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KEYS FOR THE IDENTIFICATION OF SEEDLINGS OF SOME
PROMINENT WOODY SPECIES IN EIGHT FOREST TYPES
IN PUERTO RICO^{1, 2, 3}

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In 1963 and 1964, I studied seedlings in preparation for successional investigations in Puerto Rico. Most seedlings were observed in the field, but some were raised from seed at Beltsville. I have constructed keys for the woody seedlings observed in the following forest types: (1) mangrove woodlands, (2) littoral woodlands, (3) dry limestone forests, (4) dry coastal forests, (5) moist coastal and limestone forests, (6) lower cordillera and lower Luquillo forests, (7) upper cordillera and upper Luquillo forests, and (8) gardens and parks. The choice of these forest types results from my observations and those of Little & Wadsworth (Common trees of Puerto Rico and the Virgin Islands. Agr. Handb. No. 249. USDA For. Serv. 548 p. 1964). I have assigned each species to the forest type in which I think it is most likely to occur. In Appendix 1, botanical and Spanish names of the species are accompanied by references to the illustrations and to the forest type or types in which the seedlings occur.

In the lower cordillera and lower Luquillo forests, most seeds germinate in or on the litter above the soil. In nearly half of these, the cotyledons do not emerge from the testa during germination. It is etymologically incorrect to term such germination hypogeal. Therefore, I propose the following adjectives: (1) *cryptocotylar* (*crypto*, hidden; *cotyledon*, a hollow vessel), characterized by the cotyledons remaining in the testa after germination; and (2) *phanerocotylar* (*phanero*, manifest; *cotyledon*, a hollow vessel), characterized by the cotyledons escaping the testa during germination. There is a gradual increase in the percentage of cryptocotylar species as one passes from the dry limestone forests (thorn forests) to the lower cordillera and lower Luquillo forests (rain forests).

Three more words have facilitated the construction of the keys: (1) *cataphylls*: brown or hyaline scale leaves succeeding the cotyledons, as in many cryptocotylar species, (2) *eophylls*: the first few leaves with green expanded laminae (Tomlinson, J. Arnold Arb. **41**: 415. 1960), and (3) *metaphylls*: the mature leaves as opposed to the juvenile forms (Jackson's glossary).

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KEY 1. MANGROVE WOODLANDS

- A. Seedlings cryptocotylar.
- B. Eophylls opposite; vernation convolute(Fig. 142) RHIZOPHORA MANGLE
- BB. Eophylls alternate; vernation not convolute.
- C. Eophylls imparipinnate; cataphylls prominent
.....(Fig. 58) MACHAERIUM LUNATUM
- CC. Eophylls simple; cataphylls inconspicuous or absent
.....(Fig. 54) PTEROCARPUS OFFICINALIS
- AA. Seedlings phanerocotylar.
- D. Cotyledons conduplicate(Fig. 166) AVICENNIA GERMINANS
- DD. Cotyledons not conduplicate.
- E. Cotyledons convolute; leaves often basally biglandular.
- F. Leaves opposite(Fig. 136) LAGUNCULARIA RACEMOSA
- FF. Leaves alternate(Fig. 133) CONOCARPUS ERECTUS
- EE. Cotyledons not convolute; leaves not basally biglandular.
- G. Leaves stipulate; latex absent.
- H. Cotyledons more than 15 mm long, much broader than
long(Fig. 116) THESPESIA POPULNEA
- HH. Cotyledons less than 15 mm long, scarcely broader than
long(Fig. 114) HIBISCUS TILIACEUS
- GG. Leaves exstipulate; latex present.
- I. Leaves opposite(Fig. 127) CLUSIA sp.
- II. Leaves alternate(Fig. 149) MANILKARA BALATA

KEY 2. LITTORAL WOODLANDS

- A. Seedlings cryptocotylar.
- B. Venation parallel(Fig. 5) COCOS NUCIFERA
- BB. Venation not parallel.
- C. Seedlings unarmed(Fig. 35) CHRYSOBALANUS ICACO
- CC. Seedlings armed(Fig. 20) XIMENIA AMERICANA
- AA. Seedlings phanerocotylar.
- D. Cotyledons bilobate(Fig. 152) IPOMOEA PES-CAPRAE
- DD. Cotyledons entire or retuse.
- E. Cotyledons as broad as long or broader, often retuse.
- F. Leaves ocreate(Fig. 18) COCCOLOBA UVIFERA
- FF. Leaves not ocreate.
- G. Cotyledons retuse, not convolute; eophylls dentate
.....(Fig. 172) TECOMA STANS
- GG. Cotyledons entire, convolute; eophylls entire
.....(Fig. 134) TERMINALIA CATAPPA
- EE. Cotyledons longer than broad, entire.
- H. Cotyledons linear; eophylls dentate(Fig. 104) DODONAEA VISCOSA
- HH. Cotyledons lanceolate to ovate; eophylls entire.
- I. Cotyledons convolute; leaves lepidote
.....(Fig. 26) CAPPARIS CYNOPHALLOPHORA

II. Cotyledons not convolute; leaves elepidote.

- J. Latex present; leaves opposite.....(Fig. 157) CALOTROPIS PROCERA
 JJ. Latex absent; leaves verticillate ..(Fig. 7) CASUARINA EQUISETIFOLIA

KEY 3. DRY LIMESTONE FORESTS (THORN FORESTS)

- A. Seedlings cryptocotylar.
 B. Eophylls compound.
 C. Eophylls decomposed(Fig. 29) MORINGA OLEIFERA
 CC. Eophylls not decomposed.
 D. Eophylls trifoliolate(Fig. 100) SERJANIA POLYPHYLLA
 DD. Eophylls bifoliolate or quadrifoliolate
(Fig. 37) PITHECELLOBIUM UNGUIS-CATI
 BB. Eophylls simple(Fig. 103) THOUINIA PORTORICENSIS
- AA. Seedlings phanerocotylar.
 E. Latex present(Fig. 158) PLUMERIA ALBA
 EE. Latex absent.
 F. Cotyledons deeply retuse or bilobate.
 G. Eophylls simple.
 H. Cotyledons about as broad as long, shallowly retuse
(Fig. 170) CRESCENTIA CUJETE
 HH. Cotyledons much broader than long, deeply retuse
(Fig. 167) TABEBUIA HETEROPHYLLA
 GG. Eophylls paripinnate(Fig. 49) HAEMATOXYLON CAMPECHIANUM
 FF. Cotyledons entire or rarely shallowly emarginate.
 I. First or second eophylls compound or lobed.
 J. Eophylls with fewer than six leaflets or lobes.
 K. Eophylls palmately lobed(Fig. 79) JATROPHA GOSSYPIFOLIA
 KK. Eophylls pinnate(Fig. 57) PICTETIA ACULEATA
 JJ. Eophylls with more than five leaflets.
 L. First two eophylls at the cotyledonary node, pinnate.
 M. Cotyledons trinerved(Fig. 51) PARKINSONIA ACULEATA
 MM. Cotyledons uninerved(Fig. 40) ACACIA FARNESIANA
 LL. First two eophylls above the cotyledonary node, pinnate
 or 2-pinnate.
 N. First two eophylls opposite; cotyledons plano-convex
(Fig. 52) TAMARINDUS INDICA
 NN. First two eophylls alternate; cotyledons not plano-convex.
 O. Leaflets 2-4 mm long(Fig. 41) PROSOPIS JULIFLORA
 OO. Leaflets 6-10 mm long
(Fig. 42) LEUCAENA LEUCOCEPHALA
- II. First and second eophylls simple.
 P. Cotyledons or eophylls convolute.
 Q. Cotyledons convolute; eophylls strict
(Fig. 27) CAPPARIS COCCOLOBIFOLIA
 QQ. Cotyledons not convolute; eophylls convolute
(Fig. 62) ERYTHROXYLON AREOLATUM

- PP. Cotyledons and eophylls not convolute.
- R. Eophylls alternate.
- S. Eophylls subsessile, ocreate, entire
.....(cf. Fig. 16) COCCOLOBA sp.
- SS. Eophylls petiolate, not ocreate, entire to lobate.
- T. Seedlings pilose with long hairs..(Fig. 83) CROTON LUCIDA
- TT. Seedlings without long hairs.
- U. Cotyledons broadly reniform; metaphylls
lobed(Fig. 112) GOSSYPIUM ARBOREUM
- UU. Cotyledons ovate; metaphylls compound
.....(Fig. 65) AMYRIS ELEMIFERA
- RR. Eophylls opposite.
- V. Cotyledons foliaceous, green.
- W. Seeds alate; stipules amplexicaul
.....(Fig. 179) EXOSTEMA CARIBAEUM
- WW. Seeds exalate; stipules filiform
.....(Fig. 109) COLUBRINA ARBORESCENS
- VV. Cotyledons planoconvex, brown
.....(Fig. 89) SAVIA SESSILIFLORA

KEY 4. DRY COASTAL FORESTS (DECIDUOUS SEASONAL FORESTS)

- A. Seedlings cryptocotylar.
- B. Venation parallel(Fig. 2) SABAL CAUSIARUM
- BB. Venation not parallel.
- C. Eophylls simple.
- D. Eophylls entire, alternate.
- E. Seeds alate; leaves acuminate, drooping, without a white
border(Fig. 73) SWIETENIA MAHAGONI
- EE. Seeds exalate; leaves not acuminate or drooping, with a
white border(Fig. 150) BUMELIA OBOVATA
- DD. Eophylls dentate or undulate, the first pair usually opposite
.....(cf. Fig. 75) TRICHILIA HIRTA
- CC. Eophylls bifoliolate(Fig. 107) MELIOCOCCUS BIJUGATUS
- AA. Seedlings phanerocotylar.
- F. Cotyledons plicate, dentate.
- G. Veins orangeBOURRERIA SUCCULENTA
- GG. Veins green(Fig. 159) CORDIA NITIDA
- FF. Cotyledons not plicate or dentate.
- H. Cotyledons trifoliolate(Fig. 69) BURSERA SIMARUBA
- HH. Cotyledons simple.
- I. Eophylls compound.
- J. Eophylls trifoliolate or palmate(Fig. 118) CEIBA PENTANDRA
- JJ. Eophylls pinnate.
- K. Eophylls with 4-6 leaflets; seeds brownish-orange.
- L. Metaphylls mostly 4-foliolate
.....(cf. Fig. 70) GUAIAACUM OFFICINALE
- LL. Metaphylls mostly 6-10-foliolate
.....(Fig. 70) GUAIAACUM SANCTUM
- KK. Eophylls with more than 6 leaflets; seeds bright red
.....(Fig. 39) ADENANTHERA PAVONINA

- II. Eophylls simple.
- M. Cotyledons broader than long.
- N. Eophylls dentate; cotyledons retuse
.....(Fig. 169) SPATHODEA CAMPANULATA
- NN. Eophylls entire; cotyledons mucronate
.....(Fig. 135) BUCIDA BUCERA
- MM. Cotyledons longer than broad.
- O. Cotyledons planoconvex(Fig. 90) ANACARDIUM OCCIDENTALE
- OO. Cotyledons flat.
- P. Latex present(Fig. 11) FICUS CITRIFOLIA
- PP. Latex absent.
- Q. Eophylls dentate.
- R. Eophylls cordate, more than 3 cm long
.....(Fig. 86) HURA CREPITANS
- RR. Eophylls not cordate, less than 3 cm
long(Fig. 165) CITHAREXYLUM FRUTICOSUM
- QQ. Eophylls entire.
- S. Cotyledons longer than 1.5 cm
.....(Fig. 96) CASSINE XYLOCARPA
- SS. Cotyledons shorter than 1.5 cm
.....(Fig. 95) SCHAEFFERIA FRUTESCENS

KEY 5. MOIST COASTAL AND LIMESTONE FORESTS
(SEMI-EVERGREEN SEASONAL FORESTS)

- A. Seedlings cryptocotylar.
- B. Venation parallel; seedling armed(Fig. 6) ACROCOMIA MEDIA
- BB. Venation not parallel; seedling unarmed.
- C. Cataphylls opposite or subopposite; latex yellow
.....(Fig. 125) CALOPHYLLUM CALABA
- CC. Cataphylls alternate or absent; latex, if present, watery or milky.
- D. Eophylls peltate(Fig. 21) HERNANDIA SONORA
- DD. Eophylls not peltate.
- E. Eophylls pinnate or palmately lobed.
- F. Eophylls pinnate(Fig. 55) ANDIRA INERMIS
- FF. Eophylls palmately lobed(Fig. 123) STERCULIA APETALA
- EE. Eophylls simple.
- G. Seeds subglobose; cotyledons not obviously dissimilar.
- H. Eophylls obviously penninerved; seeds usually
more than 2 cm broad, brown, dull
.....(Fig. 23) PERSEA AMERICANA
- HH. Eophylls uninerved or weakly penninerved;
seeds less than 2 cm broad, black, lustrous
.....(Fig. 99) SAPINDUS SAPONARIA
- GG. Seeds ovoid; cotyledons markedly dissimilar
.....(Fig. 12) ARTOCARPUS HETEROPHYLLUS
- AA. Seedlings phanerocotylar.
- I. First eophylls stipulate, opposite, simple.
- J. Metaphylls simple.
- K. Leaves glabrous, vernicose(Fig. 177) TEREBRARIA RESINOSA
- KK. Leaves hairy, not vernicose(Fig. 176) GUETTARDA sp.

- JJ. Metaphylls bifoliolate(Fig. 48) HYMENAEA COURBARIL
- II. First eophylls, if stipulate, not opposite and simple.
- L. Eophylls trifoliolate.
- M. Cotyledons lance-oblong; eophylls punctate (Fig. 66) ZANTHOXYLUM sp.
- MM. Cotyledons linear; eophylls not punctate(Fig. 93) SPONDIAS PURPUREA
- LL. Eophylls simple.
- N. Latex present(Fig. 84) SAPIUM LAUROCERASUS
- NN. Latex absent.
- O. Cotyledons plicate, dentate.
- P. Seedling cepaceousCORDIA ALLIODORA
- PP. Seedling not cepaceous(Fig. 160) CORDIA SULCATA
- OO. Cotyledons not plicate nor dentate.
- Q. Cotyledons punctate.
- R. Cotyledons acute, lanceolate ..(Fig. 137) PSIDIUM GUAJAVA
- RR. Cotyledons obtuse, ovate to reniform.
- S. Cotyledons contortuplicate, nigrid-punctate
.....(Fig. 115) MONTEZUMA SPECIOSISSIMA
- SS. Cotyledons plane, red-punctate
.....(Fig. 162) TECTONA GRANDIS
- QQ. Cotyledons not punctate.
- T. Cotyledons subsessile.
- U. Teeth of the eophylls longer than broad or ciliate; indument of the lower surface not arachnoid.
- V. Eophylls subglabrous, usually with fewer than 14 teeth
.....(Fig. 148) DENDROPANAX ARBOREUS
- VV. Eophylls pilose, usually with more than 14 teeth
.....(Fig. 144) DIDYMOPANAX MOROTOTONI
- UU. Teeth of the eophylls nearly as broad as long; indument of the lower surface arachnoid.
- W. Petiolar indument ferruginous; hypocotyl densely pubescent
.....(Fig. 119) OCHROMA PYRAMIDALE
- WW. Petiolar indument not ferruginous; hypocotyl scantily pubescent
.....(Fig. 13) CECROPIA PELTATA
- TT. Cotyledons long-petiolate.
- X. Eophylls dentate, pilose ..(Fig. 111) TRIUMFETTA sp.
- XX. Eophylls entire, glabrous or subglabrous
.....(Fig. 164) CESTRUM MACROPHYLLUM

KEY 6. LOWER CORDILLERA AND LOWER LUQUILLO FORESTS
(RAIN FORESTS)

- A. Seedlings cryptocotylar.
- B. Eophylls compound.
- C. Eophylls bifoliolate.
- D. Petiole strongly alate, with a gland at the summit(Fig. 34) INGA VERA
- DD. Petiole weakly alate or exalate, glandless(Fig. 32) INGA FAGIFOLIA

- CC. Eophylls trifoliolate or pinnate.
- E. Eophylls with many leaflets(Fig. 33) PITHECELLOBIUM ARBOREUM
- EE. Eophylls with usually three leaflets.
- F. First eophylls alternate, the leaflets dentate
.....(Fig. 91) COMOCLADIA GLABRA
- FF. First eophylls opposite, the leaflets entire....(Fig. 71) DACRYODES EXCELSA
- BB. Eophylls simple.
- G. Eophylls entire.
- H. Latex absent.
- I. Eophylls, at least after the first pair, alternate.
- J. Venation parallel or plinerved.
- K. Venation parallel(Fig. 3) ROYSTONEA BORINQUENA
- KK. Venation plinerved(Fig. 8) SMILAX cf. CORIACEA
- JJ. Venation not parallel or plinerved.
- L. Petioles incrassate.
- M. Seed red, subglobose(Fig. 56) ORMOSIA KRUGII
- MM. Seed brown, reniform.
- N. Eophylls stipulate
.....(Fig. 61) ERYTHRINA cf. POEPPIGIANA
- NN. Eophylls exstipulate
.....((Fig. 31) ROUREA SURINAMENSIS
- LL. Petioles not incrassate.
- O. Seeds flattened and often winged.
- P. Seeds winged; embryo less than 1.5 cm long.
- Q. Eophylls all alternate, less than 2 cm
long(Fig. 78) SECURIDACA DIVERSIFOLIA
- QQ. First eophylls opposite, more than 2
cm long(Fig. 72) SWIETENIA MACROPHYLLA
- PP. Seeds not winged; embryo more than 1.5
cm long(Fig. 94) MANGIFERA INDICA
- OO. Seeds globose to ovoid.
- R. Stipules obvious.
- S. First eophylls alternate, densely pubes-
cent(Fig. 36) HIRTELLA RUGOSA
- SS. First eophylls opposite, glabrous
.....(Fig. 117) QUARARIBEA TURBINATA
- RR. Stipules not obvious.
- T. Hypocotyl conspicuously pubescent;
seeds less than 2.5 cm long.
- U. Leaves yellowish-green, wartless
.....(Fig. 22) NECTANDRA ANTILLANA
- UU. Leaves green, often with conical
warts(Fig. 24) OCOTEA LEUCOXYLON
- TT. Hypocotyl subglabrous; seeds more
than 2.5 cm long ..(Fig. 25) OCOTEA MOSCHATA
- II. Eophylls opposite.
- V. Seeds subglobose, exalate.
- W. Seedling aromatic, not fuliginous
.....(Fig. 141) EUGENIA STAHLII
- WW. Seedling not aromatic, often fuliginous
.....(Fig. 143) EUGENIA JAMBOS
- VV. Seeds flattened, alate(Fig. 67) HETEROPTERIS LAURIFOLIA

- HH. Latex present.
- X. Leaves opposite(Fig. 124) RHEEDIA PORTORICENSIS
- XX. Leaves alternate(Fig. 153) POUTERIA MULTIFLORA
- GG. Eophylls dentate or undulate.
- Y. Teeth of eophylls acute; seeds brown to black.
- Z. Seeds exalate; third eophyll simple.
- a. First eophylls less than 2 cm long; metaphylls unifoliate.....(Fig. 101) ALLOPHYLUS CRASSINERVIS
- aa. First eophylls more than 2 cm long; metaphylls compound(Fig. 102) CUPANIA AMERICANA
- ZZ. Seeds alate; third eophyll trifoliolate ..(Fig. 105) PAULLINIA PINNATA
- YY. Teeth of eophylls rounded; seeds reddish.
- b. Eophylls mostly less than 3 cm long(Fig. 75) TRICHILIA PALLIDA
- bb. Eophylls mostly more than 3 cm long.
- c. Metaphylls 8-20-foliolate, the tertiary veins obscure above(Fig. 74) GUAREA GUIDONIA
- cc. Metaphylls 2-6-foliolate, the tertiary veins prominent on both sides(Fig. 77) GUAREA RAMIFLORA
- AA. Seedlings phanerocotylar.
- d. Eophylls not entire; metaphylls alternate.
- e. Leaves lobed; yellow latex present.(Fig. 28) BOCCONIA FRUTESCENS
- ee. Leaves dentate, serrate, or denticulate; yellow latex absent.
- f. Leaves exstipulate.
- g. Cotyledons plicate, dentate.
- h. Leaves scabrous(Fig. 161) CORDIA LIMA
- hh. Leaves not scabrous.(Fig. 163) CORDIA BORINQUENSIS
- gg. Cotyledons not plicate or dentate.
- i. Eophylls less than 3 cm long.
- j. Leaves pubescent.
- k. Leaves oblanceolate, short-petiolate.(Fig. 146) RAPANEA FERRUGINEA
- kk. Leaves ovate, long-petiolate.(Fig. 85) ALCHORNEOPSIS PORTORICENSIS
- jj. Leaves glabrous(Fig. 92) ILEX NITIDA
- ii. Eophylls more than 3 cm long(Fig. 108) MELIOSMA HERBERTII
- ff. Leaves stipulate.
- l. Petioles incrassate; eophylls more than 2.5 cm long(Fig. 113) SLOANEA BERTERIANA
- ll. Petioles not incrassate; eophylls less than 2.5 cm long.
- m. Cotyledons reniform, with petioles about as long as the blades(Fig. 14) URERA BACCIFERA
- mm. Cotyledons, if reniform, with petioles shorter than the blades.
- n. Teeth of eophylls remote, usually fewer than 12(Fig. 129) HOMALIUM RACEMOSUM
- nn. Teeth of eophylls approximate, usually more than 12.
- o. Leaves broader above the middle, oblanceolate(Fig. 131) CASEARIA ARBOREA
- oo. Leaves broader below the middle, ovate.
- p. First eophylls opposite, serrate(Fig. 128) CASEARIA GUIANENSIS
- pp. First eophylls alternate, dentate(Fig. 130) CASEARIA SYLVESTRIS

- dd. Eophylls entire; metaphylls alternate or opposite.
- q. Seedling laticiferous.
- r. Second pair of leaves opposite; metaphylls stipulate
.....(cf. Fig. 11) *FICUS* spp.
- rr. Leaves after the first pair alternate; metaphylls exstipulate
.....(Fig. 156) *PLUMERIA* *OBTUSA*
- qq. Seedlings not laticiferous.
- s. Metaphylls opposite.
- t. Cotyledons stipulate.
- u. Cotyledons as broad as long or broader, short-petiolate.
- v. Cotyledons reniform(Fig. 182) *COFFEA* *ARABICA*
- vv. Cotyledons broadly deltoid.
- w. Cotyledons about as broad as long; stipules lanceolate(Fig. 180) *GENIPA* *AMERICANA*
- ww. Cotyledons broader than long; stipules linear
.....(Fig. 181) *IXORA* *FERREA*
- uu. Cotyledons longer than broad, long-petiolate.
- x. Seedlings densely pubescent(Fig. 176) *GUETTARDA* sp.
- xx. Seedlings not densely pubescent.
- y. Leaf blades decurrent(Fig. 178) *PALICOUREA* *ALPINA*
- yy. Leaf blades not decurrent ..(cf. Fig. 174) *PSYCHOTRIA* spp.
- tt. Cotyledons not stipulate.
- z. Leaves plinerved*MICONIA* spp.
- zz. Leaves not plinerved.
- A. Cotyledons about as long as broad.
- B. Second pair of eophylls broader above the middle; lateral veins few, remote
.....(Fig. 138) *GOMIDESIA* *LINDENIANA*
- BB. Second pair of eophylls broader below the middle; lateral veins numerous, approximate
.....(Fig. 140) *MYRCIA* *SPLENDENS*
- AA. Cotyledons much longer than broad.
- C. Cotyledons ovate(Fig. 154) *LINOCIERA* *DOMINGENSIS*
- CC. Cotyledons lanceolate(Fig. 63) *BYRSONIMA* *CORIACEA*
- ss. Metaphylls alternate.
- D. Cotyledons plano-convex; metaphylls compound
.....(Fig. 68) *TETRAGASTRIS* *BALSAMIFERA*
- DD. Cotyledons foliaceous; metaphylls simple.
- E. Nodes ocreate or geniculate.
- F. Veins strongly ascending.
- G. Upper leaf surface with conspicuous septate hairs; margin not ciliate ..(Fig. 9) *PIPER* *TRELESEANUM*
- GG. Upper leaf surface without conspicuous septate hairs; margin short-ciliate(Fig. 10) *PIPER* *ADUNCUM*
- FF. Veins not strongly ascending(cf. Fig. 16) *COCCOLOBA* sp.
- EE. Nodes not ocreate or geniculate.
- H. Cotyledons linear(Fig. 17) *CISSAMPELOS* *PAREIRA*
- HH. Cotyledons broader than linear.
- I. Seedlings aromatic(Fig. 15) *GUATTERIA* *CARIBAEA*
- II. Seedlings not aromatic.
- J. Petioles incrassate(Fig. 113) *SLOANEA* *BERTERIANA*

- JJ. Petioles not incrassate.
 - K. Cotyledons reniform.
 -(Fig. 139) BUCHENAVIA CAPITATA
 - KK. Cotyledons ovate.
 - L. Leaves punctate
 -(Fig. 147) ARDISIA GLAUCIFLORA
 - LL. Leaves not punctate
 -(Fig. 87) DRYPETES GLAUCA

KEY 7. UPPER CORDILLERA AND UPPER LUQUILLO FORESTS (MOSSY FORESTS)

- A. Seedlings cryptocotylar.
 - B. Eophylls bilobed or compound; seedlings not aromatic.
 - C. Venation parallel(Fig. 4) PRESTOEA MONTANA
 - CC. Venation pinnate(Fig. 106) MATAYBA DOMINGENSIS
 - BB. Eophylls simple; seedlings aromatic.
 - D. Leaves alternate(Fig. 30) OCOTEA SPATHULATA
 - DD. Leaves opposite(Fig. 145) EUGENIA BORINQUENSIS
- AA. Seedlings phanerocotylar.
 - E. Cotyledons stipulate; metaphylls opposite.
 - F. Seedlings malodorous.
 - G. Stipules connatePSYCHOTRIA MALEOLENS
 - GG. Stipules freeLASIANTHUS LANCEOLATUS
 - FF. Seedlings not malodorous(Fig. 173) HILLIA PARASITICA
 - EE. Cotyledons not stipulate; metaphylls alternate or opposite.
 - H. Cotyledons linear.
 - I. Cotyledons with two nerves(Fig. 1) PODOCARPUS CORIACEUS
 - II. Cotyledons with one or three nerves(Fig. 98) CYRILLA RACEMIFLORA
 - HH. Cotyledons not linear.
 - J. Eophylls trifoliolate(Fig. 97) TURPINIA PANICULATA
 - JJ. Eophylls simple.
 - K. Eophylls dentate(Fig. 82) ALCHORNEA LATIFOLIA
 - KK. Eophylls entire.
 - L. Latex present.
 - M. Latex white.
 - N. Petioles and midribs with many appressed hairs; metaphylls apiculate
 -(cf. Fig. 151) MICROPHOLIS CHRYSOPHYLLOIDES
 - NN. Petioles and midribs with few scattered hairs; metaphylls not apiculate
 -(Fig. 151) MICROPHOLIS GARCINIAEFOLIA
 - MM. Latex yellow(Fig. 127) CLUSIA sp.
 - LL. Latex absent.
 - O. Leaves alternate.
 - P. Cotyledons broader than long, retuse
 -(Fig. 168) TABEBUIA RIGIDA
 - PP. Cotyledons longer than broad, not retuse
 -(Fig. 88) CROTON POECILANTHUS
 - OO. Leaves opposite.
 - Q. Leaves plinerved.
 - R. Leaves obtuse, lepidote
 -CALYCOGONIUM SQUAMULOSUM

- RR. Leaves acute, stellate-pubescent
HETEROTRICHUM CYMOSUM
 QQ. Leaves penninerved.
 S. Nodes incrassate
(Fig. 132) DAPHNOPSIS PHILIPPANA
 SS. Nodes not incrassate
 (Fig. 155) HAENIANTHUS SALICIFOLIUS var. OBOVATUS

KEY 8. GARDENS AND PARKS

- A. Seedlings cryptocotylar.
 B. Eophylls pellucid-punctateCITRUS sp.
 BB. Eophylls not pellucid-punctate.
 C. Latex present.
 D. Eophylls trifoliolate(Fig. 76) HEVEA BRASILIENSE
 DD. Eophylls simple(Fig. 126) GARCINIA MANGOSTANA
 CC. Latex absent.
 E. First eophylls simple.
 F. Eophylls exstipulate(Fig. 19) ANNONA SQUAMOSA
 FF. Eophylls stipulate(Fig. 60) ERYTHRINA CRISTA-GALLI
 EE. First eophylls compound.
 G. Eophylls quadrifoliolate(cf. Fig. 37) PITHECELLOBIUM DULCE
 GG. Eophylls palmatePACHIRA AQUATICA
- AA. Seedlings phanerocotylar.
 H. First eophylls compound or palmately lobed.
 I. Cotyledons linear; eophylls decompoundMELIA AZEDERACH
 II. Cotyledons broader than linear; eophylls lobed to decompound.
 J. Eophylls palmately compound or lobed.
 K. Cotyledons convolute; eophylls 5-foliolate
(Fig. 122) STERCULIA FOETIDA
 KK. Cotyledons not convolute; eophylls palmately lobed.
 L. Eophylls mostly 7-lobate, the lobes serrate
(Fig. 80) RICINUS COMMUNIS
 LL. Eophylls mostly 3-5-lobate, the lobes not serrate
(Fig. 81) ALEURITES MOLUCCANA
 JJ. Eophylls bifoliolate, pinnate, or decompound.
 M. Eophylls bifoliolate(Fig. 46) BAUHINIA sp.
 MM. Eophylls pinnate or decompound.
 N. Cotyledons deeply retuse; leaflets dentate
(Fig. 171) JACARANDA MIMOSIFOLIA
 NN. Cotyledons entire; leaflets entire.
 O. First eophyll with four leaflets.
 P. Second eophyll paripinnate(Fig. 47) CASSIA SIAMEA
 PP. Second eophyll decompound
(Fig. 38) PITHECELLOBIUM SAMAN
 OO. First eophyll with more than four leaflets.
 Q. First and second eophyll pinnate; seeds twice
 as long as broad(Fig. 50) DELONIX REGIA
 QQ. First or second eophyll decompound; seeds
 not twice as long as broad.
 R. First eophyll 1-pinnate; second eophyll
 2-pinnate(Fig. 43) ALBIZIA LEBBECK

- RR. First or second eophyll decomposed with more than two pinnae.
- S. Seeds ocellate; first eophyll pinnate; eglandular
.....(Fig. 44) ENTEROLOBIUM CYCLOCARPUM
- SS. Seeds not ocellate; first eophyll decomposed, glandular
.....(Fig. 45) PARKIA BIGLANDULOSA
- HH. First eophylls simple or pennilobed.
- T. First eophylls dentate or pennilobed; plants laticiferous or pellucid-punctate.
- U. Latex present; cotyledons entire, not punctate.
- V. Metaphylls pennilobedCARICA PAPAYA
- VV. Metaphylls palmilobedCOCHLOSPERMUM VITIFOLIUM
- UU. Latex absent; cotyledons often dentate, pellucid-punctate
.....(Fig. 64) CITRUS PARADISI
- TT. First eophylls entire, or rarely denticulate or serrate; latex absent.
- W. Metaphylls opposite; cotyledons stipulate
.....(Fig. 175) POSOQUERIA LATIFOLIA
- WW. Metaphylls alternate.
- X. Metaphylls palmately lobed or compound; cotyledons contortuplicate.
- Y. Cotyledons subsessile; metaphylls palmately compound(Fig. 120) ADANSONIA DIGITATA
- YY. Cotyledons long-petiolate; metaphylls palmately lobed(Fig. 121) CAVANILLESIA PLATANIFOLIA
- XX. Metaphylls simple or imparipinnate; cotyledons not contortuplicate.
- Z. Eophylls exstipulate, aromatic(Fig. 19) ANNONA SQUAMOSA
- ZZ. Eophylls stipulate, not aromatic.
- a. Cotyledons long-petiolate; eophylls plinerved
.....(Fig. 110) ZIZYPHUS JUJUBA
- aa. Cotyledons subsessile; eophylls penninerved.
- b. Cotyledons suborbicular, plinerved; eophylls broadly ovate to suborbicular
.....(Fig. 59) GLIRICIDIA SEPIUM
- bb. Cotyledons narrowly ovate, penninerved; eophylls narrowly ovate
.....(Fig. 53) PTEROCARPUS INDICUS

APPENDIX 1.

Botanical names, Spanish names, figure references, and forest types for the species studied.

| <i>Botanical name</i> | <i>Spanish name</i> | <i>Fig.</i> | <i>Forest⁴
Type</i> |
|--------------------------------------|---------------------|-------------|------------------------------------|
| <i>Acacia farnesiana</i> (L.) Willd. | Aroma | 40 | 3 |
| <i>Acrocomia media</i> O. F. Cook | Corozo | 6 | 5 |
| <i>Adansonia digitata</i> L. | Baobab | 120 | 8 |
| <i>Adenantha pavonina</i> L. | Peronillas | 39 | 4,5 |
| <i>Albizia lebeck</i> (L.) Benth. | Acacia amarilla | 43 | 8 |

⁴ 1 = mangrove woodlands; 2 = littoral woodlands; 3 = dry limestone forests; 4 = dry coastal forests; 5 = moist coastal and moist limestone forests; 6 = lower cordillera and lower Luquillo forests; 7 = upper cordillera and upper Luquillo forests; 8 = gardens and parks.

| <i>Botanical name</i> | <i>Spanish name</i> | <i>Fig.</i> | <i>Forest¹
Type</i> |
|---|----------------------|-------------|------------------------------------|
| <i>Alchornea latifolia</i> Sw. | Achiotillo | 82 | 5,6,7 |
| <i>Alchorneopsis portoricensis</i> Urban | Palo de gallina | 85 | 6,7 |
| <i>Aleurites moluccana</i> (L.) Willd. | Nuez de India | 81 | 8 |
| <i>Allophylus crassinervis</i> Radlk. | Gaetilla | 101 | 5,6 |
| <i>Amyris elemifera</i> L. | Tea | 65 | 3 |
| <i>Anacardium occidentale</i> L. | Pajuil | 90 | 4,5,8 |
| <i>Andira inermis</i> (W. Wright) H. B. K. | Moca | 55 | 4,5,6 |
| <i>Annona squamosa</i> L. | Anón | 19 | 8 |
| <i>Ardisia glauciflora</i> Urban | Ausubón | 147 | 6 |
| <i>Artocarpus heterophyllus</i> Lam. | Jaca | 12 | 8 |
| <i>Avicennia germinans</i> (L.) L.
(<i>Avicennia nitida</i> Jacq.) | Mangle prieto | 166 | 1 |
| <i>Bauhinia</i> sp. | Mariposa | 46 | 8 |
| <i>Bocconia frutescens</i> L. | Palo de pan cimarrón | 28 | 4,5,6 |
| <i>Bourreria succulenta</i> Jacq. | Palo de vaca | none | 3,4 |
| <i>Buchenavia capitata</i> (Vahl) Eichl. | Granadillo | 139 | 5,6 |
| <i>Bucida buceras</i> L. | Ucar | 135 | 3,4,5 |
| <i>Bumelia obovata</i> (Lam.) A. DC. | Caimitillo | 150 | 4 |
| <i>Bursera simaruba</i> (L.) Sarg. | Almácigo | 69 | 2,3,4,5 |
| <i>Byrsonima coriacea</i> (Sw.) DC. | Maricao | 63 | 3,4,5,6 |
| <i>Calophyllum calaba</i> L.
(<i>Calophyllum brasiliense</i> Camb.) | María | 125 | 3,4,5,6 |
| <i>Calotropis procera</i> (Ait.) R. Br. | Bomba | 157 | 2,3 |
| <i>Calycogonium squamulosum</i> Cogn. | Jusillo | none | 7 |
| <i>Capparis coccolobifolia</i> Mart. | Burro | 27 | 3 |
| <i>Capparis cynophallophora</i> L. | Burro prieto | 26 | 2,3,4 |
| <i>Carica papaya</i> L. | Lechosa | none | 8 |
| <i>Casearia arborea</i> (L. C. Rich.) Urban | Rabo ratón | 131 | 4,5,6 |
| <i>Casearia guianensis</i> (Aubl.) Urban | Palo blanco | 128 | 5,6 |
| <i>Casearia sylvestris</i> Sw. | Cafecillo | 130 | 4,5,6 |
| <i>Cassia siamea</i> Lam. | Casia de Siam | 47 | 8 |
| <i>Cassine xylocarpa</i> Vent. | Coscorrón | 96 | 2,4 |
| <i>Casuarina equisetifolia</i> L. | Casuarina | 7 | 2,4,5 |
| <i>Cavanillesia platanifolia</i> (Humb. &
Bonpl.) H. B. K. | Cuipo | 121 | 8 |
| <i>Cecropia peltata</i> L. | Yagruma hembra | 13 | 4,5,6 |
| <i>Ceiba pentandra</i> (L.) Gaertn. | Ceiba | 118 | 3,4,5 |
| <i>Cestrum macrophyllum</i> Vent. | Galán del monte | 164 | 5,6 |
| <i>Chrysobalanus icaco</i> L. | Icaco | 35 | 2,4 |
| <i>Cissampelos pareira</i> L. | Bejuco de mona | 17 | 5,6 |
| <i>Citharexylum fruticosum</i> L. | Péndula | 165 | 1,2,3,4,5,6 |
| <i>Citrus paradisi</i> MacFadyen | Toronja | 64 | 8 |
| <i>Citrus</i> spp. | | none | 8 |
| <i>Clusia</i> sp. | Cupey, Cupeillo | 127 | 1,2,4,5,6,7 |
| <i>Coccoloba pyrifolia</i> Desf. | Uvera | 16 | 5,6 |
| <i>Coccoloba uvifera</i> (L.) L. | Uva de playa | 18 | 2 |
| <i>Cochlospermum vitifolium</i> (Willd.)
Spreng. | Rosa imperial | none | 8 |
| <i>Cocos nucifera</i> L. | Palma de coco | 5 | 2,4,5 |
| <i>Coffea arabica</i> L. | Café | 182 | 5,6 |
| <i>Colubrina arborescens</i> (Mill.) Sarg. | Abeyuelo | 109 | 3,4 |
| <i>Comocladia glabra</i> (Schultes) Spreng. | Carrasco | 91 | 6 |
| <i>Conocarpus erectus</i> L. | Mangle botón | 133 | 1,2 |
| <i>Cordia alliodora</i> (Ruiz & Pavón) Oken | Capá prieto | none | 4,5,6 |
| <i>Cordia borinquensis</i> Urban | Muñeco | 163 | 6 |
| <i>Cordia lima</i> (Desv.) Roem. & Schult. | Lija | 161 | 6 |
| <i>Cordia nitida</i> Vahl | Capá colorado | 159 | 4 |

| Botanical name | Spanish name | Fig. | Forest ⁴
Type |
|--|-----------------|------|-----------------------------|
| <i>Cordia sulcata</i> DC. | Moral | 160 | 5,6 |
| <i>Crescentia cujete</i> L. | Higuero | 170 | 3,4 |
| <i>Croton lucida</i> L. | Corchillo | 83 | 3 |
| <i>Croton poecilanthus</i> Urban | Sabinón | 88 | 6,7 |
| <i>Cupania americana</i> L. | Guara | 102 | 5,6 |
| <i>Cyrilla racemiflora</i> L. | Palo colorado | 98 | 6,7 |
| <i>Dacryodes excelsa</i> Vahl | Tabonuco | 71 | 6 |
| <i>Daphnopsis philippiana</i> Krug & Urban | Majagua brava | 132 | 6,7 |
| <i>Delonix regia</i> (Bojer) Raf. | Flamboyán | 50 | 8 |
| <i>Dendropanax arboreus</i> (L.) Decne. & Planch. | Pollo | 148 | 5,6 |
| <i>Didymopanax morototoni</i> (Aubl.) Decne. & Planch. | Yagrumo macho | 144 | 5,6 |
| <i>Dodonaea viscosa</i> (L.) Jacq. | Guitarán | 104 | 2 |
| <i>Drypetes glauca</i> Vahl | Varital | 87 | 6 |
| <i>Enterolobium cyclocarpum</i> (Jacq.) Griseb. | Guanacaste | 44 | 8 |
| <i>Erythrina crista-galli</i> L. | Cresta de gallo | 60 | 8 |
| <i>Erythrina</i> cf. <i>poepigiana</i> (Walp.) O. F. Cook | Bucayo gigante | 61 | 5,6 |
| <i>Erythroxylon areolatum</i> L. | Indio | 62 | 3,4 |
| <i>Eugenia borinquensis</i> Britton | Guayabota | 145 | 7 |
| <i>Eugenia jambos</i> L. | Pomarrosa | 143 | 2,4,5,6 |
| <i>Eugenia stahlia</i> (Kiaersk.) Krug & Urban | Guayabota | 141 | 6,7 |
| <i>Exostema caribaeum</i> (Jacq.) Roem. & Schult. | Albarillo | 179 | 3 |
| <i>Ficus citrifolia</i> Mill.
(<i>Ficus laevigata</i> Vahl) | Jagüey | 11 | 3,4,5,6 |
| <i>Garcinia mangostana</i> L. | Mangostán | 126 | 8 |
| <i>Genipa americana</i> L. | Jagua | 180 | 4,5,6 |
| <i>Gliricidia sepium</i> (Jacq.) Steud. | Mata-ratón | 59 | 8 |
| <i>Gomidesia lindeniana</i> Berg. | Cieneguillo | 138 | 5,6 |
| <i>Gossypium arboreum</i> L. | Algodón | 122 | 3 |
| <i>Guaiacum officinale</i> L. | Guayacán | none | 3,4 |
| <i>Guaiacum sanctum</i> L. | Guayacán blanco | 70 | 3,4 |
| <i>Guatteria caribaea</i> Urban | Haya blanca | 15 | 6 |
| <i>Guarea guidonia</i> (L.) Sleumer
(<i>Guarea trichilioides</i> L.) | Guaraguao | 74 | 5,6 |
| <i>Guarea ramiflora</i> Vent. | Guaraguaillo | 77 | 6 |
| <i>Guettarda</i> sp. | Cucubano | 176 | 3,4,5,6 |
| <i>Haematoxylon campechianum</i> L. | Campeche | 49 | 3 |
| <i>Haenianthus salicifolius</i> var. <i>obovatus</i> (Krug & Urb.) Standl. | Caney | 155 | 7 |
| <i>Hernandia sonora</i> L. | Mago | 21 | 4,5,6 |
| <i>Heteropteris laurifolia</i> (L.) A. Juss. | Bejuco de buey | 67 | 5,6 |
| <i>Heterotrichum cymosum</i> (Wendl.) Urban | Camasey peludo | none | 6,7 |
| <i>Hevea brasiliensis</i> (H. B. K.) Muell.-Arg. | Goma del Pará | 76 | 8 |
| <i>Hibiscus tiliaceus</i> L. | Emajagua | 114 | 1,2,3,4,5,6, |
| <i>Hillia parasitica</i> Jacq. | Himencillo | 173 | 7 |
| <i>Hirtella rugosa</i> Pers. | Icaquillo | 36 | 6 |
| <i>Homalium racemosum</i> Jacq. | Caracolillo | 129 | 3,4,5,6 |
| <i>Hura crepitans</i> L. | Molinillo | 86 | 4,5 |
| <i>Hymenaea courbaril</i> L. | Algarrobo | 48 | 4,5,6 |
| <i>Ilex nitida</i> (Vahl) Maxim. | Briqueta | 92 | 6 |

| Botanical name | Spanish name | Fig. | Forest ¹
Type |
|--|------------------|------|-----------------------------|
| <i>Inga fagifolia</i> (L.) Willd.
(<i>Inga laurina</i> [Sw.] Willd.) | Guamá | 32 | 5,6 |
| <i>Inga vera</i> Willd. | Guava | 34 | 5,6 |
| <i>Ipomoea pes-caprae</i> (L.) Roth. | Bejuco de playa | 152 | 2 |
| <i>Ixora ferrea</i> (Jacq.) Benth. | Palo clavo | 181 | 6 |
| <i>Jacaranda mimosifolia</i> D. Don | Jacaranda | 171 | 8 |
| <i>Jatropha gossypifolia</i> L. | Frailecillo | 79 | 8 |
| <i>Laguncularia racemosa</i> (L.) Gaertn. f. | Mangle blanco | 136 | 1 |
| <i>Lasianthus lanceolatus</i> (Griseb.) Urban | Mata de peo | none | 6,7 |
| <i>Leucaena leucocephala</i> (Lam.) De Wit
(<i>Leucaena glauca</i> (L.) Benth.) | Zarcilla | 42 | 3,4 |
| <i>Linociera domingensis</i> (Lam.) Knobl. | Hueso blanco | 154 | 5,6 |
| <i>Machaerium lunatum</i> (L.) Ducke | Escambrón | 58 | 1 |
| <i>Mangifera indica</i> L. | Mango | 94 | 4,5,6,8 |
| <i>Manilkara balata</i> (Aubl.) Dubard
(<i>Manilkara bidentata</i> (A.DC.)
Chev.) | Ausubo | 149 | 1,2,4,5,6 |
| <i>Matayba domingensis</i> (DC.) Radlk. | Negra lora | 106 | 7 |
| <i>Melia azedarach</i> L. | Alelaila | none | 8 |
| <i>Meliococcus bijugatus</i> Jacq. | Quenepa | 107 | 4,5,6,8 |
| <i>Meliosma herbertii</i> Rolfe | Aguacatillo | 108 | 6,7 |
| <i>Miconia</i> spp. | Camasey | none | 5,6 |
| <i>Micropholis chrysophylloides</i> Pierre | Caimitillo | none | 5,6,7 |
| <i>Micropholis garciniaefolia</i> Pierre | Caimitillo verde | 151 | 7 |
| <i>Montezuma speciosissima</i> Sessé & Moc. | Maga | 115 | 5,6,8 |
| <i>Moringa oleifera</i> Lam. | Resedá | 29 | 3,4 |
| <i>Myrcia splendens</i> (Sw.) DC. | Hoja menuda | 140 | 4,5,6 |
| <i>Nectandra antillana</i> Meisn. | Aguacatillo | 22 | 5 |
| <i>Ochroma pyramidale</i> (Cav. ex Lam.)
Urban | Guano | 119 | 4,5,6 |
| <i>Ocotea leucoxydon</i> (Sw.) Mez | Laurel geo | 24 | 5,6 |
| <i>Ocotea moschata</i> (Meisn.) Mez | Nuez moscada | 25 | 6,7 |
| <i>Ocotea spathulata</i> Mez | Nemocá | 30 | 6,7 |
| <i>Ormosia krugii</i> Urban | Palo de matos | 56 | 6 |
| <i>Pachira aquatica</i> Aubl. | Ceiba de agua | none | 8 |
| <i>Palicourea alpina</i> (Sw.) DC. | Cachimbo | 178 | 6 |
| <i>Parkia biglandulosa</i> W. & A. | Uya | 45 | 8 |
| <i>Parkinsonia aculeata</i> L. | Palo de rayo | 51 | 3,4 |
| <i>Paullinia pinnata</i> L. | Bejuco de palma | 105 | 5,6 |
| <i>Persea americana</i> Mill. | Aguacate | 23 | 4,5,6,8 |
| <i>Pictetia aculeata</i> (Vahl) Urban | Tachuelo | 57 | 3,4 |
| <i>Piper aduncum</i> L. | Higuillo | 10 | 5,6,7 |
| <i>Piper treleaseanum</i> Britton & Wilson | Higuillo blanco | 9 | 6 |
| <i>Pithecellobium arboreum</i> (L.) Urban | Cojoba | 33 | 5,6 |
| <i>Pithecellobium dulce</i> (Roxb.) Benth. | Guamuchil | none | 8 |
| <i>Pithecellobium saman</i> (Jacq.) Benth. | Samán | 38 | 4,5,6,8 |
| <i>Pithecellobium unguis-cati</i> (L.) Benth. | Uña de gato | 37 | 3 |
| <i>Plumeria alba</i> L. | Alelí | 158 | 3 |
| <i>Plumeria obtusa</i> L. | Alelí cimarrón | 156 | 4,5,6 |
| <i>Podocarpus coriaceus</i> L. C. Rich. | Caobilla | 1 | 5,7 |
| <i>Posoqueria latifolia</i> (Rudge) R. & S. | Borajo | 175 | 8 |
| <i>Pouteria multiflora</i> (A. DC.) Eyma | Jácana | 153 | 5,6,8 |
| <i>Prestoea montana</i> (Graham) Nicholson
(<i>Euterpe globosa</i> Auct.) | Palma de sierra | 4 | 6,7 |
| <i>Prosopis juliflora</i> (Sw.) DC. | Bayahonda | 41 | 3,4 |
| <i>Psidium guajava</i> L. | Guayaba | 137 | 4,5,6 |
| <i>Psychotria berteriana</i> DC. | Cachimbo | 174 | 6 |

| <i>Botanical name</i> | <i>Spanish name</i> | <i>Fig.</i> | <i>Forest¹
Type</i> |
|---|---------------------|-------------|------------------------------------|
| <i>Psychotria maleolens</i> Urban | Peo de gato | none | 6,7 |
| <i>Pterocarpus indicus</i> Willd. | Pterocarpus | 53 | 8 |
| <i>Pterocarpus officinalis</i> Jacq. | Palo de pollo | 54 | 1,5 |
| <i>Quararibea turbinata</i> (Sw.) Poir. | Garrocho | 117 | 3,4,5,6 |
| <i>Rapanea ferruginea</i> (Ruiz & Pav.) Mez | Mantequero | 146 | 6 |
| <i>Rheedia portoricensis</i> Urban | Palo de cruz | 124 | 2,4,5,6 |
| <i>Rhizophora mangle</i> L. | Mangle colorado | 142 | 1 |
| <i>Ricinus communis</i> L. | Higuereta | 80 | 8 |
| <i>Rourea surinamensis</i> Miq. | Juan caliente | 31 | 6 |
| <i>Roystonea borinquena</i> O. F. Cook | Palma real | 3 | 1,2,3,4,5,6,8 |
| <i>Sabal causiarum</i> (O. F. Cook) Beccari | Palma de sombrero | 2 | 4 |
| <i>Sapindus saponaria</i> L. | Jaboncillo | 99 | 3,4,5 |
| <i>Sapium laurocerasus</i> Desf. | Tabaiba | 84 | 5,6 |
| <i>Savia sessiliflora</i> (Sw.) Willd. | Aretillo | 89 | 3 |
| <i>Schaefferia frutescens</i> Jacq. | Jiba | 95 | 4 |
| <i>Securidaca diversifolia</i> (L.) S. F. Blake | Bejuco de sopla | 78 | 5,6 |
| <i>Serjania polyphylla</i> (L.) Radlk. | Bejuco de costilla | 100 | 3 |
| <i>Sloanea berteriana</i> Choisy | Motillo | 113 | 6 |
| <i>Smilax cf. coriacea</i> Spreng. | Dunguey | 8 | 5,6 |
| <i>Spathodea campanulata</i> Beauv. | Tulipán | 169 | 4,5 |
| <i>Spondias purpurea</i> L. | Ciruela del país | 93 | 4,5,6,8 |
| <i>Sterculia apetala</i> (Jacq.) Karst. | Anacaguita | 123 | 8 |
| <i>Sterculia foetida</i> L. | Anacaguita | 122 | 8 |
| <i>Swietenia macrophylla</i> King | Caoba hondureña | 72 | 5,6 |
| <i>Swietenia mahagoni</i> Jacq. | Caoba dominicana | 73 | 3,4 |
| <i>Tabebuia heterophylla</i> (DC.) Britton | Roble blanco | 167 | 2,3,4,5,6 |
| <i>Tabebuia rigida</i> Urban | Roble de sierra | 168 | 7 |
| <i>Tamarindus indica</i> L. | Tamarindo | 52 | 3,4 |
| <i>Tecoma stans</i> (L.) H. B. K. | Roble amarillo | 172 | 2 |
| <i>Tectona grandis</i> L. f. | Teca | 162 | 4,5,8 |
| <i>Terebraria resinosa</i> (Vahl) Sprague | Aquilón | 177 | 4,5 |
| <i>Terminalia catappa</i> L. | Almendra | 134 | 2,4,5 |
| <i>Tetragastris balsamifera</i> (Sw.) Kuntze | Masa | 68 | 6 |
| <i>Thespesia populnea</i> (L.) Soland. | Emajagüilla | 116 | 1,2,4,5,6 |
| <i>Thouinia portoricensis</i> Radlk. | Serrasuela | 103 | 3,4 |
| <i>Trichilia hirta</i> L. | Tinacio | none | 3,4 |
| <i>Trichilia pallida</i> Sw. | Gaeta | 75 | 5,6 |
| <i>Triumfetta</i> sp. | Cadillo | 111 | 5,6 |
| <i>Turpinia paniculata</i> Vent. | Sauco cimarrón | 97 | 5,6,7 |
| <i>Urera baccifera</i> (L.) Gaud. | Ortega | 14 | 6 |
| <i>Ximenia americana</i> L. | Manzanilla | 20 | 2,3 |
| <i>Zanthoxylum</i> sp. | Aceitillo | 66 | 4,5,6 |
| <i>Zizyphus jujuba</i> (L.) Lam. | Aprines | 110 | 3,8 |



Plate 1

1. *Podocarpus coriaceus* ($\times \frac{3}{4}$). 2. *Sabal causiarum* ($\times \frac{1}{2}$). 3. *Roystonea borinquena* ($\times \frac{1}{2}$). 4. *Prestoea montana* ($\times \frac{1}{2}$). 5. *Cocos nucifera* ($\times \frac{1}{4}$). 6. *Acrocomia media* ($\times \frac{1}{4}$). 7. *Casuarina equisetifolia* ($\times 1$). 8. *Smilax* cf. *coriacea* ($\times \frac{1}{2}$).



Plate 2

9. *Piper treleaseanum* ($\times \frac{1}{2}$). 10. *Piper aduncum* ($\times \frac{1}{2}$). 11. *Ficus citrifolia* ($\times \frac{1}{2}$).
 12. *Artocarpus heterophyllus* ($\times \frac{1}{4}$). 13. *Cecropia peltata* ($\times \frac{1}{2}$). 14. *Urera baccifera*
 ($\times \frac{3}{4}$). 15. *Guatteria caribaea* ($\times \frac{3}{4}$). 16. *Coccoloba pyrifolia* ($\times \frac{3}{4}$). 17. *Cissampelos*
pareira ($\times \frac{3}{4}$). 18. *Coccoloba uvifera* ($\times \frac{1}{2}$). 19. *Annona squamosa* (a & b $\times \frac{1}{2}$). 20.
Ximenia americana ($\times \frac{1}{2}$).



Plate 3

21. *Hernandia sonora* ($\times \frac{1}{3}$). 22. *Nectandra antillana* ($\times \frac{1}{2}$). 23. *Persea americana* ($\times \frac{1}{2}$). 24. *Ocotea leucoxylon* ($\times \frac{1}{2}$). 25. *Ocotea moschata* ($\times \frac{1}{4}$). 26. *Capparis cynophallophora* ($\times 1$). 27. *Capparis coccolobifolia* ($\times 1$). 28. *Bocconia frutescens* ($\times \frac{1}{2}$). 29. *Moringa oleifera* (a,b, & c $\times \frac{1}{2}$). 30. *Ocotea spathulata* ($\times \frac{1}{2}$). 31. *Rourea surinamensis* ($\times \frac{1}{2}$).



Plate 4

32. *Inga fagifolia* ($\times \frac{3}{4}$). 33. *Pithecellobium arboreum* ($\times \frac{1}{2}$). 34. *Inga vera* ($\times \frac{1}{2}$).
 35. *Chrysobalanus icaco* ($\times \frac{1}{2}$). 36. *Hirtella rugosa* ($\times \frac{1}{2}$). 37. *Pithecellobium unguicatum* (a & b $\times 1$).
 38. *Pithecellobium saman* ($\times \frac{1}{2}$). 39. *Adenanthera pavonina* ($\times \frac{1}{2}$).

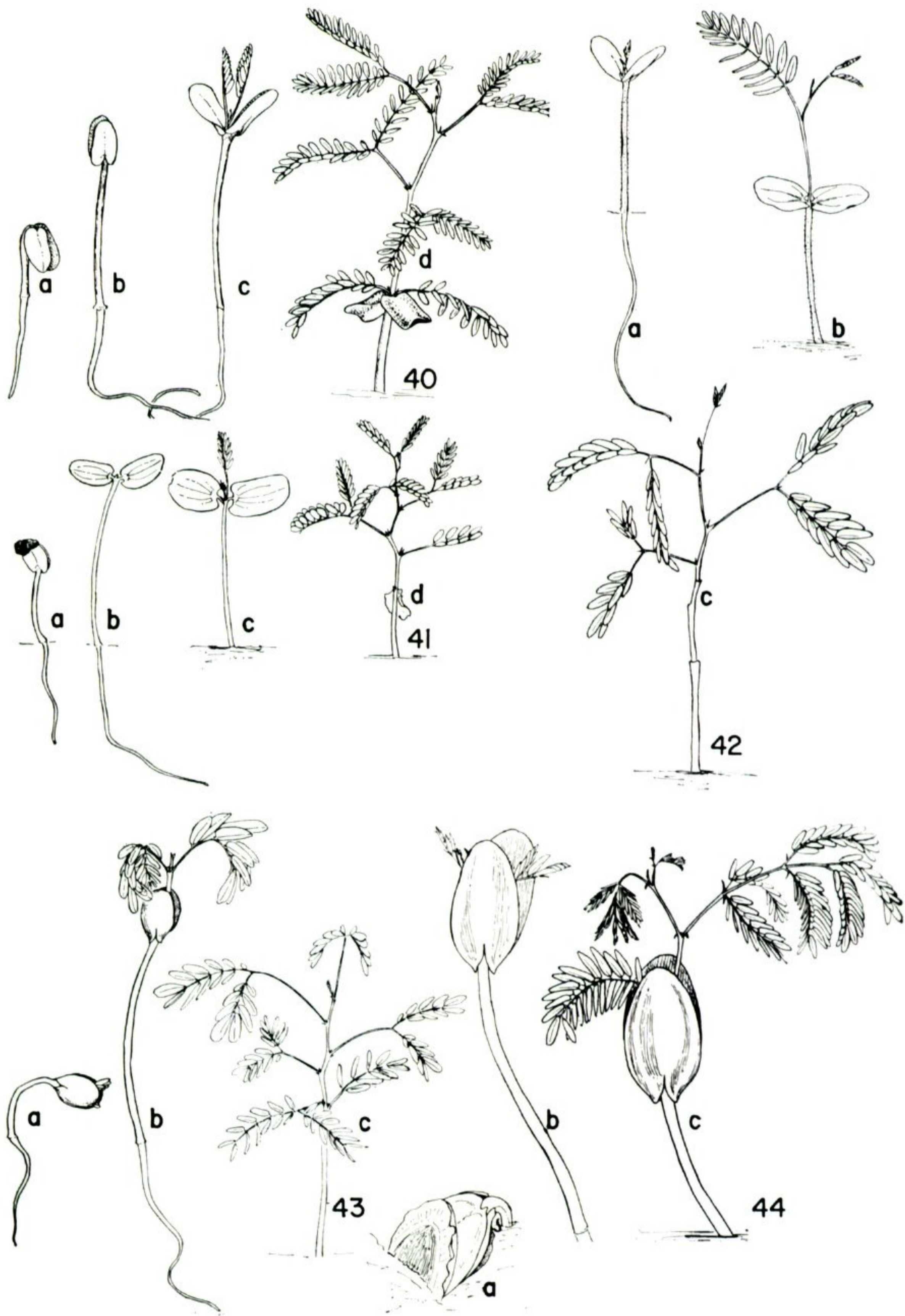


Plate 5

40. *Acacia farnesiana* (a,b,c, & d $\times \frac{1}{2}$). 41. *Prosopis juliflora* (a,b,c, & d $\times \frac{1}{2}$). 42. *Leucaena leucocephala* (a,b, & c $\times \frac{1}{2}$). 43. *Albizia lebbek* (a,b, & c $\times \frac{1}{2}$). 44. *Enterolobium cyclocarpum* (a,b, & c $\times \frac{1}{2}$).

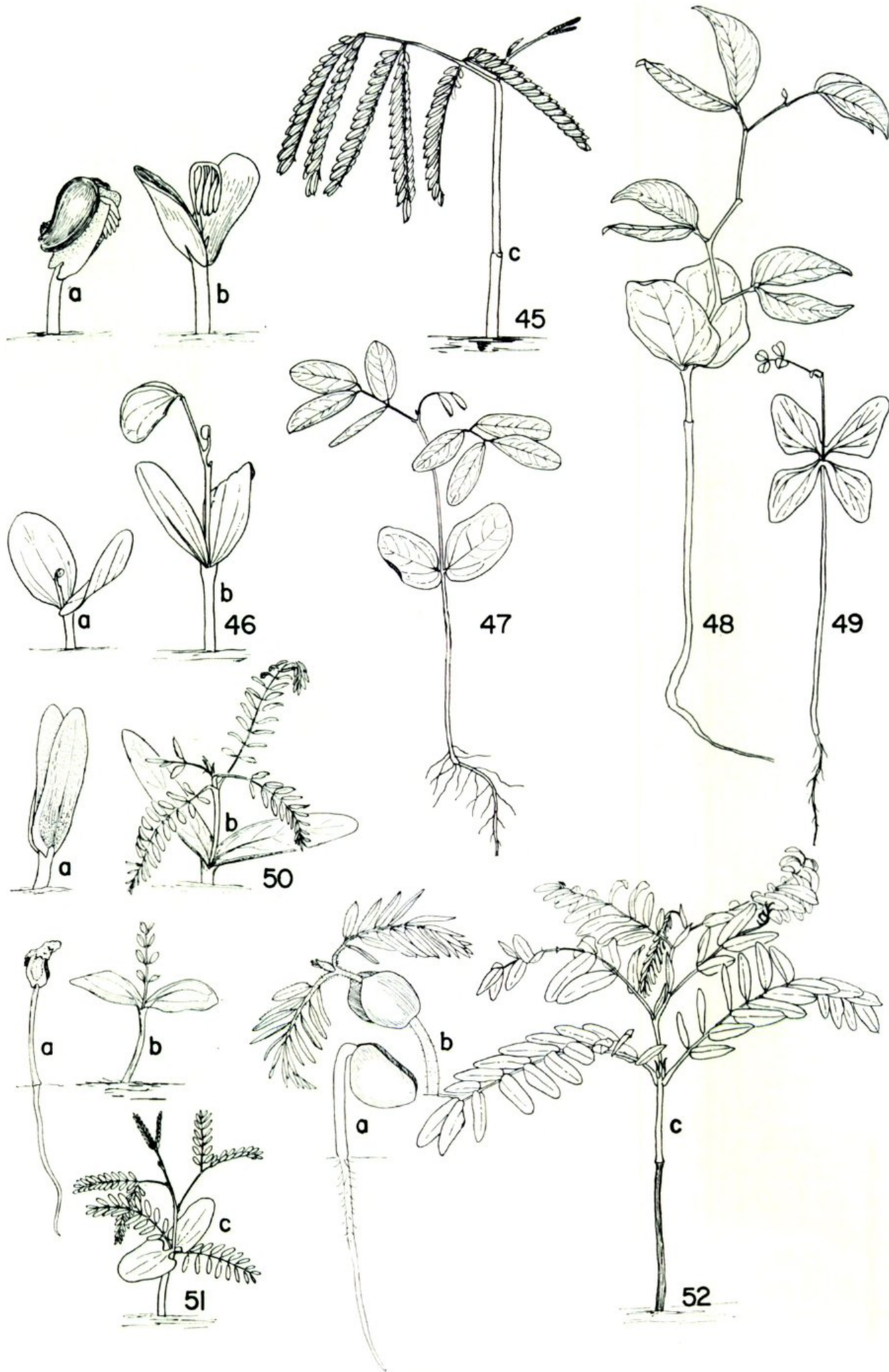


Plate 6

45. *Parkia biglandulosa* (a,b, & c $\times \frac{1}{2}$). 46. *Bauhinia* sp. (a & b $\times \frac{3}{4}$). 47. *Cassia siamea* ($\times 1$). 48. *Hymenaea courbaril* ($\times \frac{1}{2}$). 49. *Haematoxylon campechianum* ($\times 1$). 50. *Delonix regia* (a & b $\times \frac{1}{2}$). 51. *Parkinsonia aculeata* (a,b, & c $\times \frac{1}{2}$). 52. *Tamarindus indica* (a,b, & c $\times \frac{1}{2}$).

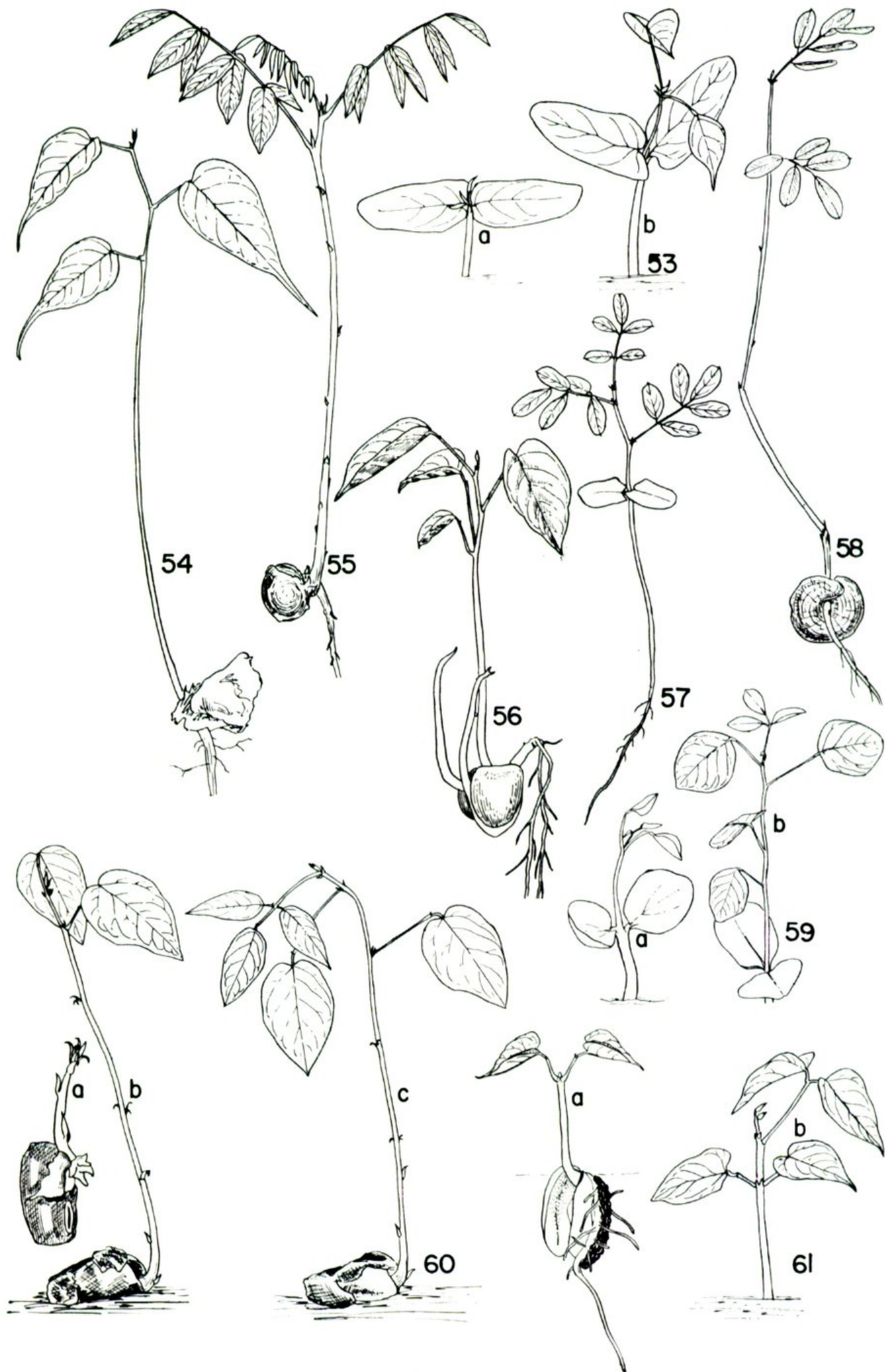


Plate 7

53. *Pterocarpus indicus* (a & b $\times \frac{3}{4}$). 54. *Pterocarpus officinalis* ($\times \frac{1}{2}$). 55. *Andira inermis* ($\times \frac{1}{3}$). 56. *Ormosia krugii* ($\times \frac{1}{2}$). 57. *Pictetia aculeata* ($\times \frac{3}{4}$). 58. *Machaerium lunatum* ($\times \frac{1}{4}$). 59. *Gliricidia sepium* (a & b $\times \frac{1}{2}$). 60. *Erythrina crista-galli* (a, b, & c $\frac{1}{3}$). 61. *Erythrina* cf. *poeppigiana* (a & b $\times \frac{1}{3}$).

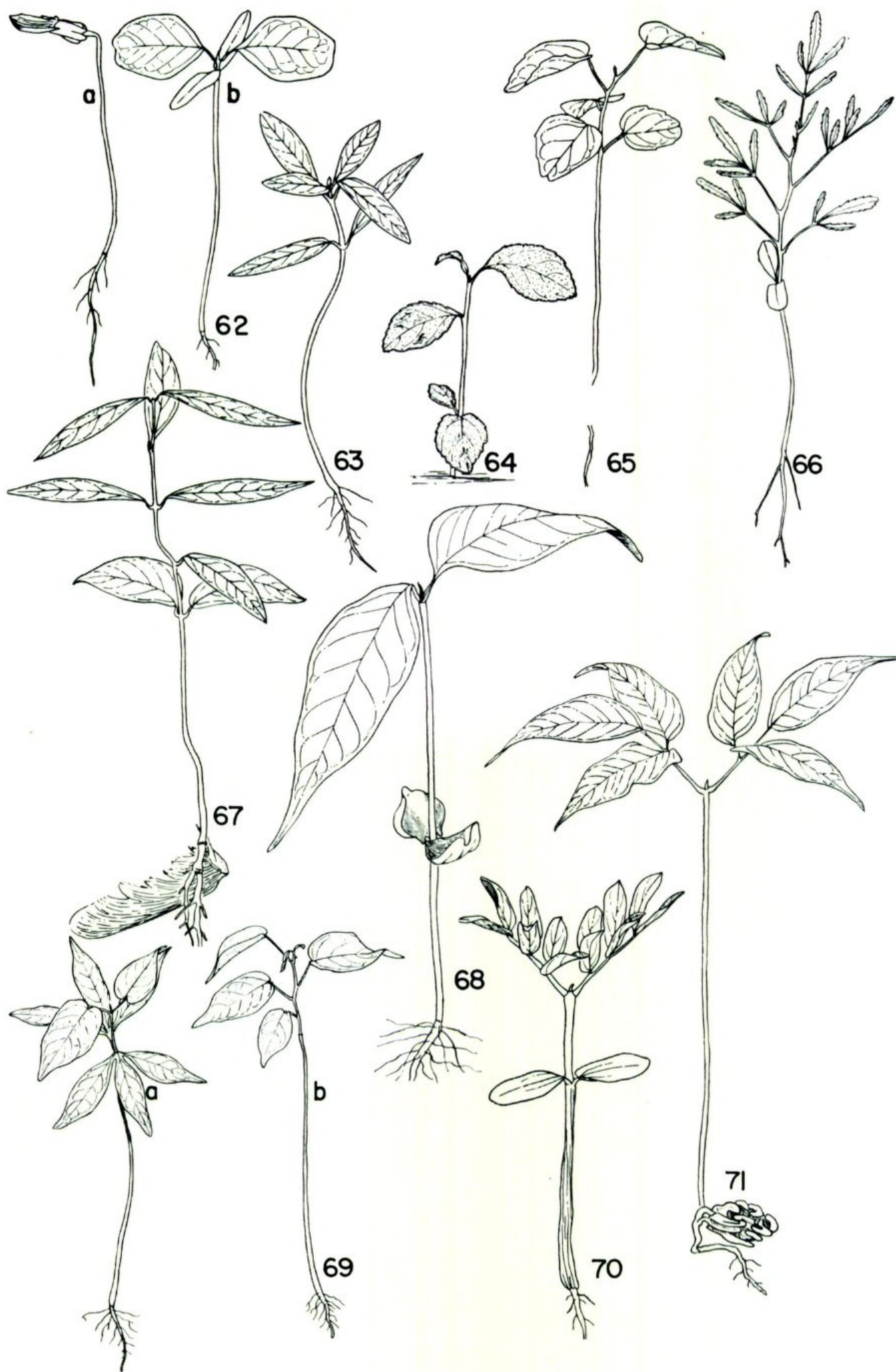


Plate 8

62. *Erythroxylon areolatum* (a & b $\times 1$). 63. *Byrsonima coriacea* ($\times \frac{3}{4}$). 64. *Citrus paradisi* ($\times \frac{1}{2}$). 65. *Amyris elemifera* ($\times 1$). 66. *Zanthoxylum* sp. ($\times \frac{3}{4}$). 67. *Heteropteris laurifolia* ($\times \frac{1}{2}$). 68. *Tetragastris balsamifera* ($\times \frac{1}{2}$). 69. *Bursera simaruba* (a & b $\times \frac{1}{3}$). 70. *Guaiacum sanctum* ($\times \frac{3}{4}$). 71. *Dacryodes excelsa* ($\times \frac{1}{2}$).



Plate 9

72. *Swietenia macrophylla* (a & b $\times \frac{1}{2}$). 73. *Swietenia mahagoni* ($\times \frac{1}{2}$). 74. *Guarea guidonia* ($\times \frac{1}{2}$). 75. *Trichilia pallida* ($\times \frac{3}{4}$). 76. *Hevea brasiliensis* ($\times \frac{1}{4}$). 77. *Guarea ramiflora* ($\times \frac{1}{2}$). 78. *Securidaca diversifolia* ($\times \frac{5}{8}$). 79. *Jatropha gossypifolia* ($\times \frac{1}{2}$).

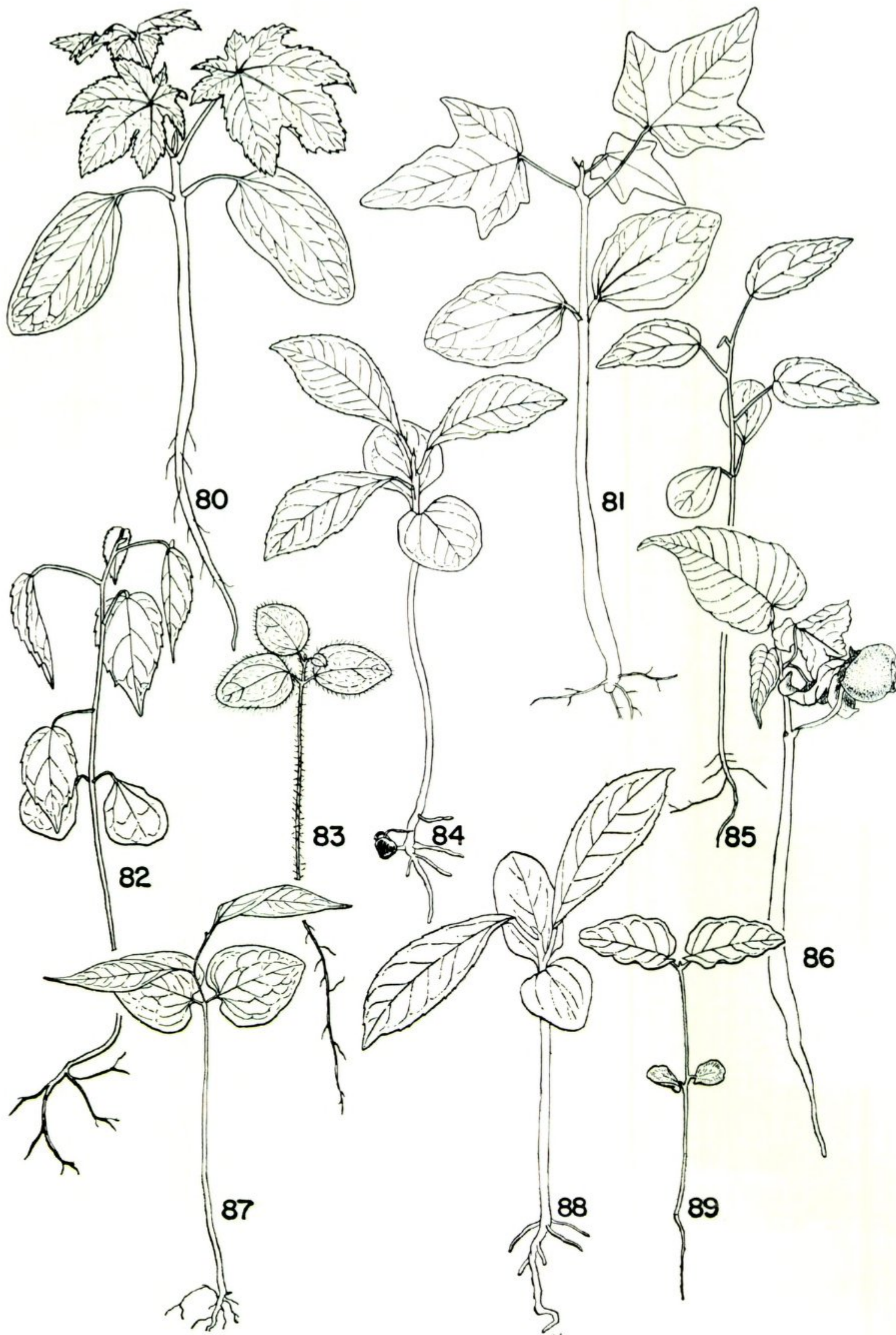


Plate 10

80. *Ricinus communis* ($\times \frac{1}{2}$). 81. *Aleurites moluccana* ($\times \frac{1}{3}$). 82. *Alchornea latifolia* ($\times \frac{1}{2}$). 83. *Croton lucida* ($\times 1\frac{1}{4}$). 84. *Sapium laurocerasus* ($\times \frac{1}{2}$). 85. *Alchorneopsis portoricensis* ($\times \frac{1}{2}$). 86. *Hura crepitans* ($\times \frac{1}{2}$). 87. *Drypetes glauca* ($\times \frac{1}{2}$). 88. *Croton poecilanthus* ($\times \frac{1}{2}$). 89. *Savia sessiliflora* ($\times \frac{1}{4}$).

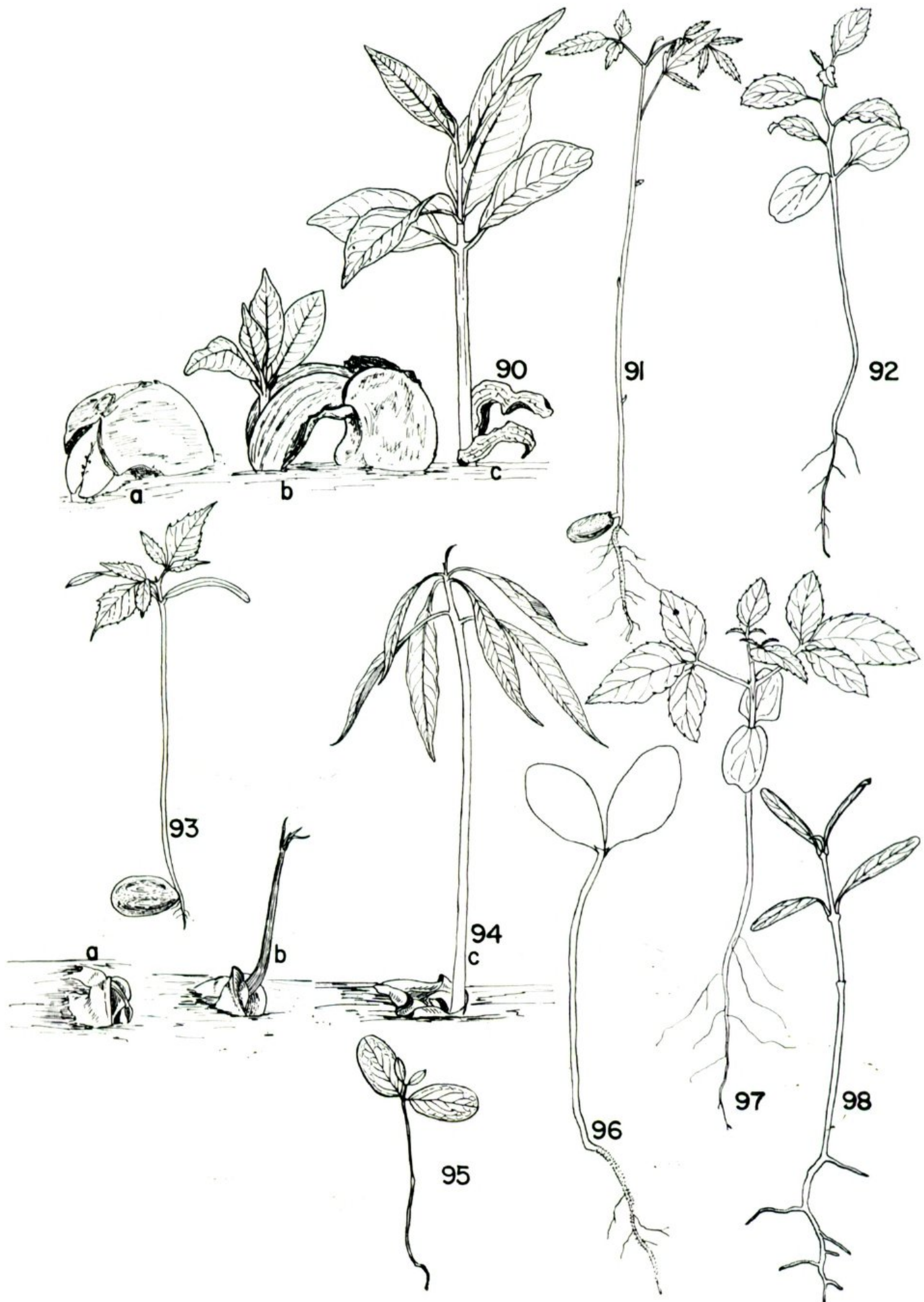


Plate 11

90. *Anacardium occidentale* (a & b $\times 2$, c $\times 1$). 91. *Comocladia glabra* ($\times \frac{1}{2}$). 92. *Ilex nitida* ($\times \frac{3}{4}$). 93. *Spondias purpurea* ($\times \frac{1}{2}$). 94. *Mangifera indica* (a, b, & c $\times \frac{1}{4}$). 95. *Schaefferia frutescens* ($\times 1$). 96. *Cassine xylocarpa* ($\times \frac{1}{2}$). 97. *Turpinia paniculata* ($\times \frac{5}{8}$). 98. *Cyrilla racemiflora* ($\times 1$).

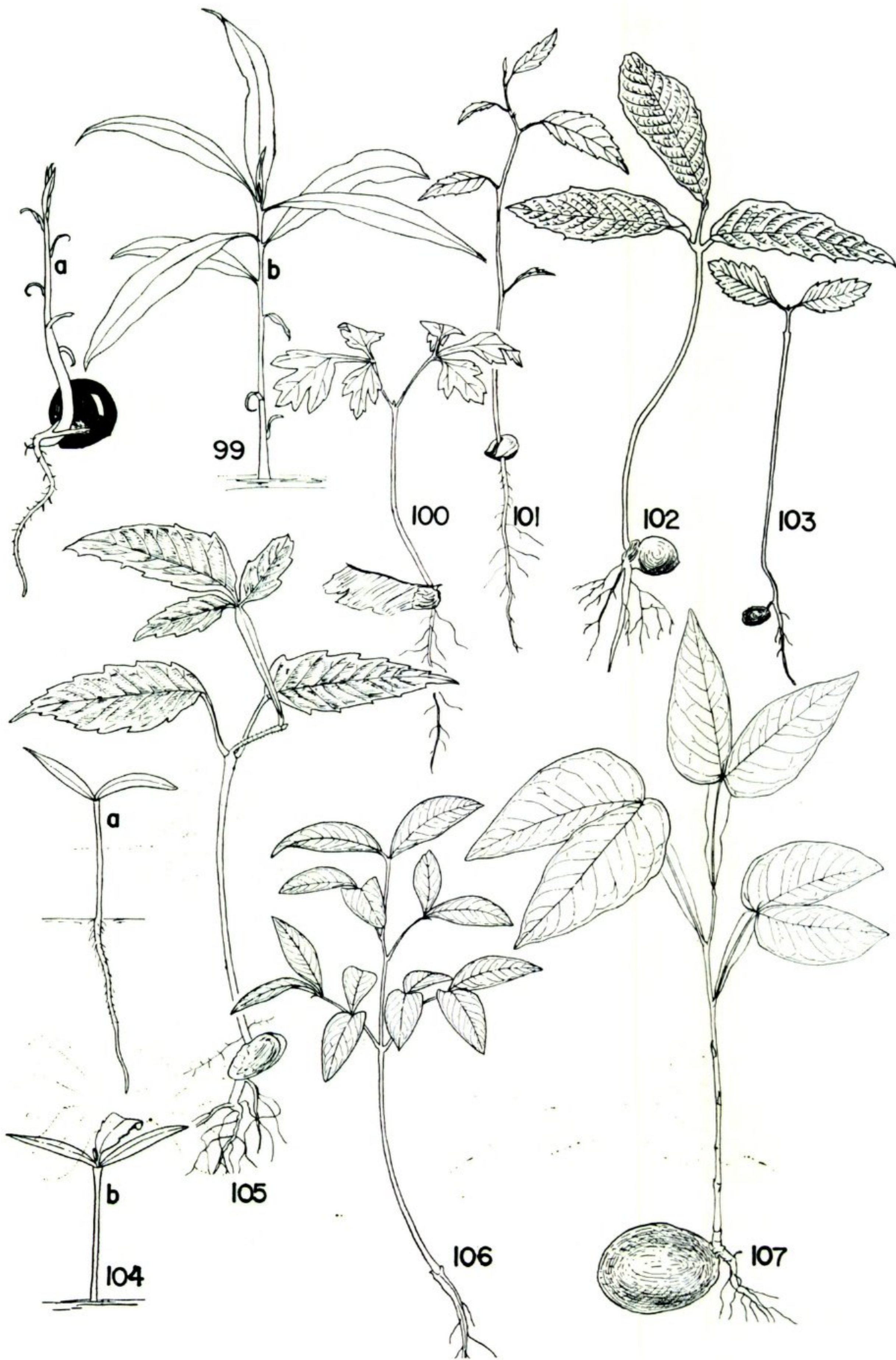


Plate 12

99. *Sapindus saponaria* (a & b $\times \frac{1}{2}$). 100. *Serjania polyphylla* ($\times \frac{1}{2}$). 101. *Allophylus crassinervis* ($\times \frac{3}{4}$). 102. *Cupania americana* ($\times \frac{1}{2}$). 103. *Thouinia portoricensis* ($\times \frac{1}{2}$). 104. *Dodonaea viscosa* (a & b $\times \frac{1}{2}$). 105. *Paullinia pinnata* ($\times \frac{1}{2}$). 106. *Matayba domingensis* ($\times \frac{3}{4}$). 107. *Meliococeus bijugatus* ($\times \frac{1}{2}$).

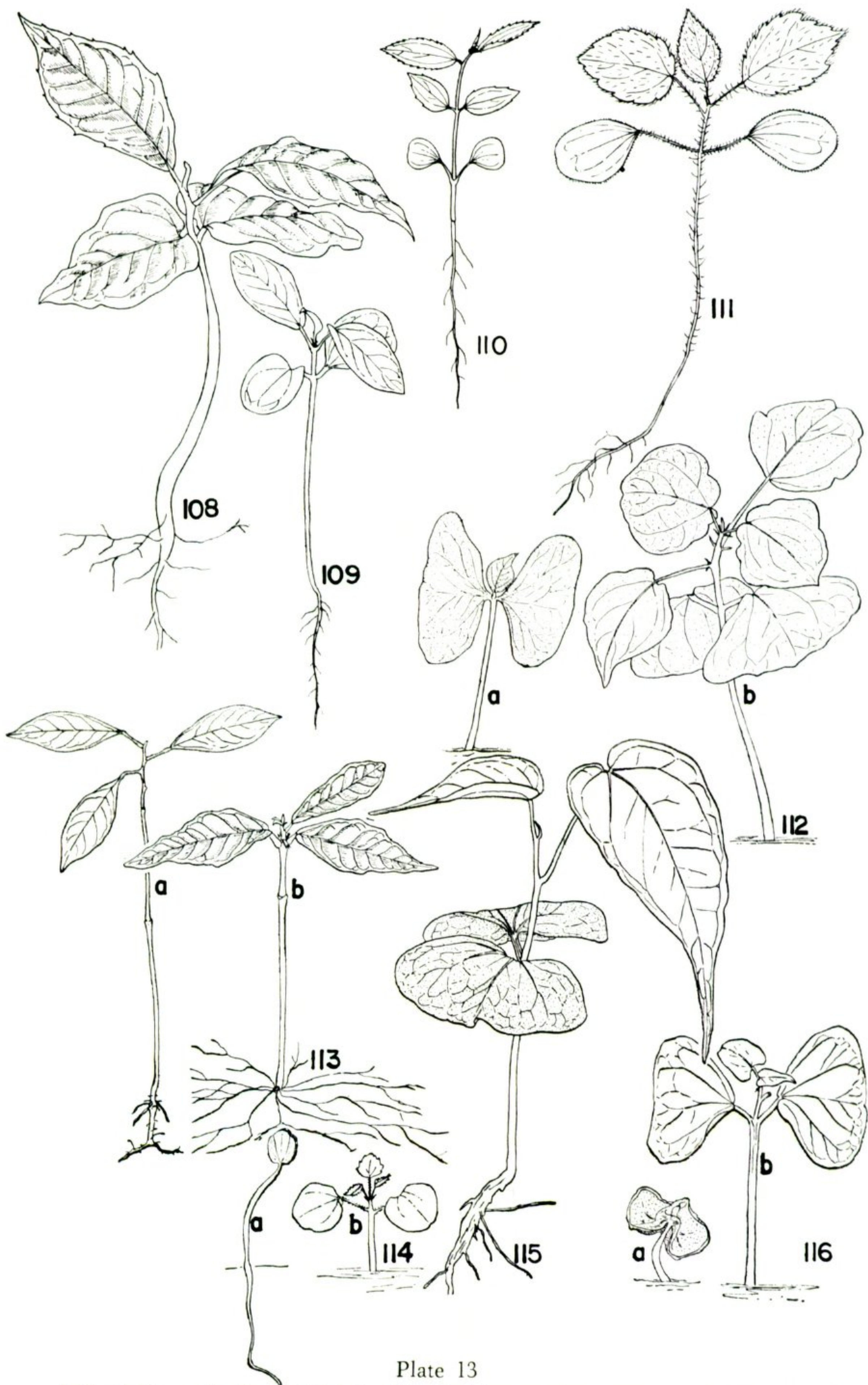


Plate 13

108. *Meliosma herbertii* ($\times \frac{1}{2}$). 109. *Colubrina arborescens* ($\times 1$). 110. *Zizyphus jujuba* ($\times \frac{1}{2}$). 111. *Triumfetta* sp. ($\times 1\frac{1}{2}$). 112. *Gossypium arboreum* (a & b $\times \frac{1}{2}$). 113. *Sloanea berteriana* (a & b $\times \frac{1}{2}$). 114. *Hibiscus tiliaceus* (a & b $\times \frac{1}{2}$). 115. *Montezuma speciosissima* ($\times \frac{1}{2}$). 116. *Thespesia populnea* (a & b $\times \frac{1}{2}$).

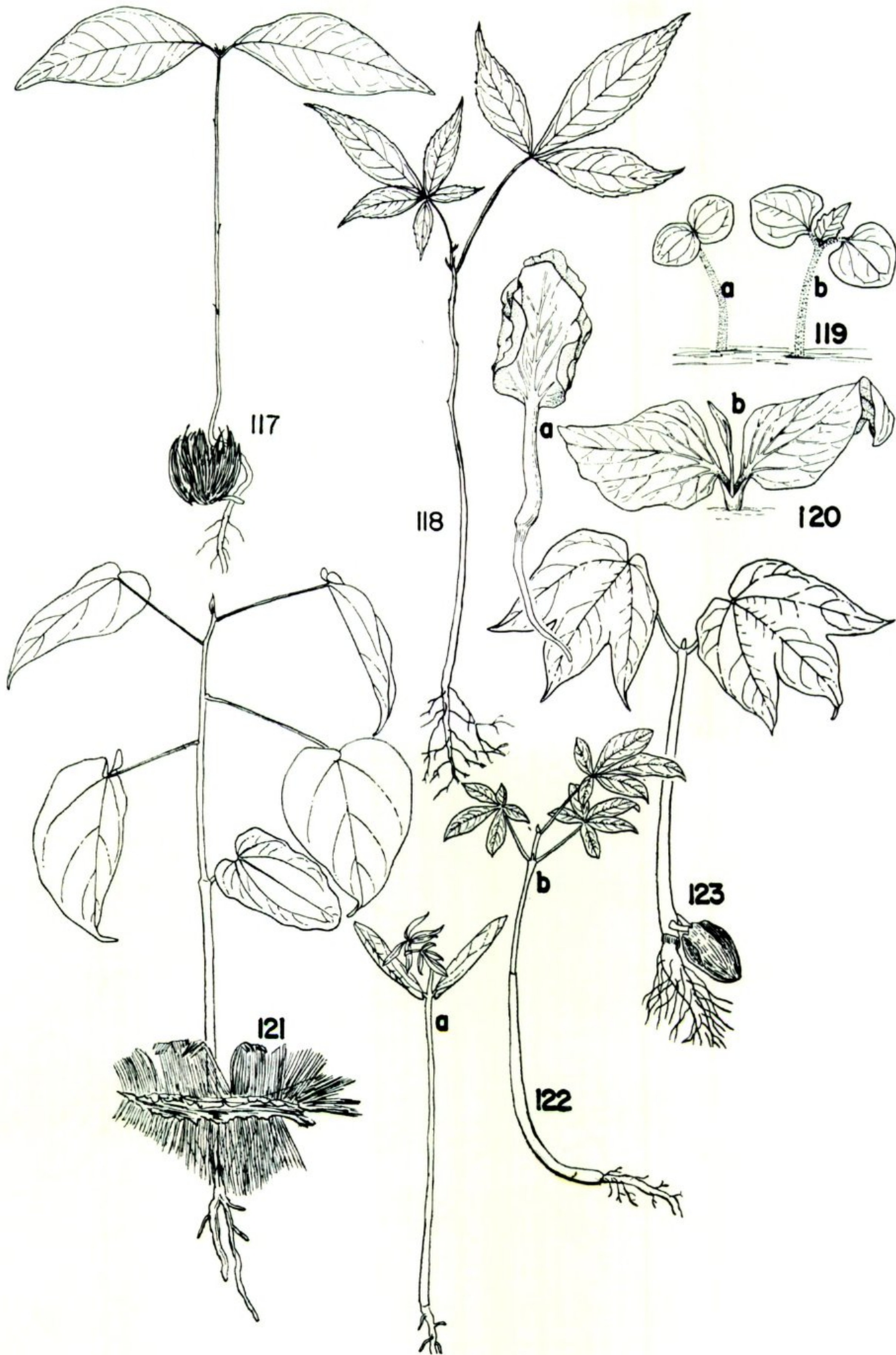


Plate 14

117. *Quararibea turbinata* ($\times \frac{1}{2}$). 118. *Ceiba pentandra* ($\times \frac{1}{2}$). 119. *Ochroma pyramidale* (a & b $\times 1$). 120. *Adansonia digitata* (a & b $\times \frac{1}{2}$). 121. *Cavanillesia platanifolia* ($\times \frac{3}{8}$). 122. *Sterculia foetida* (a & b $\times \frac{1}{4}$). 123. *Sterculia apetala* ($\times \frac{1}{3}$).

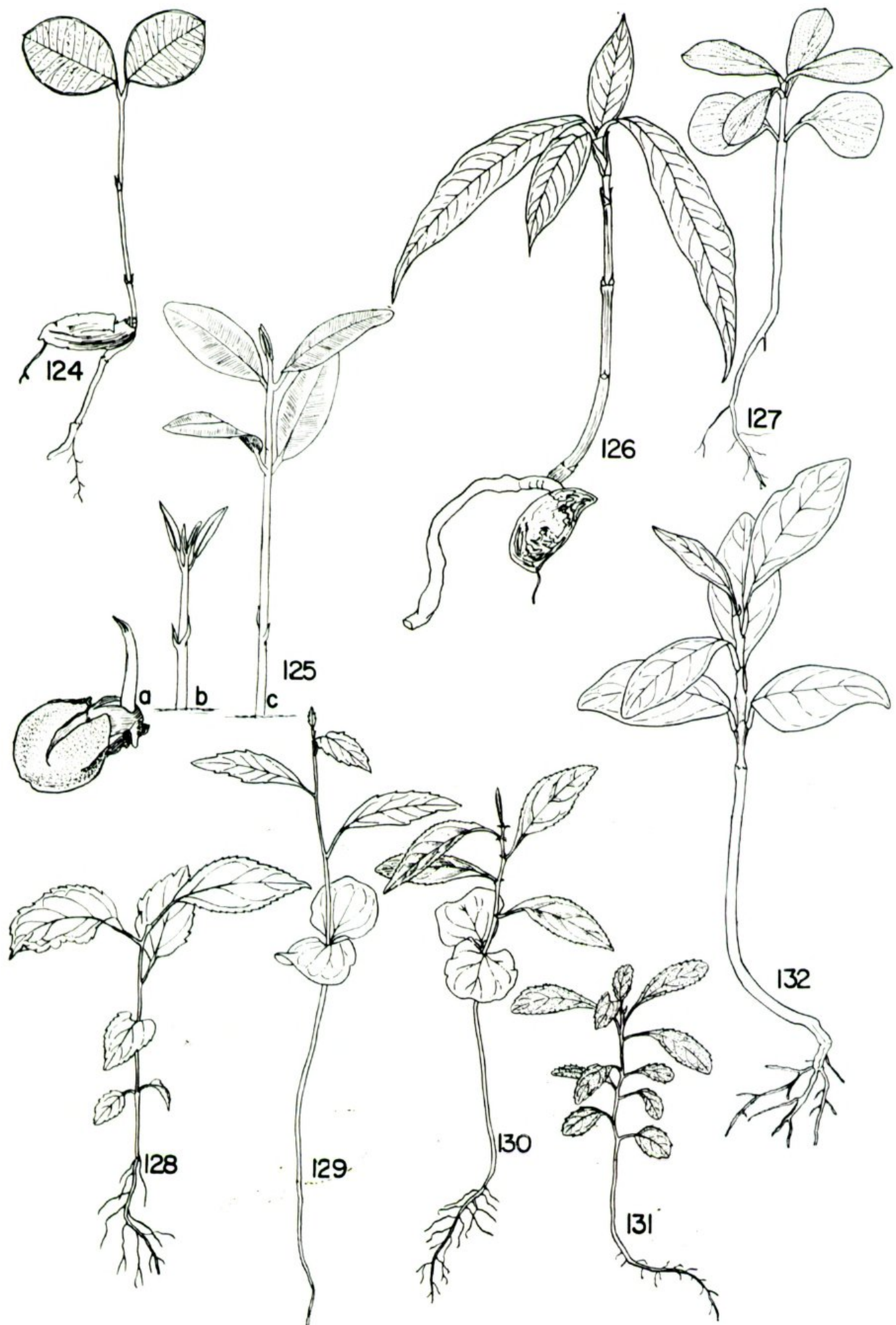


Plate 15

124. *Rheedia portoricensis* ($\times \frac{1}{2}$). 125. *Calophyllum calaba* (a & b $\times \frac{1}{2}$, c $\times \frac{1}{3}$).
 126. *Garcinia mangostana* ($\times \frac{1}{2}$). 127. *Clusia* sp. ($\times 1$). 128. *Casearia guianensis* ($\times 1$).
 129. *Homalium racemosum* ($\times 1$). 130. *Casearia sylvestris* ($\times 1$). 131. *Casearia arborea*
 ($\times 1$). 132. *Daphnopsis philippiana* ($\times 1$);

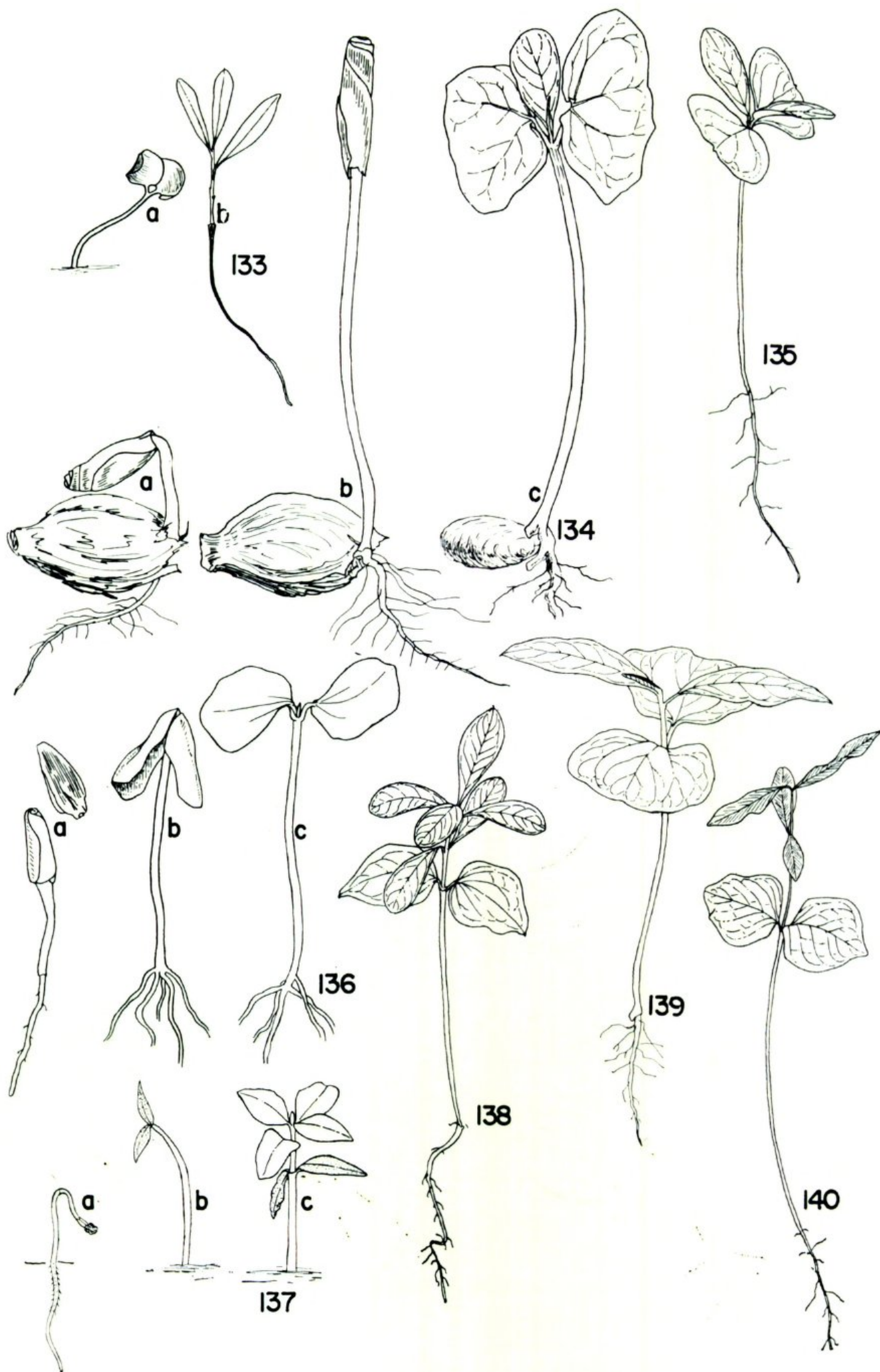


Plate 16

133. *Conocarpus erectus* (a \times 1, b \times $\frac{1}{2}$). 134. *Terminalia catappa* (a, b, & c \times $\frac{1}{2}$).
 135. *Bucida buceras* (\times 1). 136. *Laguncularia racemosa* (a, b, & c \times $\frac{1}{2}$). 137. *Psidium guajava* (a, b, & c \times 1). 138. *Gomidesia lindneriana* (\times $\frac{1}{2}$). 139. *Buchenavia capitata* (\times $\frac{1}{2}$). 140. *Myrcia splendens* (\times $\frac{1}{2}$).

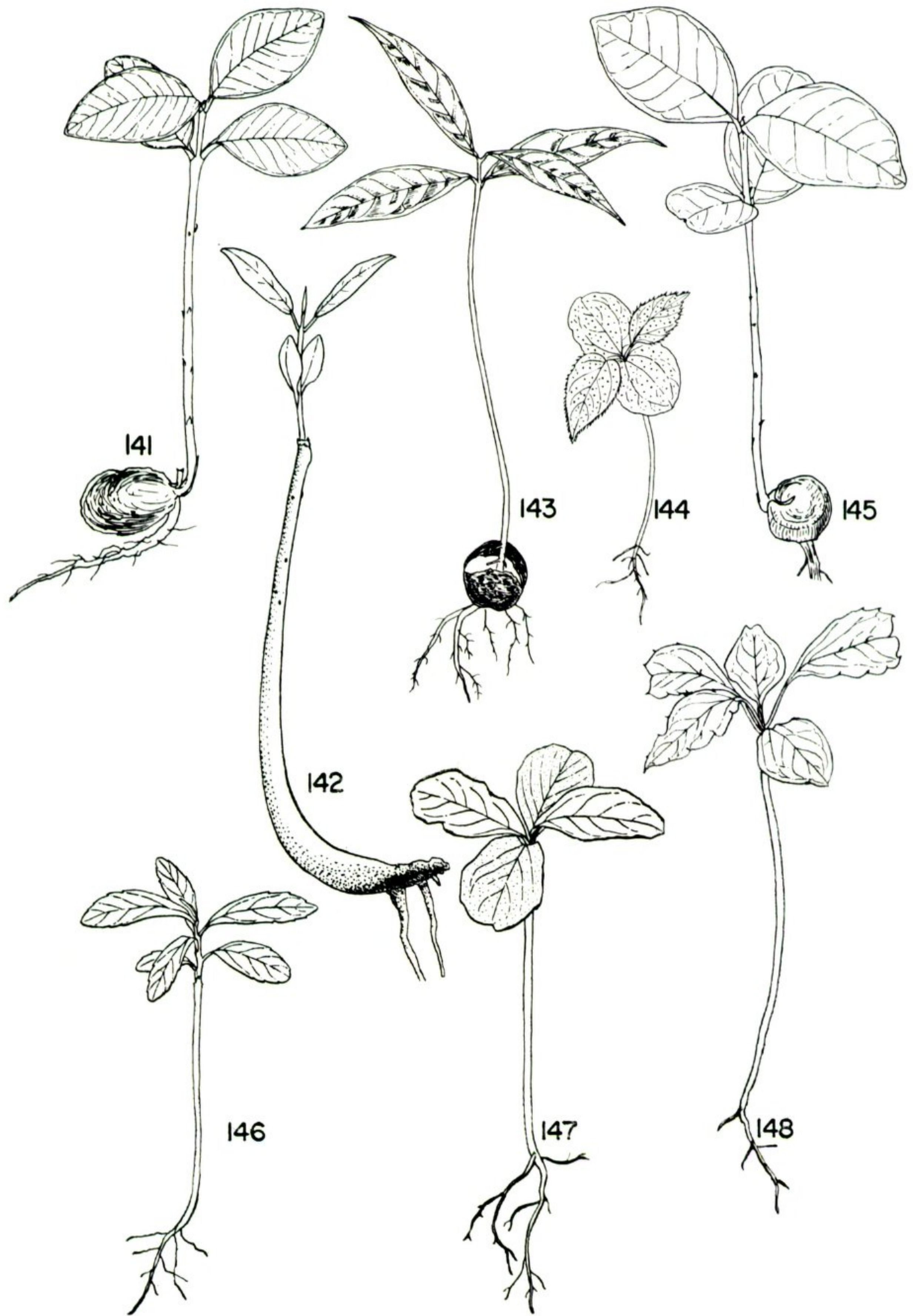


Plate 17

141. *Eugenia stahlii* ($\times \frac{1}{2}$). 142. *Rhizophora mangle* ($\times \frac{1}{3}$). 143. *Eugenia jambos* ($\times \frac{1}{2}$). 144. *Didymopanax morototoni* ($\times \frac{1}{2}$). 145. *Eugenia borinquensis* ($\times \frac{1}{2}$). 146. *Rapanea ferruginea* ($\times 1$). 147. *Ardisia glauciflora* ($\times 1$). 148. *Dendropanax arboreus* ($\times \frac{5}{8}$).

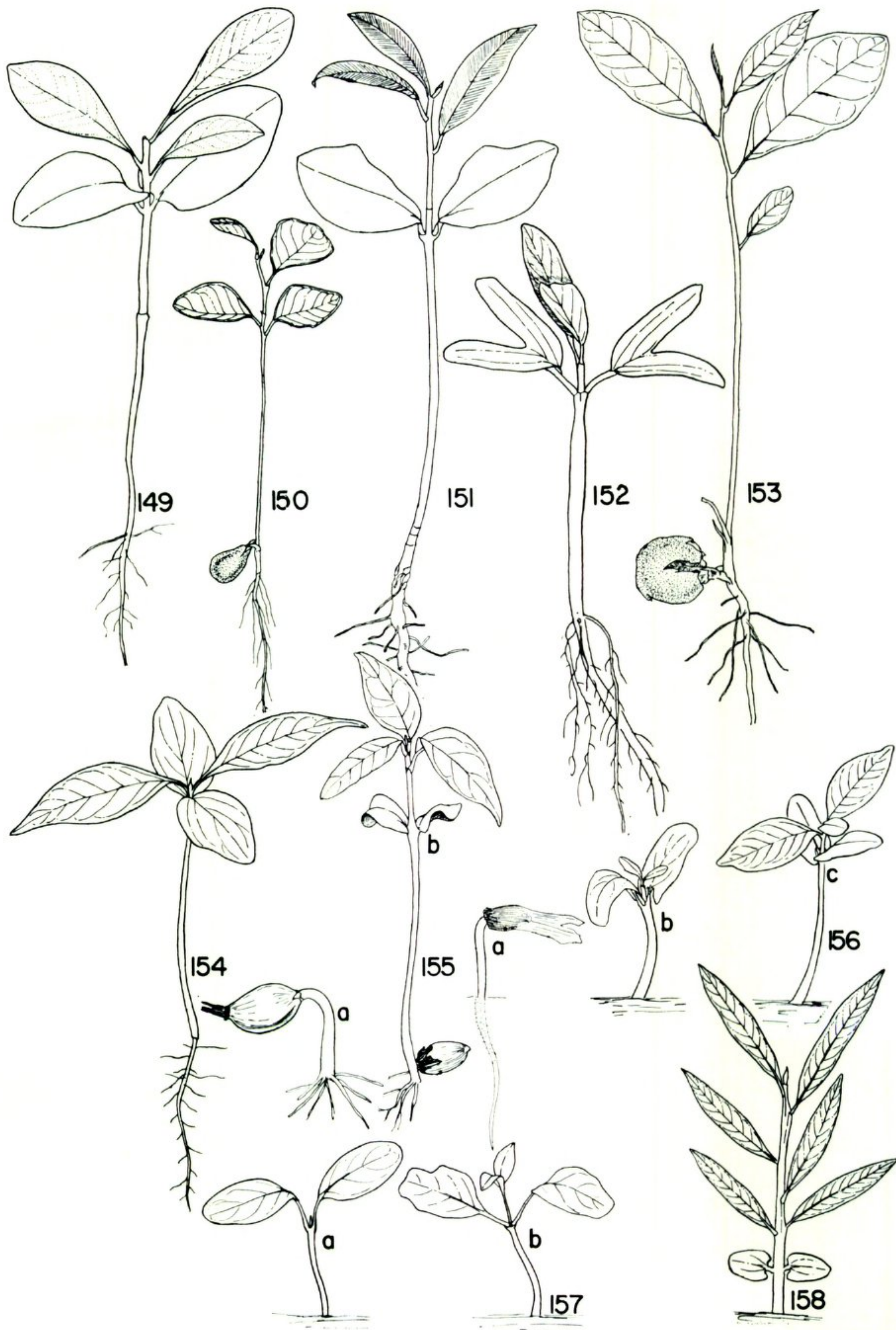


Plate 18

149. *Manilkara balata* ($\times \frac{1}{2}$). 150. *Bumelia obovata* ($\times \frac{3}{4}$). 151. *Micropholis garciniaefolia* ($\times \frac{1}{2}$). 152. *Ipomoea pes-caprae* ($\times \frac{1}{2}$). 153. *Pouteria multiflora* ($\times \frac{1}{4}$). 154. *Linociera domingensis* ($\times \frac{3}{4}$). 155. *Haenianthus salicifolius* var. *obovatus* (a $\times \frac{5}{8}$, b $\times \frac{3}{8}$). 156. *Plumeria obtusa* (a, b, & c $\times \frac{1}{2}$). 157. *Calotropis procera* (a & b $\times \frac{1}{2}$). 158. *Plumeria alba* ($\times \frac{1}{2}$).

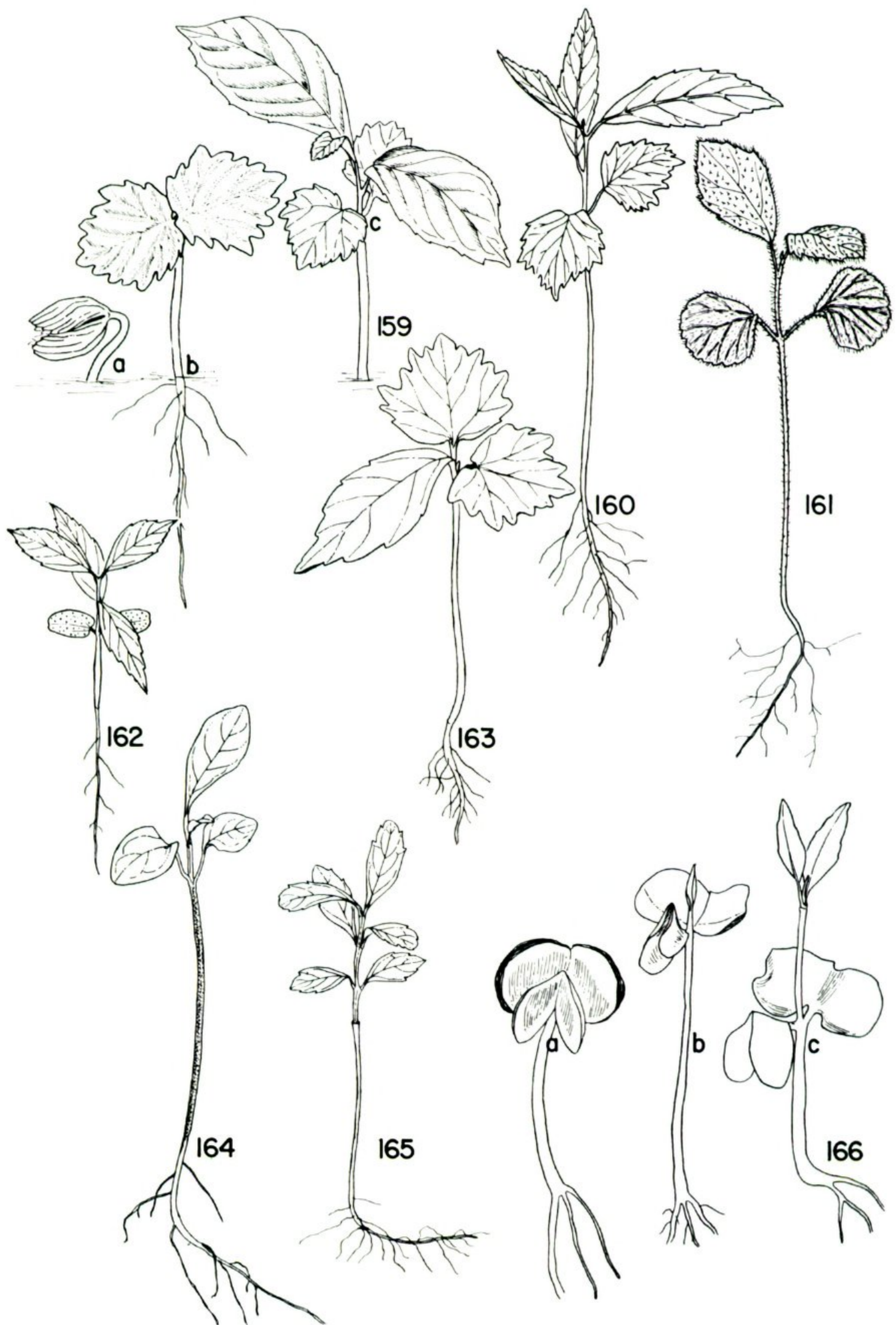


Plate 19

159. *Cordia nitida* (a & b $\times 1$, c $\times \frac{3}{4}$). 160. *Cordia sulcata* ($\times \frac{3}{4}$). 161. *Cordia lima* ($\times 1$). 162. *Tectona grandis* ($\times \frac{1}{2}$). 163. *Cordia borinquensis* ($\times \frac{1}{2}$). 164. *Cestrum macrophyllum* ($\times \frac{1}{2}$). 165. *Citharexylum fruticosum* ($\times \frac{1}{2}$). 166. *Avicennia germinans* ($\times \frac{1}{2}$).

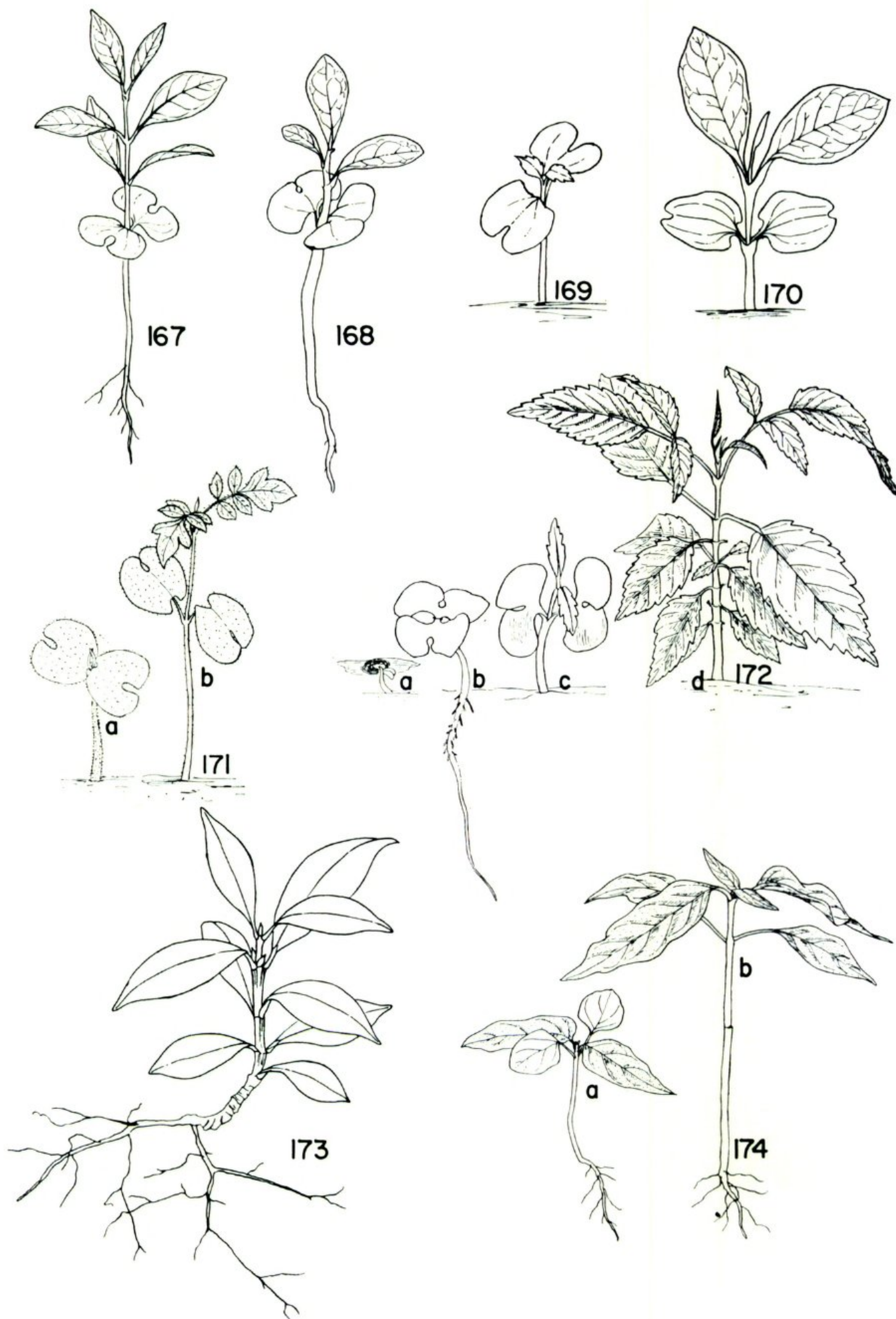


Plate 20

167. *Tabebuia heterophylla* ($\times \frac{1}{2}$). 168. *Tabebuia rigida* ($\times \frac{1}{2}$). 169. *Spathodea campanulata* ($\times \frac{1}{2}$). 170. *Crescentia cujete* ($\times \frac{1}{2}$). 171. *Jacaranda mimosifolia* (a & b $\times \frac{3}{4}$). 172. *Tecoma stans* (a $\times \frac{1}{2}$, b & c $\times 1$, d $\times \frac{1}{2}$). 173. *Hillia parasitica* ($\times \frac{1}{2}$). 174. *Psychotria berteriana* (a & b $\times \frac{1}{2}$).

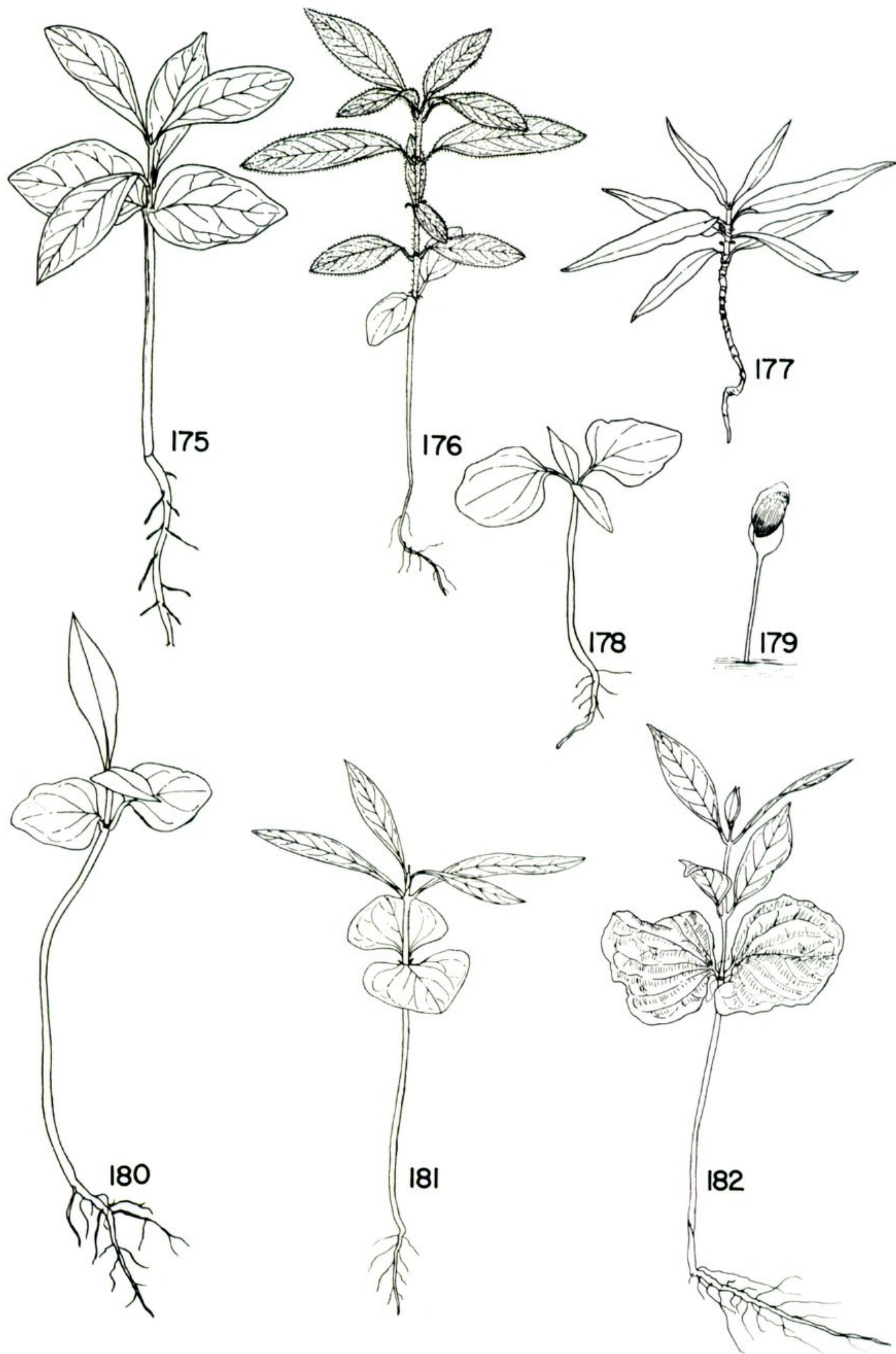


Plate 21

175. *Posoqueria latifolia* ($\times \frac{1}{2}$). 176. *Guettarda* sp. ($\times \frac{3}{4}$). 177. *Terebraria resinosa* ($\times \frac{1}{2}$). 178. *Palicourea alpina* ($\times 1$). 179. *Exostema caribaeum* ($\times 1$). 180. *Genipa americana* ($\times \frac{1}{2}$). 181. *Ixora ferrea* ($\times \frac{3}{4}$). 182. *Coffea arabica* ($\times \frac{1}{2}$).