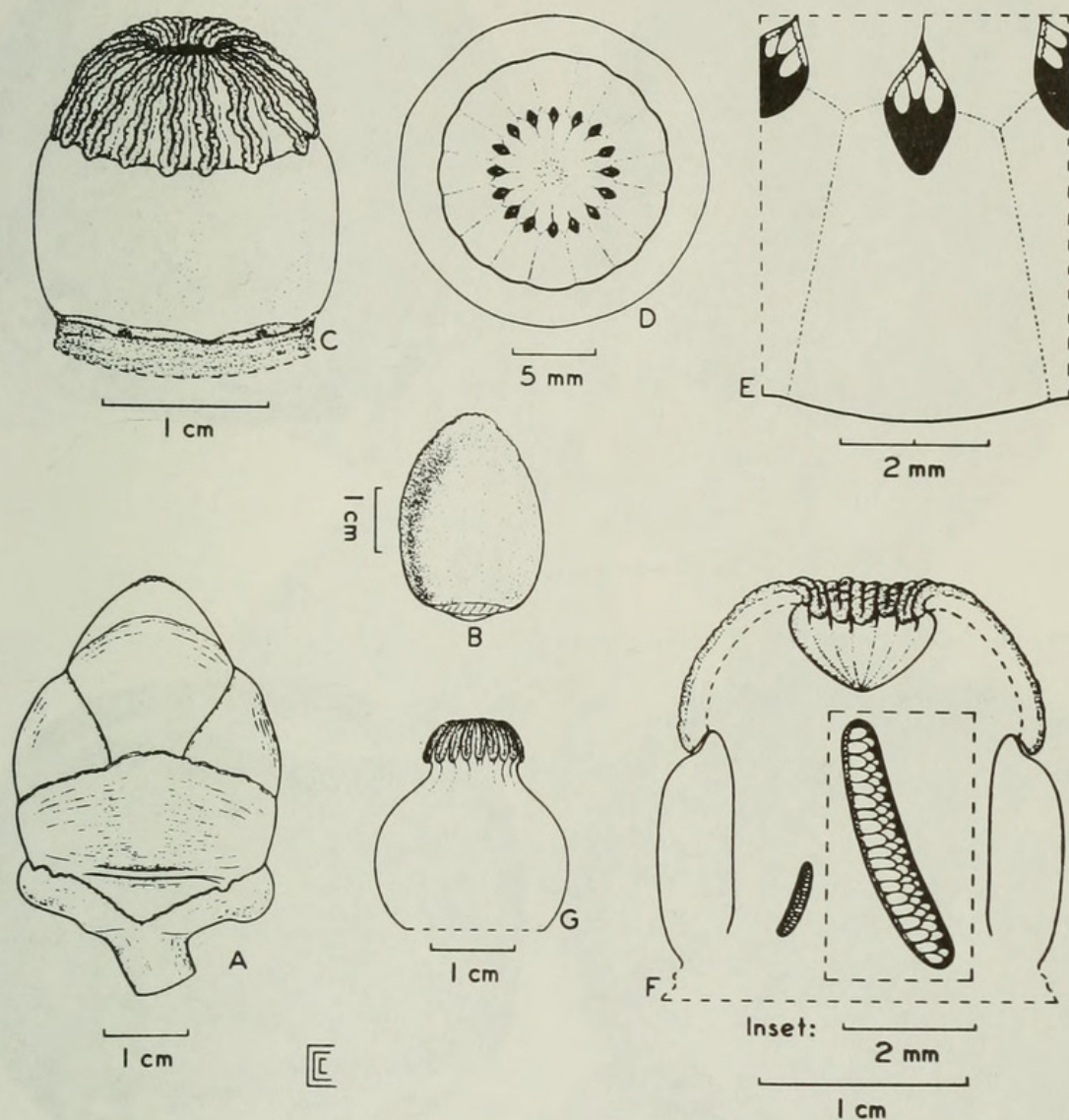


Fig. 2. Clusia venusta. A, Pistillate bud, Maguire & Maguire 61791; B, Petal, Maguire & Maguire 61791; C, Immature pistil, the ovary of which is encased in fleshy staminodial cylinder, Maguire & Maguire 61791; D, Cross-section of immature ovary with encasing staminodial cylinder, Maguire & Maguire 61791; E, Cross-section of a carpel and portion of adjacent ones, showing attachment of sessile ovules at base of which are integumental rings which at maturity envelop the seed as conspicuously colored arils, Maguire & Maguire 61791; F, Long-section of immature pistil showing relatively small locules and placental area (inset much enlarged), and staminodial cylinder, Maguire & Maguire 61791; G, Maturing pistil, Jativa & Epling 1058.



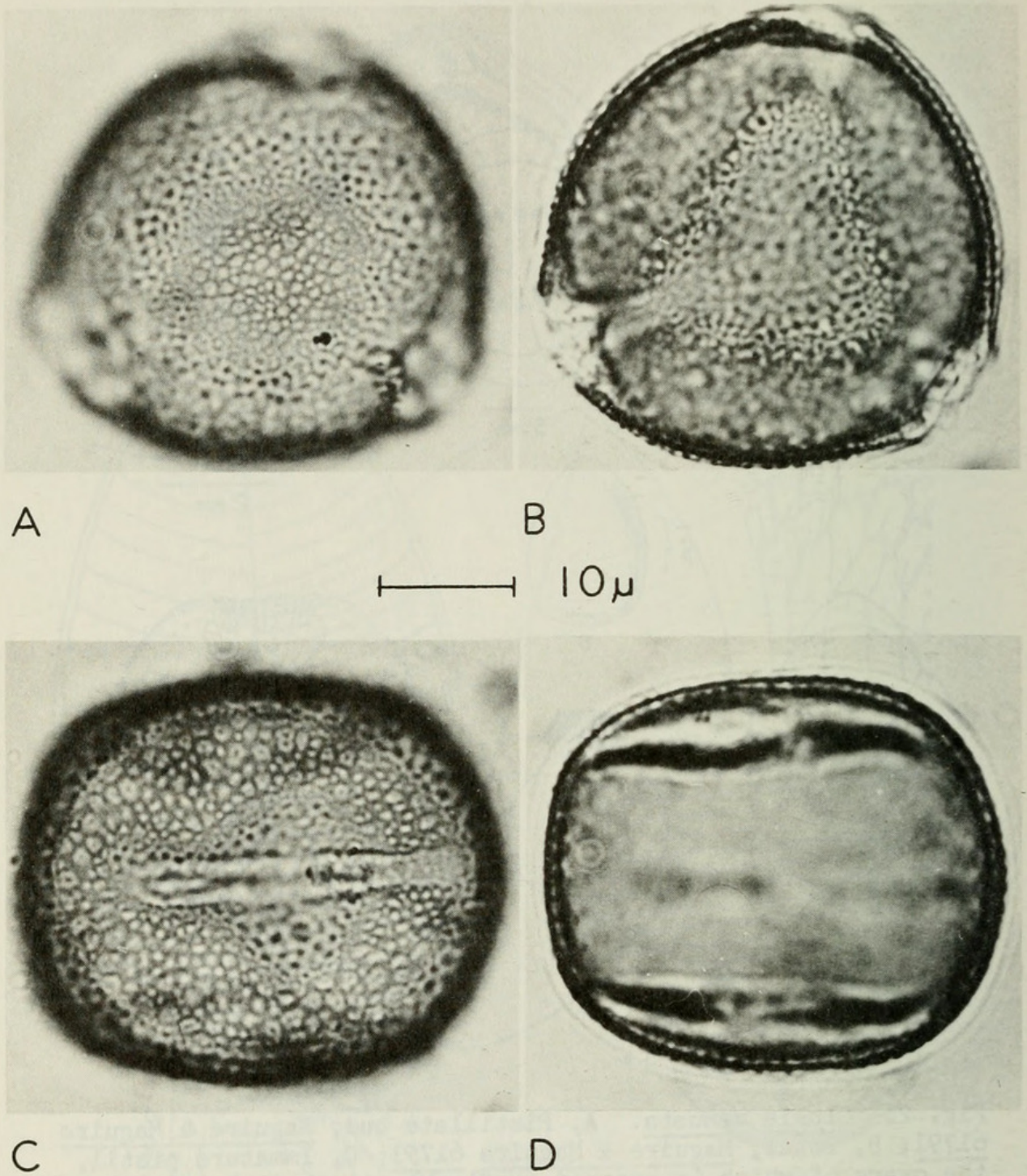


Fig. 3. Pollen of Clusia venusta, Maguire & Maguire 61795, x 1500 (approx.). A, Surface polar view showing alveolate-reticulate sculpturing; B, Median focus view showing sulci and walls in section (central triangular area is artifactual, resulting from a depression of spore walls); C, Surface equatorial view showing sulcus and sculpturing; D, Median focus view showing the two adverse sulci and wall in section.



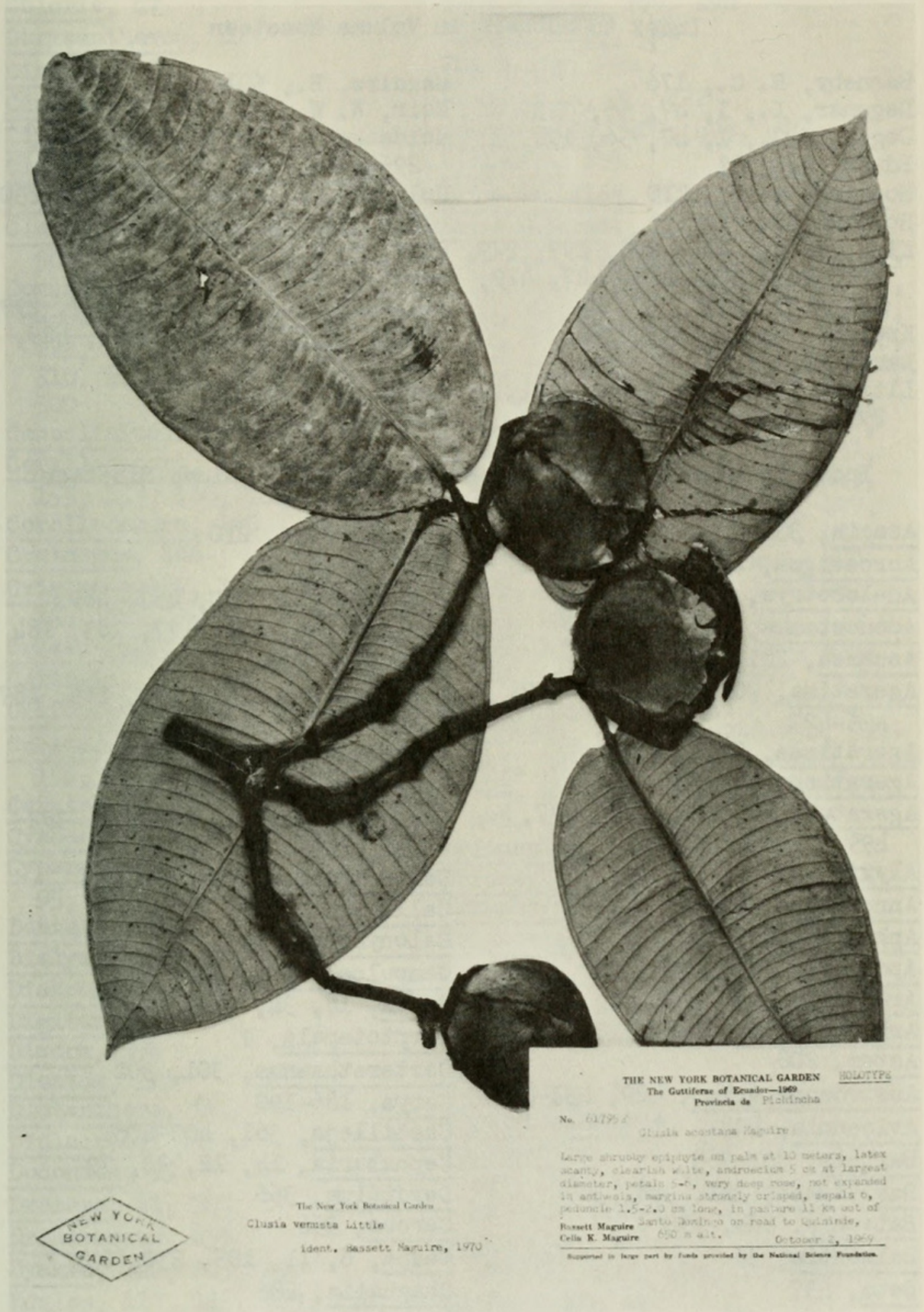


Fig. 4. Clusia venusta. Photograph of ♂ specimen, Maguire & Maguire 61795.



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