

## JAMAICAN AND OTHER SPECIES OF BUMELIA (SAPOTACEAE)

WILLIAM T. STEARN

THE GENUS *Bumelia*, with which *Dipholis* is here united, comprises about forty species, all American, of which nine occur in Jamaica. They have been the subject of a careful, detailed, very useful revision by Cronquist in the *Journal of the Arnold Arboretum* 26: 435-471. 1945, which provides keys, descriptions, and synonymy, the last very extensive owing to insufficient allowance by many authors for variation within species.

The following notes arising out of a study of the Sapotaceae for the *Flora of Jamaica* supplement Cronquist's work.

In Jamaica these trees are often known under the name of "Bullet," formerly "Bully-tree," the ripe fruits of some species recalling to the early colonists those of the European bullace (*Prunus instititia*).

## THE IDENTITY OF MAUROCENIA AMERICANA

In 1754, Philip Miller maintained the genus *Maurocenia* (in his *Gardeners Dictionary Abridged*, 4th ed.) as distinct from *Cassine*, with which Linnaeus had united it, observing that "in this he is mistaken," and thus gave the name *Maurocenia* valid post-1753 publication. In 1768 (in the 8th edition of the *Gardeners Dictionary*), Miller included four species in the genus. The first, *Maurocenia frangula* Miller (*Cassine maurocenia* L., 1753), the lectotype of the genus, belongs to the Celastraceae. This and Miller's two other species, *M. phillyrea* Miller (i.e., *Cassine peragua* L. sensu stricto, syn. *C. capensis* L.) and *M. cerasus* Miller (possibly an *Euclea*) were all from South Africa. His fourth species, *M. americana*, however, came from Jamaica and, although not hitherto placed, it is evidently not congeneric with the African members of the genus. Miller's account is as follows:

4. MAUROCENIA (*Americana*) foliis obverse ovatis emarginatis, floribus solitariis alaribus. *Maurocenia* with obverse oval leaves which are indented at the edges, and flowers growing singly from the sides of the branches. Frangula folio subrotundo rigido subtus ferrugineo. Houst. MSS. *Berry-bearing Alder with a rounded stiff leaf, which is of an iron colour on the under side.*

The fourth sort was discovered by the late Dr. Houstoun, growing naturally at the Palisadoes in Jamaica, from whence he sent the seeds to Europe; this rises with a woody stalk from fifteen to twenty feet high, covered with a rough brown bark, and divides into many branches, which are garnished with stiff leaves, placed alternately; they are about an inch and a half long, and a little more in breadth, indented at the top, with a stiff reflexed border, of a gray colour on their upper side, but of a rusty iron colour on their under, standing upon short foot-stalks. The flowers come out singly along the side of the



FIG. 1. Type specimen of *Maurocena americana* Miller (*Bumelia americana* (Miller) Stearn) in herb. British Museum (Nat. Hist.).

branches; they have small white petals which end in acute points, and five slender stamina, which spread open, and are terminated by obtuse summits. In the center is situated a roundish germen, supporting a long bifid stigma, which is permanent. The germen afterwards turns to a round berry, with one or two cells, each having one oblong seed.

The Palisadoes is a coastal strip of land enclosing Kingston Harbour with Port Royal at its tip. Houstoun's specimen (FIG. 1) from the Palisadoes is in Miller's herbarium, now incorporated in the general herbarium of the British Museum (Natural History), London; it lacks flowers but undoubtedly belongs to *Bumelia retusa* Swartz, the lectotype of the genus *Bumelia* (Sapotaceae), which is common on the coasts of the Bahamas, Jamaica, and Cuba. This varies much in the size, shape, pubescence, and veining of the leaves. The leaves of Houstoun's specimen agree essentially with those of *B. retusa* from southern Jamaica, e.g., *Proctor* 17427 from Little Goat Island, St. Catherine, as well as from elsewhere, e.g., *Stearn* 314 from St. Ann, *Proctor & Stearn* 11762 from Trelawny. Although the fruits are usually solitary in the axils, the flowers are rarely so and are usually in sessile axillary fascicles of 2 to 15. In consequence of the identity of Miller's species with Swartz's, Miller's epithet must be transferred to *Bumelia* and replace Swartz's.

*Bumelia americana* (Miller) Stearn, comb. nov.

*Maurocena americana* Miller, Gard. Dict. ed. 8, art. Maurocena no. 4. 1768.  
*Bumelia retusa* Swartz, Prodr. 49. 1788; Fl. Ind. Occ. 1: 490. 1797. Cronquist, Jour. Arnold Arb. 26: 460. 1945.

For further synonymy, see Cronquist, *loc. cit.*

THE JAMAICAN SPECIES OF BUMELIA

After stating that *Bumelia* Swartz (1788) and *Dipholis* A. DC. (1884), showed "no real diversity in structure or habit" and that the presence of albumen in *Dipholis* and its absence in *Bumelia* have no practical importance owing to the rarity of fruiting specimens, Hartog in 1879 (Jour. Bot. (London) 17: 356) accordingly proposed to abolish *Dipholis* even as a section of *Bumelia*. Nevertheless most other authors have continued to maintain them, by attributing scanty or no albumen and fleshy cotyledons to *Bumelia* and abundant albumen and thin cotyledons to *Dipholis*. Aubréville (*Adansonia*, Mém. 1: 78. 1965), for example, keys them out as:

Graine sans albumen . . . . .	<i>Bumelia</i>
Graine avec albumen . . . . .	<i>Dipholis</i>

The seeds are, however, unknown for many species of this group, and it is thus uncertain whether such species really possess the seed characters of the genera in which they have been placed. Despite certain tendencies noted by Cronquist (Jour. Arnold Arb. 26: 445. 1945), e.g. "plant commonly spiny or thorny" in *Bumelia* and "plant unarmed" in *Dipholis*, "ovary usually hairy, occasionally glabrous" in *Bumelia* and "ovary nearly always glabrous" in *Dipholis*, the "fruit commonly . . . rounded . . . at the apex" in *Bumelia* and the "fruit commonly abruptly tapering to the style" in *Dipholis*, there are no constant correlations between these char-

acters and those of the seed. Hence it is difficult and arbitrary to recognize two groups. Baehni in his first memoir on the Sapotaceae (Candollea 7: 434. 1938) referred *Dipholis* to *Bumelia*. In his posthumous survey of the genera (Boissiera 11: 133-136. 1965) he concluded that "en somme leur séparation aurait plutôt comme base une croyance, un mythe," the amount of albumen and thickness of the cotyledons being a relative and not absolute distinction. No good purpose is served in trying to keep them separate.

The Jamaican species of *Bumelia*, including those formerly placed in *Dipholis*, are as follows:

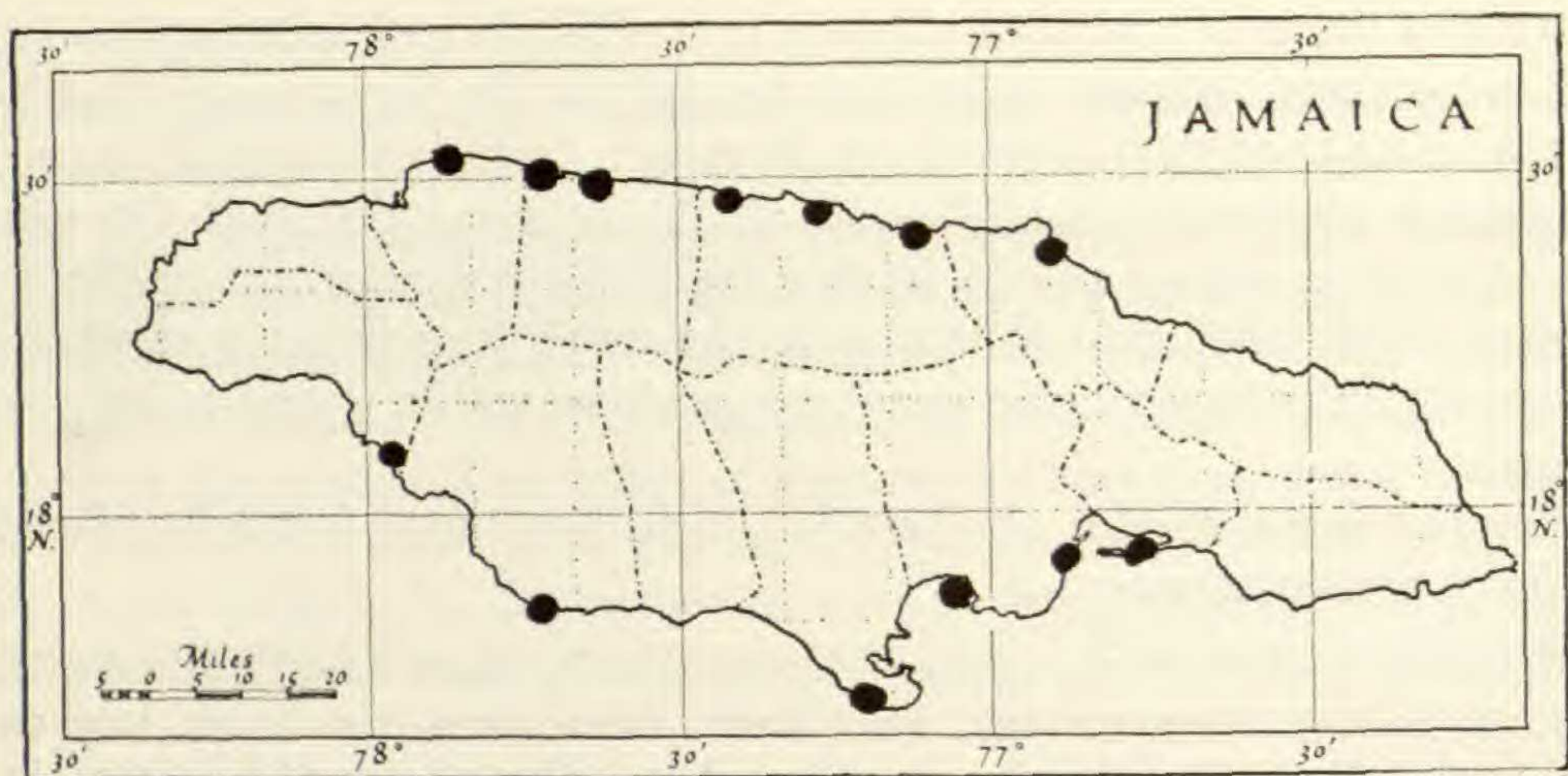
1. Calyx ca. 2-2.5(-3) mm. long. Flowers usually many (3-15) in a cluster.
  2. Petiole 15-32 mm. long. Leaf-blades often more than 8 cm. long and 4 cm. broad; lateral veins clearly evident. Fruits large (12-15 mm. in diameter), subglobose. . . . . *B. nigra*.
  2. Petiole 2-15 mm. long. Leaf-blades rarely up to 8 cm. long and 4 cm. broad; lateral veins inconspicuous. Fruits smaller (4-10 mm. in diameter).
    3. Leaf-blades acute or shortly acuminate, mostly narrowly elliptic. Fruits ca. 5 mm. long. . . . . *B. salicifolia*.
    3. Leaf-blades obtuse or rounded, sometimes emarginate at apex, mostly almost orbicular, rotund or broadly elliptic, varying to obovate or oblanceolate. Fruits ca. 8-10 mm. long.
      4. Young branchlets, pedicels, and sepals glabrous. Leaves green beneath when young. Fruits oblong-ellipsoid, ca. 4-5 mm. in diameter. . . . . *B. rotundifolia*.
      4. Young branchlets, pedicels, and sepals minutely hairy. Leaves brown-tomentose beneath when young. Fruits subglobose to broadly ellipsoid, ca. 10 mm. in diameter. . . . . *B. americana*.
1. Calyx (3-)3.5-4 mm. long. Flowers usually few (1-8) in a cluster.
  5. Sepals 8-9, the outer as well as the inner brown-tomentose. Pedicels persistently hairy. Central Jamaica. . . . . *B. octosepala*.
  5. Sepals 5-8, the outer 2 glabrous or sparsely hairy, the inner tomentose or sericeous. Pedicels glabrous or sparingly hairy.
    6. Leaf-blades not more than 5 cm. broad.
      7. Leaves without raised network of veins beneath. Blue Mountains. . . . . *B. montana*.
      7. Leaves with raised network of veins beneath. Santa Cruz Mountains. . . . . *B. sp. nov. I*.
    6. Leaf-blades some or all more than 5 cm. broad, with raised network of veins beneath immediately visible under a lens.
      8. Petiole 1-10 mm. long. Leaf-blades obovate or broadly obovate. Eastern Jamaica. . . . . *B. bullata*.
      8. Petiole 10-20 mm. long. Leaf-blades elliptic-oblong. Western Jamaica. . . . . *B. sp. nov. II*.

*Bumelia americana* (Miller) Stearn, comb. nov. See above.

*B. americana* subsp. *americana* FIG. 1; FIG. 2, G-K; FIG. 3, I.

*Bumelia retusa* subsp. *typica* Cronquist, Jour. Arnold Arb. 26: 460. 1945.

Bahamas, Cuba, Jamaica, Navassa. See MAP 1.



MAP 1. Distribution of *Bumelia americana* in Jamaica.

***B. americana* subsp. *neglecta* (Cronquist) Stearn, comb. nov.**

*Bumelia retusa* subsp. *neglecta* Cronquist, Jour. Arnold Arb. 26: 461. 1945.

Mexico, British Honduras.

***Bumelia bullata* (Howard & Proctor) Stearn, comb. nov.**

*Dipholis bullata* Howard & Proctor, Jour. Arnold Arb. 39: 103. 1958.

Jamaica: Parish of Portland.

***Bumelia montana* Swartz, Prodr. 49. 1788; Fl. Ind. Occ. 1: 493. t. 8, fig. e-n. 1797. FIG. 3, A-D, J.**

*Dipholis montana* (Swartz) Griseb. Fl. Brit. W. Indian Is. 401. 1861. Pierre & Urban in Urban, Symb. Antill. 5: 135. 1904. Cronquist, Jour. Arnold Arb. 26: 442. 1945.

Jamaica: Parishes of St. Andrew, Portland, St. Thomas.

***Bumelia nigra* Swartz, Prodr. 49. 1788; Fl. Ind. Occ. 1: 487. t. 8, fig. a-d. 1797. FIG. 3, F-H.**

*Dipholis nigra* (Swartz) Griseb. Fl. Brit. W. Indian Is. 400. 1861. Pierre & Urban in Urban, Symb. Antill. 5: 137. 1904. Cronquist, Jour. Arnold Arb. 26: 439. 1945.

Jamaica: Parishes of Westmoreland, Trelawny, St. Elizabeth, Manchester, Clarendon, St. Ann, St. Andrew.

***Bumelia octosepala* (Urban) Stearn, comb. nov. FIG. 3, E.**

*Dipholis octosepala* Urban, Symb. Antill. 7: 324. 1912. Cronquist, Jour. Arnold Arb. 26: 442. 1945.

Jamaica: Parishes of Trelawny, Clarendon, St. Ann, St. Catherine.

***Bumelia rotundifolia* Swartz, Prodr. 50. 1788; Fl. Ind. Occ. 1: 495.**

1797. Pierre & Urban in Urban, Symb. Antill. 5: 143. 1904. Cronquist, Jour. Arnold Arb. 26: 459, 1945. FIG. 2, A-F.

Jamaica: Parishes of Hanover, Trelawny, Manchester, St. Ann, Clarendon, St. Catherine, St. Andrew.

*Bumelia salicifolia* (L.) Swartz, Prodr. 50. 1788; Fl. Ind. Occ. 1: 491. 1797.

*Achras salicifolia* L. Sp. Pl. ed. 2. 1: 470. 1762.

*Dipholis salicifolia* (L.) A. DC. in DC. Prodr. 8: 188. 1844. Sargent, Silva N. Am. 5: 179. t. 250. 1893. Pierre & Urban in Urban, Symb. Antill. 5: 138. 1904. Cronquist, Jour. Arnold Arb. 26: 440. 1945.

Florida, Bahamas, Jamaica (Parishes of Westmoreland, St. James, St. Elizabeth, Trelawney, Clarendon, St. Ann, St. Catherine, St. Mary, St. Andrew), Cuba, Hispaniola, Puerto Rico, Virgin Islands, Guadeloupe, Barbados, Central America.

#### *Bumelia*, sp. nov. I.

Jamaica: Parish of St. Elizabeth; Santa Cruz Mountains, Malvern, 2,200', ix. 1907, *Harris 9742*; same locality, 2,100', ix. 1907, *Harris 9803*.

This is closely related to *Bumelia montana* of the Blue Mountains, eastern Jamaica, but seems distinct in the more evident veining of the leaves and slightly smaller calyx. Complete flowers and fruits are unknown.

#### *Bumelia*, sp. nov. II.

Jamaica: Parish of Hanover; interior summit slopes of Dolphin Head, limestone ridge forest, 1,100' - 1,700', iv. 1955, *Proctor 10039*.

This species is notable for its large leaves with elliptic blades 5-18 cm. long, 2.5-8 cm. broad. Complete flowers and fruits are unknown.

### OTHER SPECIES

The following species distinguished by Cronquist or by Standley and Williams under *Dipholis* do not occur in Jamaica.

#### *Bumelia bellonis* (Urban) Stearn, comb. nov.

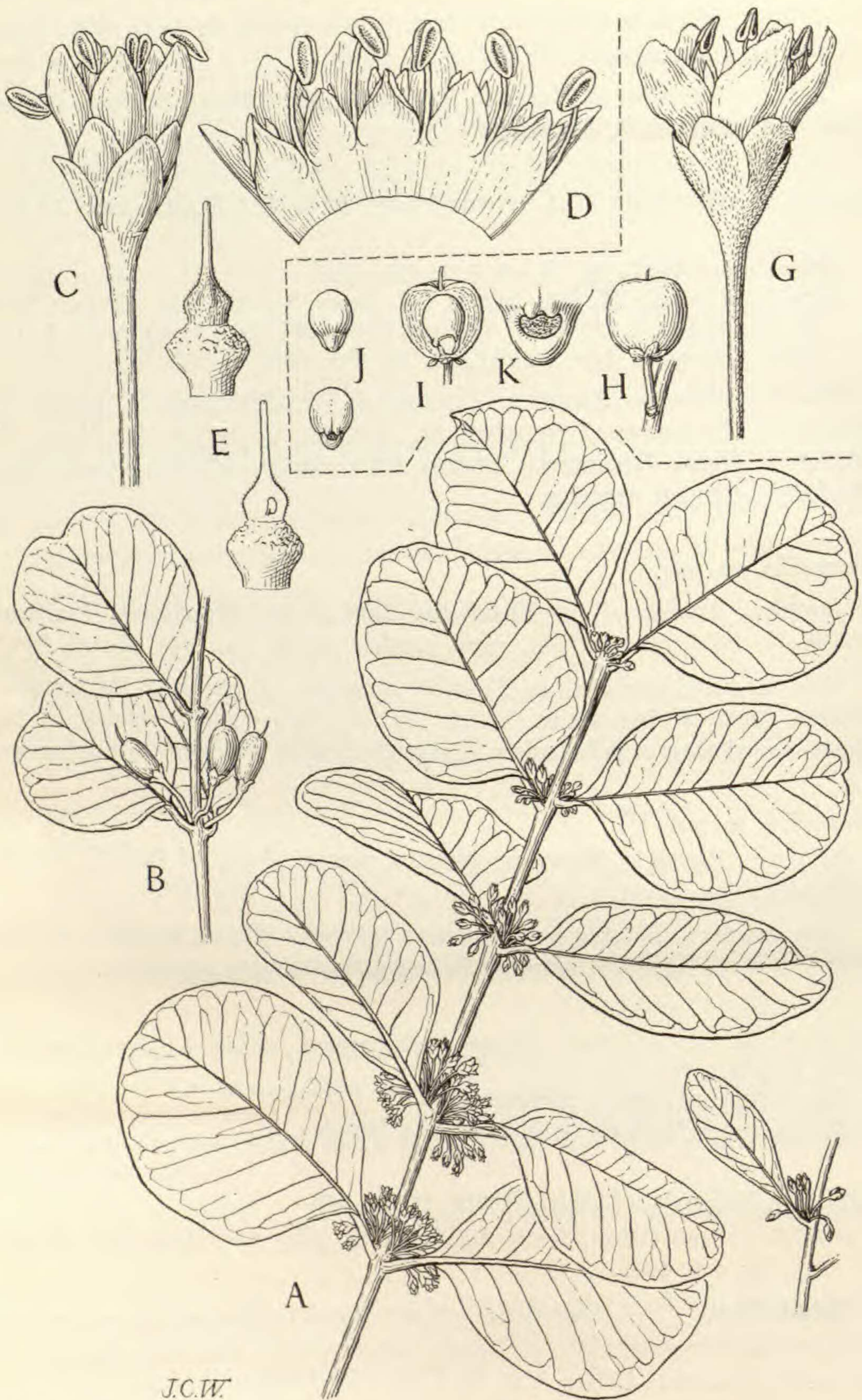
*Dipholis bellonis* Urban, Symb. Antill. 5: 137. 1904. Cronquist, Jour. Arnold Arb. 26: 440. 1945.

Puerto Rico.

#### *Bumelia cubensis* Griseb. Cat. Pl. Cub. 164. 1866.

*Dipholis cubensis* (Griseb.) Pierre in Urban, Symb. Antill. 5: 140. 1904. Cronquist, Jour. Arnold Arb. 26: 443. 1945.

Cuba.



J.C.W.

FIG. 2. A-F, *Bumelia rotundifolia*. A, flowering shoot (Norman 158)  $\times 3/5$ ; B, fruiting shoot (Webster & Wilson 4928),  $\times 3/5$ ; C, flower (Norman 158),  $\times 6$ ; D, dissected corolla (Norman 158),  $\times 6$ ; E, gynoecium (Norman 158),

**Bumelia durifolia** (Standley) Stearn, comb. nov.

*Dipholis durifolia* Standley, Carnegie Inst. Wash. Misc. Publ. 461 (Bot. Maya Area 4): 78. 1935. Cronquist, Jour. Arnold Arb. 26: 441. 1945.

British Honduras.

**Bumelia ferruginea** (Ekman & O. C. Schmidt) Stearn, comb. nov.

*Dipholis ferruginea* Ekman & O. C. Schmidt, Fedde, Repert. Sp. Nov. 32: 94. 1933. Cronquist, Jour. Arnold Arb. 26: 444. 1945.

Hispaniola: Dominican Republic.

**Bumelia jubilla** (Urban) Stearn, comb. nov.

*Dipholis jubilla* Ekman ex Urban, Symb. Antill. 9: 415. 1925. Cronquist, Jour. Arnold Arb. 26: 439. 1945.

Cuba.

**Bumelia matudae** (C. Lundell) Stearn, comb. nov.

*Sideroxylon matudae* C. Lundell, Phytologia 1: 221. 1937 (as *matudai*).

*Sideroxylon steyermarkii* Standley, Field Mus. Publ. Bot. 22: 368. 1940.

*Dipholis matudae* (C. Lundell) C. Lundell, Contr. Univ. Michigan Herb. 7: 43. 1942 (as *matudai*); Standley & L. O. Williams in Fieldiana, Bot. 24: 220. 1967 (as *matudae*).

Mexico, Guatemala.

Cronquist included this in *Bumelia minutiflora*, from which it differs, according to Standley and Williams, in having much larger and differently veined leaves. The genitive of Matuda being *matudae*, like *balansae* from Balansa (cf. Int. Code Bot. Nomencl. 1966, Art. 73, Rec. 73C), Lundell's original spelling *matudai* is to be treated as an orthographic error.

**Bumelia minutiflora** (Pittier) Baehni, Boissiera 11: 135. 1965.

*Dipholis minutiflora* Pittier, Contr. U.S. Natl. Herb. 13: 464. 1912. Cronquist, Jour. Arnold Arb. 26: 438. 1945.

Mexico, Guatemala, Honduras, Costa Rica, Panama.

**Bumelia** sp.

*Dipholis parvifolia* Standley, Field Mus. Publ. Bot. 18: 909. 1938. Cronquist, Jour. Arnold Arb. 26: 442. 1945.

Transfer of Standley's epithet *parvifolia* to *Bumelia* is precluded by

---

× 6; [F] unlettered figure in lower right corner, leaf and inflorescence (*Harris 11040*, isotype of *B. peckhamensis*), × 3/5. G–K, *Bumelia americana*. G, flower (*Stearn 314*), × 6; H, fruit (*Proctor 2197*), × 1; I, fruit in longitudinal section (*Proctor 2197*), × 1; J, seed (*Proctor 2197*), × 1; K, scar of seed (*Proctor 2197*), × 3. Drawing by Joanna C. Webb, from specimens in British Museum (Natural History), London.



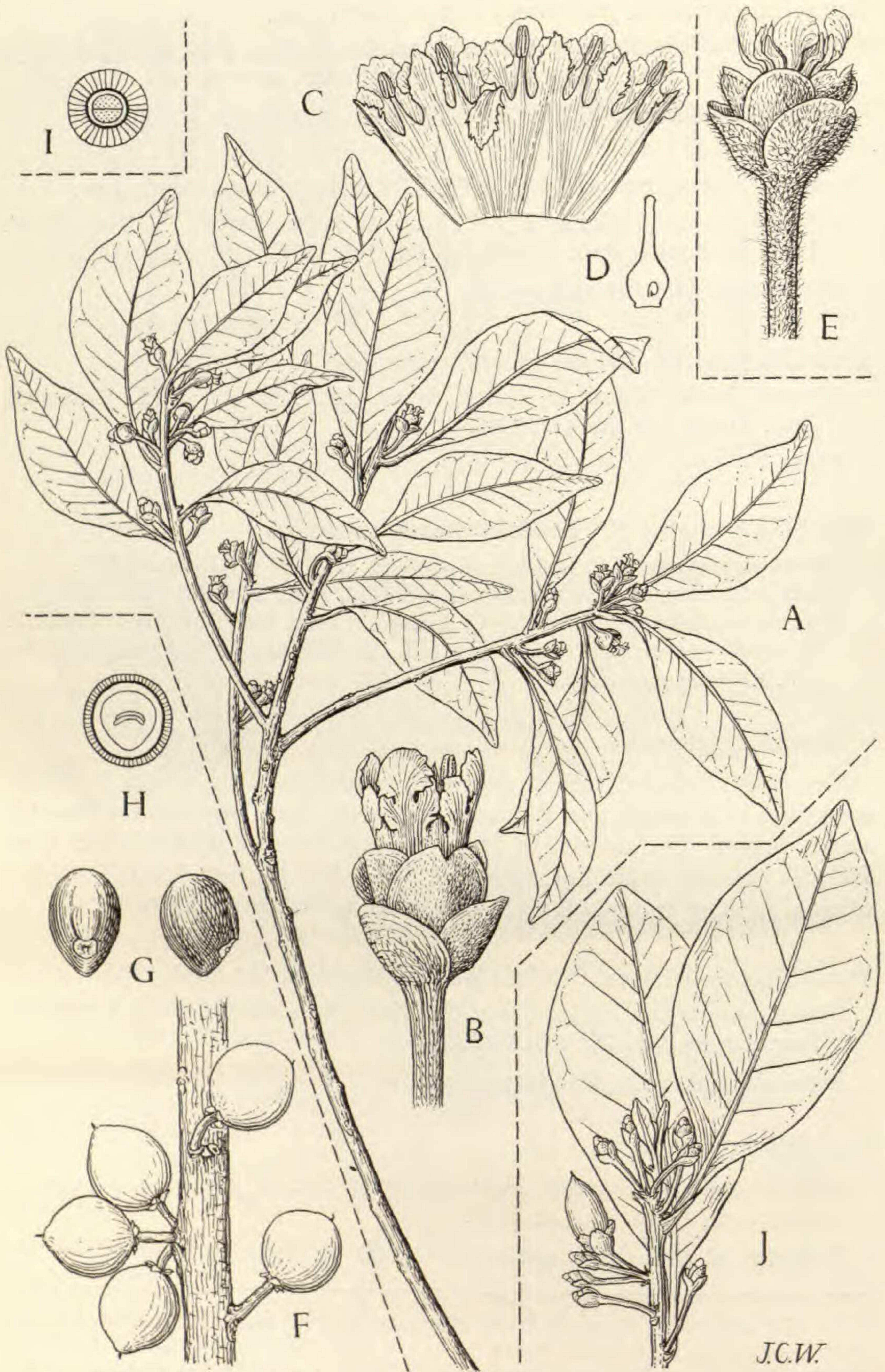


FIG. 3. A-D, J, *Bumelia montana*. A, flowering shoot (Proctor 9538),  $\times 3/5$ ; B, flower (Proctor 9538),  $\times 4$ ; C, dissected corolla (Proctor 9538),  $\times 4$ ; D, gynoecium in section (Proctor 9538); J, fruiting shoot (Harris 10118),

J.C.W.

*Bumelia parvifolia* A. DC. in DC. Prodr. 8: 190. 1844. Since this species was described by Standley from specimens without flowers, it would seem prudent to await more complete material from the type-locality, Los Ayotes, prov. Guanacaste, Costa Rica, before providing it with a new name.

***Bumelia repens* (Urban & Ekman) Stearn, comb. nov.**

*Dipholis repens* Urban & Ekman, Ark. Bot. 22A. 17: 70. 1929. Cronquist, Jour. Arnold Arb. 26: 444. 1945.

Hispaniola: Dominican Republic.

***Bumelia sericea* (Cronquist) Stearn, comb. nov.**

*Dipholis sericea* Cronquist, Jour. Arnold Arb. 26: 444. 1945.

Hispaniola: Dominican Republic.

***Bumelia stevensonii* (Standley) Stearn, comb. nov.**

*Dipholis stevensonii* Standley, Trop. Woods 11: 21. 1927. Cronquist, Jour. Arnold Arb. 26: 438. 1945.

British Honduras.

DEPARTMENT OF BOTANY

BRITISH MUSEUM (NATURAL HISTORY)

CROMWELL ROAD

LONDON, S.W. 7, ENGLAND

---

× 2/3. E, *Bumelia octosepala*, flower (Proctor 5421), × 4. F-H, *Bumelia nigra*. F, fruits (Proctor 20591), × 3/5; G, seed (Proctor 20591), × 1; H, fruit in transverse section showing cotyledons embedded in abundant endosperm and scanty pulp, × 3/5. I, *Bumelia americana*, fruit in transverse section showing fleshy cotyledons, without endosperm, and abundant pulp, × 1. Drawing by Joanna C. Webb, from specimens in British Museum (Natural History), London.