A FLORA OF TASSAJARA

Volume Two: A Fully Illustrated Field Key

By David Rogers

A FLORA OF TASSAJARA

THE VASCULAR PLANTS OF THE TASSAJARA REGION OF THE VENTANA WILDERNESS, MONTEREY RANGER DISTRICT OF LOS PADRES NATIONAL FOREST, SANTA LUCIA MOUNTAINS, MONTEREY COUNTY, CALIFORNIA.

A completely revised second edition that includes 96 additional taxa.

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On the cover:
Elegant Madia (*Madia elegans*).
Sarah Ann Drake, delineator, S. Watts, sculptor.
Edwards Botanical Register volume 17, 1831.

On the title page:
Scarlet Bugler (*Chelone centranthifolia*, now *Penstemon centranthifolius*).
Sarah Ann Drake, delineator, S. Watts, sculptor.
Edwards Botanical Register volume 20, 1835.

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The illustration sources, credits and explanations of the plates of volume two section is in volume one.

Page number (s) on which the illustration (s) of a species occurs in this volume follow the name of the species in the text. For example:

The genus *Athysanus* is represented in the Tassajara region by one species. ***Athysanus pusillus***. p. 104.

A DICHOTOMOUS DIAGNOSTIC KEY TO THE DIVISIONS AND FAMILIES OF VASCULAR PLANTS IN THE TASSAJARA REGION. p. 1

1a. Plants that reproduce by one celled spores (ferns, horsetails, moss ferns):
- **2a**. Moss like plants with trailing, ascending or erect stems. The nearest equivalents to leaves are small scale like formations that are spirally arranged on the stems. Spores are produced in the axils of specialized scales that are terminal on the stems (sporophylls) . . . . . ***Lycopodiophyta***.
- **2b**. Plants with erect, ascending or arching stems or leaves. Leaves well developed or not. Spores are produced on the lower leaf surfaces or in terminal cone like structures (ferns and horsetails). . . . . ***Pteridophyta***.

1b. Plants that reproduce by seeds, and thus male and female reproductive formations are manifested:
- **3a**. Coniferous trees, i.e., trees which lack true flowers. Ovules are naked and produced on the inner surface of (usually) spirally arranged pistillate (female) scales. Fertilization occurs on contact with air borne pollen from staminate (male) catkins. The pistillate scales enlarge and become woody with age, forming a cone or similar structure. Pollen is transported by air. . . . . ***Pinophyta***.
- **3b**. Flowering plants, i. e., broadleaf trees, shrubs, and herbaceous plants (including grasses and glasslike plants) with true flowers. Ovules are in enclosed in ripening pistils (ovaries). Fertilization occurs with contact of pollen with specialized receptive (usually terminal) organs (stigmas) which send pollen grains to the ovary. Pollen is transported by air, insects or birds. . . . . ***Anthophyta***. (the Angiosperms).
  - **4a**. Germinating embryos with two opposing cotyledons (generally leaf like and often food supplying structures). The leaves are rarely grass like, and they typically have a pinnately or palmately branched vein structure, with capillary veins netted between the larger veins. Trunks or branches of tree or shrub species developing concentric rings with each year's growth, and thus widening the girth. Outer flower parts (calyces & corollas), if present, are mostly lobed or divided in four's, five's, or more. Broadleaf trees, shrubs, and perennial and annual herbaceous plants (the Dicotyledons):
    - **5a**. Aromatic trees or large shrubs with six yellow petal like sepals that are spirally arranged in 3's. Stamens spirally arranged in 3's; pollen aperture one. *Umbellularia californica* (California Bay Laurel) . . . . . ***Magnoliidae***.
    - **5b**. Trees, shrubs, and perennial and annual herbs with the flower parts generally arranged in 4's or 5's. Pollen apertures 3 or more. . . . . ***Eudicotyledons***.
  - **4b**. Germinating embryos with one cotyledon. Leaves most typically elongated and more or less glasslike, and with a parallel vein structure. Outer flower parts (perianth segments) are singular, dual, or arranged in one or more series of three's. Trunks or branches of tree or shrub like plants are not truly woody and do not develop true bark, the "wood" is either fibrous and/or pithy and does not develop growth rings (such as in palm, banana, and Joshua trees), or is hard and tubular in shape, and solid only at the nodes (as in the bamboos of the Grass Family). Grasses, sedges, rushes, cat tails, lilies, orchids, irises, etc. . . . . ***Monocotyledons***.

LYCOPODIOPHYTA (Lycophytes):

Lycopodiophyta is represented in the Tassajara region by one family that has only one genus. . . . . ***Selaginellaceae***.

PTERIDOPHYTA. Ferns.

1a. Reed like plants with hollow stems. The nearest equivalents to leaves are scale or sheath like formations that are produced at the nodes, or slender reed like structures that are produced in whorls at the nodes. The spores are produced in cone like structures that are terminal on the fertile stems. Horsetails. . . . . ***Equisetopsida***.

1b. Plants without hollow stems. Leaves well developed. The spores are produced from sori (sporangia clusters) on the lower surface of the leaf blades. Ferns. . . . . ***Polypodiopsida***.

EQUISETOPSIDA (EUSPORANGIATE FERNS):

Equisetopsida is represented in the Tassajara region by one family that has one genus. . . . . ***Equisetaceae*** (*Equisetum*).

POLYPODIOPSIDA (LEPTOSPORANGIATE FERNS):

1a. Sporangia hidden under the reflexed margins of the leaf segments. . . . . ***Pteridaceae*** (*Adiantum*, *Myriopteris*, *Pellaea*).

1b. Sporangia fully exposed or covered by indusium (a membranous tissue):
- **2a**. Sporangia covered by indusium (the indusium shriveling in maturity):
  - **3a**. Sori elongated and slightly curved. . . . . ***Blechnaceae***.
  - **3b**. Sori round or horse shoe shaped:

4a. Hardy ferns with evergreen fronds ranging from about 3 to 10+ dm. long. . . . . ***Dryopteridaceae***.
4b. Small and delicate ferns with dry season deciduous fronds usually less than 3 dm. long (ours). . . ***Cystopteridaceae***.
2b. Sporangia not covered by indusium:
5a. Sporangia not clustered into distinct sori, but scattered near the margins or along major veins:
6a. Fronds mostly 4 to 20 dm. (16-80") long. Stipes (petioles) stout, light colored, and not glossy. . ***Dennstaedtiaceae***.
6b. Fronds mostly 1 to 4 dm. (4-16") long. Stipes slender, dark, and glossy. . . . . ***Pteridaceae*** (*Pentagramma*).
5b. Sporangia clustered into distinct sori:
7a. Sori round and produced in two parallel rows. . . . . ***Polypodiaceae***.
7b. Sori irregularly shaped and produced at the apex of major veins. . . . . ***Pteridaceae*** (*Aspidotis*).

PINOPHYTA (GYMNOSPERMS, CONIFEROUS TREES):

1a. Leaves opposite, branched, and comprised of numerous flat scale like segments. . . . . ***Cupressaceae***.
1b. Leaves alternate, often in bundles, not branched, and narrowly linear to narrowly oblong. . . . . ***Pinaceae***.

ANTHOPHYTA (ANGIOSPERMAE, FLOWERING PLANTS):

MAGNOLIIDAE (MAGNOLIIDS):

Magnoliidae is represented in the Tassajara region by one family and one species. . . . . ***Lauraceae***.

EUDICOTYLEDONS (EUDICOTYLEDONEAE, EUDICOTS):

1a. Flowers produced in flower heads that resemble a single flower. The flowers are sessile on a common receptacle that bears few to usually many (and often minute) flowers. The receptacle is usually surrounded by one or more whorls of involucre bracts (phyllaries). The ovaries are inferior and are frequently crested with scale or bristle like segments (pappus). The corollas are either tubular at the base and strap like above (a ligulate or ray corolla), or tubular below and lobed at the apex (a tubular or discoid corolla). The flower heads may be comprised entirely of ligulate flowers (a ligulate head), entirely of tubular flowers (a discoid head), or of both ray and tubular flowers (a radiate head); in such flower heads the ligulate flowers are situated at or near the parameters of the receptacle and resembling petals. Anthers are united into a tube surrounding the style. Represented in the Tassajara region by 46 genera and 73 species. . . ***Asteraceae***.
1b. Flowers not produced in true flower heads. If produced in head like clusters, the flowers are not borne on a common receptacle, and if the flowers have corollas, they also have calyces:
2a. Corollas absent. Calyces (if present) are often green, but they are corolla like in color and texture in some species (some species also have involucres that are corolla like in color and/or texture) . . . . . GROUP ONE.
2b. Corollas present, but they may be very minute or shed early in some species:
3a. Corollas divided to the base into distinct petals, or some petals free and others partly united. . . . . GROUP TWO.

3b. Plants in which the corollas are united at the base. In some the corollas are united only at the very base, while in others the corollas are united into a tube, ring, bowl or disk like formation for much to nearly all of their length. . . . GROUP THREE.

GROUP ONE. COROLLAS ABSENT.

The calyces and/or involucres may be corolla like in color and/or texture in some species.

1a. Small parasitic plants that occur on the branches and stems of pine trees. As the plants lack chlorophyll, they are not green, and the leafless stems are comprised of jointed scale like segments. . . . . ***Viscaceae*** (*Arceuthobium*).
1b. Plants that are not in any way like the above. If the plants are parasitic, they are small shrubs that have green leaves, and they do not occur on pine trees:
2a. Leaves strictly basal. . . . . ***Polygonaceae*** (*Systenotheca* & some species of *Eriogonum* & *Chorizanthe*).
2b. Leaves not strictly basal:
3a. Leaves opposite or mostly opposite (some may be whorled in 3's or more in some species):
4a. Shrubs that are not vine like or parasitic on other plants. The flowers are produced in dangling catkins. . . . . .
4b. Herbaceous plants, parasitic shrubs, and vines or vine like plants:
5a. Parasitic shrubs that occur on the branches and stems of trees or shrubs. The fruits are white berries. . . . . ***Viscaceae*** (*Phoradendron*).

5b. Plants that are not parasitic. The fruits are not berries:
6a. Vines or vine like plants:
7a. Perennial vines with woody lower stems. The leaves are divided into 3 to 7 petiolate leaflets. . . . . .

Ranunculaceae (*Clematis*).

7b. Prostrate annual herbs. The leaves are obcordate (heart shaped) to fan shaped or roundish and usually notched at the apex. . . . . ***Polygonaceae*** (*Pterostegia*).

6b. Erect or mound forming annual and perennial herbs:

8a. Mound forming annual herbs. These are strongly aromatic gray-green plants that are xerophytic, and thus most of the growth occurs during the dry season. . . . . ***Euphorbiaceae*** (*Croton*).

8b. Erect annual and perennial herbs:

8a. Leaves with deeply serrate margins. The stems are 4 angled and are armed with needle like bristles that inject a painfully stinging fluid upon contact with the skin. Nettles. . . . . ***Urticaceae***.

8b. Leaves with entire to crisped or finely toothed margins. The stems are round and are not armed with stinging bristles:

9a. Flowers produced in the axils of leaves. The flowers have staminate and pistillate sections; the stalked pistillate section is positioned above the staminate section. . . . . ***Euphorbiaceae*** (*Euphorbia*).

9b. Flowers produced in terminal or lateral clusters or in terminal panicles or spikes. The flowers are normal (they have both stamens and pistils) . . . . . ***Polygonaceae*** (*Chorizanthe* & *Eriogonum*).

3b. Leaves alternate or mostly alternate (in some species the basal leaves are produced in rosettes):

10a. Annual and perennial herbs:

11a. Leaf blades 1 to 4 times ternately divided into leaflets. Stamens 8 to many, pistils 2 to 20. Plants which are restricted to wet or seasonally wet habitats. . . . . ***Ranunculaceae*** (*Thalictrum*).

11b. Leaf blades simple or pinnately divided into lobes or leaflets. Stamens 1 to 9, pistils 1. Plants which are, for the most part, not restricted to wet or seasonally wet habitats (the exceptions are in *Datiscaceae* and *Polygonaceae* (*Persicaria*):

12a. Blades of larger leaves pinnately divided into lobes or leaflets:

13a. Perennial herbs with erect or ascending stems ranging from about 7 to 10 dm. (28-72") tall. Flowers produced in the axils of the leaves. Ovaries inferior. . . . . ***Datiscaceae***.

13b. Annual herbs with prostrate or ascending stems ranging from about .5 to 2 dm. (2-8") long. Flowers produced in crowed terminal racemes. Ovaries superior. . . . . ***Brassicaceae*** (*Lipidium*).

12b. Leaves simple; the margins range from entire to sharply toothed, shallowly lobed or crisped:

14a. Flowers produced in the axils of leaves. The flowers have staminate and pistillate sections; the stalked pistillate section is positioned above the staminate section. . . . . ***Euphorbiaceae*** (*Euphorbia*).

14b. Flowers produced in terminal or lateral clusters, in terminal panicles, or in terminal or lateral spikes. The flowers are normal (they include both stamens and pistils):

15a. Flowers subtended by an involucre. The calyces and sometimes the involucres are petal like in color and texture. . . . . ***Polygonaceae*** (*Chorizanthe membranacea* & *Eriogonum elongatum*).

15b. Flowers not subtended by an involucre:

16a. Stems with sheath like structures at the leaf nodes. . . . . ***Polygonaceae*** (*Rumex* & *Persicaria*).

16b. Stems without sheath like structures at the nodes. . . . . ***Chenopodiaceae***.

10b. Trees and shrubs:

17a. Leaves sessile, less than 2 cm. long, narrowly linear to linear oblong or linear oblanceolate, and with entire margins that are revolute. The calyces are petal like in color and texture. Shrubs or subshrubs that are less than 2 m. (6.5') tall. . . . . ***Polygonaceae*** (*Eriogonum fasciculatum*)

17b. Leaves petiolate (at least shortly so), usually much more than 2 cm. long, not narrowly linear, or if so, then the margins are not revolute. The calyces, if present, are not petal like in color or texture, except in *Lauraceae*. Trees and large shrubs that are usually more than 2 m. tall:

18a. Plants strictly riparian (they only occur along or near perennial or mostly perennial streams, at springs and seeps, etc.):

19a. Leaves large, generally deltate in outline, and palmately divided into three to (usually) five pointed lobes. The bark of at least the upper branches is smooth and off white, but becoming grayish with age, and flaking off in thin scales. Seeds produced in remotely spaced globular clusters on pendulous racemes. Sycamore trees. . ***Platanaceae***.

19b. Leaves of various sizes and shapes, but not palmately divided into pointed lobes. The bark is smooth to rough, light to dark gray or brown, and not flaking off in thin scales. Seeds produced in cone like structures or in capsules:

20a. Leaves oblong-ovate to rhombic and with doubly serrate margins. The fruit is a woody cone like structure that contains winged nutlets. Alder trees. . . . . ***Betulaceae***.

20b. Leaves deltate to narrowly linear; the margins are entire, serrate or crenate, or sometimes irregularly lobed. The fruit is a capsule that produces seeds which are equipped with tufts of fine hairs which enable them to be carried by the wind. Willows and Cottonwoods. . . . . ***Salicaceae***.

18b. Plants that are not restricted to riparian habitats (but they can occur in riparian habitats):

21a. Leaves strongly aromatic, with a distinct spicy scent and taste. The sepals are 6 to 8 mm. long, yellow or

yellowish, and resemble petals. The fruit is a fleshy drupe with a thin green skin, oily flesh, and a stone like seed. . . . . ***Lauraceae*** (*Magnoliidae*, page).

21b. Leaves not or not strongly aromatic. Sepals, if present, are less than 6 mm. long, and do not resemble petals. Fruits of various kinds, and if a drupe, then juicy and berry like:

22a. Flowers produced in catkins or the staminate flowers produced in catkins. The fruit is an acorn. Oaks and Tanoaks. . . . . ***Fagaceae***.

22b. Flowers not produced in catkins:

23a. Leaves elliptic to obovate with serrate margins, and up to 8 cm. long. The fruit is an achene with a persistent feather like style that is enclosed in a persistent floral tube. . . . . ***Rosaceae*** (*Cercocarpus*).

23b. Leaves roundish to ovate with spiny toothed margins, and less than 4 cm. long. The fruit is a red berry containing two seeds. . . . . ***Rhamnaceae*** (*Rhamnus ilicifolia*).

GROUP TWO: COROLLAS DIVIDED INTO DISTINCT PETALS, OR SOME PETALS PARTLY UNTIED.

1a. Petals unequal in size, shape or arrangement. Some petals partly united or not:

2a. Flowers produced in simple or compound umbels. Petals 5. . . . . ***Apiaceae***.

2b. Flowers not produced in umbels:

3a. Petals 4 in 2 unequal sets, the outer petals united at the base, the inner petals are united at the tip. Stamens 6. . . . . ***Papaveraceae*** (*Ehrendorferia*).

3b. Petals 3 to 5, none united at the tip. Stamens 5, 6 to 8, or 10 or more:

4a. Stamens 5. Petals 5, the arrangement with two upper, two lateral and one lower, the lower spurred at the base. The fruit is a 3 chambered capsule. . . . . ***Violaceae***.

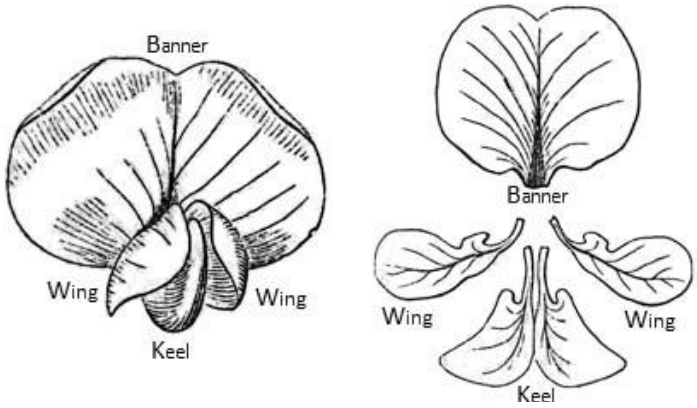
4b. Stamens 6 or more. Petals 3 to 5, and spurred only in *Ranunculaceae*. The fruit is a capsule, legume or follicle:

5a. Flowers with one or five nectar bearing spurs, and with sepals that are petal like in color and texture. Stamens 10 or more, the filaments mostly free. Pistils 3 to 5. . . . . ***Ranunculaceae*** (*Delphinium*).

5b. Flowers without spurs, the sepals not petal like (except in *Polygalaceae*). Stamens 6 to 10, the filaments usually fused. Pistil singular. The fruit is a capsule or legume. Lower petal or petals obscuring or engulfing the stamens and pistil:

6a. Leaves simple. Stamens 6 to 8. Petals 3 or 5 or absent. Petal arrangement with two small upper petals, two large lateral petals (actually modified sepals) and one lower and sack like petal. The fruit is a two chambered capsule. . . . . ***Polygalaceae***.

6b. Leaves divided into 3 or more leaflets. Stamens 10. Petals 5, the arrangement papilionaceous (butterfly like), with 1 upper and usually larger petal (banner), 2 lateral petals (wings), and 2 central petals (the keel), which are often united or partly united, and are often obscured by the wings. The fruit is a 1 to many seeded legume (pod). ***Fabaceae***.



A papilionaceous *Fabaceae* flower.

1b. Petals equal or nearly equal in size, shape and arrangement. No petals partly united:

7a. Trees, shrubs and subshrubs:

8a. Plants with thorns or spines. Petals 5:

9a. Stamens 10 to many. Ovaries superior, the fruit an aggregation of drupelets (blackberry) or achenes hidden within an enlarged hypanthium (rose hip) . . . . . ***Rosaceae*** (*Rosa* & *Rubus*).

9b. Stamens 5. Ovaries inferior, the fruit a spiny berry. . . . . ***Grossulariaceae***.

8b. Plants not thorny (plants may have spinescent branchlets or prickly hairs). Petals 4, 5 or 6:

10a. Ovaries inferior or partially inferior (positioned below or partially below and to some extent connected to the calyx, at least near the base):

11a. Flowers with more stamens than petals:

12a. Shrubs with alternate leaves. The fruit is a red and waxy or black and berry like pome (an apple like fruit). . . . ***Rosaceae*** (*Heteromeles* & *Amelanchier*).

12b. Subshrubs with opposite leaves or with at least some of the leaves opposite. The fruit is a dry capsule:

13a. Plants with erect or ascending branches. Flowers elongated and with a red and corolla like tube about 2 to 4 cm. long. Petals red. Seeds crested with tufts of hair. . . . . ***Onagraceae*** (*Epilobium canum*).

13b. Plants with semi prostrate branches. Flowers not elongated and less than 1 cm. long. Petals white. Seeds without tufts of hair. . . . . ***Philadelphaceae*** (*Whipplea*).

11b. Flowers with the same number of stamens as petals:

14a. Leaves opposite or in opposite groups or clusters. Petals and stamens 4. . . . . ***Cornaceae***.

14b. Leaves alternate or in alternate groups or clusters, except in some *Rhamnaceae* species (locally *Ceanothus cuneatus*). Petals and stamens sometimes 4 but usually 5:

15a. Petals and stamens 5, the stamens alternate with the petals. Ovaries completely inferior. The fruit is a berry. . . . . ***Grossulariaceae***.

15b. Petals and stamens 4 or 5, the stamens opposite the petals. Ovaries only partially inferior. The fruit is a dry capsule or berry. . . . . ***Rhamnaceae***.

10b. Ovaries superior (positioned above and not connected to the calyx, but the calyx may surround the ovary):

16a. Stamens 10 or more:

17a. Plants vine like. Leaves divided into 3 to 15 leaflets. True petals absent, but simulated by four sepals that are petal like in color and texture. . . . . ***Ranunculaceae*** (*Clematis*).

17b. Shrubs or subshrubs. Leaves simple. True petals present:

18a. Shrubs:

19a. Sepals 2, petals 4. The fruit is a slender capsule. . . . . ***Papaveraceae*** (*Dendromecon*).

19b. Sepals and petals 5. Fruit is an achene, drupe or follicle. . . . . ***Rosaceae***.

18b. Tufted subshrubs or woody based perennial herbs:

20a. Leaves mostly alternate and narrowly linear. Petals yellow. . . . . ***Cistaceae***.

20b. Leaves opposite and ovate to obovate or oblanceolate. Petals red. . . . . ***Caryophyllaceae*** (*Silene*).

16b. Stamens less than 10:

21a. True petals absent, but simulated by 6 sepals that are petal like in color and texture. Leaves strongly aromatic. The fruit is a green and oily drupe with one large seed. . . . . ***Lauraceae*** (*Magnoliidae*, page).

21b. True petals present. The leaves not strongly or pleasantly aromatic. Fruits various, but not like the above:

22a. Leaves whorled in 4's or more. Calyx absent, petals 4. The fruit is a berry or 2 nutlets. . . . . ***Rubiaceae***.

22b. Leaves alternate or opposite, but not whorled in 4's. Calyx present, petals 2 to 6. The fruit is a berry, winged nutlet, capsule or elongated pod:

23a. Leaves divided into 3 or more leaflets:

24a. Leaves divided into 3 (or rarely 5) leaflets. The fruits are greenish or whitish berries. Contact with surface oils causing a severe allergenic dermatitis in most people. Poison Oak. . . . . ***Anacardiaceae***.

24b. Leaves divided into more than 3 leaflets:

25a. Leaflets with spiny toothed margins. Petals 6. The fruit is a berry. . . . . ***Berberidaceae***.

25b. Leaflets with serrate but not spiny toothed margins. Petals 2 or 4 (5). The fruit is not a berry:

26a. Leaves pinnately divided into leaflets. Petals 2. The fruit is a double samara (2 winged nutlets) . . . . ***Oleaceae***.

26b. Leaves palmately divided into leaflets. Petals 4 (5). The fruit is a large pear shaped capsule with one seed that is about 2 to 5 cm. wide. . . . . ***Sapindaceae*** (*Aesculus*).

23b. Leaves simple or lobed, but not divided into leaflets:

27a. Trees or large shrubs. Leaves opposite, deltate to roundish in outline, about 1 to 4 dm. (4-16") in diameter, and deeply divided into 5 (or sometimes 3) major lobes. The fruit is double samara (2 winged nutlets) . . . . . ***Sapindaceae*** (*Acer*).

27b. Short to long branched subshrubs. The leaves are much smaller and not lobed:

28a. Branches short. Petals 4. The fruit is a long and narrow silique. . . . . ***Brassicaceae*** (*Boechera*).

28b. Branches long. Petals 4 to 6. The fruit is capsule that is obscured within a tubular calyx. . ***Lythraceae***.

7b. Annual and perennial herbs:

29a. Ovaries inferior or partially inferior (positioned below or partially below and to some extent connected to the calyx, at least near the base):

30a. Leaves one or more times pinnately, ternately, or palmately divided into distinct leaflets or narrow segments. Flowers produced in simple or compound umbels:

31a. Umbels simple or compound, but the inflorescence not paniculate. The fruit is dry, often prickly or bristly, and splitting into two carpels in maturity. . . . . ***Apiaceae***.

31b. Umbels produced on the branches of a panicle. The fruit is a berry. . . . . ***Araliaceae***.

30b. Leaves simple to pinnately or palmately toothed or lobed, but not divided into distinct leaflets or narrow segments. Flowers not produced in umbels (or in well defined umbels):

32a. Styles 2 to 5, or the style two cleft nearly to the ovary:
33a. Cauline leaves alternate or leaves strictly basal. . . . . ***Saxifragaceae***.
33b. Cauline leaves opposite:
34a. Flowers produced in small and loose umbels in the axils of the leaves. . . . . ***Apiaceae*** (*Bowlesia*).
34b. Flowers produced in terminal head like clusters. . . . . ***Hydrangeaceae*** (*Whipplea*).
32b. Style singular (the stigma may be lobed):
35. Flowers with 4 sepals, 4 petals, and 4 or 8 stamens. The fruit is a 4 celled capsule. . . . . ***Onagraceae***.
35b. Flowers with 5 sepals, 5 to 10 petals, and 10 or more stamens. The fruit is a 1 celled capsule. . . . ***Loasaceae***.
29b. Ovaries superior (positioned above and not connected to the calyx, but the calyx may surround the ovary):
36a. Flowers with 10 or more stamens:
37a. Pistils 3 to many, each maturing into an achene or a follicle:
38a. Leaves simple and very succulent. The fruit is a follicle. . . . . ***Crassulaceae***.
38b. Leaves variously lobed or divided into leaflets, these not or only slightly succulent. The fruit is a follicle or achene:
39a. Flowers with a hypanthium (a generally cup shaped structure from which the calyx, corolla and stamens arise). Petals and sepals symmetrical, the sepals green and not petal like. The fruit is an achene. . . ***Rosaceae***.
39b. Flowers without a hypanthium. Petals and sepals symmetrical or asymmetrical, the sepals in *Delphinium*, *Aquilegia*, and *Clematis* petal like in color and texture. The fruit is a follicle or achene. . . . ***Ranunculaceae***.
37b. Pistils 1, remaining intact or dividing into few to many carpels in maturity (the styles may be one to several, and entire or divided):
40a. Cauline leaves opposite or whorled, or some cauline leaves opposite or whorled:
41a. Leaves palmately divided into deep lobes or segments. The fruit consists of 5 carpels, each of which retains longitudinal section of the style. . . . . ***Geraniaceae*** (*Geranium*).
41b. Leaves simple. The fruit is a capsule:
42a. Plants of wet habitats. Petals entire and yellow with black dots. Stamens usually much more than 10. . . . ***Hypericaceae***.
42b. Plant of various habitats, but not wet ones. Petals lobed or entire, not yellow, or if yellowish, then lobed and not black dotted. Stamens 10:
43a. Leaves opposite. Petals lobed (except in *Minuartia* & *Moehringia*). Annual and perennial herbs. . . . . ***Caryophyllaceae***.
43b. Leaves whorled, opposite and also often alternate. Petals entire. Small perennial herbs that only occur in some areas of the higher elevations of the Tassajara region. . . . . ***Ericaceae*** (*Chimaphila*).
40b. Cauline leaves alternate (basal leaves may be in rosettes), or the leaves strictly basal:
44a. Fruits comprised of 5 to 15 one ovuled carpels. . . . . ***Malvaceae***.
44b. Fruit a capsule:
45a. Leaves clover like, i.e., divided into 3 generally obcordate leaflets. . . . . ***Oxalidaceae***.
45b. Leaves not clover like, the blades ranging from simple to palmately lobed or deeply cleft, or ternately divided into numerous narrowly linear segments:
46a. Sepals 2. Petals 3 to 7:
47a. Leaves simple and entire. Sepals persistent. Petals 3 to 7 and red to pinkish) . . . . . ***Montiaceae*** (*Calandrinia*).
47b. Leaves divided into narrowly linear segments, or pinnately divided into leaflets or lobes. Sepals falling early, usually before the flowers are mature. Petals 4 and yellow to orange (or orangish) . . . . . ***Papaveraceae***.
46b. Sepals (or calyx lobes) 5. Petals 5:
48a. Sepals (or calyx lobes) equal or nearly equal in size and arrangement. Petals white. . . ***Saxifragaceae***.
48b. Sepals asymmetrical (1 large, 2 intermediate, and 2 minute and bract like). Petals yellow. . ***Cistaceae***.
36b. Flowers with less than 10 stamens:
49a. Cauline leaves opposite or whorled, or at least some of the cauline leaves opposite or whorled:
50a. Pistils 3 to 5, the fruit is a follicle. Annual herbs less than 6 cm. (2½") tall and with leaves less than 3 mm. long). . . . . ***Crassulaceae*** (*Crassula*).
50b. Pistils 1, the fruit of various manifestations. Plants generally more to much more than 6 cm tall, the leaves generally more to much more than 3 cm. long:
51a. Sepals 2. Cauline leaves fused on one or both sides of the stem into disk like or 2 lobed formations) . . . . . ***Montiaceae*** (*Claytonia*).
51b. Sepals 3 to 6 (or absent). Cauline leaves not or only slightly fused at the base:
52a. Leaves divided into deep lobes or segments. The fruit consists of 5 carpels, each of which retains longitudinal section of the style (the style becoming coiled when dry) . . . . . ***Geraniaceae*** (*Erodium*).
52b. Leaves simple, entire or toothed, but not deeply divided into lobes or segments:
53a. All or some of the leaves produced in whorls:

54a. Lower cauline leaves whorled, the basal in rosettes and the upper opposite. Sepals 3, petals 6. The fruit is a narrow capsule. Small annual herbs. . . . . ***Papaveraceae*** (*Meconella*).

54b. All leaves whorled. Sepals absent, petals 5. The fruit is 1 berry or 2 nutlets. Annual and perennial herbs. . . . . ***Rubiaceae***.

53b. All leaves opposite or some leaves opposite and others alternate:

55a. All leaves opposite. Sepals, petals and stamens 5. . . . . ***Caryophyllaceae***.

55b. Lower leaves generally opposite and the upper leaves generally alternate. Sepals and petals 4 to 6, stamens 6. . . . . ***Lythraceae***.

49b. Cauline leaves alternate or the leaves strictly basal:

56a. Pistils 2 to many, the fruit is an achene. . . . . ***Ranunculaceae*** (*Ranunculus hebecarpus*).

56b. Pistil 1:

57a. Sepals 2. . . . . ***Montiaceae***.

57b. Sepals 4 to 15:

58a. Sepals and petals 4. Stamens 6, 4 long and 2 short (or rarely with only 2 or 4 stamens). The fruit is a 1 to many seeded, generally flattened, and often pod like capsule. . . . . ***Brassicaceae***.

58b. Sepals 5 to 16, petals 5 or 6. Stamens 5 or 6:

59a. Sepals 9 to 16, petals 6, stamens 6. Leaves basal and pinnately divided into leaflets. . . . ***Berberidaceae***.

59a. Sepals, petals and stamens 5. Leaves basal or cauline and simple and entire:

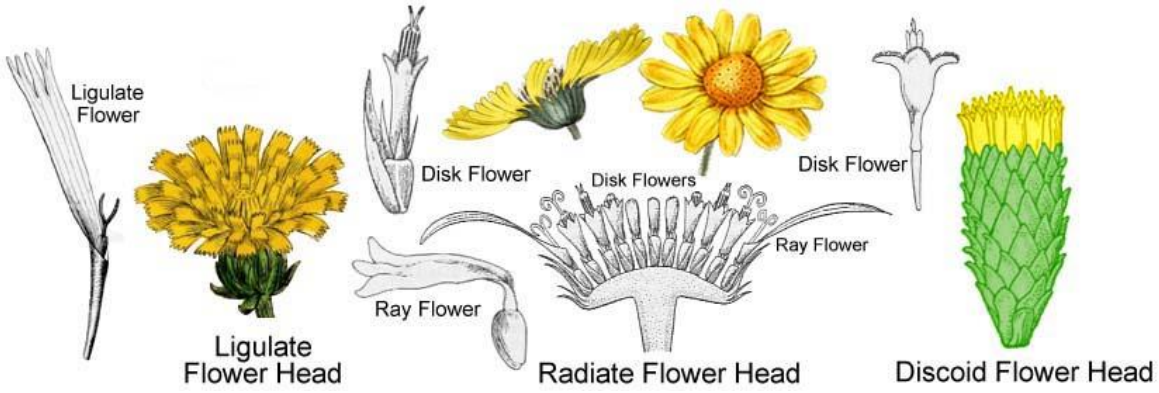
60a. Leaves strictly basal, 4 to 14 cm. long, the blades generally ovate lanceolate. Flowers singular and terminal on scapes. . . . . ***Parnassiaceae***.

60b. Leaves cauline, narrowly linear, and 1 to 2.5 cm. long. Flowers produced in open cymes. . . ***Linaceae***.

GROUP THREE: COROLLAS UNITED, AT LEAST AT THE BASE.

In some species the corollas are united only at the very base, while in others they are united into a ring, tube, bowl or disk like formation for much to nearly all of their length.

1a. Flowers produced in flower heads that resemble a singular flower. The flowers are sessile on a common receptacle that bears few to usually many (and often minute) flowers. The receptacle is usually surrounded by one or more whorls of involucre bracts (phyllaries). The ovaries are inferior and are frequently crested with scale or bristle like segments (pappus). The corollas are either tubular at the base and strap like above (a ligulate or ray corolla), or tubular below and lobed at the apex (a tubular or discoid corolla). The flower heads may be comprised entirely of ligulate flowers (a ligulate head), entirely of tubular flowers (a discoid head), or of both ray and tubular flowers (a radiate head); in such flower heads the ligulate flowers are situated at or near the parameters of the receptacle and resembling petals. The anthers are united into a tube surrounding the style. Represented in the Tassajara region by 47 genera and 73 species. . . ***Asteraceae***.



Asteraceae flower heads and flowers.

1b. Flowers not produced in flower heads that resemble a singular flower. If produced in head like clusters, the flowers are not borne on a common receptacle, and each are subtended by calyces:

2a. Parasitic plants that lack chlorophyll, and thus they are not green. True leaves absent, but bracts may be present:

3a. Primarily underground plants that are parasitic on the roots of other plants; the flowers range from black to yellowish, pink and purplish blue. The bilabiate corollas range from about 1 to 4.5 cm. long. . . . . ***Orobanchaceae*** (*Aphyllon*).

3b. Slender stemmed vines that are parasitic on the branches and stems of other plants; the plants range from pale yellow to slightly orangish. The corollas are urn shaped and less than 6 mm. long. . . . . ***Convolvulaceae*** (*Cuscuta*).

2b. Plants that are not parasitic (or only partially parasitic) that have chlorophyll, and thus they are green or partially green:

4a. Leaves strictly basal and rarely present while the flowers are blooming. . . . . ***Campanulaceae*** (*Nemacladus*).

4b. Leaves strictly basal or not, and present while the flowers are blooming:

5a. Leaves very succulent, the larger ones produced in basal rosettes. Corollas fused only at the very base, and thus the

lobes may at first appear to be petals. . . . . ***Crassulaceae*** (*Dudleya*).

5b. Leaves not or only slightly succulent, and produced in basal rosettes or not. Corollas united in various ways:

6a. Leaves produced only in basal rosettes:

7a. Flowers produced in loose racemes on capillary pedicles 8 to 20 mm. long. . . . ***Campanulaceae*** (*Nemacladus*).

7b. Flowers produced in umbels or terminal head like clusters:

8a. Flowers produced in umbels. Corollas petal like in texture and variously colored. . . . . ***Primulaceae***.

8b. Flowers produced in terminal clusters. Corollas translucent and paper like. . . . . ***Plantaginaceae*** (*Plantago*).

6b. Leaves or some leaves cauline (produced on the stems). The basal leaves of some species are produced in rosettes:

9a. Leaves produced only in whorls of 4 to 8 at the nodes of the stems. . . . . ***Rubiaceae*** (*Galium*).

9b. Leaves not produced in whorls, or only some of the leaves are produced in whorls:

10a. Leaves alternate or most leaves alternate:

11a. Corollas asymmetrical:

12a. True corollas absent, but the colorful involucres and/or calyces may be at first mistaken for corollas. . . . ***Polygonaceae*** (*Chorizanthe*).

12b. True corollas present (i. e., they are positioned above the calyces):

13a. Ovaries inferior (positioned below the calyx lobes). Plants of wet habitats. . ***Campanulaceae***. (*Lobelia*).

13b. Ovaries superior (positioned above the corolla). Plants not of wet habitats (except for *Castilleja minor*):

14a. Flowers not subtended by colorful petal like bracts. Bases of corolla tubes with narrow spurs or swollen pouch like formations. . . . . ***Plantaginaceae*** (*Antirrhinum*, *Nuttallanthus*).

14b. Flowers in most species subtended by colorful petal like bracts. Bases of corolla tubes not spurred or pouched. . . . . ***Orobanchaceae*** (*Castilleja*, *Cordylanthus*, *Pedicularis* and *Triphysaria*).

11a. Corollas symmetrical or nearly so:

15a. Trees, shrubs and subshrubs:

16a. Trees with strawberry like fruits (*Arbutus*), or shrubs with apple like fruits (*Arctostaphylos*). Bark, or portions of bark (and often stems) that are smooth reddish brown (reddish brown or not and shredding in *Arctostaphylos tomentosa*). Flowers urn shaped. Stamens 10. . . . ***Ericaceae*** (*Arbutus*, *Arctostaphylos*).

16b. Shrubs or subshrubs with fruits that range from many seeded capsules, achenes or round berries that are black in maturity. Bark not smooth reddish brown (if the stems are reddish brown the flowers are not urn shaped). Flowers variously shaped; urn shaped only in *Eriodictyon tomentosum*. Stamens 5 to 9:

17a. True corollas absent, but the calyces, which are petal like in color and texture, can at first be mistaken for corollas. The fruits are achenes. . . . . ***Polygonaceae*** (woody *Eriogonum* species).

17b. True corollas present. The fruits are many seeded capsules or round black berries:

18a. Corollas rotate and disk or star shaped. Anthers at first joined and forming a ring that closely surrounds the styles. The fruits are round berries that are black in maturity. . . . . ***Solanaceae***.

18b. Corollas urn shaped, bell shaped, funnel shaped, or salverform. Anthers free and not forming rings around the styles. The fruits are many seeded capsules:

19a. Flowers produced in terminal clusters. Corollas salverform. . . . . ***Polemoniaceae*** (*Eriastrum*).

19b. Flowers produced in panicles that are comprised of coiling cymes. Corollas urn shaped, bell shaped or funnel shaped. . . . . ***Boraginaceae*** (*Eriodictyon*, some species of *Phacelia*).

15b. Annual and perennial herbs:

20a. Vines or vine like plants:

21a. Leaves palmately 5 to 7 lobed. Corollas rotate. Staminate flowers produced in axillary racemes, pistillate flowers produced singularly in the axils. The fruits are large round berry like structures that are covered with spines. . . . . ***Cucurbitaceae***.

21b. Leaves triangular in general outline. Corollas broadly funnel shaped. Flowers bisexual and produced singularly in the axils of the leaves. The fruits are capsules. . . . . ***Convolvulaceae***.

20b. Plants that are not vines or vine like:

22a. True corollas absent, but the involucres and/or calyces, which are petal like in color and/or texture, can be at first mistaken for corollas. The fruits are achenes. . . . ***Polygonaceae*** (*Chorizanthe*, *Eriogonum*).

22b. True corollas present. The fruits are capsules or round berries that are black in maturity:

23a. Corollas rotate and disk or star shaped. Anthers at first joined and forming a ring that closely surrounds the styles. The fruits are round berries that are black in maturity. . . . . ***Solanaceae***.

23b. Corollas rotate, bowl shaped, bell shaped, funnel shaped or salverform. Anthers free and not forming rings around the styles. The fruits are capsules or nutlets:

24a. Ovaries inferior. The fruits are capsules. . . . . ***Campanulaceae*** (*Githopsis*, *Heterocodon*).

24b. Ovaries superior. The fruits are capsules or nutlets:

25a. Flowers produced in outwardly coiling racemes. . . . . ***Boraginaceae***.

25b. Flowers not produced in coiling racemes:

26a. Fruits comprised of 1 to 4 nutlets. . . . . ***Boraginaceae***.

26b. Fruit a capsule:
27a. Calyx lobes in most species cleft less than half way to the calyx base. Corollas salverform to funnel shaped. Styles 3 lobed. . . . . ***Polemoniaceae***.
27b. Calyx lobes cleft nearly to the calyx base. Corollas rotate to bell shaped. Styles 2 lobed. . . ***Boraginaceae***.

10b. Leaves opposite or some leaves opposite (or in opposite clusters in some species):
28a. Corollas symmetrical or nearly so:
29a. Trees, shrubs and subshrubs:
30a. Corollas actually consisting of four red petals about 8 to 16 mm. long, which are borne on long red corolla like floral tubes that are about 2 to 4 cm. long. The fruits are slender capsules that contain numerous comose seeds. . . . . ***Onagraceae*** (*Epilobium canum*).
30b. Flowers not like the above. The fruits are berries:
31a. Small trees or large shrubs. Leaves pinnately divided into 5 to 7 leaflets. Flowers produced in large and generally flat topped terminal cymes. . . . . ***Adoxaceae***.
31b. Lanky shrubs or subshrubs. Leaves entire or sometimes shallowly lobed. . . . . ***Caprifoliaceae***. (*Symphoricarpos*).
29b. Annual and perennial herbs:
32a. True corollas absent, but the calyces, which are petal like in color and/or texture, can be at first mistaken for corollas. The fruits are achenes. . . . . ***Polygonaceae*** (*Chorizanthe*, *Eriogonum*).
32b. True corollas present. The fruits are capsules or nutlets:
33a. Corollas actually consisting of four red petals that are borne on long red corolla like floral tubes that are about 2 to 4 cm. long. The fruits are slender capsules that contain numerous comose seeds. . . . . ***Onagraceae*** (*Epilobium canum*).
33b. Flowers not like the above. The fruits range from four nutlets to slender or roundish capsules:
34a. Flowers with 2 pistils that mature into long and narrow capsules that contain many comose (tufted) seeds. . . . . ***Apocynaceae***.
34b. Flowers with 1 pistil that matures into roundish to oblong-ovoid capsules or 4 nutlets:
35a. Flowers sessile and produced in dense terminal and lateral spikes. Corollas very slightly to moderately bilabiate. The ovaries mature into 4 nutlets. . . . . ***Verbenaceae***.
35b. Flowers pedunculate and produced in the axils of the leaves. Corollas rotate to salverform. The ovaries mature into capsules:
36a. Corollas narrowly funnel shaped to salverform. . . . . ***Polemoniaceae*** (*Microsteris*).
36b. Corollas rotate to bowl shaped:
37a. Leaves entire. Corollas usually pinkish orange (salmon), but are sometimes white, pink, blue, purple or scarlet. . . . . ***Myrsinaceae***.
37b. Leaves pinnately or irregularly lobed or parted into leaflets. Corollas purplish blue, blue, white, or blue and white . . . . . ***Boraginaceae*** (*Pholistoma* & *Nemophila*).
28b. Corollas asymmetrical (bilabiate—but only slightly in some species):
38a. Vine like shrubs or subshrubs. The fruits are round berries. . . . . ***Caprifoliaceae*** (*Lonicera*).
38b. Shrubs, subshrubs and annual and perennial herbs, none of which are vine like. The fruits are not berries:
39a. Ovaries inferior and maturing into achenes. Corolla bases spurred or pouched (the spur is very small in *Plectritis congesta*). Annual herbs. . . . . ***Valerianaceae***.
39b. Ovaries superior and maturing into capsules or nutlets. Corolla bases not spurred or pouched in most species. Shrubs, subshrubs and annual and perennial herbs:
40a. Ovaries maturing into 4 nutlets (sometimes some of the nutlets fail to mature):
41a. Corollas strongly to moderately bilabiate (two lipped) . . . . . ***Lamiaceae***.
41b. Corollas weakly to moderately bilabiate:
42a. Flowers produced in terminal and lateral spikes in which the flowers are not whorled. Ovary not or only slightly 4 lobed. . . . . ***Verbenaceae***.
42b. Flowers produced in whorls, head like clusters, or in spikes in which the flowers are whorled. Ovary deeply 4 lobed, especially in fruit. . . . . ***Lamiaceae***.
40b. Ovaries maturing into capsules.
43a. Calyx united into a tube for more (and usually much more) than 70% of the length, the calyx ribs usually pleated. Stigmas 2 lobed, the lobes flat, disk like, and moving together when touched. . . . ***Phrymaceae***.
43b. Calyx divided into sepals, or united into a tube for no more than 60% of the length, the calyx ribs not pleated. Stigmas not lobed:
44a. Stems four angled. Lower corolla lip much smaller than the upper lip. . . . . ***Scrophulariaceae***.
44b. Stems not four angled. Lower corolla lip slightly to much larger than the upper lip (the corollas are narrowly tubular in *Penstemon centranthifolius*) . . . . . ***Plantaginaceae***.

MONOCOTYLEDONS. (Monocotyledoneae, Monocots).

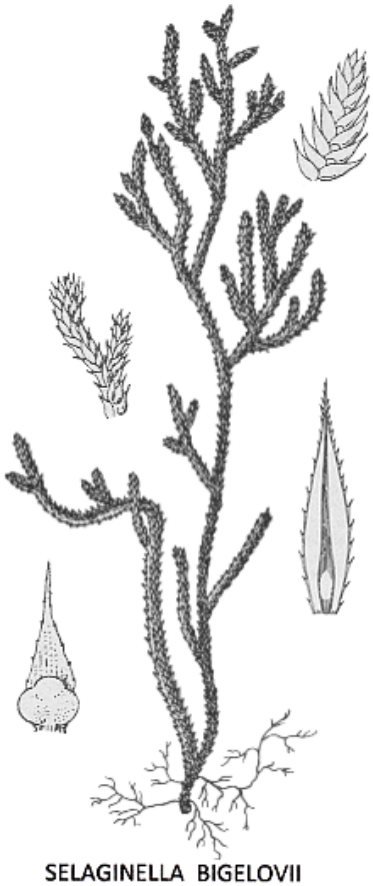
1a. Perianths (corollas) petal like, i.e., they are colorful and/or delicately textured:
2a. Ovaries inferior (they are positioned below or partially below the perianth segments):
3a. Perianth segments asymmetrical. Ovaries one celled. Stamens one or two. . . . . ***Orchidaceae***.
3b. Perianth segments symmetrical. Ovaries three celled. Stamens three. . . . . ***Iridaceae***.
2b. Ovaries superior (they are positioned above the perianth segments and in no way joined to the segments):
4a. Leaves stiff and sword like, up to 1 m. (40") long, tapering to a very sharp and penetrating spine, and produced in dense basal tufts. Flowers borne in profusion in massive panicles on thick stalks up to 4 m. (13') tall. . . . . ***Agavaceae*** (*Hesperoyucca*).
4b. Plants that are in no way similar to the above:
5a. Flowers produced in terminal umbellate clusters, the flowers clearly radiating from a common point:
6a. Lower portion of perianth segments united into a tube, or if the perianth segments are divided to the base (as in *Bloomeria*), then the flowers are yellow and the filaments have a cup shaped appendage at their bases. Plants not smelling or tasting onion like. . . . . ***Themidaceae***.
6b. Perianth segments divided to the base, the flowers are not yellow (ours), and the filaments do not have basal appendages (the bases are wide and fused into a ring). Plants with an onion like scent and taste. . . . . ***Alliaceae***.
5b. Flowers not produced in umbellate clusters, or if the inflorescence is somewhat umbellate, then the flower do not radiate from a common point:
7a. Styles three and distinct to the base. . . . . ***Melanthiaceae***.
7b. Styles singular (but often 3 lobed or parted at the apex):
8a. Well developed leaves borne only at or near the base of the plant, upper "leaves" reduced to scarious bracts. . . ***Agavaceae*** (*Chlorogalum*).
8b. Well developed leaves present on the stems above the base of the plant, but may be reduced in size or modified in shape and/or arrangement. . . . . ***Liliaceae***.
1b. Perianth segments not petal like; they are husk or scale like, and green when young but brown or brownish yellow later on:
9a. Flowers with three or more perianth segments:
10a. Flowers densely compacted on elongated spikes. Perianth segments are slender thread like fibers. The fruit is an achene. Cat Tails. . . . . ***Typhaceae***.
10b. Flowers borne on branching panicles. Perianth segments green when young and husk like when mature, and arranged in two series of three's. The fruit is a many seeded capsule. Rushes. . . . . ***Juncaceae***.
9b. Flowers with one or two perianth segments:
11a. Flowers with one scale like perianth segment (bract) covering or partly covering the flowers and fruits. Stems solid, not jointed, and typically three angled (and thus triangular) in cross section. Plants mostly of wet or moist habitats. Sedges. . . . . ***Cyperaceae***.
11b. Flowers with two husk like perianth segments (glumes) subtending or sometimes enclosing the flowers and fruits. Stems hollow, solid only at the nodes (joints), and usually round in cross section. Most species not of wet or moist habitats. Grasses. . . . . ***Poaceae***.

LYCOPODIOPHYTA (Lycophytes). MOSS FERNS AND QUILWORTS.

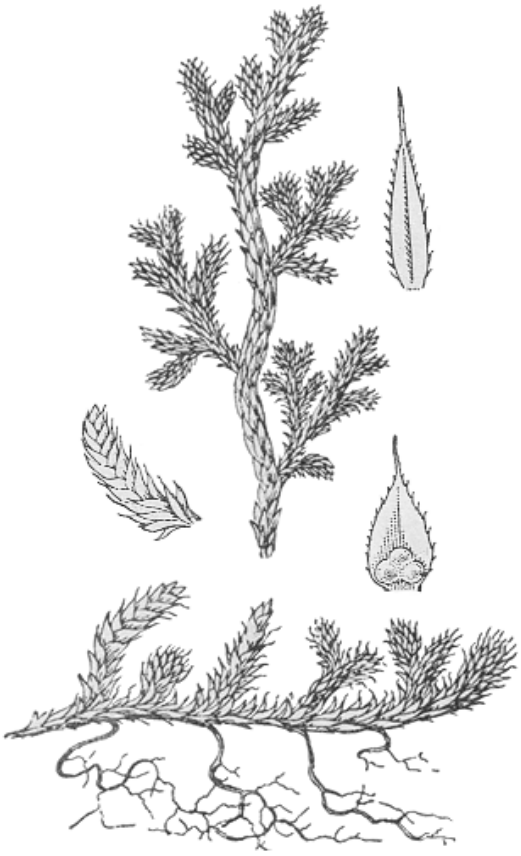
SELAGINELLACEAE. SPIKE MOSS FAMILY.

SELAGINELLA. SPIKE MOSSES, RESURRECTION PLANTS.

1a. Stems erect or ascending and rooting only at the base. . . . . ***S. bigelovii***.
1b. Stems prostrate and rooting at the nodes. . . . . ***S. hansenii***.



SELAGINELLA BIGELOVII



SELAGINELLA HANSENII

***PTERIDOPHYTA*. FERNS.**

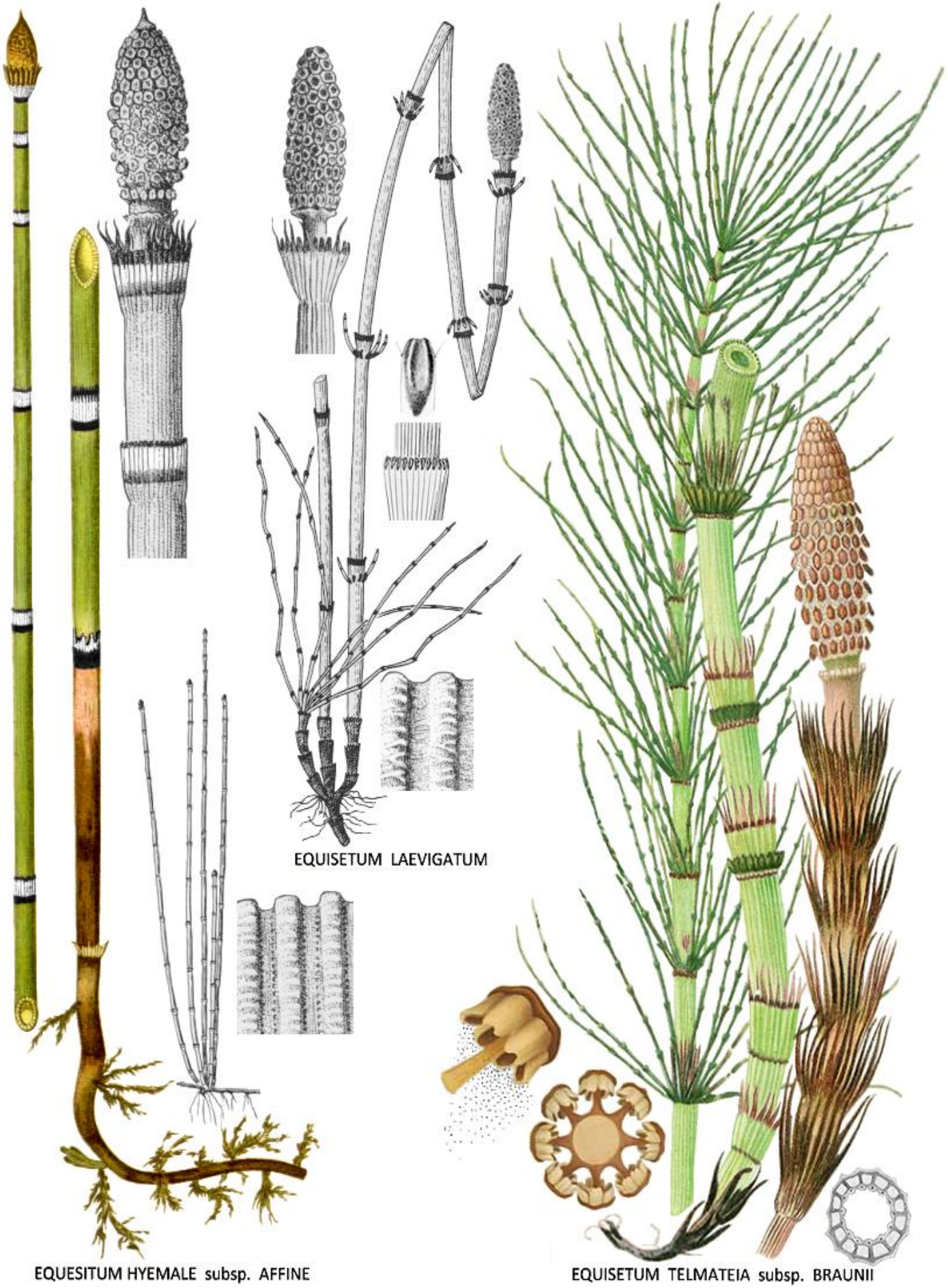
1a. Reed like plants with hollow stems (ours). The nearest equivalents to leaves are scale or sheath like formations that are produced at the nodes, or slender reed like structures that are produced in whorls at the nodes. The spores are produced in cone like structures that are terminal on the fertile stems. Horsetails. . . . . ***Equisetopsida***.
1b. Plants without hollow stems. Leaves well developed. The spores are produced from sori (sporangia clusters) on the lower surface of the leaf blades. . . . . ***Polypodiopsida***.

EQUISETOPSIDA (Eusporangiate Ferns).

EQUISETACEAE. HORSETAIL FAMILY.

EQUISETUM. HORSETAILS AND SCOURING RUSHES.

1a. Stems with whorls of long and slender reed like branches at the nodes. Fertile and sterile stems are physically dissimilar, and arise separately from the ground. . . . . ***E. telmateia***. subsp. ***braunii***.
1b. Stems without reed like branches at the nodes, or with short and stubby branches at the nodes. All stems fertile and physically similar:
2a. Stems slender, less than 4 mm. wide, and often with smaller, secondary stems arising from the base, and often with short, finger like branches that are produced in whorls at the nodes. . . . . ***E. laevigatum***.
2b. Stems stout, 4-12 mm. wide, and never with secondary basal stems, and never with branches at the nodes. . . . . ***E. hyemale*** subsp. ***affine***.



EQUISETUM LAEVIGATUM

EQUESITUM HYEMALE subsp. AFFINE

EQUISETUM TELMATEIA subsp. BRAUNII

POLYPODIOPSIDA* or *PTERIDOPSIDA (Leptosporangiate Ferns):

1a. Sporangia hidden under the reflexed margins of the leaf segments. . . . . ***Pteridaceae*** (*Adiantum, Myriopteris, Pellaea*).
1b. Sporangia fully exposed or covered by indusium (a membranous tissue):
2a. Sporangia covered by indusium (the indusium shriveling in maturity):
3a. Sori elongated and slightly curved. . . . . ***Blechnaceae***.
3b. Sori round or horse shoe shaped:
4a. Hardy ferns with evergreen fronds ranging from about 3 to 10+ dm. long. . . . . ***Dryopteridaceae***.
4b. Small and delicate ferns with dry season deciduous fronds usually less than 3 dm. long. . . . . ***Cystopteridaceae***.
2b. Sporangia not covered by indusium:
5a. Sporangia not clustered into distinct sori, but scattered near the margins or along major veins:
6a. Fronds mostly 4 to 20 dm. (16-80") long. Stipes (petioles) stout, light colored, and not glossy. . ***Dennstaedtiaceae***.
6b. Fronds mostly 1 to 4 dm. (4-16") long. Stipes slender, dark, and glossy. . . . . ***Pteridaceae*** (*Pentagramma*).
5b. Sporangia clustered into distinct sori:
7a. Sori round and produced in two parallel rows. . . . . ***Polypodiaceae***.
7b. Sori irregularly shaped and produced at the apex of major veins. . . . . ***Pteridaceae*** (*Aspidotis*).

BLECHNACEAE. DEER FERN FAMILY.

Blechnaceae is represented in the Tassajara region by one species. . . . . ***Woodwardia fimbriata***. p. 14, 15.

CYSTOPTERIDACEAE. FRAGILE FERN FAMILY.

Cystopteridaceae is represented in the Tassajara region by one genus and one species. . . . . ***Cystopteris fragilis***. p. 10, 16.

DENNSTAEDTIACEAE. BRACKEN FERN FAMILY.

Dennstaedtiaceae is represented in the Tassajara region by one species. . . . . ***Pteridium aquilinum*** var. ***pubescens***. p. 17.

DRYOPTERIDACEAE. WOOD FERN FAMILY.

1b. Frond twice pinnate. . . . . ***Dryopteris***.
1a. Fronds once pinnate (ours) . . . . . ***Polystichum***.

DRYOPTERIS. OAK WOODLAND FERNS, WOOD FERNS.

Dryopteris is represented in the Tassajara region by one species. . . . . ***Dryopteris arguta***. p. 18.

POLYSTICHUM. SWORD FERNS.

1a. Fronds mostly less than 5 dm. (20") long. Pinnae 2 to 3 cm. long, less than 5 times longer than wide, generally imbricated, and abruptly tapering to a relatively blunt apex. . . . . ***P. imbricans*** subsp. ***imbricans***. p. 19.
1b. Fronds mostly 5 to 10+ dm. (20-40"+) long. Pinnae usually much more than 3 cm. long, more than 5 times longer than wide, generally on a single plane, and gradually tapering to an often upwardly curled, pointed apex. . . . . ***P. imbricans*** subsp. ***curtum***. p. 19.

POLYPODIACEAE. POLYPODY FERN FAMILY.

POLYPODIUM. POLYPODY FERNS.

1a. Leaf veins free. Sori generally round. Blade segments often acute at the apex and often falcate (sickle shaped) . . . . . ***P. glycyrrhiza***. p. 21.
1b, Leaf veins free and fused. Sori round to ovate or oblong. Blade segments rounded or only slightly acute at the apex. . . ***P. calirhiza***. p. 20.

PTERIDACEAE. BRAKE FERN FAMILY.

1a. Sporangia fully exposed or only partially concealed by recurving leaf segment margins, or by modified (indusia like) recurving margins (false indusium):
2a. Sporangia covered at least partly by recurving margins (*Aspidotis densa*), or by false indusium. . . . . ***Aspidotis***.
2b. Sporangia diffuse and scattered along major veins. . . . . ***Pentagramma***.
1b. Sporangia concealed under the recurving margins of the leaf segments:
3a. Lower surface of blade segments scaly, fibrous or densely pubescent. . . . . ***Myriopteris***.

3b. Blades glabrous throughout:
4a. Margins of blade segments, or at least fertile blade segments, slightly to deeply lobed and/or incised. . . . ***Adiantum***.
4b. Margins of all blade segments entire. . . . . ***Pellaea***.

ADIANTUM. MAIDEN HAIR FERNS.

1a. Blades divided into 2 equal parts that are divided into once pinnate divisions. . . . . ***A. aleuticum***. p. 22.
1b. Blades not divided into 2 parts; they are 2 to 3 times pinnately divided along one axis:
2a. Margins of leaflets deeply lobed or incised, the sterile leaflets finely toothed. . . . . ***A. capillus-veneris***. p. 23.
2b. Margins of leaflets shallowly lobed to entire, the sterile leaflets not toothed. . . . . ***A. jordanii***. p. 24.

ASPIDOTIS. SHIELD FERNS, FALSE INDUSIA FERNS.

1a. Ultimate leaf segments mostly linear and entire. Sporangia continuous on both sides of midvein. False indusia with many shallow and regular teeth. . . . . ***A. densa***. p. 25.
1b. Ultimate leaf segments generally ovate in outline and pinnately divided into lobes. Sporangia not continuous on both sides of midvein. False indusia more or less entire or with coarse or deep irregular teeth or lobes:
2a. False indusia about as wide as long, free, 1 to 2 (-5) per segment, and more or less entire or with a few coarse or deep irregular teeth. . . . . ***A. californica***. p. 25.
2b. False indusia about as wide or wider than long, generally fused at the base, 3 to 5 (-7) per segment, and with many coarse or deep, irregular teeth or lobes. . . . . ***A. carlotta-halliae***. p. 25.

MYRIOPTERIS. MYRIAD FERNS, BEAD FERNS, LACE FERNS, LIP FERNS.

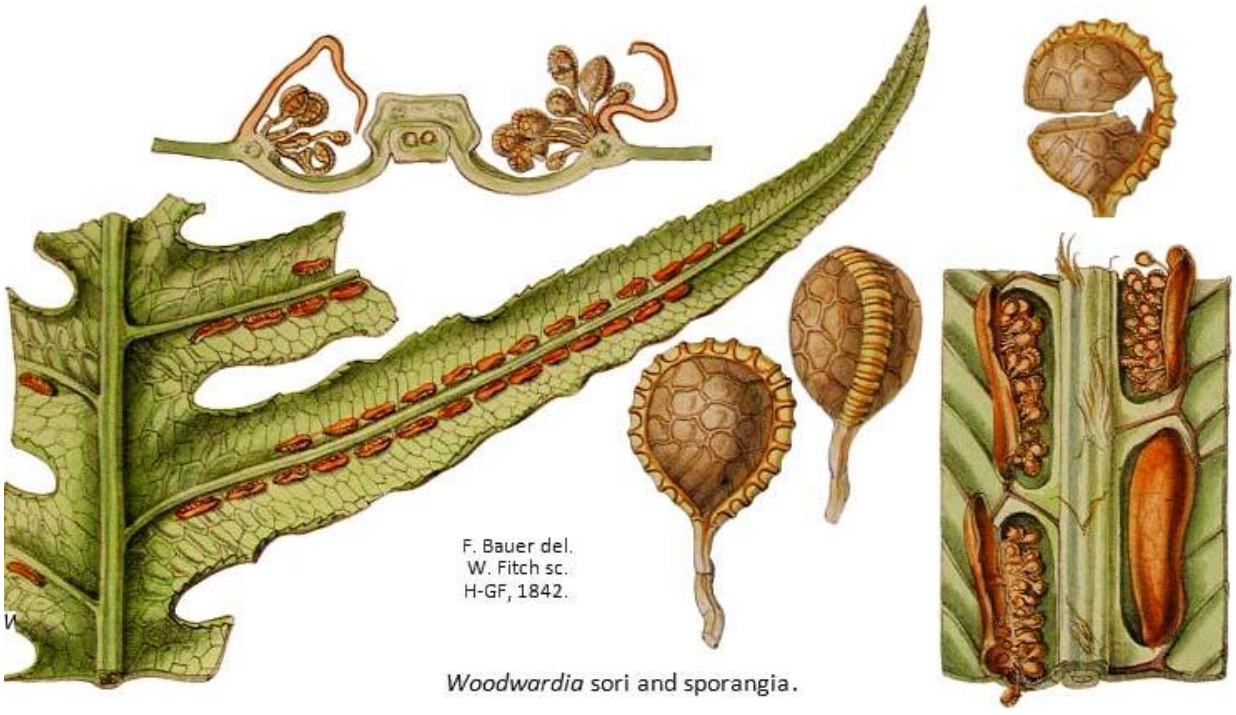
1a. Ultimate segments of fronds mostly oblong, and densely tomentose below. . . . . ***M. gracillima***. p. 26.
1b. Ultimate segments of fronds round or roundish, and subtended by a dense layer of thin scales and longish hairs:
2a. Blades glabrous on the upper surface; ultimate segments larger and more roundish. . . . . ***M. covillei***. p. 26.
2b. Blades with a scattering of hairs on the upper surface; ultimate segments smaller and less roundish. . . . ***M. intertexta***. p. 26.

PELLAEA. DUSKY FERNS.

1a. Blade segments mostly oblong or ovate, fairly rounded at the apex, spaciously arranged, and blue green during the rainy season and reddish brown during the dry season. . . . . ***P. andromedifolia***. p. 27.
1b. Blade segments narrowly elliptic, acute at the apex, crowded, and gray green during rainy season and gray during the dry season. . . . . ***P. mucronata***. p. 27.

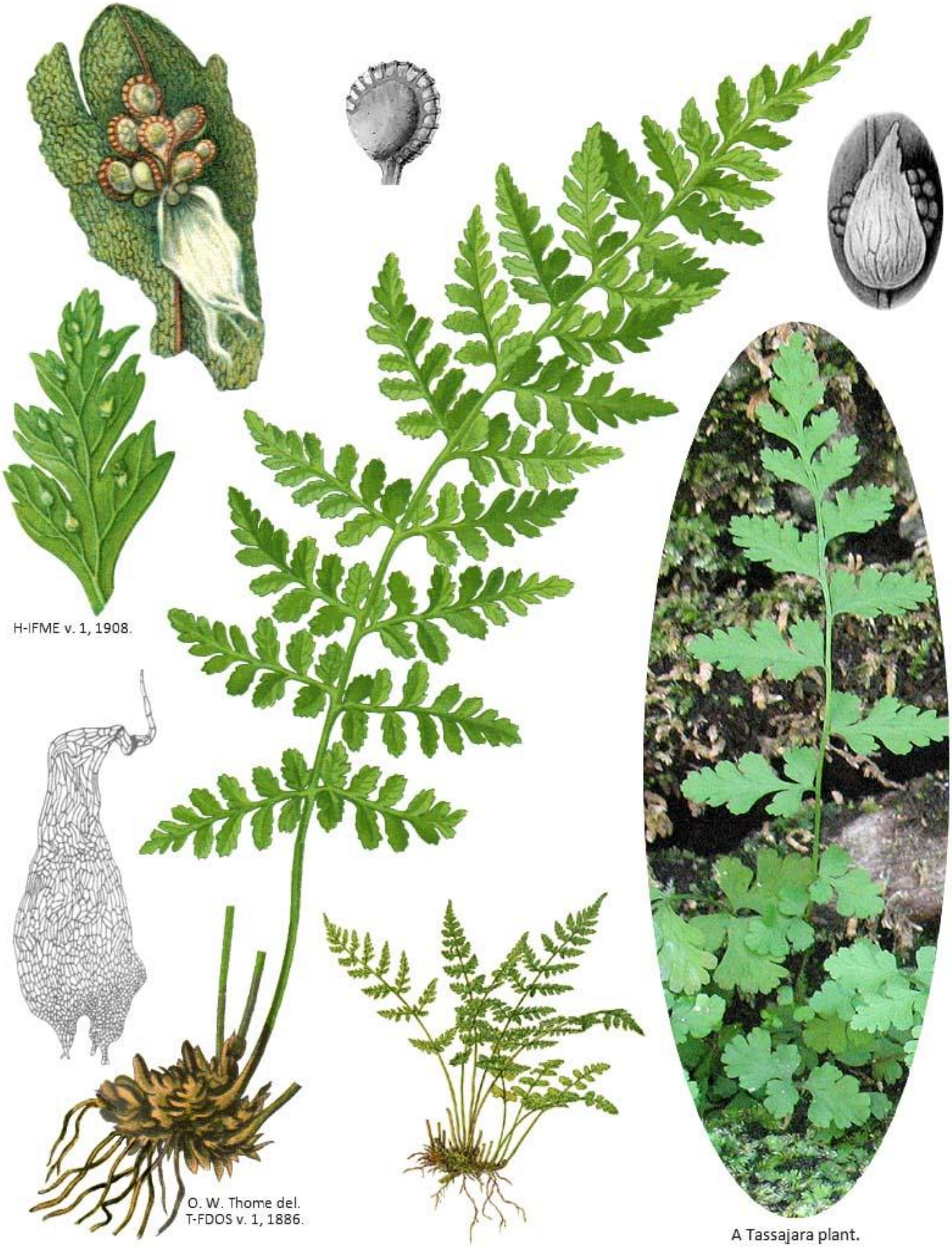
PENTAGRAMMA. GOLDEN BACK FERN.

Pentagramma is represented in the Tassajara region by one species. . . . . ***Pentagramma triangularis***. p. 28.



Woodwardia sori and sporangia.

WOODWARDIA FIMBRIATA

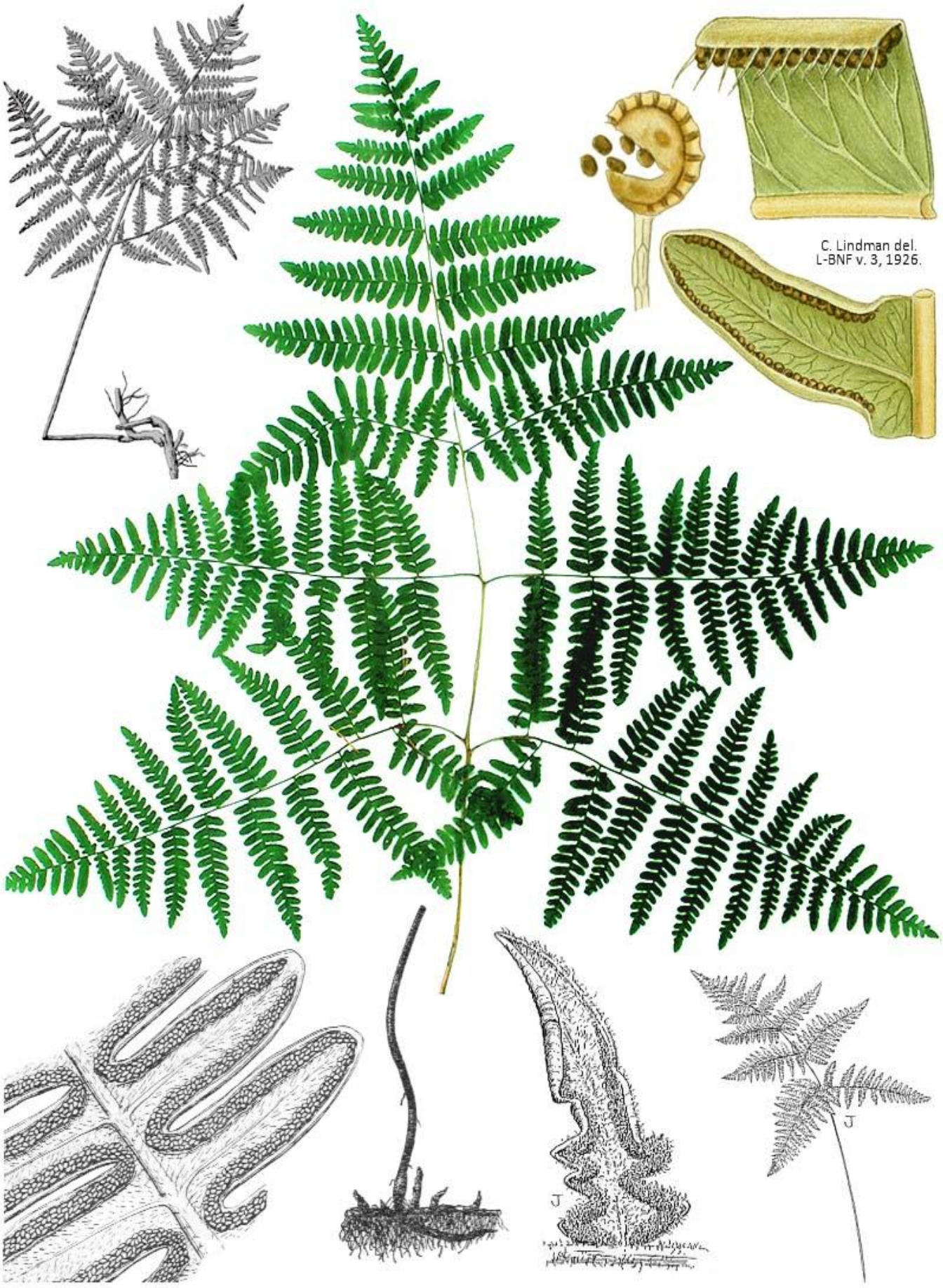


H-IFME v. 1, 1908.

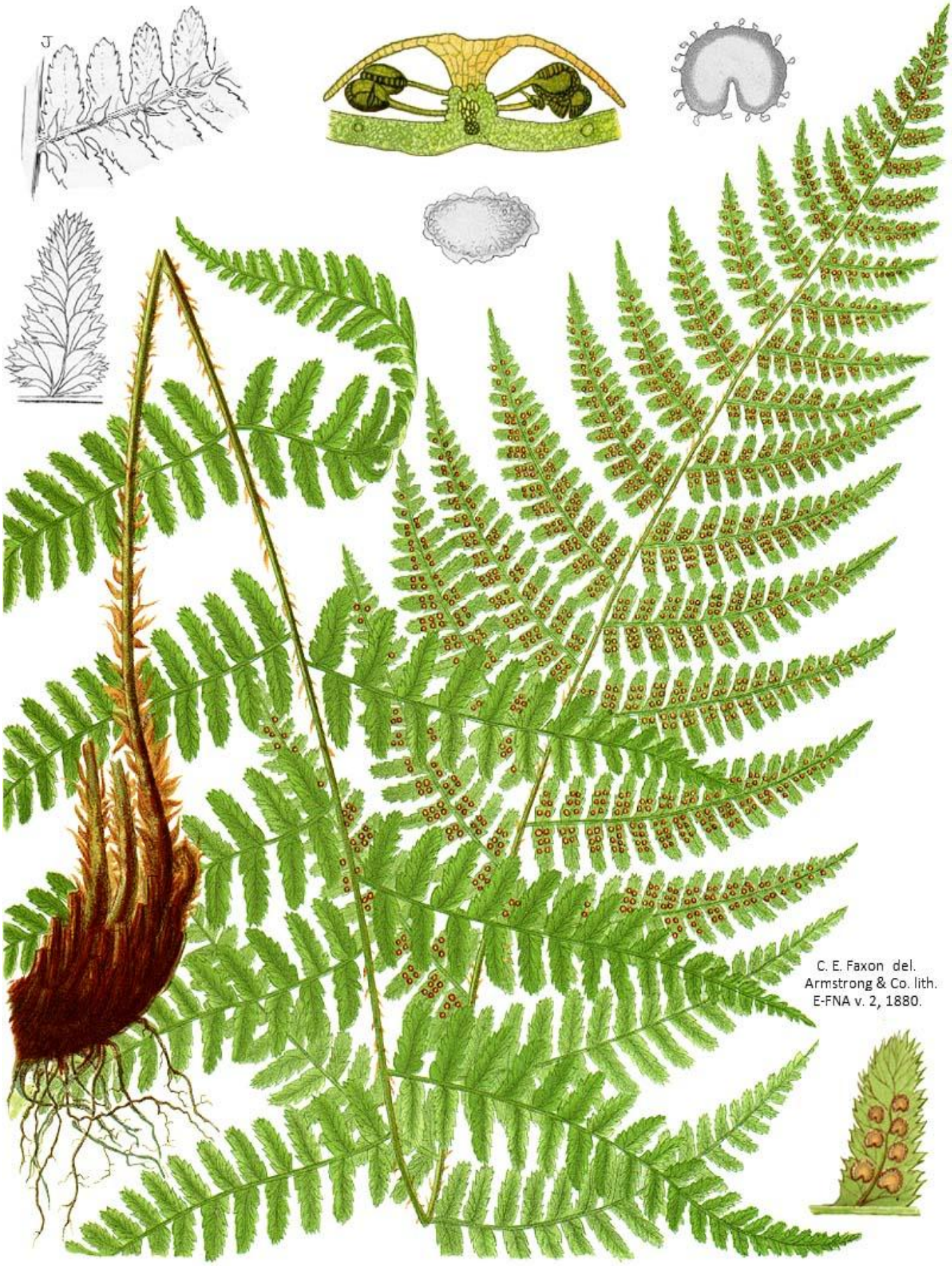
O. W. Thome del.
T-FDOS v. 1, 1886.

A Tassajara plant.

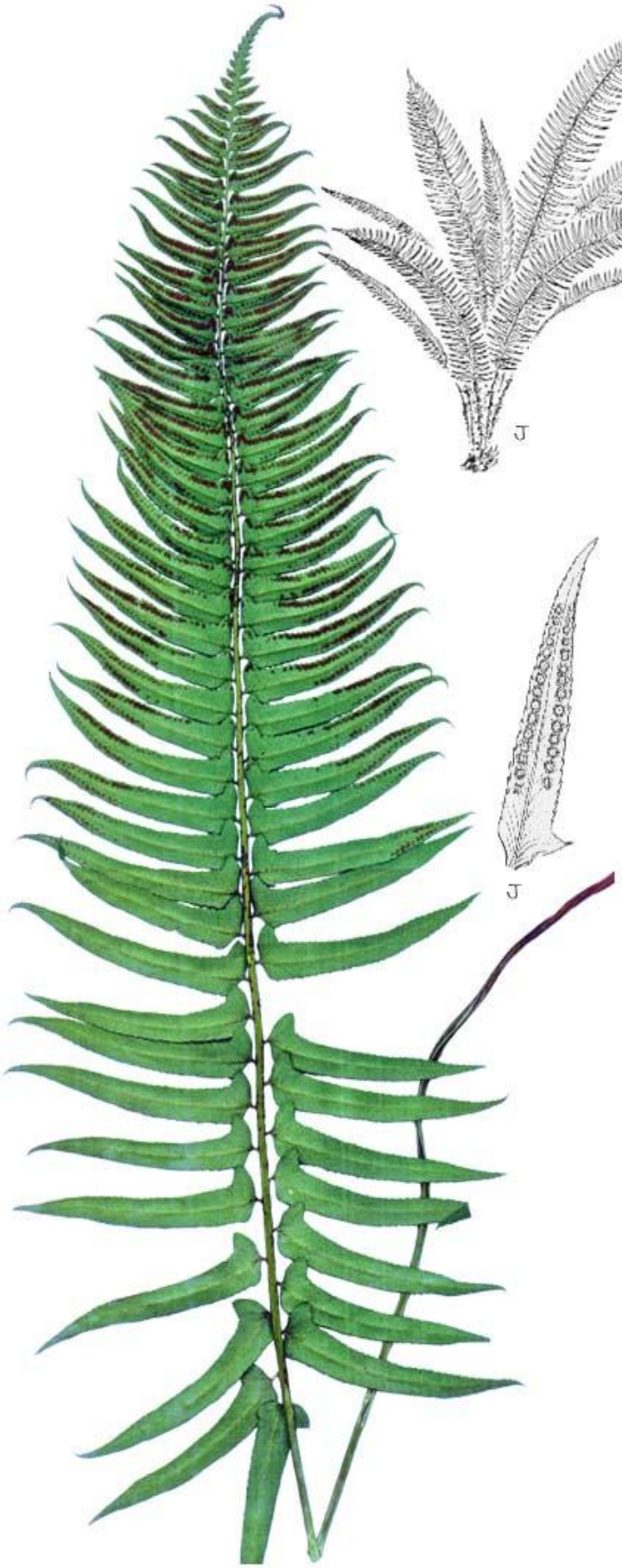
CYSTOPTERIS FRAGILIS



PTERIDIUM AQUILINUM var. PUBESCENS.

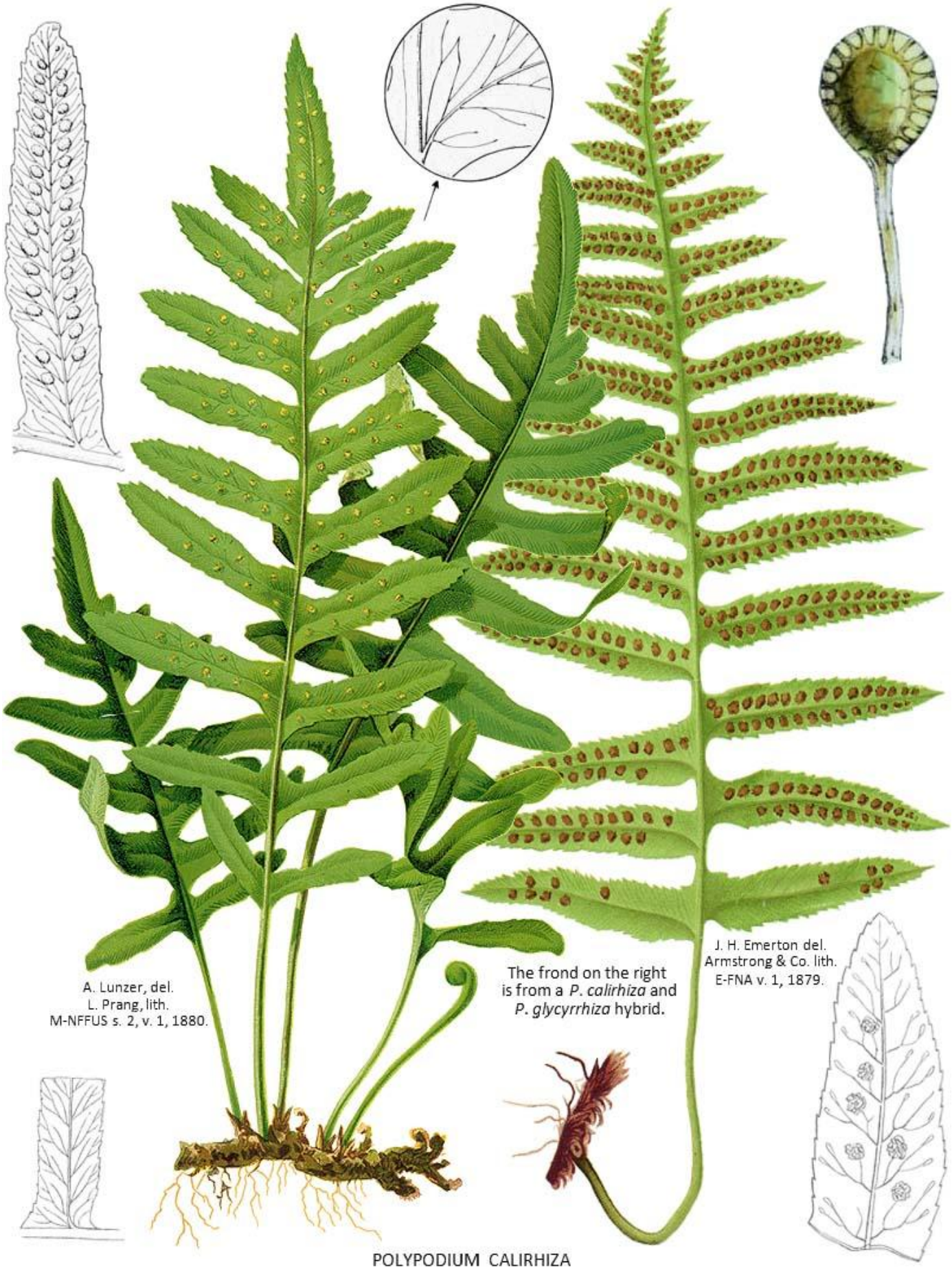


DRYOPTERIS ARGUTA



POLYSTICHUM IMBRICANS subsp. CURTUM

POLYSTICHUM IMBRICANS subsp. IMBRICANS

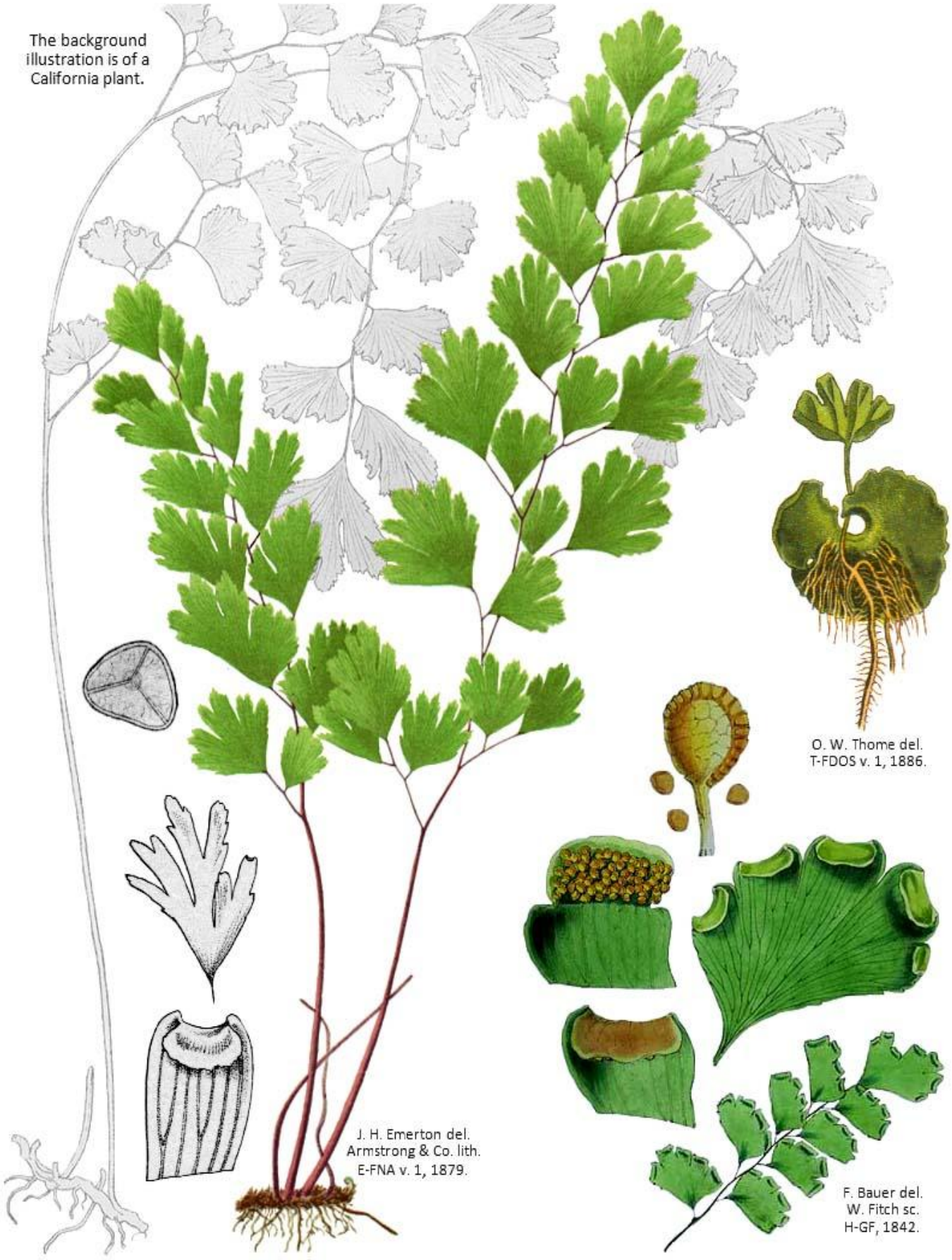


POLYPODIUM CALIRHIZA

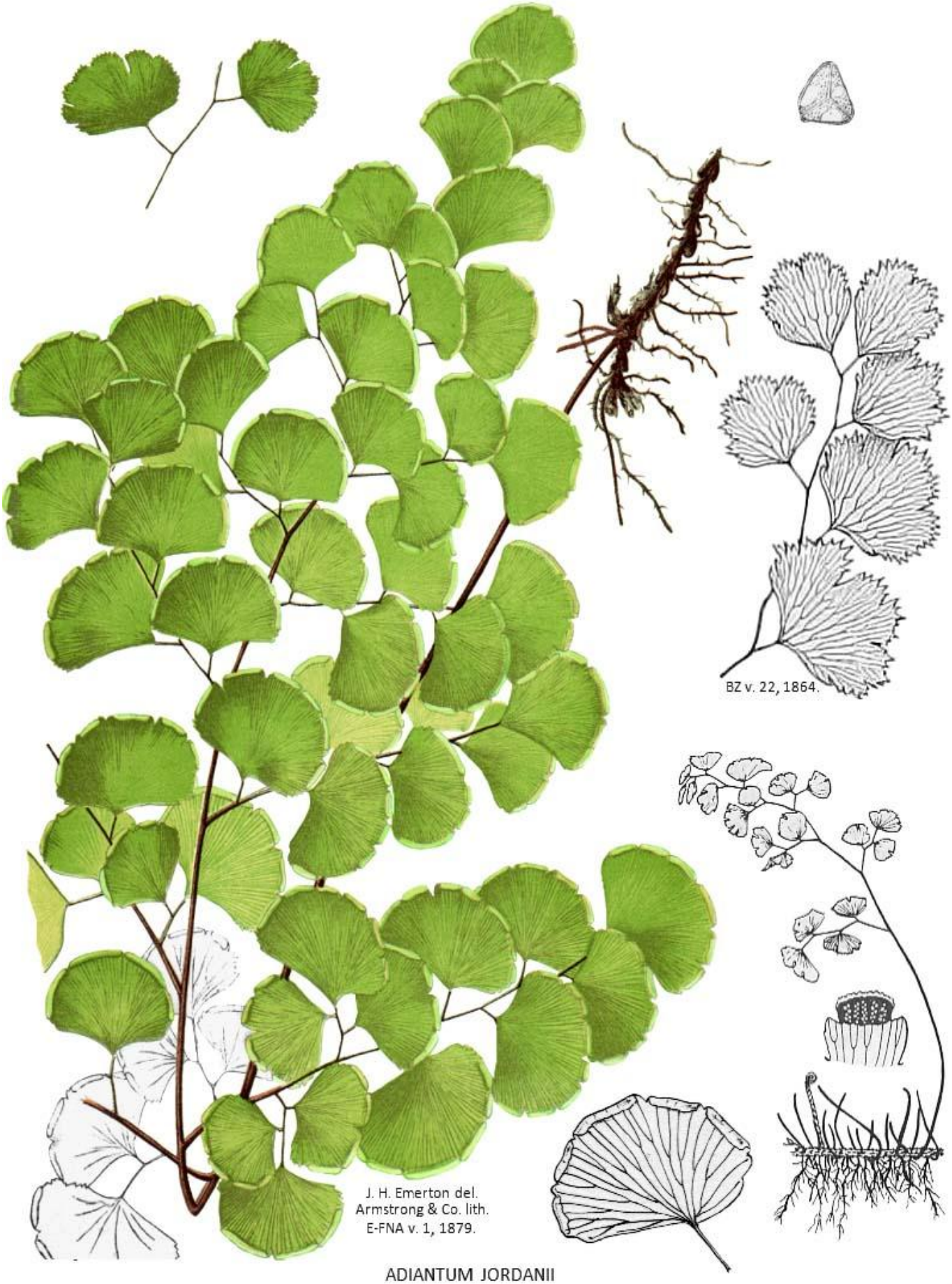
POLYPODIUM GLYCYRRHIZA

J. H. Emerton del.
Armstrong & Co. lith.
E-FNA v. 1, 1879.

ADIANTUM ALEUTICUM

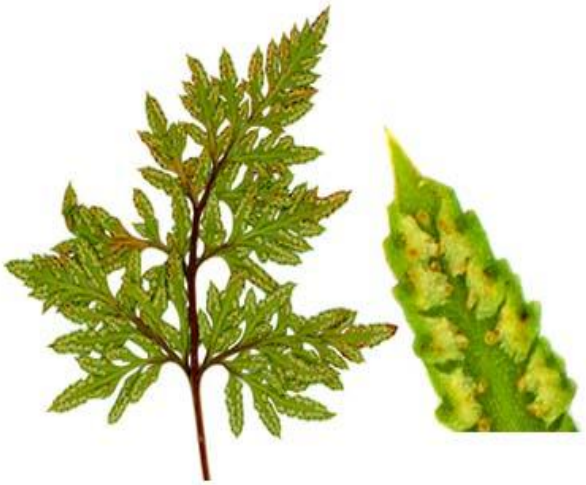


ADIANTUM CAPILLUS-VENERIS



ADIANTUM JORDANII

Fitch del. et lith.
H-SF v. 2, 1858.



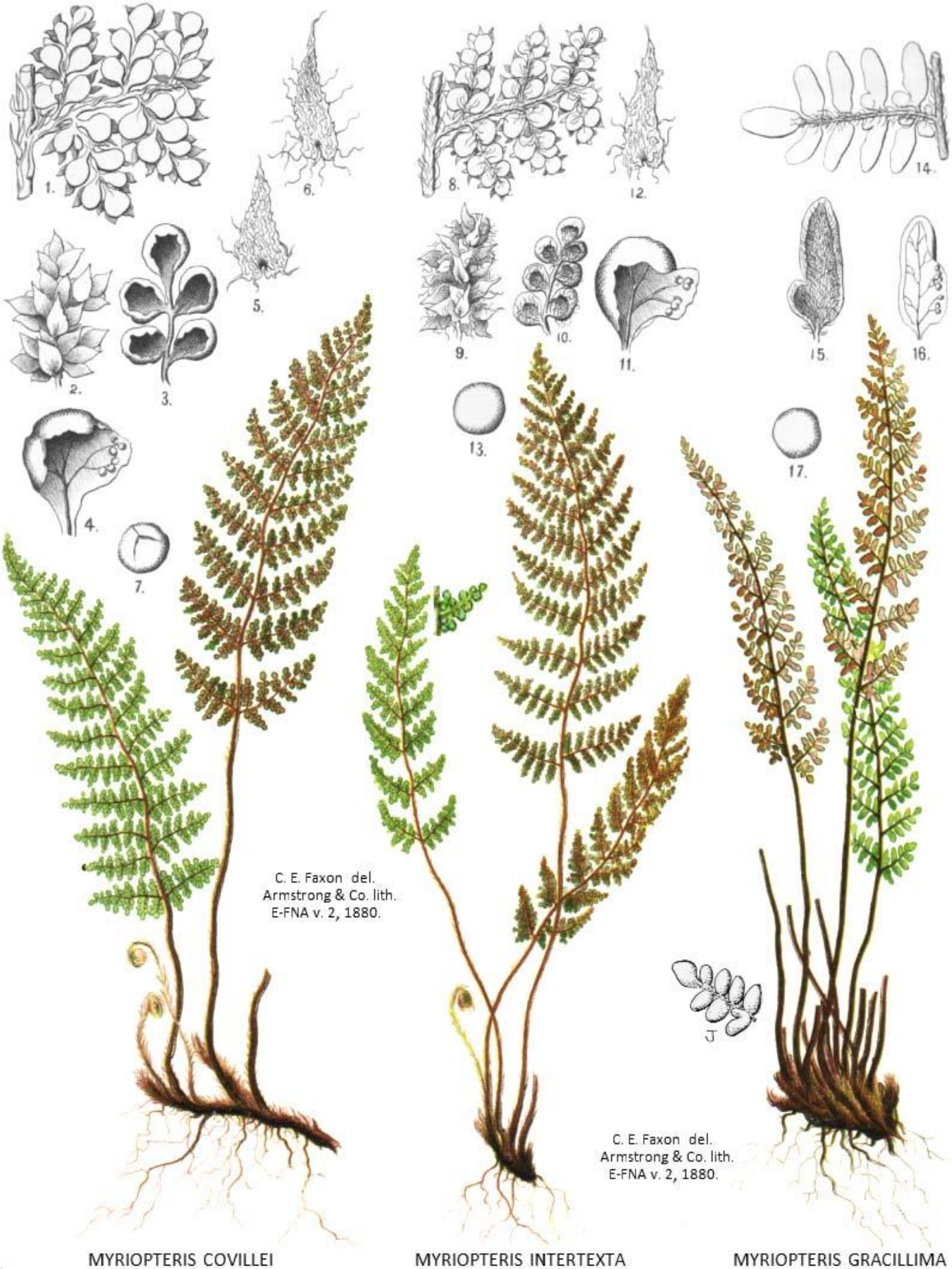
ASPIDOTIS CARLOTTA-HALLIAE

ASPIDOTIS CALIFORNICA

J. H. Emerton del.
Armstrong & Co. lith.
E-FNA v. 1, 1879.

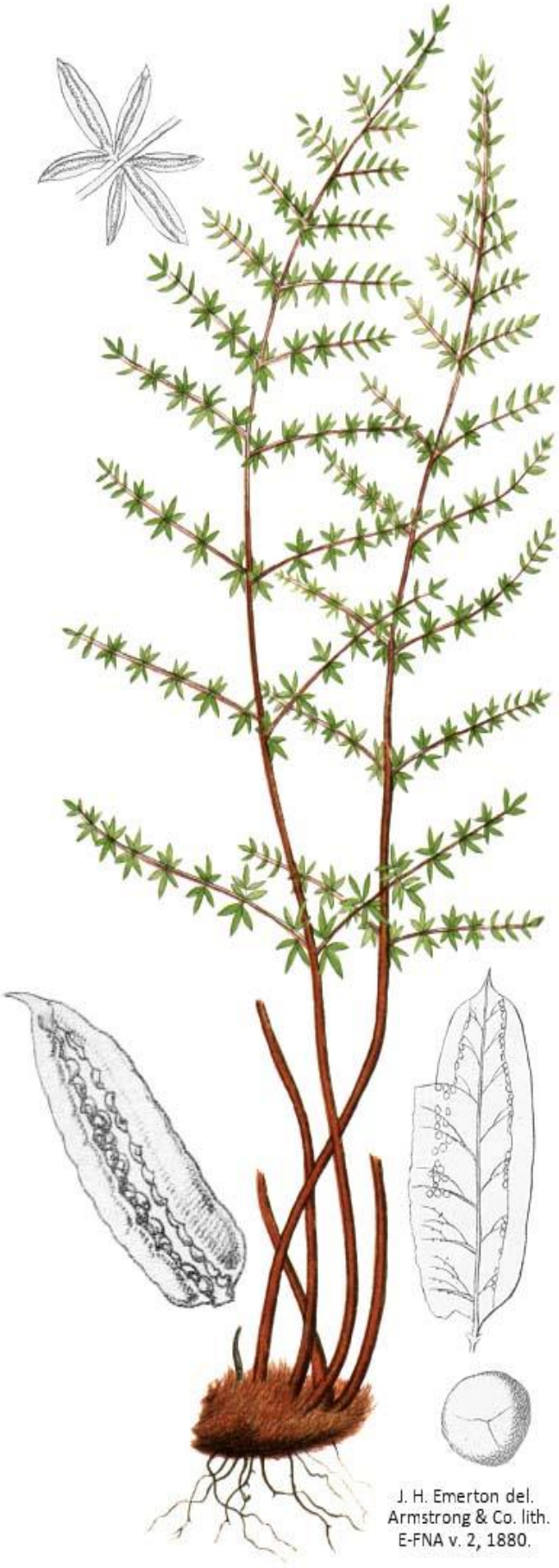
W. Fitch del. et lith.
H-SF v. 2, 1858.

ASPIDOTIS DENSA



MYRIOPTERIS COVILLEI MYRIOPTERIS INTERTEXTA MYRIOPTERIS GRACILLIMA

PELLAEA ANDROMEDIFOLIA



PELLAEA MUCRONATA

PENTAGRAMMA TRIANGULARIS

PINOPHYTA (*Coniferophyta*, Gymnosperms). CONIFEROUS TREES. p. 29.

1a. Leaves branched and comprised of numerous flat scale like segments (ours). The fruits consist of three woody scales that enclose two seeds (ours). . . . . ***Cupressaceae***.

1b. Leaves not branched, and alternate (in *Abies*) or produced in bundles (in *Pinus*). The fruits are imbricated woody cones. ***Pinaceae***.

CUPRESSACEAE. CYPRESS FAMILY.

CALOCEDRUS. BEAUTIFUL CEDAR.

Calocedrus is (or was prior to the recent fires) represented in the Tassajara region by one species. . . ***Calocedrus decurrens***. p. 30.

PINACEAE. PINE FAMILY.

1a. Leaves produced singularly. Cones facing upward on the branches; cone scales falling upon maturation of the cones. . . ***Abies***.

1b. Leaves produced in bunches of three's (ours). Cones hanging downward or outward on the branches; cone scales persistent. . . . . ***Pinus***.

ABIES. FIR TREES.

Abies is represented in the Tassajara region by one species. . . . . ***Abies bracteata***. p. 29, 31-32.

PINUS. PINE TREES.

1a. Cone scale spurs elongated, stout, hooked and mostly 3 to 5 (-7) cm. long. Cones mostly 19 to 35 cm. (7½-14") long. Scattered nearly throughout the Tassajara region, and locally common to abundant in some areas. . ***P. coulteri***. p. 33-34.

1b. Cone scale spurs short, generally triangular, slightly hooked and less than 1 cm. long. Cones mostly 7 to 25 cm. (2¾-10") long. Restricted to higher elevations in the Tassajara region:

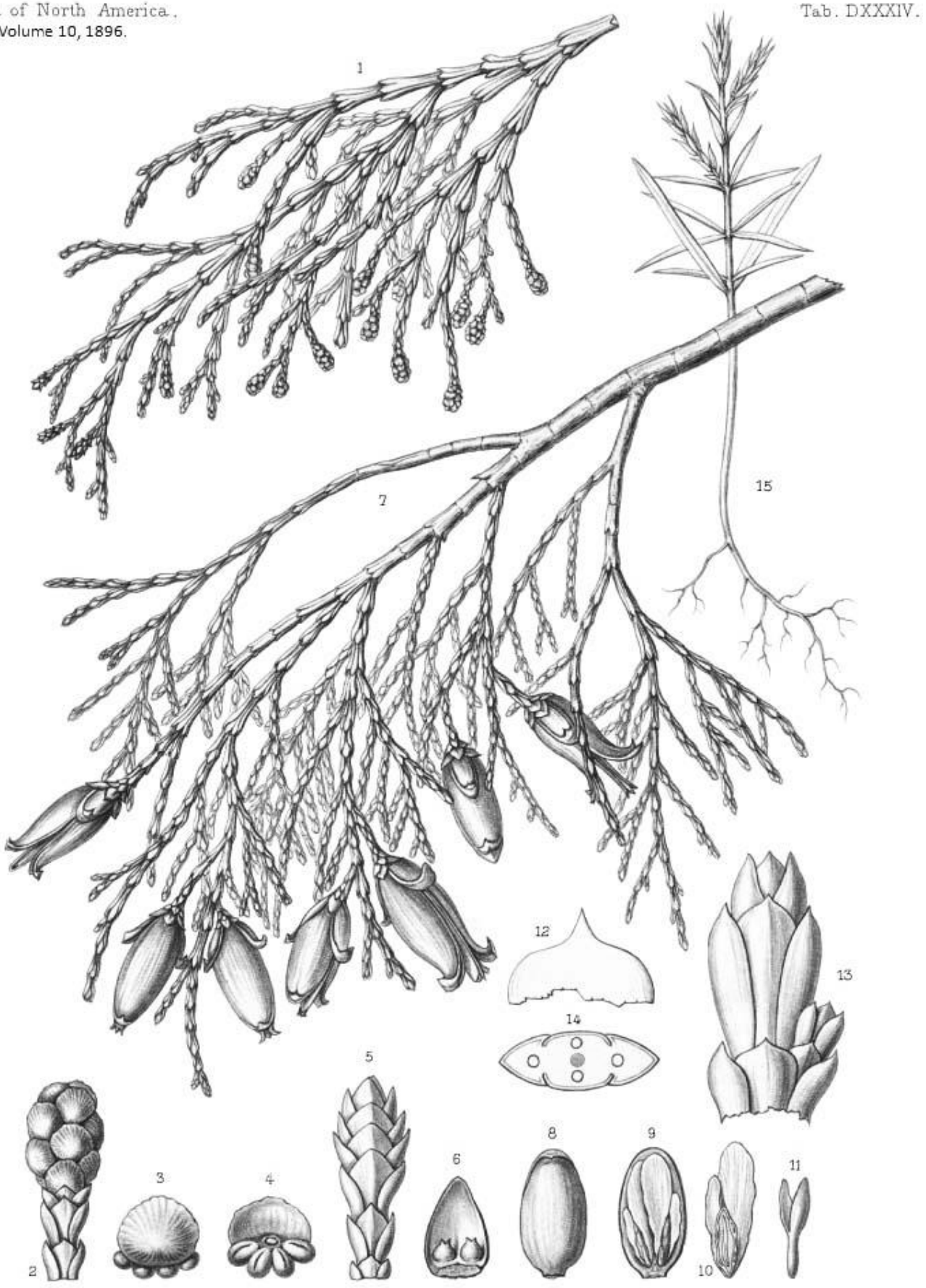
2a. Cones mostly 7 to 15 cm. (2¾ -6") long. Cone scales less numerous; when the cones are viewed from one side, the number of scales in the central and upper angled rows range from about 4 to 7. Locally common from the upper Church Creek watershed to Pine Valley and Pine Ridge. . . . . ***P. ponderosa***. p. 36, 37, 38.

2b. Cones mostly 13 to 25 cm. (5-10") long. Cone scales more numerous; when the cones are viewed from one side, the number of scales in the central and upper angled rows range from about 7 to 11. Restricted to two small plantations on Chew's Ridge. . . . . ***P. jeffreyi***. p. 35.

Abies bracteata as illustrated in volume 79 of *Curtis's Botanical Magazine*, 1853.

Silva of North America.
Volume 10, 1896.

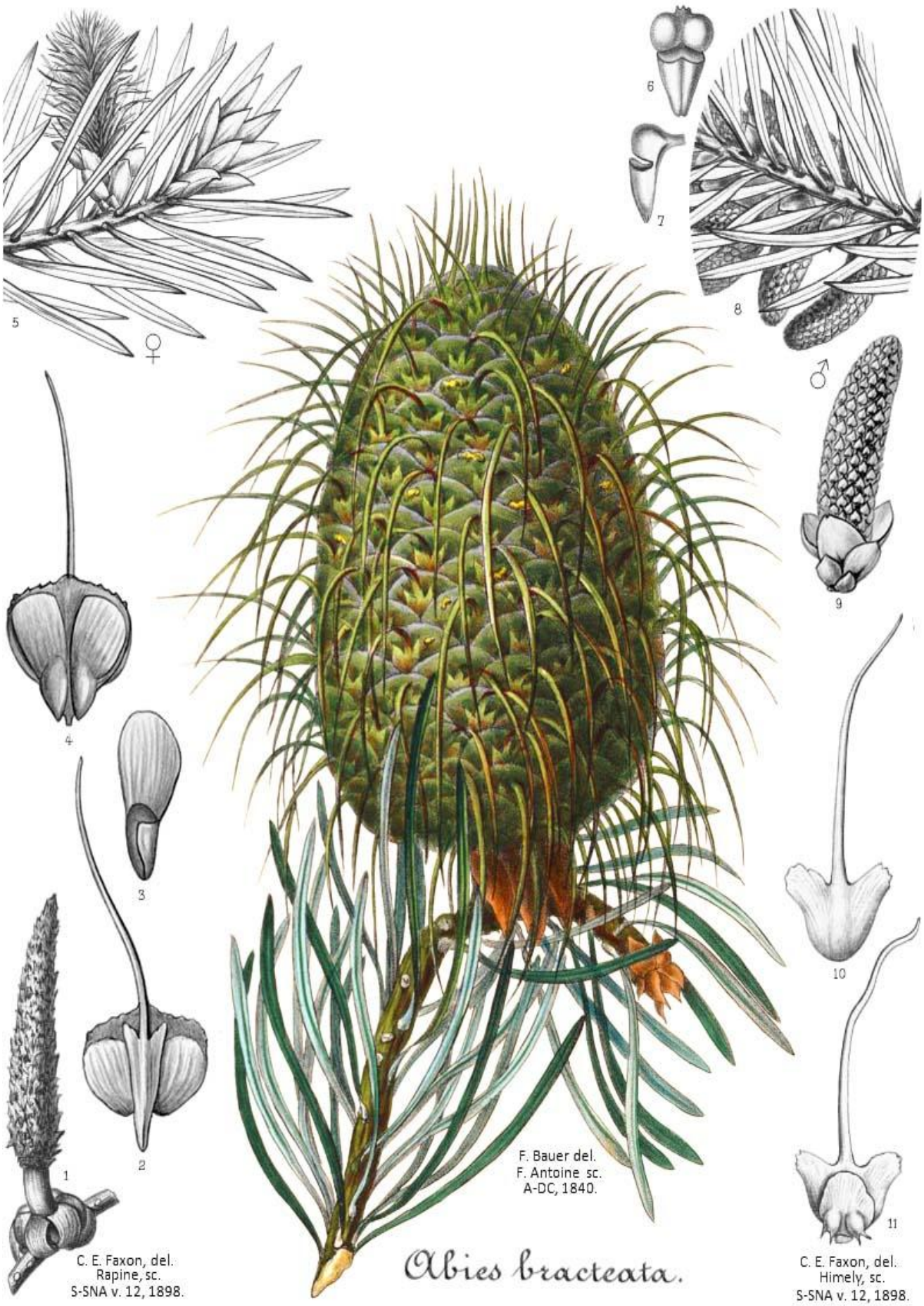
Tab. DXXXIV.



C. E. Faxon del.
A. Riocreux direx.

CALOCEDRUS DECURRENS

Rapine sc.
Imp. J. Taneur, Paris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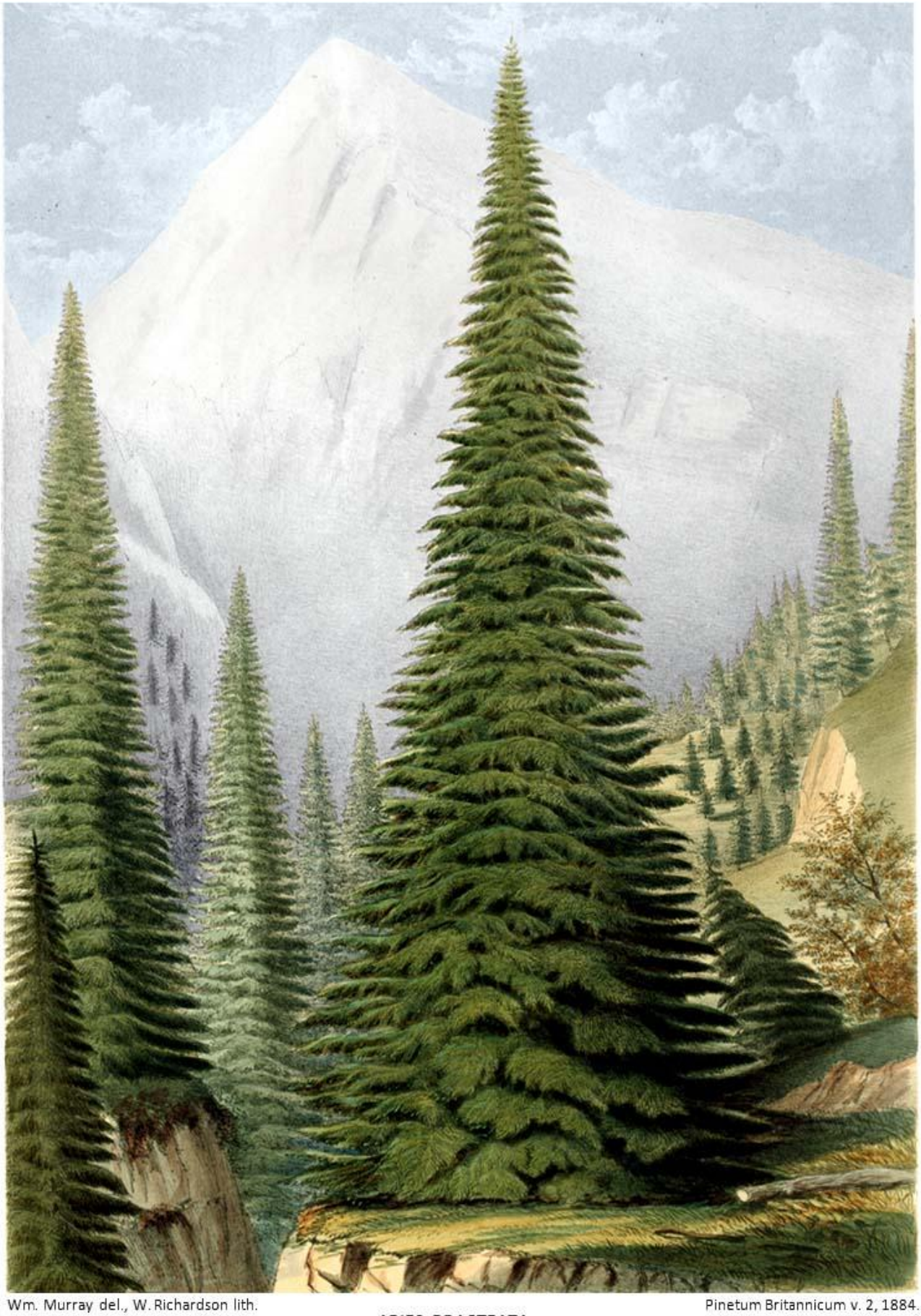
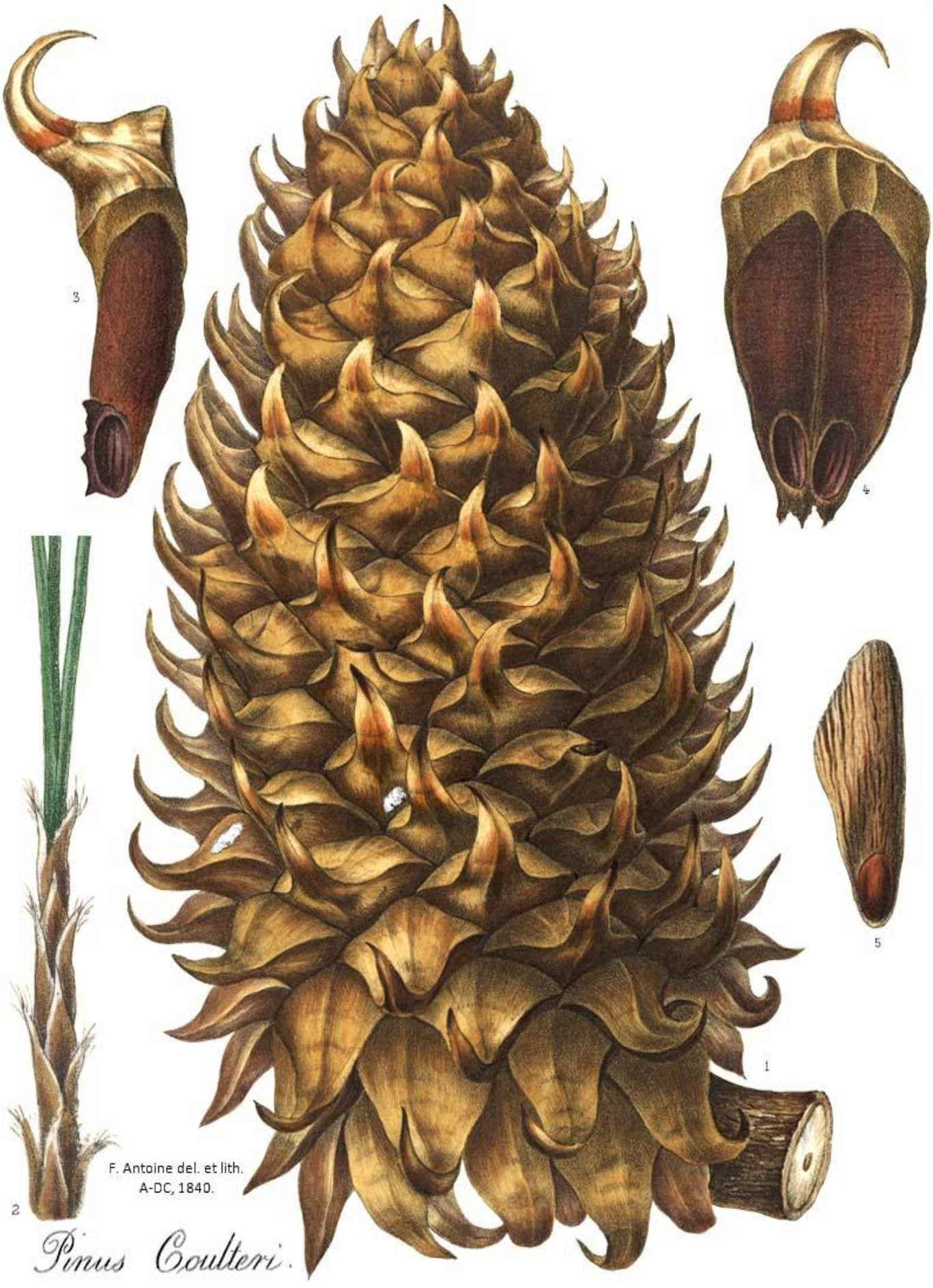
F. Bauer del.
F. Antoine sc.
A-DC, 1840.
C. E. Faxon, del.
Rapine, sc.
S-SNA v. 12, 1898.
Abies bracteata.
C. E. Faxon, del.
Himely, sc.
S-SNA v. 12, 1898.



ABIES BRACTEATA

A ideal tree as illustrated in volume 2 of Pinetum Britannicum, 1884.


3
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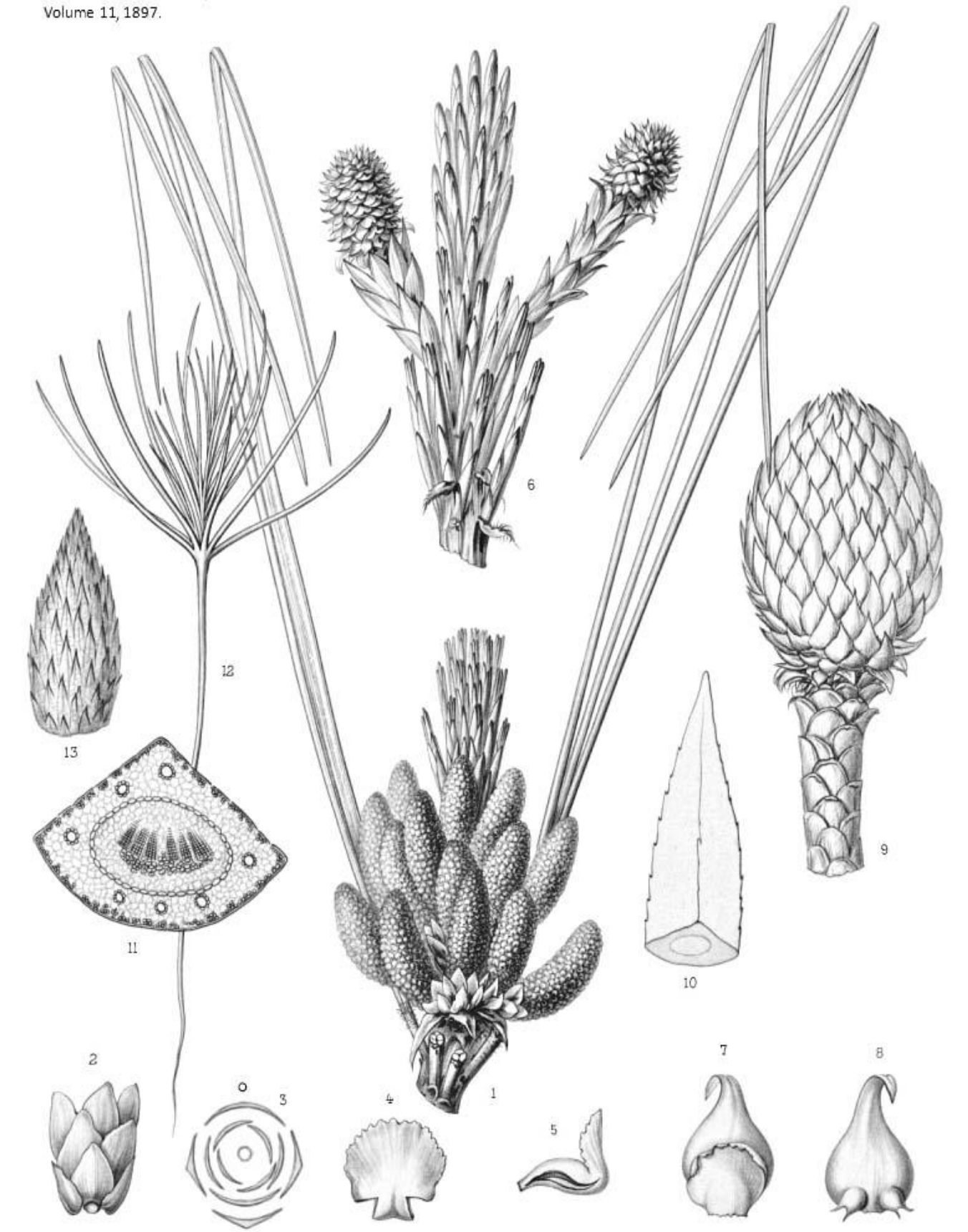
F. Antoine del. et lith.
A-DC, 1840.
Pinus Coulteri.

Silva of North America.
Volume 11, 1897.

Tab. DLXXI.



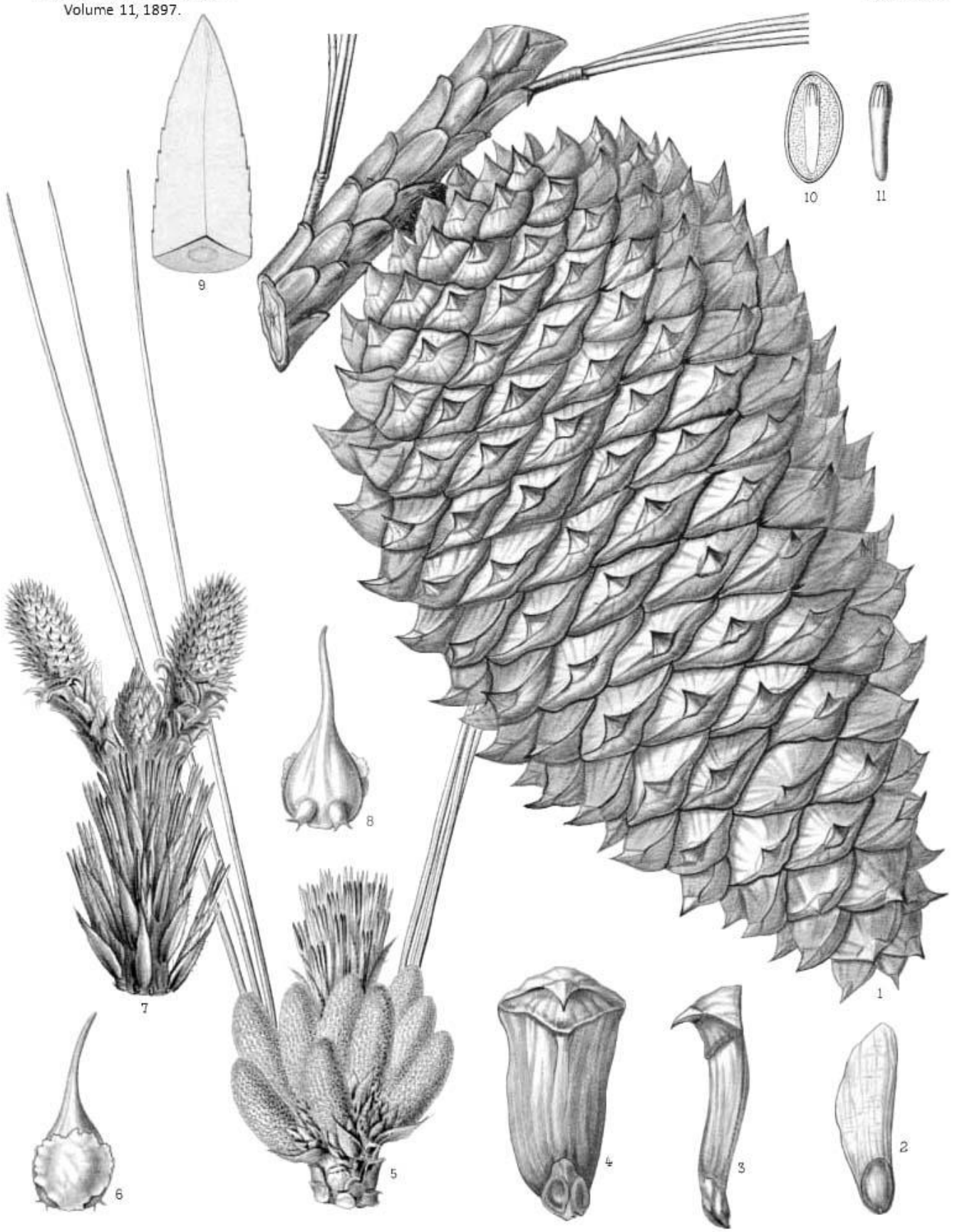
C.E. Faxon del.
A. Riocreux direx.t

Rapine sc.
Imp. J. Taneur, Paris.

PINUS COULTERI, D. Don.

Silva of North America.
Volume 11, 1897.

Tab. DLXIII.



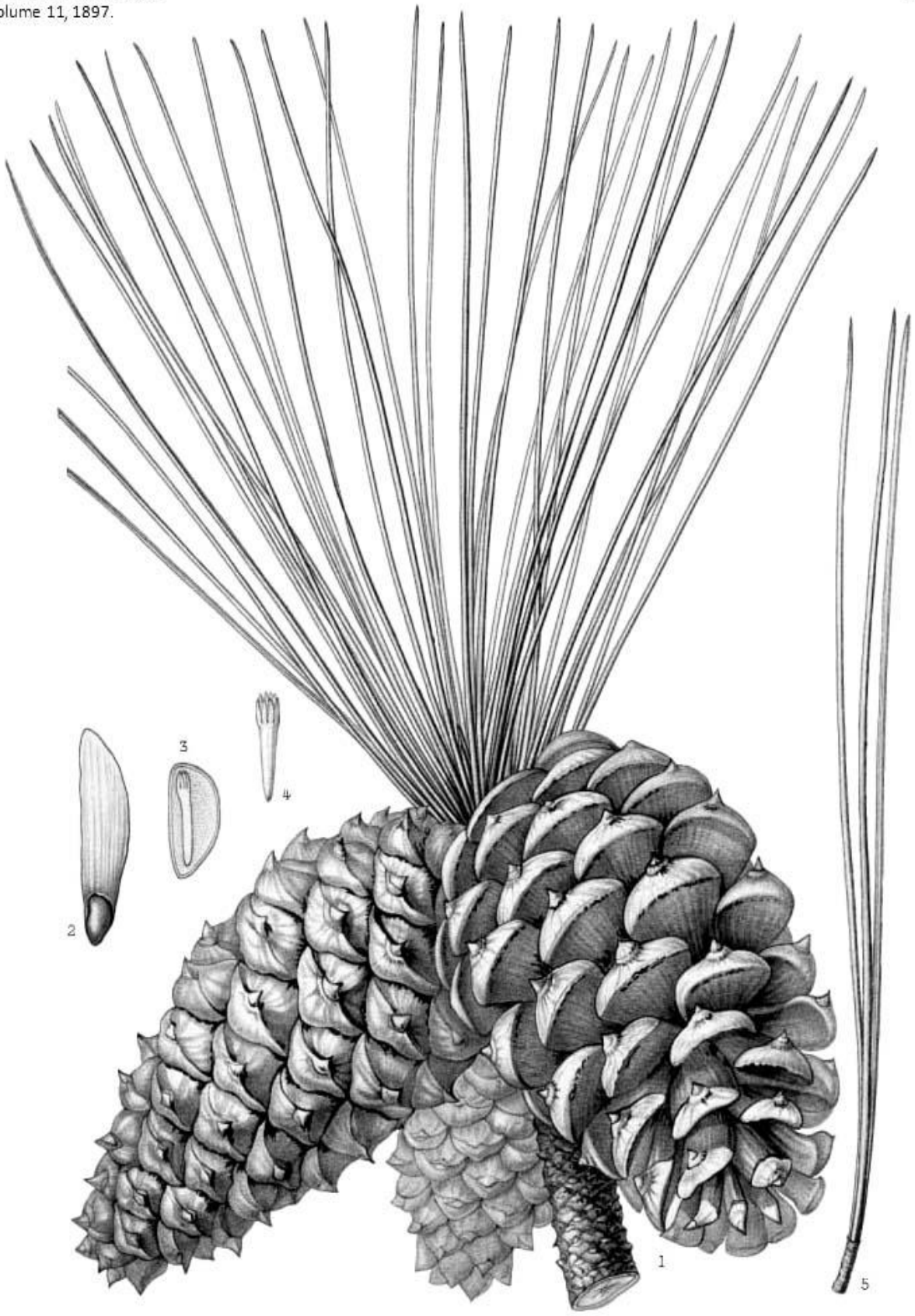
C. E. Faxon del.
A. Riocreux direx.t

PINUS JEFFREYI.

Em. Himely sc.
Imp. J. Taneur, Paris.

Silva of North America.
Volume 11, 1897.

Tab. DLXI.



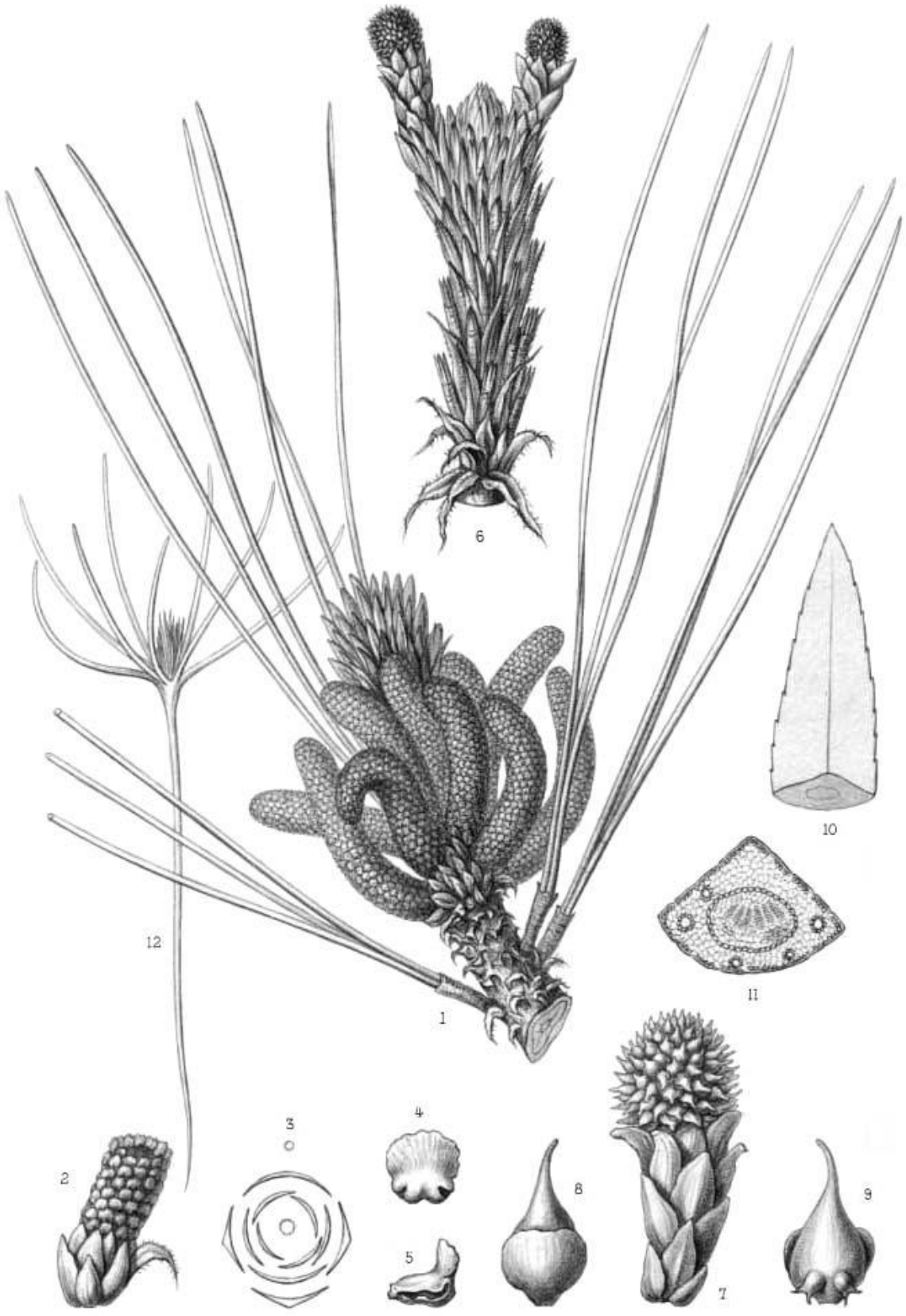
C.E.Faxon del.
A.Riocreux direx.t

Migneaux sc.
Imp. J. Taneur, Paris.

PINUS PONDEROSA, Laws.

Silva of North America.
Volume 11, 1897.

Tab. DLX.



C. E. Faxon del.
A. Riocreux direx.

PINUS PONDEROSA, Laws.

Rapine sc.
Imp. J. Taneur, Paris.

Pinus ponderosa in Yosemite Valley, from volume one of *The Garden*, 1872.

ANTHOPHYTA (*Angiospermae*). Flowering Plants.

MAGNOLIIDAE (Magnoliids). The Magnolia Clade.

LAURACEAE. LAUREL FAMILY.

UMBELLULARIA. CALIFORNIA LAUREL.

The genus *Umbellularia* has only one species. . . . . ***Umbellularia californica***. p. 40-41.

EUDICOTYLEDONEAE (Eudicotyledons, Eudicots).

ADOXACEAE. MUSKROOT FAMILY.

SAMBUCUS. ELDERBERRY.

Sambucus is represented in the Tassajara region by one taxon. . . . . ***Sambucus nigra*** subsp. ***caerulea***. p. 42-43.

ANACARDIACEAE. CASHEW or SUMAC FAMILY.

TOXICODENDRON. POISON OAK, POISON IVY, etc.

Toxicodendron is represented in the Tassajara region by one species. . . . . ***Toxicodendron diversilobum***. p. 44-45.

APIACEAE (*Umbelliferae*). CELERY, CARROT or PARSLEY FAMILY.

1a. Fruits covered with prickly structures (barbs, scales, bristles, hairs, etc.):
- **2a**. Prickly structures of fruits hooked above the base, often near the tip:
  - **3a**. Prickly structures consisting of stout barbs or scales. Axis of fruit not marked by an obvious structure. Perennial herbs from tuberous roots. . . . . ***Sanicula***.
  - **3b**. Prickly structures consisting of slender bristles or hairs. Axis of fruit marked by an obvious structure. Annual herbs:
    - **4a**. Prickly structures produced in distinct rows along the ribs of the fruit. . . . . ***Yabea***.
    - **4b**. Prickly structures not produced in rows:
      - **5a**. Fruits beaked (i.e., they have a two lobed appendage at the apex) . . . . . ***Anthriscus***.
      - **5b**. Fruits beakless. . . . . ***Torilis***.
- **2b**. Prickly structures straight or angled from the base:
  - **6a**. Inflorescence consisting of open, spreading umbels. Fruits several times longer than wide and with small and remote prickles. . . . . ***Osmorhiza***.
  - **6b**. Inflorescence consisting of contracted head like umbels. Fruits densely bristly and not more than twice as long as wide. . . . . ***Daucus***.

1b. Fruits not covered with prickly structures (they range from glabrous to hairy):
- **7a**. Fruits not flattened and without prominently winged margins:
  - **8a**. Plants of constantly wet habitats. The petals are white:
    - **9a**. Leaves broadly lanceolate in outline and once pinnate. . . . . ***Berula***.
    - **9b**. Leaves narrowly ovate to triangular ovate in outline and one to three times pinnate. . . . . ***Cicuta***.
  - **8b**. Plants not of constantly wet habitats. The petals are yellow or yellowish green:
    - **9a**. Perennial herbs with leaves broadly deltoid in outline and two to three times pinnate. . . . . ***Tauschia***.
    - **9b**. Small annual herbs with opposite leaves that are lobed but not divided into leaflets. . . . . ***Bowlesia***.
- **7b**. Fruits more or less flattened and with prominent thin and often paper like wings on the margins:
  - **11a**. Plants much less than 1 m. (3') tall. Leaves finely dissected into numerous leaflets, the ultimate segments narrowly linear. . . . . ***Lomatium***.
  - **11b**. Plants robust and about 1 to 3 m. (3-10') tall. Leaves divided into three large and very broad leaflets. . ***Heracleum***.

ANTHRISCUS. CHERVIL.

Anthriscus is represented in the Tassajara region by one introduced species. . . . . ***Anthriscus caucalis***. p. 46.

BERULA.

The genus *Berula* has one species. . . . . ***Berula erecta***. p. 46.

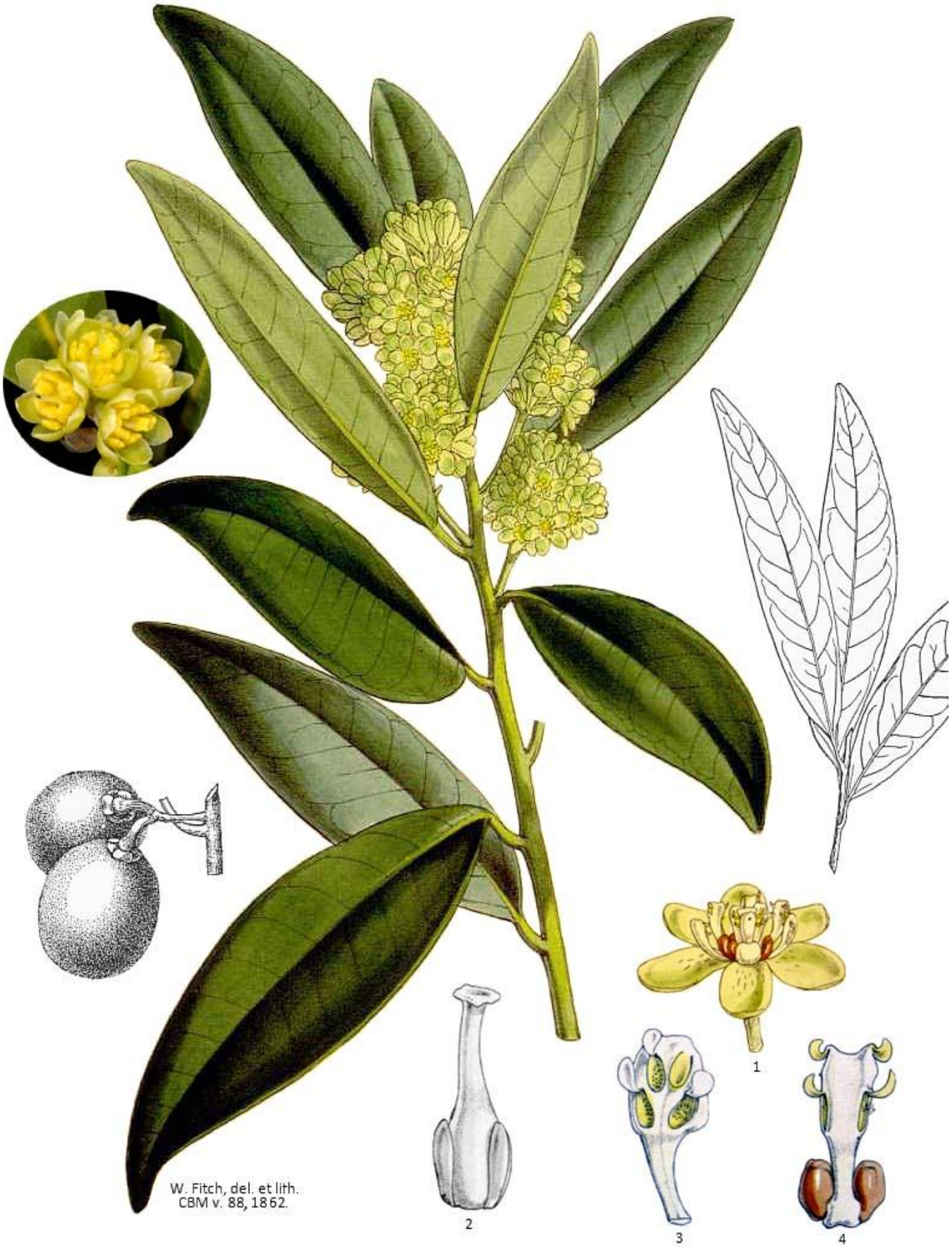
Continued on page 47.

Silva of North America
Volume 7, 1895.

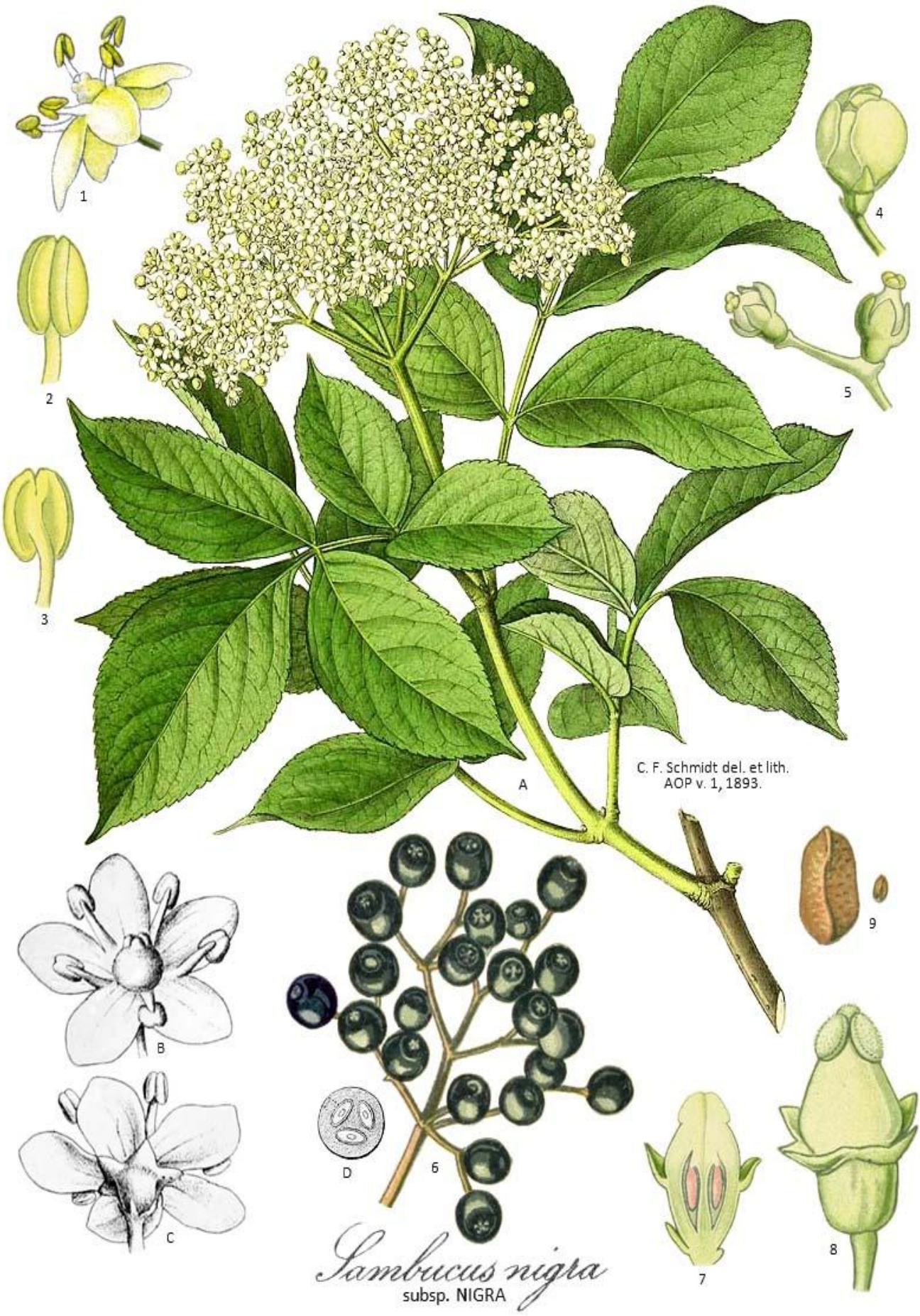
C.E. Faxon del.
A. Riocreux direx.t

UMBELLULARIA CALIFORNICA

Himely sc.
Imp. J. Taneur, Paris



UMBELLULARIA CALIFORNICA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C. F. Schmidt del. et lith.
AOP v. 1, 1893.
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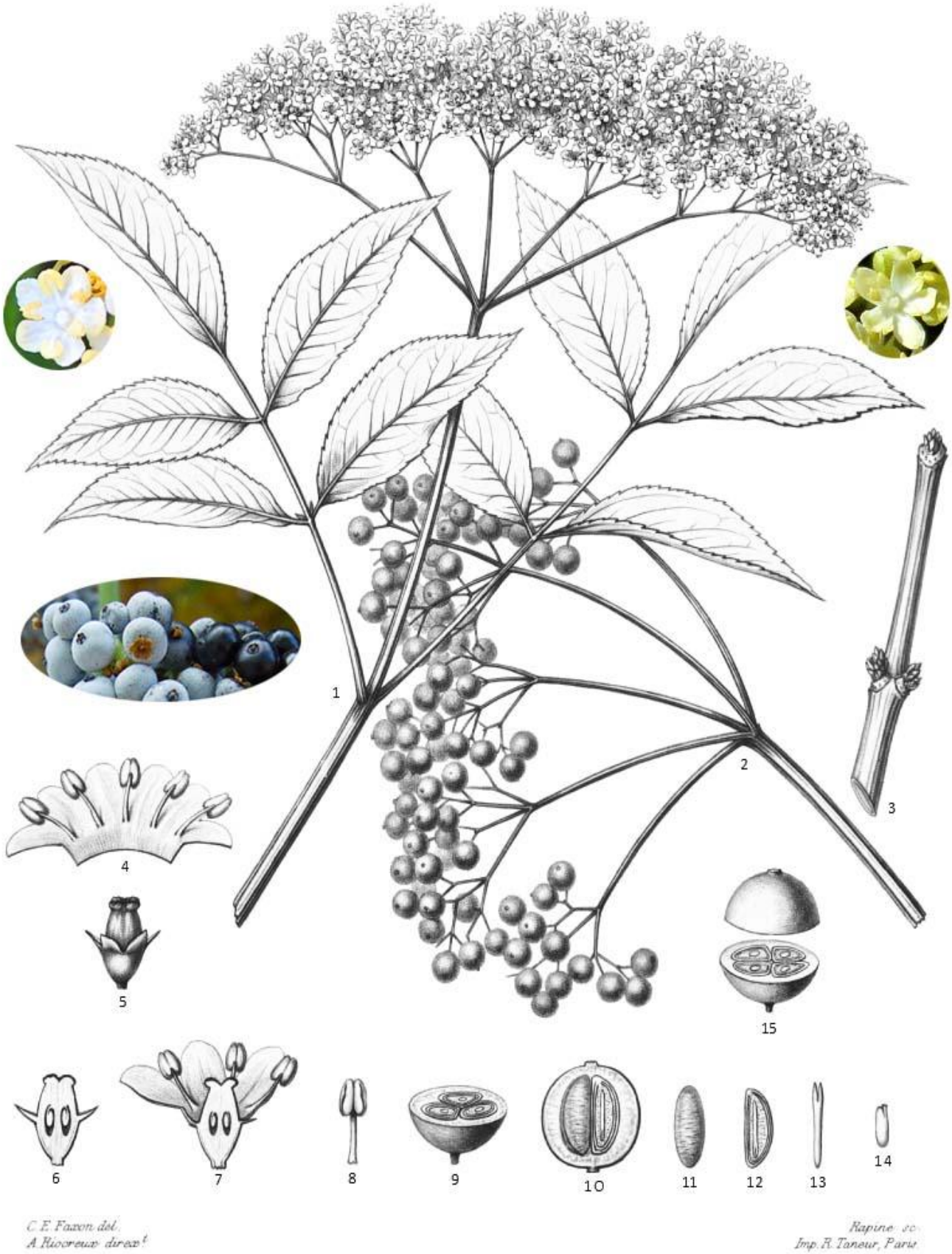
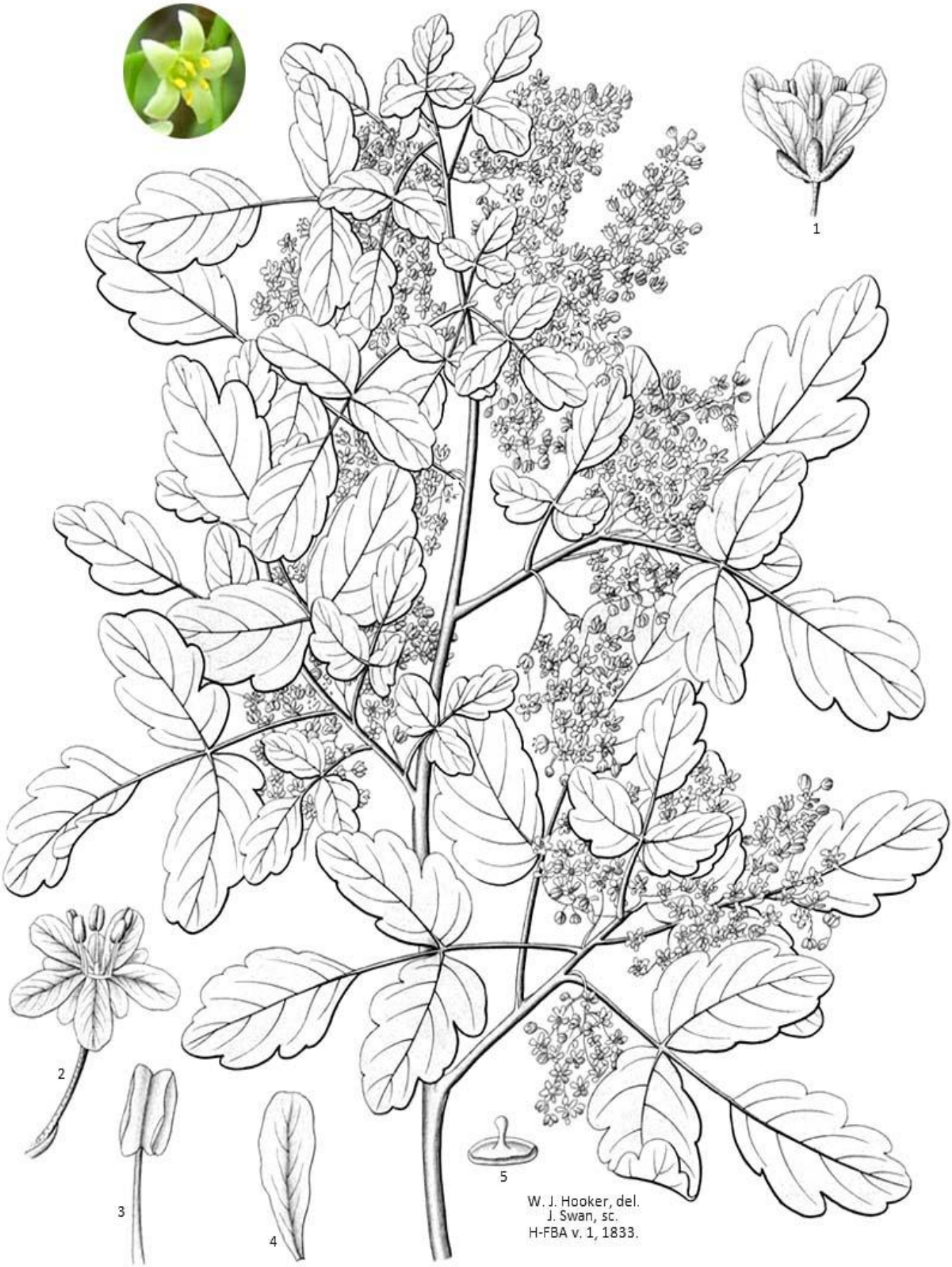
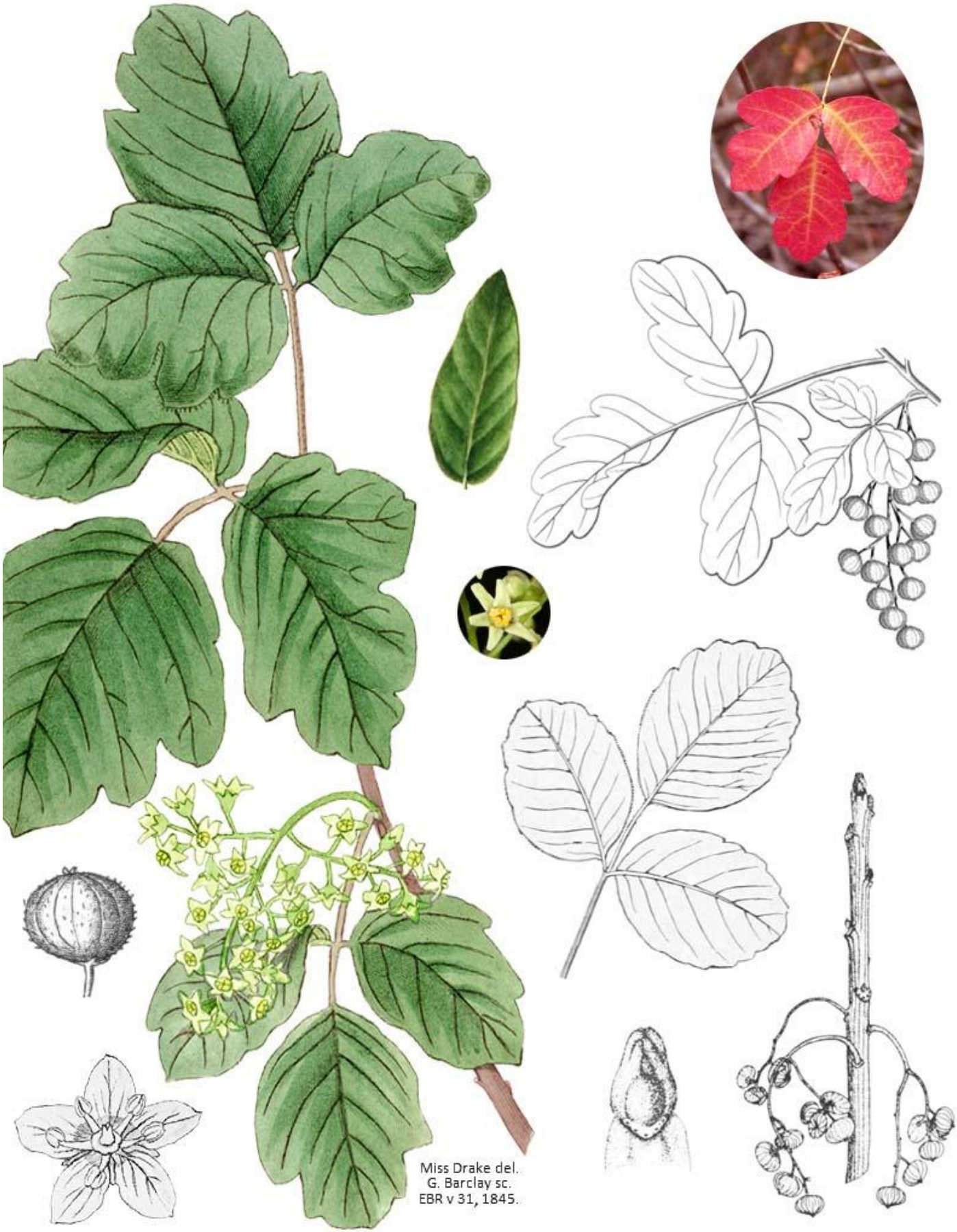
Sambucus nigra
subsp. NIGRA



SAMBUCUS NIGRA subsp. CAERULEA

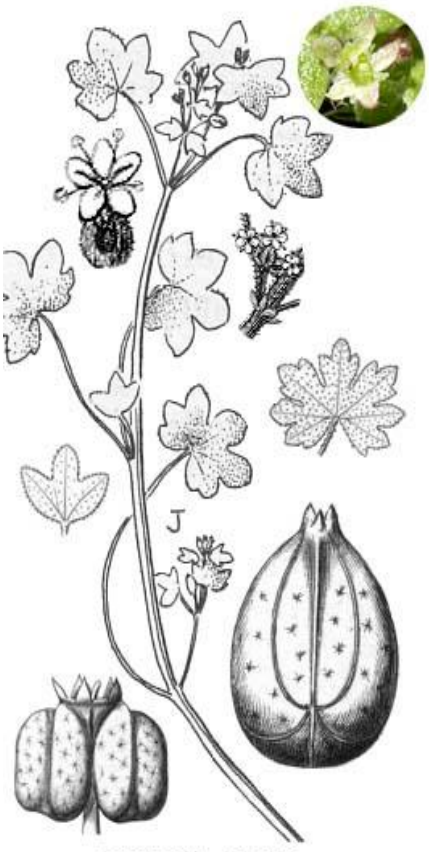


TOXICODENDRON DIVERSILOBUM



TOXICODENDRON DIVERSILOBUM

ANTHRISCUS CAUCALIS



BOWLESIA INCANA

BERULA ERECTA

BOWLESIA.

Bowlesia is represented in the Tassajara region by one species. . . . . ***Bowlesia incana***. p. 46.

CICUTA. POISONOUS WATER HEMLOCK.

Cicuta is represented in the Tassajara region by one species. . . . . ***Cicuta douglasii***. p. 48.

DAUCUS. CARROT.

Daucus is represented in the Tassajara region by one species. . . . . ***Daucus pusillus***. p. 48.

HERACLEUM. COW PARSNIP.

Heracleum is represented in the Tassajara region by one species. . . . . ***Heracleum maximum***. p. 48.

LOMATIUM. HOG FENNEL, SHEEP PARSNIP.

1a. Ovaries scabrous, puberulent or hairy, fruits hairy (glabrous in age):
- **2a**. Petals tomentose. Mature fruits broadly oval to round, the wings wider than the body, and usually pink(ish) or purple(ish) . . . . . ***L. dasycarpum***. p. 48.
- **2b**. Petals not tomentose. Mature fruits lanceolate to broadly oblong, the wings colorful or not:
  - **3a**. Involucels one sided, the bractlets linear to ovate, and reflexed. Petals white, purplish, or pale yellow. Fruits lanceolate or elliptic to narrowly oblong, the wings generally narrower than the main body. . ***L. macrocarpum***. p. 48.
  - **3b**. Involucels radial, the bractlets oblanceolate to obovate, and not reflexed. Petals yellow. Fruits oblong to oblong-obovate, the wings about as wide or wider than the main body. . . . . ***L. utriculatum***. p. 49.

1b. Ovaries and fruits glabrous:
- **4a**. Involucels radial, the bractlets oblanceolate to obovate, and not reflexed. Petals yellow. Fruits oblong to oblong-obovate, the wings about as wide or wider than the main body. . . . . ***L. utriculatum***. p. 49.
- **4b**. Involucels one sided, the bractlets linear to ovate, and reflexed. Petals white, purplish, or pale yellow. Fruits lanceolate or elliptic to narrowly oblong, the wings generally narrower than the main body. . . . . ***L. macrocarpum***. p. 48.

OSMORHIZA. AMERICAN SWEET CICELY.

1a. Involucels (bracts subtending the umbels) conspicuous and about 2 to 10 mm. long. The larger leaves are divided into at least 20 distinct leaflets. . . . . ***O. brachypoda***. p. 49.

1b. Involucels absent or just small rudiments. The larger leaves are divided into no more than 15 distinct leaflets. . . . . ***O. berteroi***. p. 49.

SANICULA. SANICLE.

1a. Basal leaf blades deeply lobed, but not entirely divided into separate leaflets (at least some leafy tissue is present along both sides of the axis of the primary vein):
- **2a**. Outline of basal leaves rounded, the margins serrate. Plants usually branched well above the base. . . ***S. crassicaulis***. p. 50.
- **2b**. Outline of basal leaves sharply angled, the margins laciniate. Plants usually branched near the base. ***S. laciniata***. p. 51.

1b. Basal leaves divided into distinct leaflets or segments:
- **3a**. Fruits covered with thick but not prickly scales. . . . . ***S. tuberosa***. p. 51.
- **3b**. Fruits covered with hooked and prickly barbs:
  - **4a**. Blades of major leaves pinnately divided. Staminate flowers four to six per umbel and inconspicuous. . ***S. bipinnata***. p. 50.
  - **4b**. Blades of major leaves ternately divided. Staminate flowers seven to twelve per umbel and conspicuous. . . . . ***S. graveolens***. p. 51.

TAUSCHIA.

1a. Bractlets subtending umbels generally lanceolate and about 5 to 12 mm. long, and at least several exceed the flowers and fruits in length. Leaflets about 2.5 to 6 cm. long. Fruits 4 to 7 mm. long and 4 to 5 mm. wide. . . . . ***T. hartwegii***. p. 52.

1b. Bractlets subtending umbels linear and about 3 to 8 mm. long, and none exceed the flowers and fruits in length. Leaflets about 1.5 to 3.5 cm. long. Fruits 3 to 5 mm. long and 4 to 6 mm. wide. . . . . ***T. kelloggii***. p. 52.

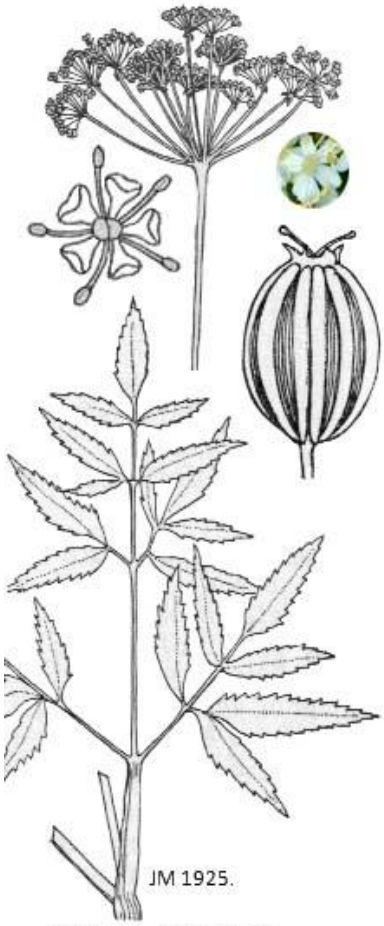
TORILIS. HEDGE PARSLEY.

Torilis is represented in the Tassajara region by one introduced species. . . . . ***Torilis arvensis***. p. 53.

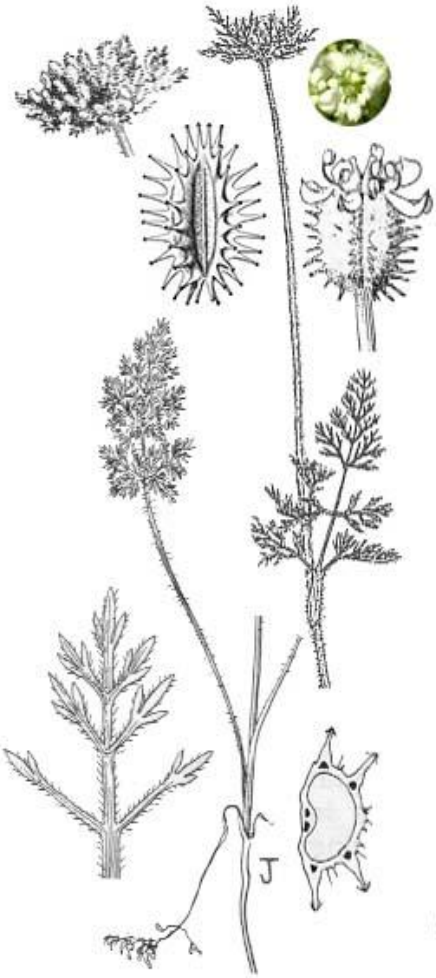
YABEA.

This genus has only one species. . . . . ***Yabea microcarpa***. p. 53.

Continued on page 52.



CICUTA DOUGLASII



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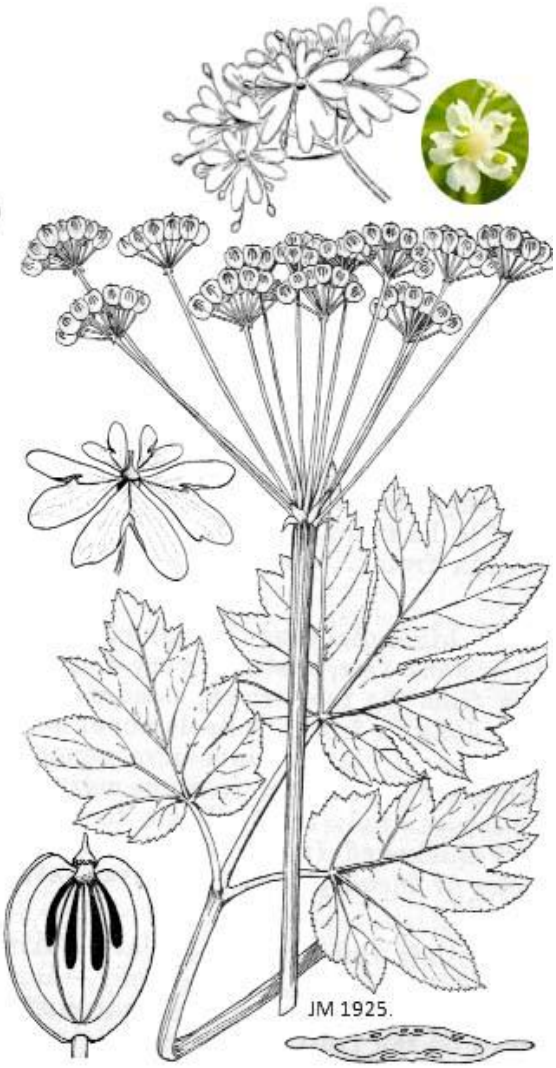
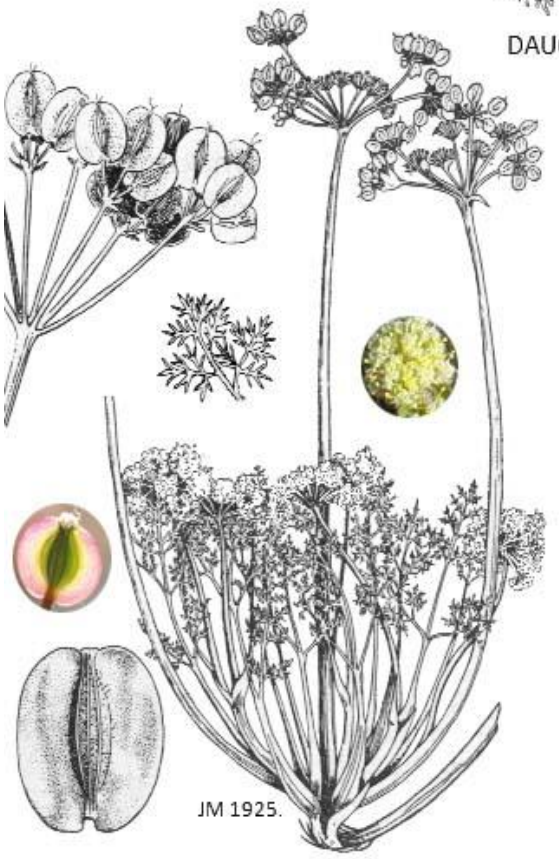
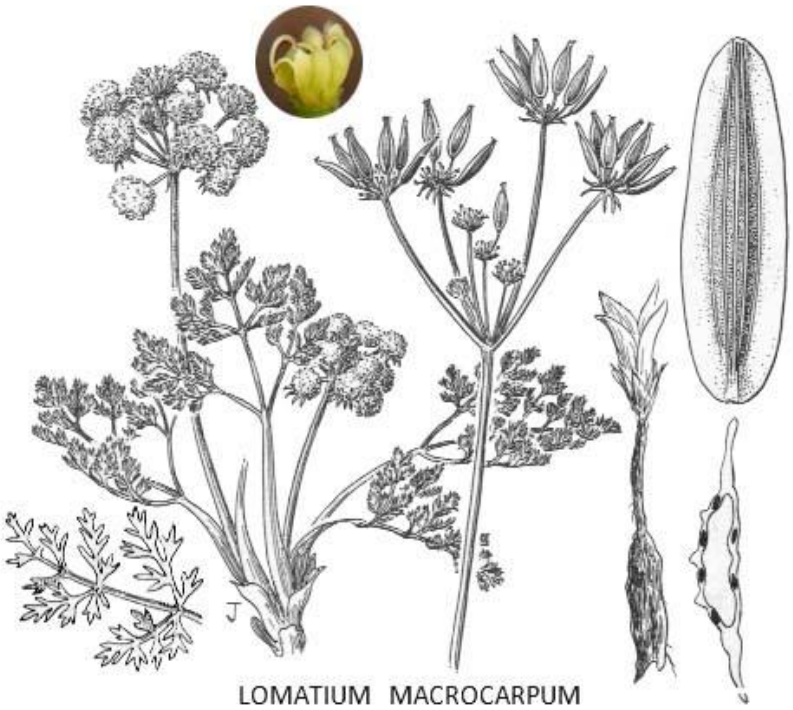


HERACLEUM MAXIMUM

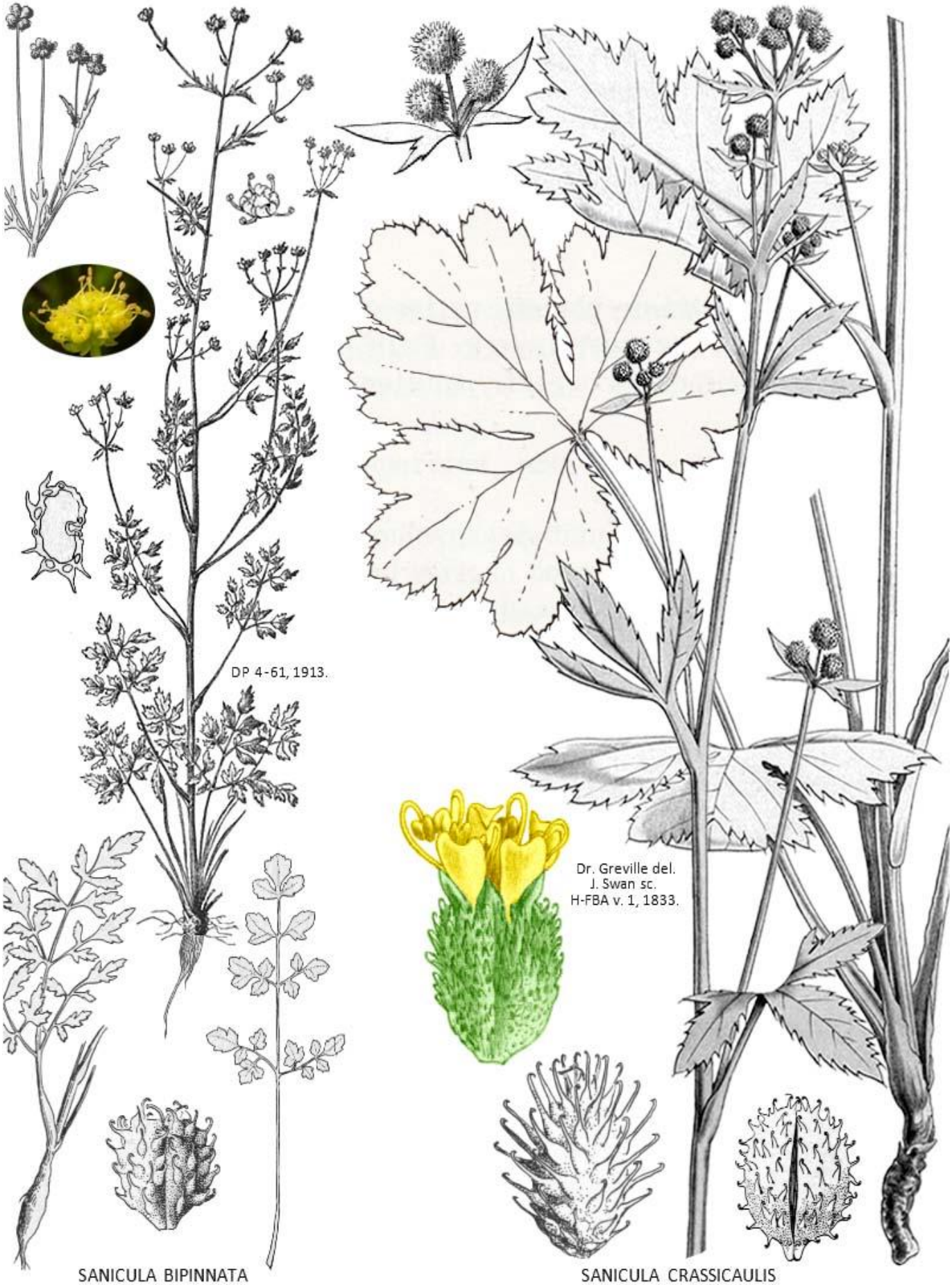


LOMATIUM DASYCARPUM

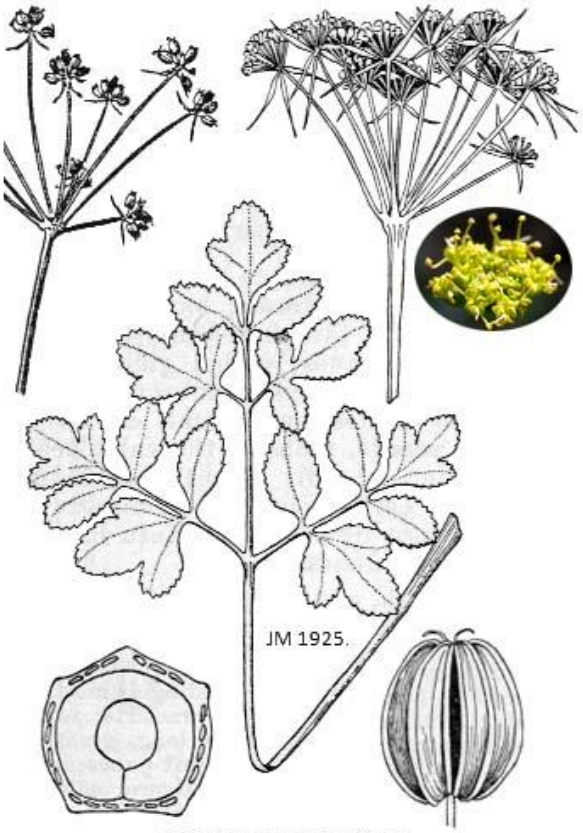


LOMATIUM MACROCARPUM


LOMATIUM URTICULATUM
OSMORHIZA BRACHYPODA
OSMORHIZA BERTEROI
A. d'Apreal, ad nat. del.
DeW-RVSY, 1905.


DP 4-61, 1913.
Dr. Greville del.
J. Swan sc.
H-FBA v. 1, 1833.
SANICULA BIPINNATA
SANICULA CRASSICAULIS

SANICULA GRAVEOLENS SANICULA LACINIATA SANICULA TUBEROSA



TAUSCHIA HARTWEGII

TAUSCHIA KELLOGGII

APOCYNACEAE. DOG BANE FAMILY.

1a. Flowers produced singularly on long pedicels from the axils of the leaves. Corolla tube funnel shaped, but the lobes are widely spreading and range from very pale blue to dark purplish blue. . . . . ***Vinca***.

1b. Flowers produced in axillary and terminal cymes or umbels. Corollas cylindrical to campanulate or urn shaped, and not blue or purplish blue. Native plants:

2a. Flowers produced in umbels. Corollas divided into lobes nearly to the base. . . . . ***Asclepias***.

2b. Individual produced in cymes. Corollas united for at least half the length. . . . . ***Apocynum***.

APOCYNUM. DOG BANE, INDIAN HEMP.

1a. Plants primarily of woodland habitats. Leaves spreading or drooping, the blades roundish to broadly ovate, and about 4 to 6 cm. long. Corolla 4 to 8 mm. long. . . . . ***A. androsaemifolium***. p. 54.

1b. Plants of riparian habitats. Leaves ascending, the blades lanceolate to narrowly ovate, and about 5 to 10 cm. long. Corolla 2.5 to 5 mm. long. . . . . ***A. cannabinum***. p. 55.

ASCLEPIAS. MILKWEED.

1a. Plants dark green and glabrous or nearly so. Leaves linear to narrowly lanceolate. . . . . ***A. fascicularis***. p. 57.

1b. Plants generally gray green due to a dense coat of white woolly hairs. Leaves broadly lanceolate to ovate:

2a. Stems erect or mostly so. Flower horns present and generally slightly exserted from the hoods. Widespread and locally common. . . . . ***A. eriocarpa***. p. 56.

2b. Stems decumbent to ascending. Flower horns absent or minute. Rare in this region. . . . . ***A. californica***. p. 56.

VINCA. PERIWINKLE.

Vinca is represented in the Tassajara region by one introduced species, which may now be eradicated. . . ***Vinca major***. p. 59.

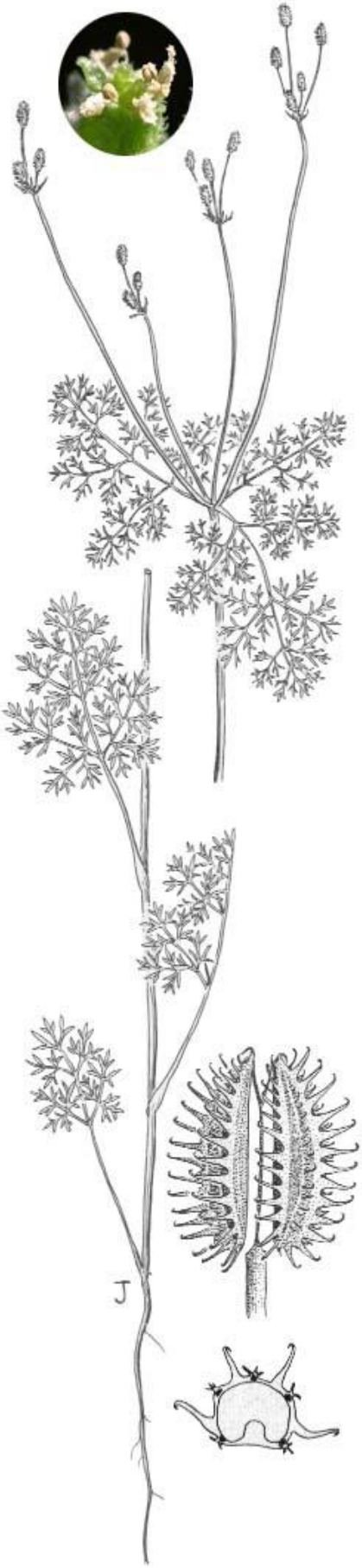
ARALIACEAE. ARALIA OR GINSENG FAMILY.

ARALIA. SPIKENARD, ELK CLOVER.

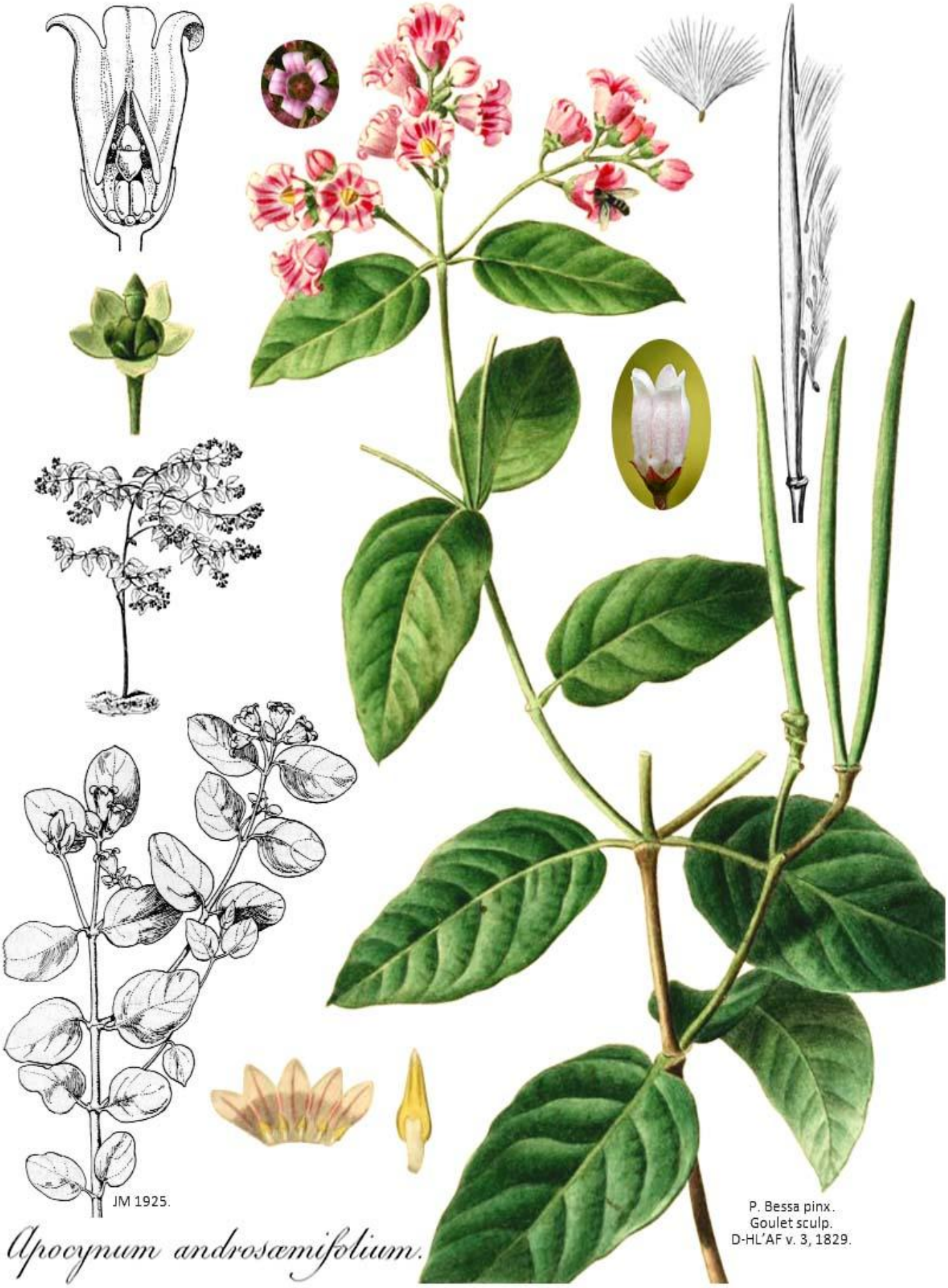
Aralia is represented in the Tassajara region by one species. . . . . ***Aralia californica***. p. 58.

Continued on page 59.

TORILIS ARVENSIS

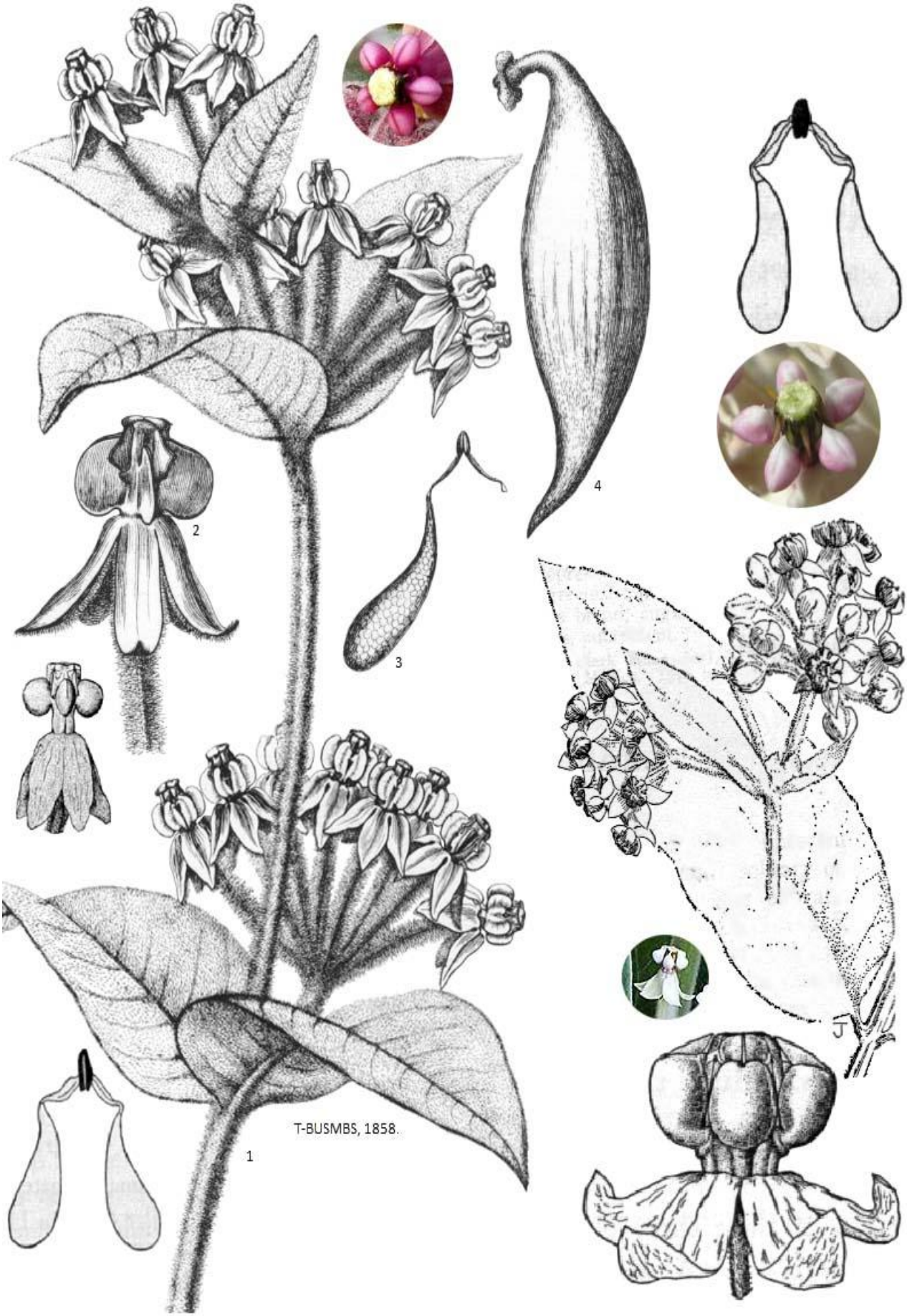


YABEA MICROCARPA



Apocynum androsæmifolium.

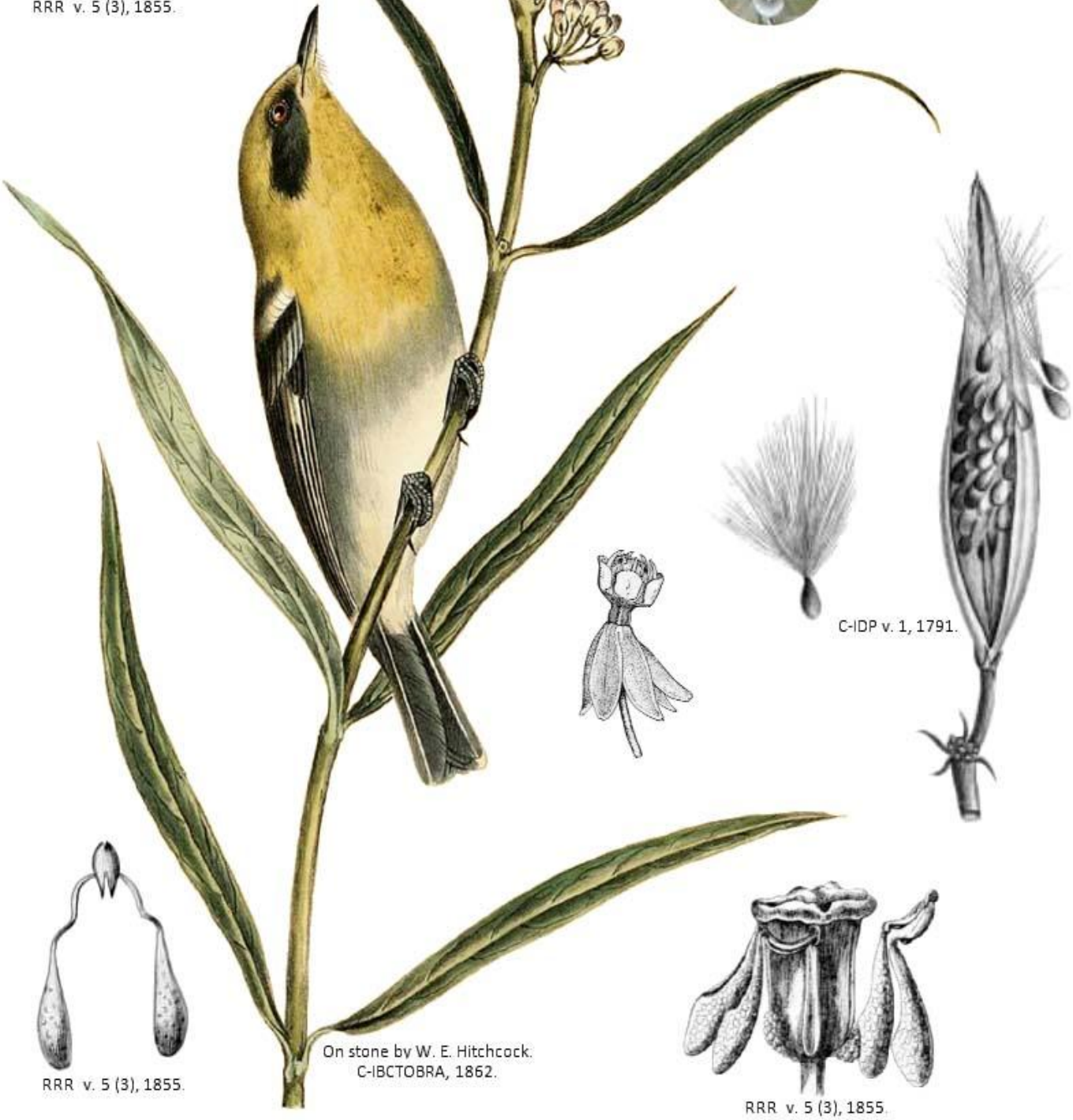
APOCYNUM CANNABINUM



ASCLEPIAS CALIFORNICA

ASCLEPIAS ERIOCARPA

RRR v. 5 (3), 1855.



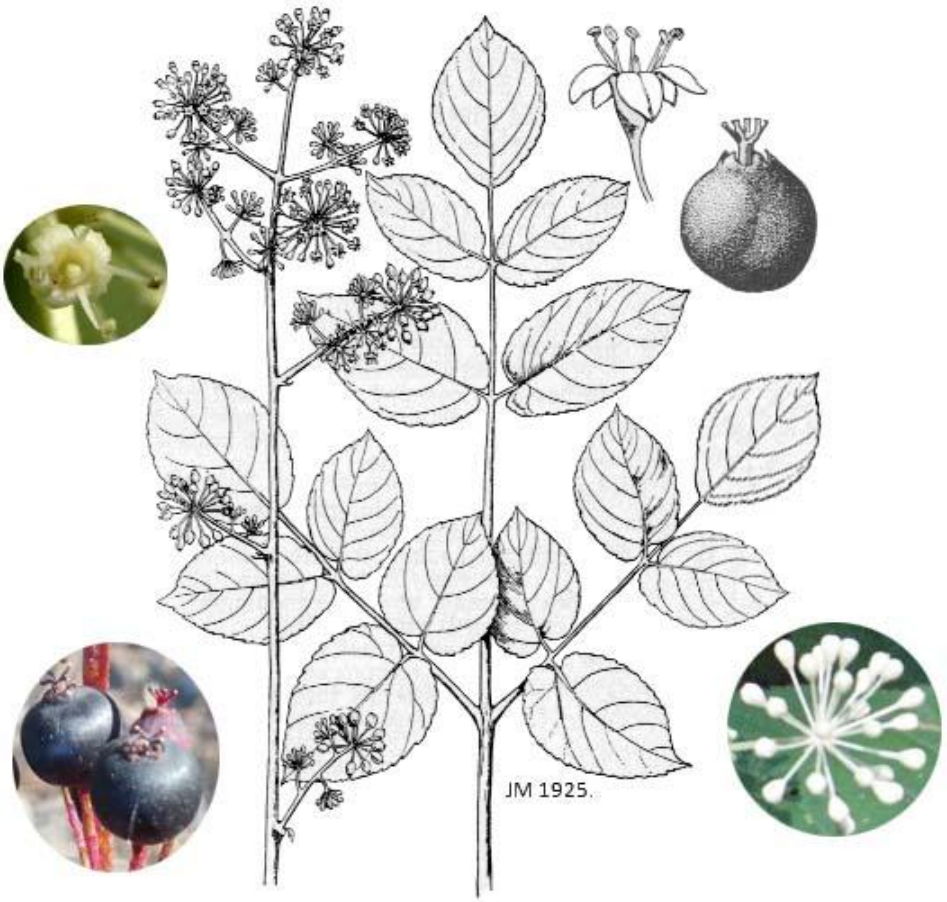
C-IDP v. 1, 1791.

RRR v. 5 (3), 1855.

On stone by W. E. Hitchcock.
C-IBCTOBRA, 1862.

RRR v. 5 (3), 1855.

ASCLEPIAS FASCICULARIS



ARALIA CALIFORNICA

ASTERACEAE (*Compositae*). SUNFLOWER FAMILY.

1a. Flower heads ligulate (i.e., all of the corollas have petal like outer formations that are known as ligules or rays). The ligules are commonly 5 lobed or toothed at the apex. The vascular fluid is usually white or whitish:

2a. Ligules white to lavender or pinkish:

3a. Leaves strictly or primarily basal, upper leaves, if present, are much reduced in size:

4a. Perennial herbs of shady woodland habitats and usually more than 4 dm. tall. Larger leaves mostly 8 to 15 cm. long, remotely toothed or entire, and densely hairy throughout. . . . . ***Hieracium***.

4b. Annual herbs generally of open habitats and usually less than 4 dm. tall. Larger leaves usually less than 8 cm. long, pinnately lobed, and usually with tufts of woolly hair at the base and between the lobes. . . . . ***Malacothrix***.

3b. Leaves not primarily basal (in *Stephanomeria* the leaves are often largely absent when the plants are fully mature):

5a. Ligules white. Achenes with a long and slender beak. Leaves relatively broad and persistent. . . . . ***Rafinesquia***.

5b. Ligules pale lavender to pink or flesh colored, or sometimes white. Achenes not beaked. Leaves relatively narrow and tending to fall before the peak of the flowering season. . . . . ***Stephanomeria***.

2b. Ligules yellow:

6a. Leaves not primarily basal:

7a. Involucres cylindrical. Achenes with a long and slender beak. . . . . ***Lactuca***.

7b. Involucres bowl or bell shaped. Achenes not beaked. . . . . ***Sonchus***.

6b. Leaves basal or primarily basal (upper leaves, if present, are much reduced in size):

8a. Achenes (or at least the inner achenes) with long and slender beaks:

9a. All achenes beaked. Pappus bristles simple. . . . . ***Agoseris***.

9b. Outer achenes not beaked. Pappus bristles plumose. . . . . ***Hypochoeris***.

8b. Achenes not beaked:

10a. Pappus comprised of slender scales with an awn protruding from a bifid apex:

11a. Budding flower heads erect. The outer phyllaries are more than ¼ as long as the inner phyllaries. . . . . ***Uropappus***.

11b. Budding flower heads nodding. The outer phyllaries are less than ¼ as long as the inner phyllaries. . . . . ***Stebbinsoseris***.

10b. Pappus comprised of capillary bristles:

12a. Evergreen perennial herbs usually more than 4 dm. tall, and generally of shady or partly shady woodland habitats. Leaves densely hairy, remotely toothed; the larger are about 8 to 16 cm. long. . . . . ***Hieracium***.

12b. Annual herbs usually less than 4 dm. tall, and generally of open grasslands or disturbed areas in chaparral. Leaves glabrous or long hairy at the base, pinnately lobed; the larger are less than 10 cm. long. . ***Malacothrix***.

1b. Flower heads radiate (the outer flowers have ligules [rays] while the inner disk flowers are tubular to funnel shaped) or discoid (all of the flowers are tubular or funnel shaped). The ligules of radiate heads are entire or two to three lobed or toothed at the apex. The vascular fluid is usually clear or translucent:

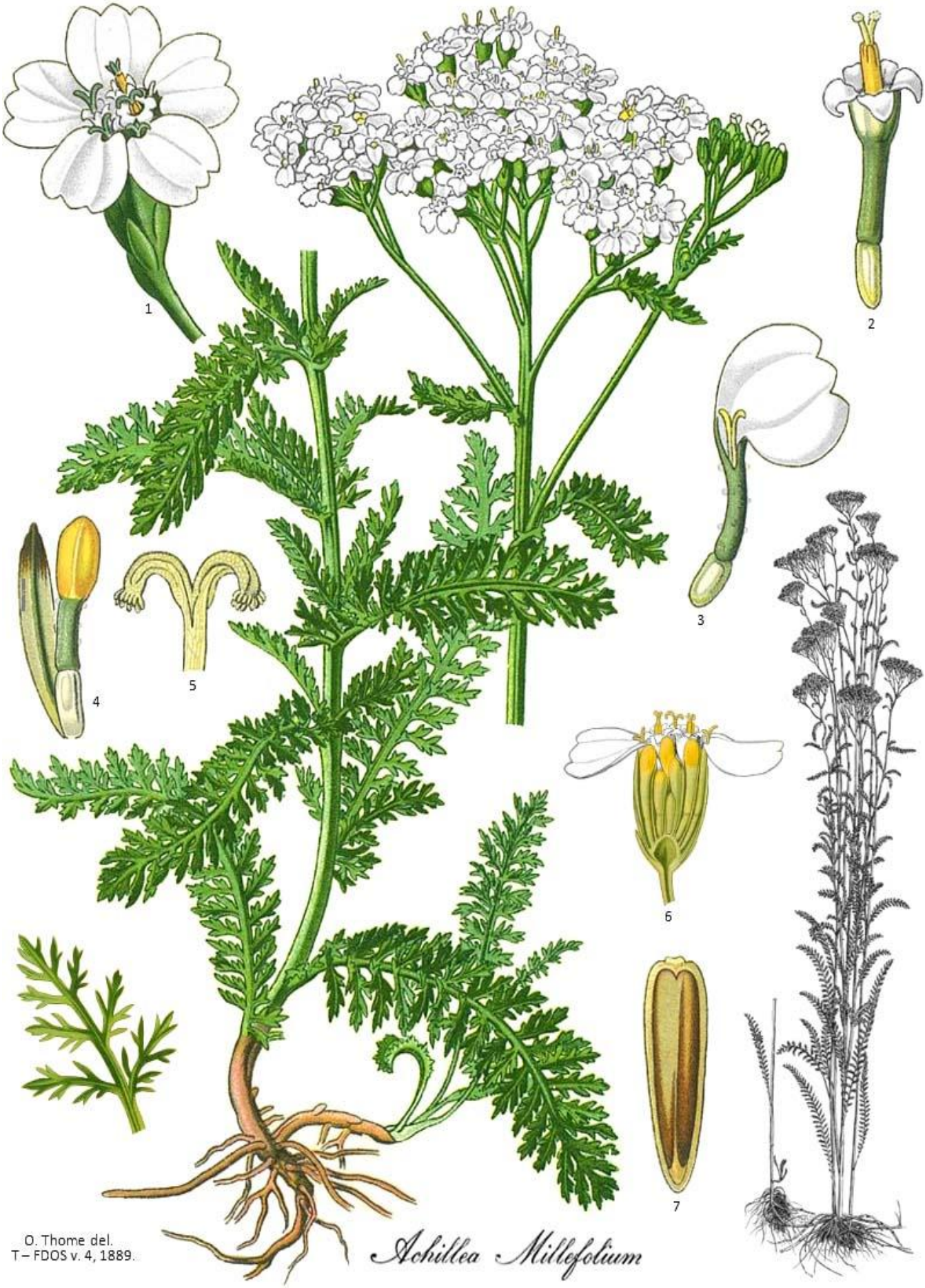
13a. Plants that are thistles or are thistle like. Phyllaries terminating with stiff and sharp spines. Flower heads discoid:
14a. Leaves with spiny margins. The flower heads are more than 2 cm. wide, and the corollas range from bluish, purplish, pale pink or bright red. . . . . ***Cirsium***.
14b. Leaves without spiny margins. The flower heads are less than 2 cm. wide, and the corollas are yellow. . ***Centaurea***.
13b. Plants that are not thistle like. Heads discoid or radiate:
15a. Phyllaries, if present, not green. All flower heads are discoid:
16a. Phyllaries many, overlapping and mostly well imbricated; the phyllaries are dry, opaque to translucent, and white or whitish to yellowish or brownish. The flowers are not enclosed in woolly bracts. . . . . ***Pseudognaphalium***.
16b. Phyllaries absent or few, and not overlapping. The outer flowers are enclosed or nearly enclosed in woolly and sack like bracts that fall with the achene:
17a. Disk flowers with 15 to 30 pappus bristles. . . . . ***Logfia***.
17b. Disk flowers without pappus bristles or with fewer than 6 pappus bristles:
18a. Leaves generally opposite. Receptacle globose. Pappus none. . . . . ***Psilocarphus***.
18b. Leaves alternate. Receptacle convex to cylindrical. Pappus none or comprised of 1 to 5 bristles:
19a. Receptacle not longer than wide. Achenes greatly swollen on the outward side, and the styles are near the center of the inner side of the achenes. Disk pappus none or comprised of 1 bristle. . . . . ***Micropus***.
19b. Receptacle cylindrical and many times longer than wide. Achenes straight or nearly so, and the styles are terminal or sub terminal. Disk pappus comprised of 1 to 5 bristles. . . . . ***Stylocline***.
15b. Phyllaries generally green when young, or only the margins are dry, translucent or scale like. Flower heads discoid or radiate:
20a. Perennial herbs of wet streambed habitats. Leaves rising from the rhizome separately from the flowering stems; the blades are roundish in outline, up to 4 dm. wide, and palmately and deeply cleft into seven to ten lobes (leaves of the flowering stems, which are present only in winter and early spring, are bract like). Ray and disk flowers are white or pinkish. . . . . ***Petasites***.
20b. Plants not like the above:
21a. Leaves pinnately divided into segments that are pinnately divided or lobed. Ray and disk corollas white. . . . ***Achillea***.
21b. Leaves not like the above. If the leaves are pinnately divided, the corollas are not white:
22a. Most leaf blades, or at least the blades of the lower leaves, broadly ovate or deltoid, and very abruptly constricting to the petiole. The bases of the blades range from truncate to deeply cordate:
23a. Taprooted subshrubs. Leaves well distributed on the stems. . . . . ***Brickellia***.
23b. Rhizomatic perennial herbs. Leaves primarily basal. . . . . ***Arnica***.
22b. Leaf blades not like the above:
24a. Flower heads very large, the involucres 3.5 to 6 cm. wide. The broadly elliptic to obovate basal leaf blades are also large, from about 25 to 45 cm. long. . . . . ***Wyethia***.
24b. Flower heads small to moderately large, the involucres less than 2 cm. wide. Leaves of various sizes and shapes, the largest less than 22 cm. long:
25a. Receptacles round, the flower heads spherical. Ray corollas, if present, are small and turned downwards, parallel to the peduncle. Phyllaries spreading or turned downward; they are often hidden under the ray corollas. . . . . ***Helenium***.
25b. Receptacle flat to convex, the heads more or less daisy like in appearance (if roundish, the phyllaries are visible and are not spreading). Ray corollas, if present, are spreading:
26a. Flower heads discoid (they contain only tubular disk flowers):
27a. Annual herbs:
28a. Corollas of outer flowers enlarged, the lobes turned outward. Phyllaries in 4 or more alternating series. . . . . ***Lessingia***.
28b. Corollas of outer flowers not enlarged. Phyllaries in 2 unequal series, the outer (lower) series are much shorter than the inner series. . . . . ***Senecio***.
27b. Perennial herbs, subshrubs and shrubs:
29a. Plants dioecious (all of the flower heads have either staminate or pistillate flowers, but never both) . ***Baccharis***.
29b. Plants not dioecious:
30a. Small plants with exposed woody root crowns that are restricted to major rock outcrops and cliffs. ***Erigeron petrophilus***.
30b. Plants that are not like the above:
31a. Plants with oblong to cuneate-obovate leaves that have spiny toothed margins. . . . . ***Hazardia***.
31b. Plants with leaves of other shapes that do not have spiny toothed margins:
32a. Pappus absent or comprised of a minute crown. . . . . ***Artemisia***.
32b. Pappus comprised of bristles. . . . . ***Ericameria***.
26b. Flower heads radiate (they contain both tubular disk flowers and outwardly spreading ray flowers):
33a. Annual herbs (some are xerophytic, and thus they can produce flowers until late fall or early winter):

34a. Leaves opposite. . . . . ***Lasthenia***.
34b. Leaves alternate (or at least the cauline leaves are alternate):
35a. Phyllaries and upper bract like leaves terminated with prominent tack shaped glands. ***Calycadenia***.
35b. Phyllaries and upper leaves not terminated by tack like glands (some of these may have gland tipped hairs):
36a. Pappus comprised of broad scales. . . . . ***Achyrachaena***.
36b. Pappus, if present, comprised of narrow scales or bristles:
37a. Achenes without pappus (disk achenes in *Deinandra* sometimes have scales less than 1 mm. long):
38a. Leaves, at least the lower and middle leaves, pinnately lobed. . . . . ***Deinandra***.
38b. Leaves entire (or sometimes minutely toothed):
39a. Plants glandular, especially on the upper stems. Leaves covered with rather coarse hair. . . . ***Madia***..
39b. Plants not glandular, except for small yellow glands at the base of the upper leaves and heads. Leaves covered with fine and semi silky hair. . . . . ***Lagophylla***.
37b. Achenes with pappus (or at least the inner most disk achenes are crested with pappus):
40a. Corollas white. . . . . ***Erigeron canadensis***.
40b. Ray corollas pale or deep yellow:
41a. Leaves narrowly linear and entire. Ray corollas usually pale yellow. . . . . ***Rigiopappus***.
41b. Leaves, at least the lower leaves, pinnately lobed. Ray corollas usually medium to deep yellow. . . . . ***Layia***.
33b. Perennial herbs, subshrubs and shrubs:
42a. Ray corollas white to blue, purple or brownish purple or brownish red (the disk corollas are yellow):
43a. Leaf margins entire. . . . . ***Erigeron foliosus***.
43b. Leaf margins, or at least those of the lower leaves, toothed or serrate:
44a. Phyllaries in a single series and not or just slightly overlapping. Achenes long hairy and crested with 2 unequal pairs of pappus scales. . . . . ***Hulsea***.
44b. Phyllaries in several overlapping and well imbricated series. Achenes short hairy and crested with pappus bristles:
45a. Plants rhizomatic and tending to from leafy patches. Lower leaves broadly lanceolate and about half as wide as long. Style branches of disk flowers without a prominent tuft of yellow hairs. . . . . ***Eurybia***.
45b. Plants taprooted and with erect to decumbent stems. Lower leaves oblanceolate and less than ¼ as wide as long. Style branches of disk flowers with a dense tuft of stiff yellow hairs. . . . ***Corethrogyne***.
42b. Ray corollas yellow (the disk corollas are also yellow):
46a. Leaves pinnately or irregularly divided into narrow segments:
47a. Ligules abruptly expanding into a generally broadly ovate formation. Phyllaries in 1 equal series. . . . . ***Eriophyllum***.
47b. Ligules linear. Phyllaries in two unequal series, the outer (lower) series much shorter and outwardly spreading. . . . . ***Senecio flaccidus***.
46b. Leaves not divided into narrow segments:
48a. Receptacles with a ring of chaff scales between the ray and disk flowers. Plants of shady habitats. . . . . ***Anisocarpus***.
48b. Receptacles without chaff scales. Plants of open, semi open or wet habitats:
49a. Heads generally 5 to 15 mm. wide and terminal on the branches of an open panicle. Ligules 3 to 10 mm. long and usually quite evident. Pappus in two series (the outer bristles much shorter than the inner bristles) . . . . . ***Heterotheca***.
49b. Heads generally less than 6 mm. wide and clustered in dense panicles. Ligules about 2 to 5 mm. long and inconspicuous. Pappus simple:
50a. All leaves narrowly linear to linear-lanceolate and entire. Heads clustered at or near the ends of the panicle branches. . . . . ***Euthamia***.
50b. Lower leaves spatulate to oblong-ovate with serrate margins, the upper most much reduced and generally elliptic with entire margins. Panicles mostly spike like (or sometimes head like) . . . . . ***Solidago***.

ACHILLEA. YARROW, MILFOIL.

Achillea is represented in the Tassajara region by one species. . . . . ***Achillea millefolium***. p. 62.

Continued on page 63.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O. Thome del.
T – FDOS v. 4, 1889.
Achillea Millefolium

ACHYRACHAENA.

This genus has only one species. . . . . ***Achyrachaena mollis***. p. 64.

AGOSERIS. WESTERN NORTH AMERICAN DANDELIONS, GOAT CHICORY.

1a. Annual herbs from slender taproots, leaves sometimes cauline. Fruiting involucre 1 to 2.5 cm. long, outer achenes sometimes wavy ribbed or inflated and ribless:
  2a. Ligules 2 to 6 mm. long, and about as long as the phyllaries. Anthers 1 to 1.5 mm. long. Leaf lobes mostly in 2 to 3 pairs. . . . . ***A. heterophylla*** var. ***heterophylla***. p. 64.
  2b. Ligules 10 to 15 mm. long, and exceeding the length of the phyllaries. Anthers 2 to 4 mm. long. Leaf lobes usually 3 to 5 pairs. . . . . ***A. heterophylla*** var. ***cryptopleura***. p. 64.
1b. Perennial herbs from stout taproots, often with an exposed caudex, leaves basal. Fruiting involucre 2 to 6 cm. long, outer achenes usually straight ribbed:
  3a. Leaf lobes generally angled outward (or rarely backward). Achenes tapering to the long and slender beak. Corollas 7 to 14 mm. long. Pappus bristles not more than 15 mm. long and in 2 to 3 series. . . . . ***A. grandiflora***. p. 64.
  3b. Leaf lobes generally angled backward. Achenes abruptly constricting to the long and slender beak. Corollas 16 to 35 mm. long. Pappus bristles more than 15 mm. long and in 4 to 6 series. . . . . ***A. retrorsa***. p. 64.

ANISOCARPUS. WOODLAND MADIA.

Anisocarpus is represented in the Tassajara region by one species. . . . . ***Anisocarpus madioides***. p. 65.

ARNICA.

1a. Heads radiate. Lower leaves mostly broadly ovate and strongly cordate at the base (and thus heart shaped) . . . . . ***A. cordifolia***. p. 65.
1b. Heads discoid. Lower leaves mostly ovate to ovate-lanceolate and truncate at the base. . . . . ***A. discoidea***. p. 65.

ARTEMISIA. MUGWORT, SAGEBRUSH, WORMWOOD.

1a. Shrubs or subshrubs. Achenes crested with minute pappus bristles. . . . . ***A. californica***. p. 66.
1b. Evergreen perennial herbs. Achenes without pappus:
  2a. Leaves gray green, usually white woolly on the lower surface, and variable in shape, but not narrowly linear. . . . . ***A. douglasiana***. p. 66.
  2b. Leaves dark green, nearly bald, and narrowly linear or cleft into linear segments. . . . . ***A. dracunculus***. p. 66.

BACCHARIS.

1a. Shrubs of dry habitats. Leaves oval to obovate, less than 4 cm. long, and mostly with remotely toothed margins. . . . . ***A. pilularis***. p. 67.
1b. Shrubs or perennial herbs of riparian habitats. Leaves generally narrowly to broadly lanceolate, mostly more than 4 cm. long, and with entire or serrulate margins:
  2a. Shrubs ranging from about 2 to 4 m. tall. . . . . ***B. salicifolia***. p. 67.
  2b. Perennial herbs from creeping rhizomes, the stems mostly less than 2 m. tall. . . . . ***B. glutinosa***. p. 67.

BRICKELLIA.

Brickellia is represented in the Tassajara region by one species. . . . . ***Brickellia californica***. p. 68

CALYCADENIA. CUP GLAND, ROSIN WEED.

Calycadenia is represented in the Tassajara region by one species. . . . . ***Calycadenia truncata***. p. 68.

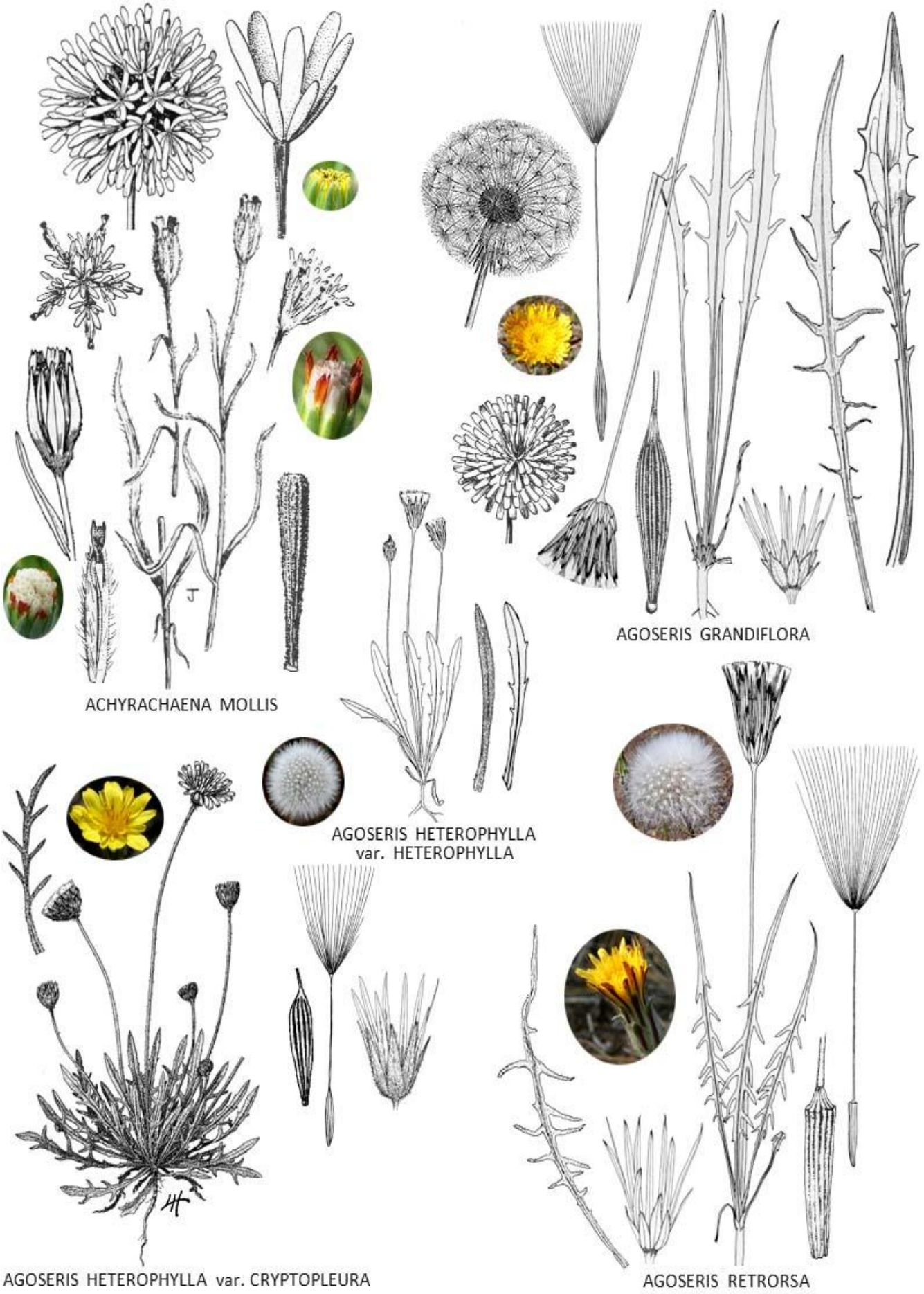
CENTAUREA. STAR THISTLE, KNAPWEED.

1a. Plants branching mostly above the base. Phyllary spines purplish, the longest usually no more than 10 mm. long. . . . . ***C. melitensis***. p. 69.
1b. Plants branching from the base. Phyllary spines yellowish, the longest about 10 to 25 mm. long. . . . ***C. solstitialis***. p. 69.

CIRSIUM. THISTLE.

1a. Plants generally compact, low-growing and unbranched. Flower heads generally tightly clustered at stem tip; corollas 20 to 28 mm. long. . . . . ***C. scariosum***. p. 70.
1b. Plants erect and upwardly branched. . . . . ***C. occidentale***. p. 70.
  2a. Outer face of outer and middle phyllaries with a long, sticky-resinous ridge that is milky when fresh, dark when dry, and occasionally very narrow. . . . . ***C. occidentale*** var. ***californicum***. p. 70.

Continued on page 68.



ACHYRACHAENA MOLLIS

AGOSERIS GRANDIFLORA

AGOSERIS HETEROPHYLLA
var. HETEROPHYLLA

AGOSERIS HETEROPHYLLA var. CRYPTOPLEURA

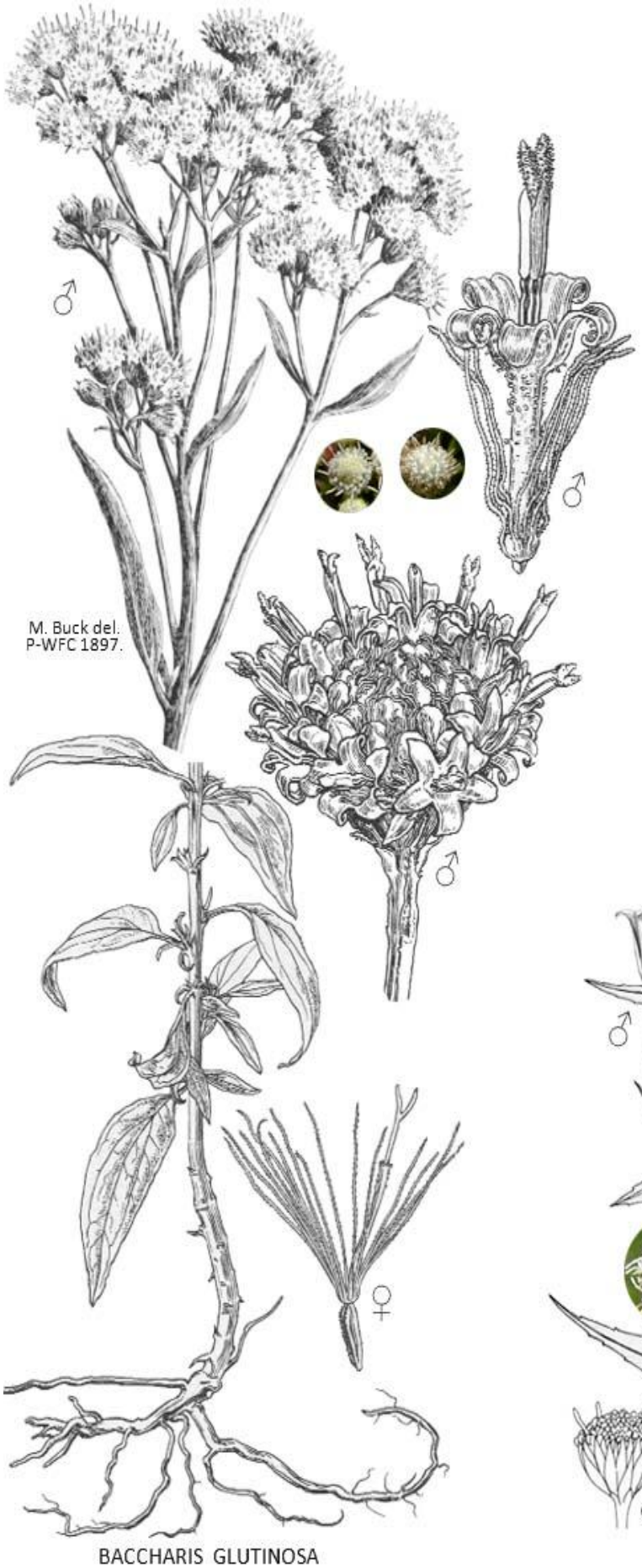
AGOSERIS RETRORSA

ANISOCARPUS MADIOIDES

ARNICA CORDIFOLIA

ARNICA DISCOIDEA

ARTEMISIA CALIFORNICA ARTEMISIA DOUGLASIANA ARTEMISIA DRACUNCULUS

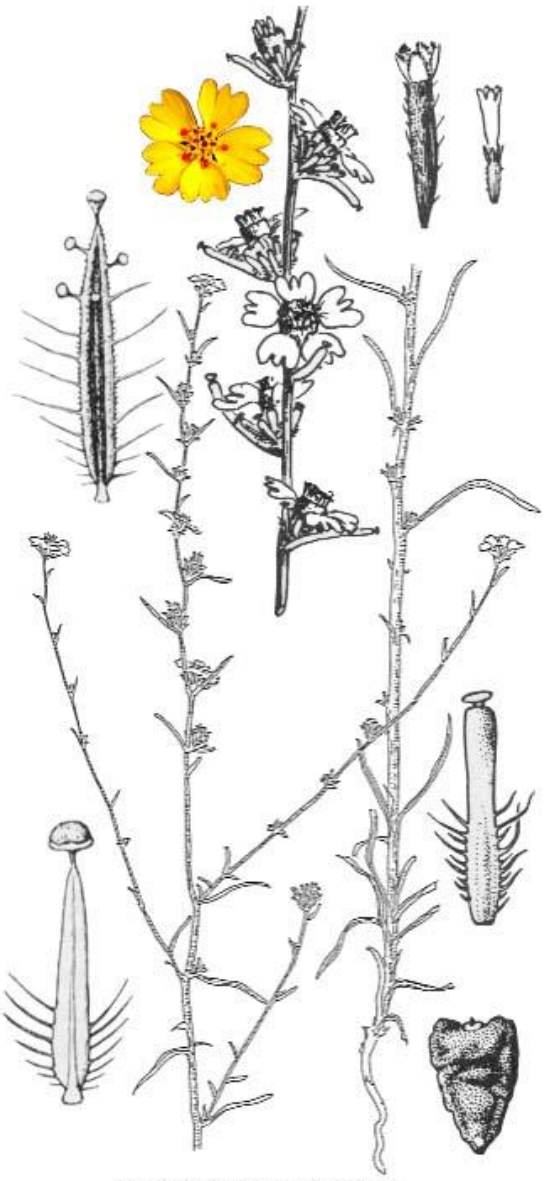


BACCHARIS GLUTINOSA

BACCHARIS PILULARIS

BACCHARIS SALICIFOLIA

BRICKELLIA CALIFORNICA



CALYCADENIA TRUNCATA

Cirsium key continued.

2b. Outer face of outer and middle phyllaries without a sticky-resinous ridge:

3a. Outer and middle phyllaries without short appressed bases. The phyllaries are lance-linear to ovate, and appressed or generally ascending to erect; the tip spines are 1 to 12 mm. long. . . . . .***C. occidentale*** var. ***californicum***. p. 70.

3b. Outer and middle phyllaries with short appressed bases. The phyllaries are lanceolate to linear or needle-like, and the tips are ascending to stiffly spreading; the tip-spines are generally 1 to 35 mm. long:

4a. Phyllary tips conspicuously connected side-to-side by a network of cobwebby or multi cellular hairs. . . . . ***C. o.*** var. ***occidentale***. p. 70.

4b. Phyllary tips glabrous or hairy to densely tomentose but generally not conspicuously connected side-to-side by network of cobwebby or multi cellular hairs:

5a. Corollas generally bright red-pink to red. . . . . ***C. o.*** var. ***venustum***. p. 70.

5b. Corolla white or cream to lavender, purple, or pale rose. . . . . .***C. o.*** var. ***californicum***. p. 70.

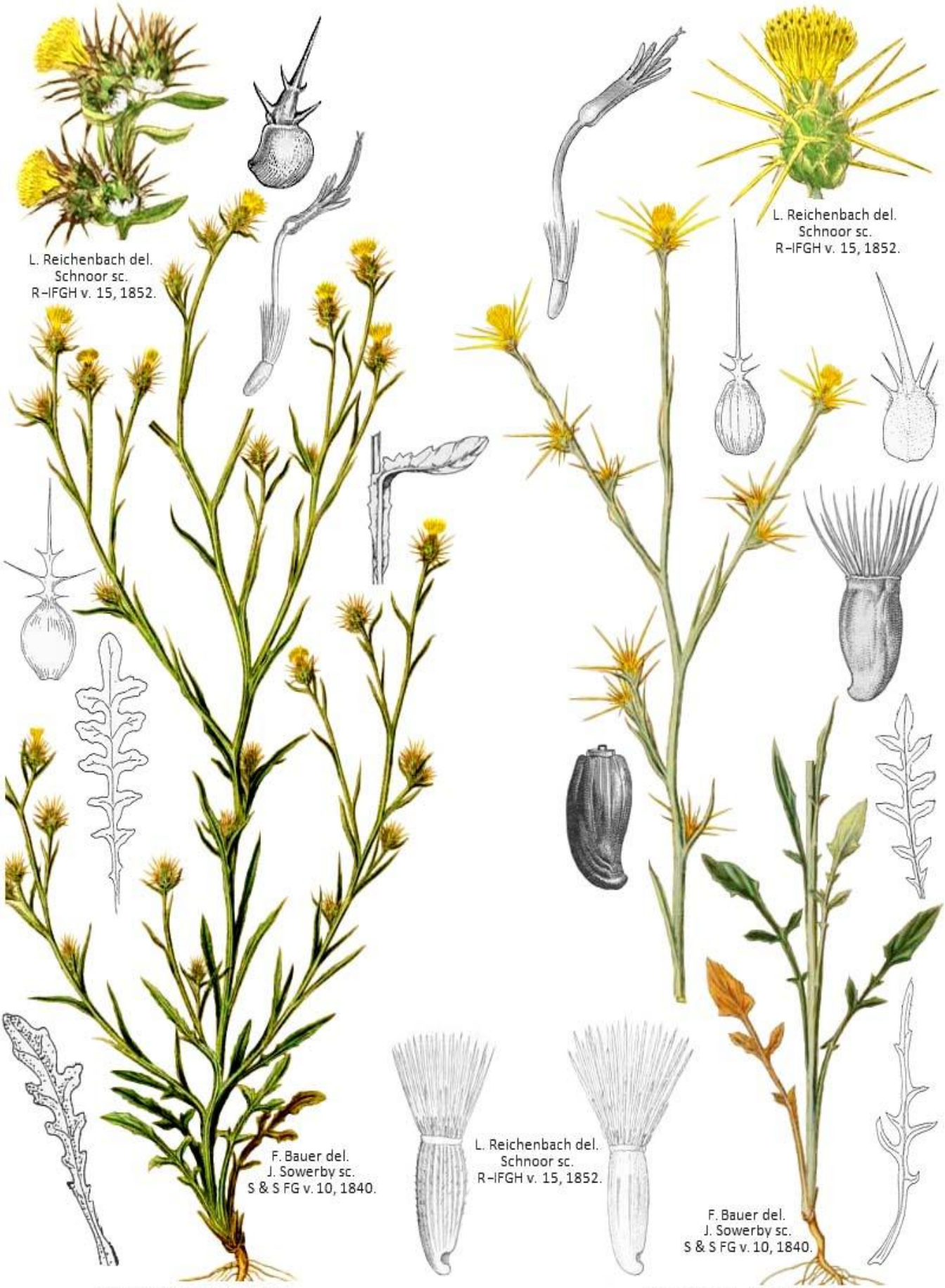
CORETHROGYNE.

Corethrogyne consists of one highly variable species. . . . . ***Corethrogyne filaginifolia***. p. 71.

DEINANDRA.

Deinandra is represented in the Tassajara region by one species. . . . . ***Deinandra corymbosa***. p. 71.

Continued on page 72.

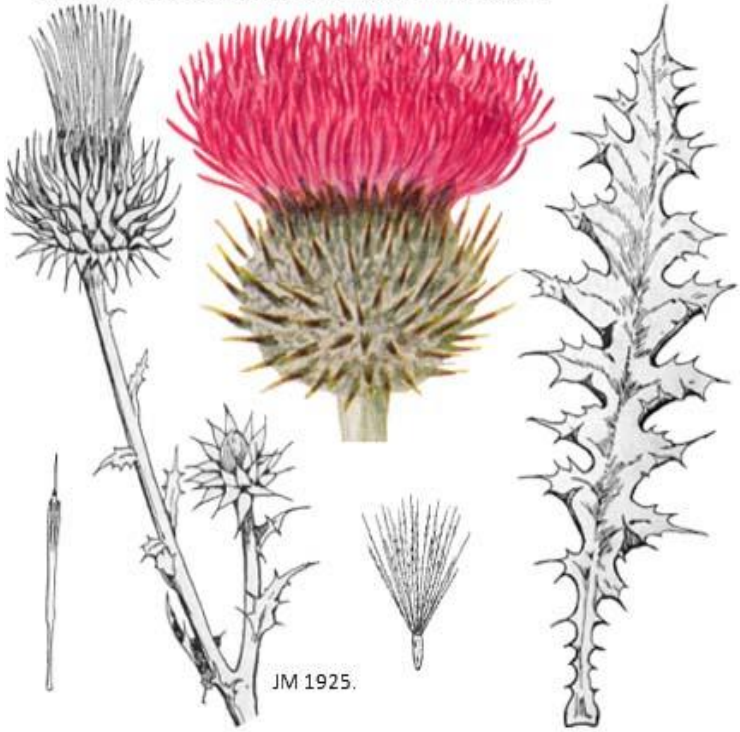


CENTAUREA MELITENSIS

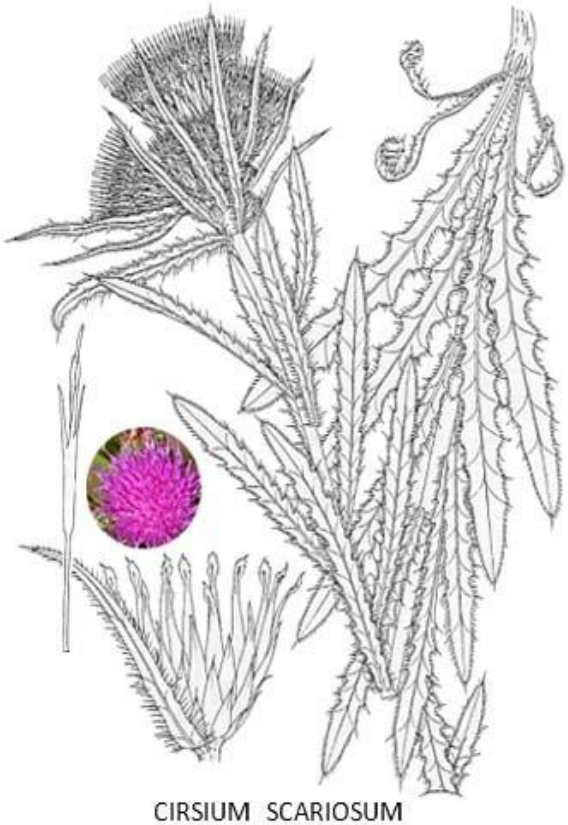
CENTAUREA SOLSTITIALIS

CIRSIUM OCCIDENTALE var. CALIFORNICUM

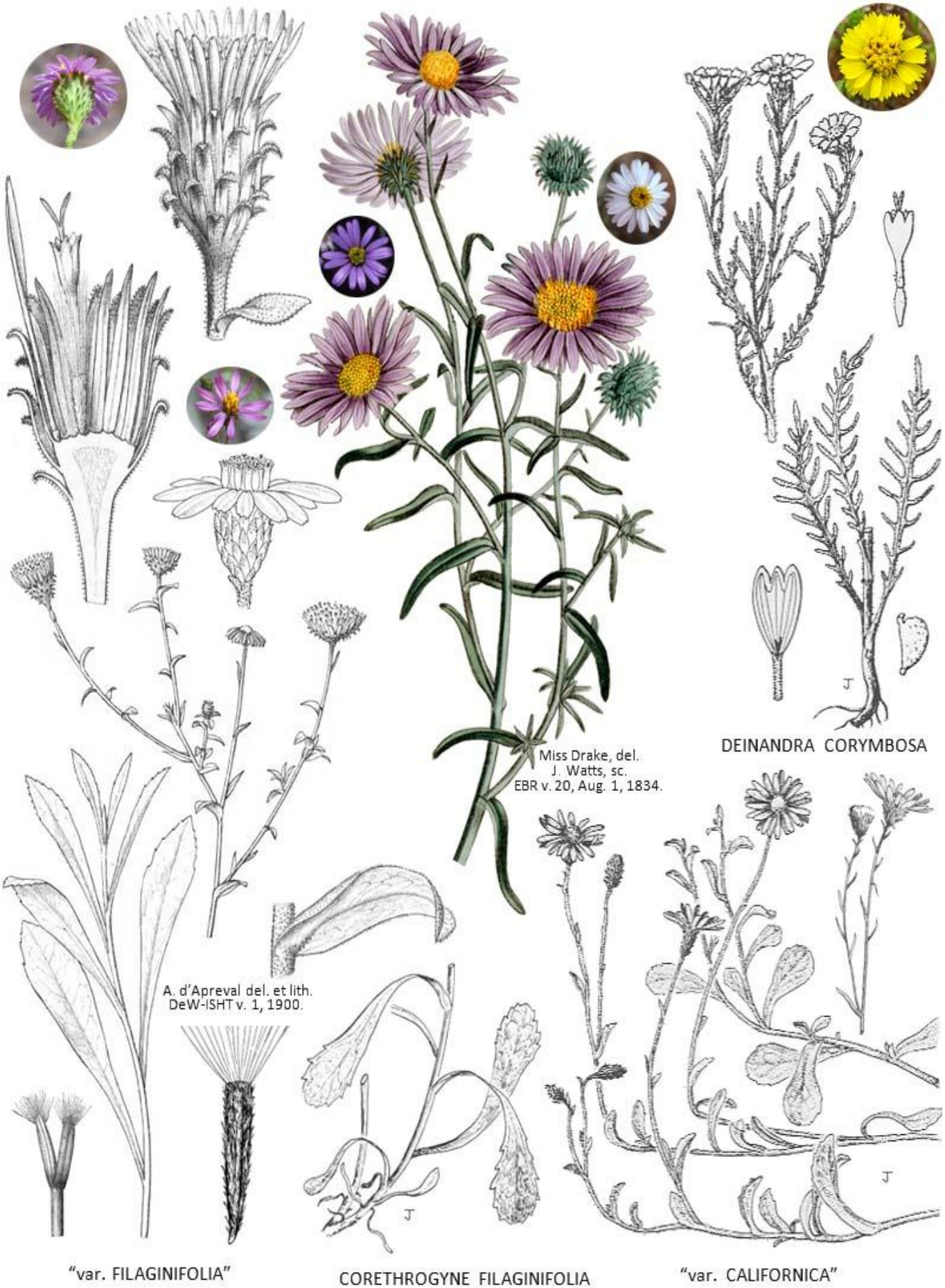
CIRSIUM OCCIDENTALE var. OCCIDENTALE



CIRSIUM OCCIDENTALE var. VENUSTUM



CIRSIUM SCARIOSUM


Miss Drake, del.
J. Watts, sc.
EBR v. 20, Aug. 1, 1834.
DEINANDRA CORYMBOSA
A. d'Apreval del. et lith.
DeW-ISHT v. 1, 1900.
"var. FILAGINIFOLIA"
CORETHROGYNE FILAGINIFOLIA
"var. CALIFORNICA"

ERICAMERIA. GOLDEN BUSH.

1a. Shrubs with upwardly branched trunks and dense and generally rounded crowns up to 4+ m. tall. Leaves, and often young stems, dotted with round and more or less evenly spaced resin filled pits. Involucres less than 4.5 mm. long. Flowers 10 to 25 per head, the corollas 4.7 to 5.5 mm. long. . . . . .***E***. ***arborescens***. p. 73.
1b. Shrubs with spreading or ascending (or erect) stems less than 3 m. tall. Leaves and young stems lacking round resin pits. Involucres 6 to 14 mm. long. Flowers mostly 5 per head, the corollas 6 to 13 mm. long:
2a. Plants 5 to 28 dm. tall. Stems densely tomentose with tightly matted hairs. Leaves 15 to 30 mm. long, and largely absent during the flowering period. . . . . ***E***. ***nauseosa*** var. ***mohavensis***. p. 73.
2b. Plants 2 to 10 dm. tall. Stems loosely tomentose. Leaves 30 to 70 mm. long, and present during the flowering period. . ***E. nauseosa*** var. ***speciosa***. p. 73.

ERIGERON. FLEABANE DAISY.

1a. Stems usually less than 3 dm. long. Heads discoid and without pistillate flowers. Restricted to cliffs and major rock outcrops. . . . . .***E***. ***petrophilus***. var. ***petrophilus***. p. 74.
1b. Stems 2 to 20 dm. long. Heads radiate or inconspicuously radiate, the ray flowers pistillate. Plants of various habitats:
2a. Annual herbs with inconspicuously radiate heads. Ray and disk flowers white. . . . . ***E***. ***canadensis***. p. 74.
2b. Perennial herbs with conspicuously radiate flower heads. Ray corollas range from purple, bluish purple, violet or sometimes nearly white; the disk corollas are yellow (or rarely reddish) . . . . . ***E***. ***foliosus***. var. ***foliosus***. p. 74.

ERIOPHYLLUM. WOOLLY SUNFLOWERS.

Eriophyllum is represented in the Tassajara region by one species. . . . . ***Eriophyllum confertiflorum***. p. 75.

EURYBIA. FALSE ASTER.

Eurybia is represented in the Tassajara region by one species. . . . . ***Eurybia radulina***. p. 75.

EUTHAMIA. NARROW LEAFED GOLDENROD.

Euthamia is represented in the Tassajara region by one species. . . . . ***Euthamia occidentalis***. p. 75.

HAZARDIA. SAW TOOTHED GOLDENBUSH.

Hazardia is represented in the Tassajara region by one species. . . . . ***Hazardia squarrosa***. p. 75.

HELENIUM. SNEEZEWEED, SNAKEWEED.

Helenium is represented in the Tassajara region by one species. . . . . ***Helenium puberulum***. p. 75.

HETEROTHECA. GOLDEN ASTER, TELEGRAPH WEED.

Heterotheca is represented in the Tassajara region by one species. . . . . ***Heterotheca sessiliflora*** subsp. ***echioides***. p. 76.

HIERACIUM. HAWKWEED.

1a. Ligules (petals) white. Phyllaries glabrous or with a few long hairs. . . . . ***H***. ***albiflorum***. p. 76.
1b. Ligules yellow. Phyllaries pubescent to hirsute. . . . . ***H***. ***argutum***. p. 76.

HULSEA.

Hulsea is represented in the Tassajara region by one species. . . . . ***Hulsea heterochroma***. p. 76.

HYPOCHAERIS. CAT'S EARS.

Hypochaeris is represented in the Tassajara region by one introduced species. . . . . ***Hypochaeris glabra***. p. 76.

LACTUCA. LETTUCE.

Lactuca is represented in the Tassajara region by one introduced species. . . . . ***Lactuca serriola***. p. 76.

LAGOPHYLLA. HARE LEAF.

Lagophylla is represented in the Tassajara region by one species. . . . . ***Lagophylla ramosissima***. p. 77.

LASTHENIA. GOLDFIELDS.

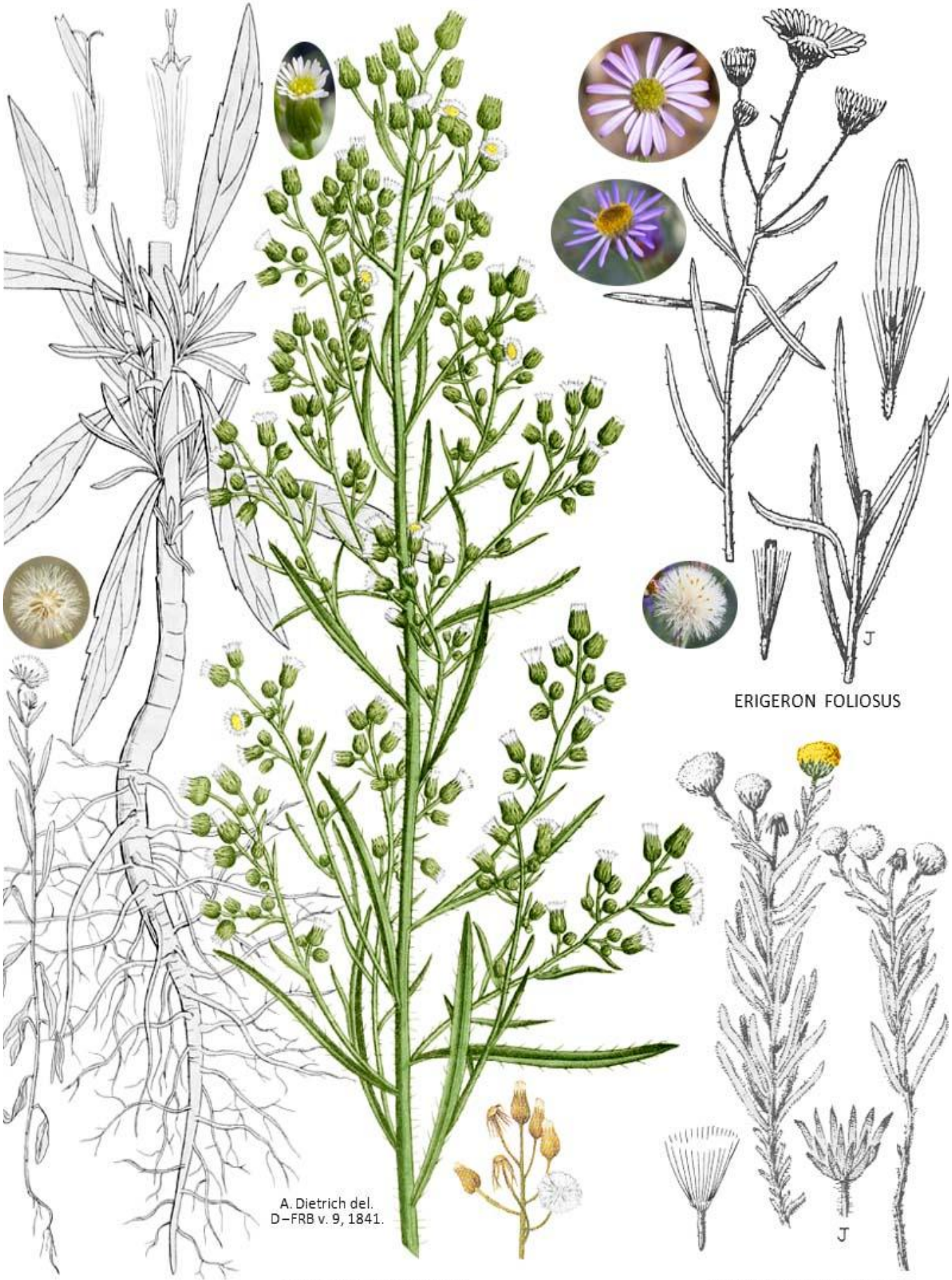
Lasthenia is represented in the Tassajara region by one species. . . . . ***Lasthenia californica***. p. 77.

Continued on page 78.

ERICAMERIA ARBORESCENS

ERICAMERIA NAUSEOSA
var. MOHAVENSIS

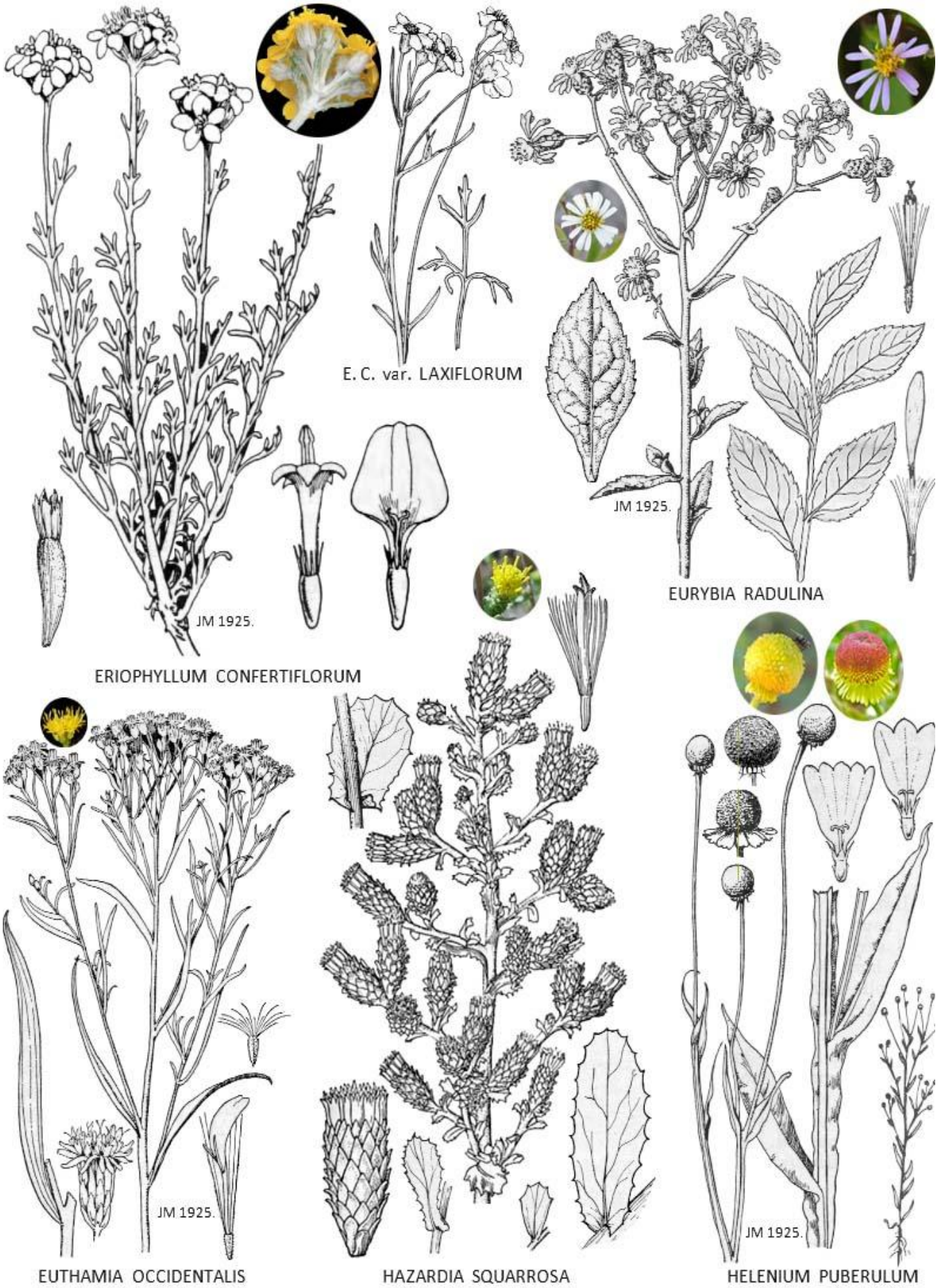
ERICAMERIA NAUSEOSA
var. SPECIOSA

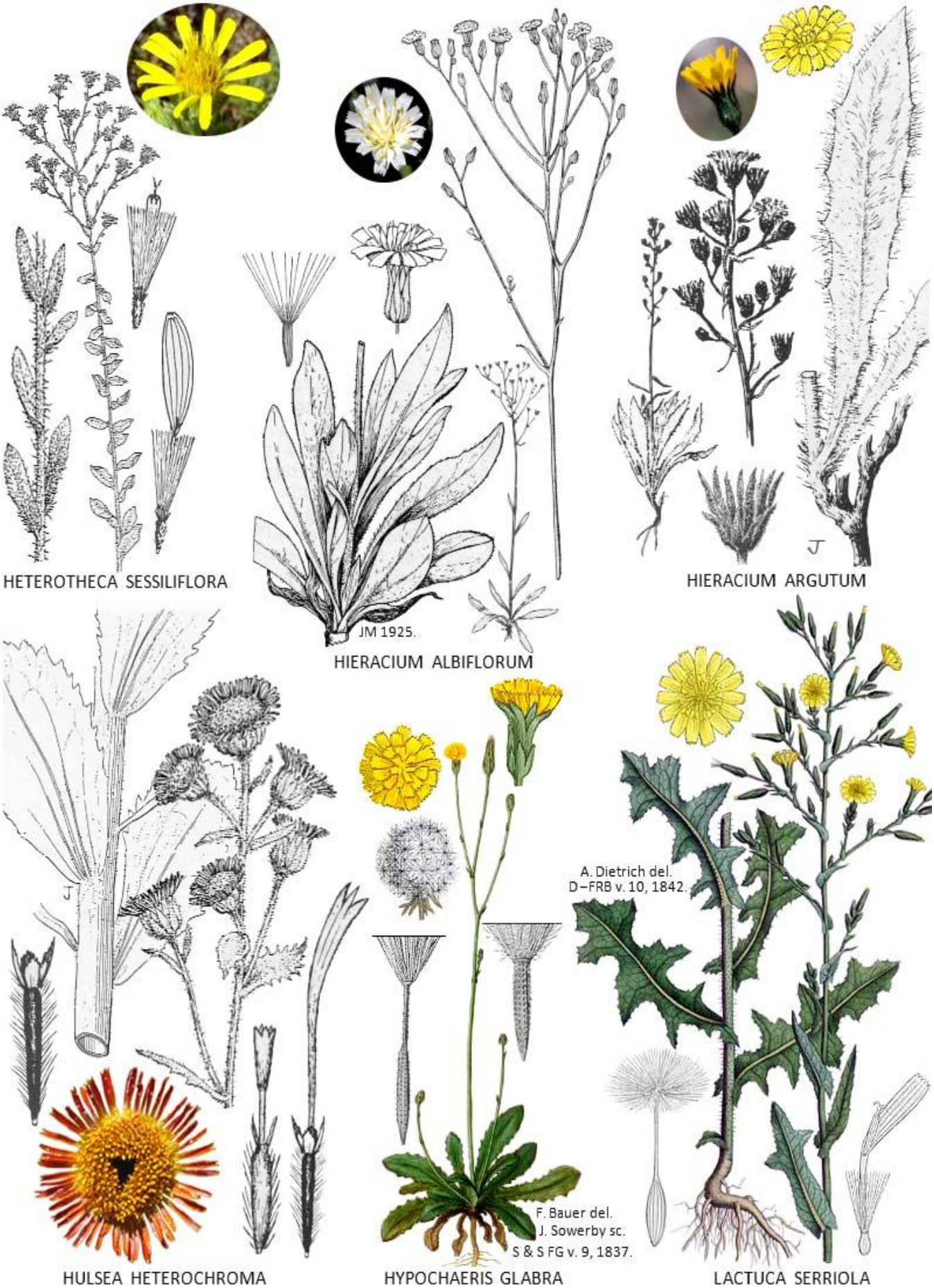


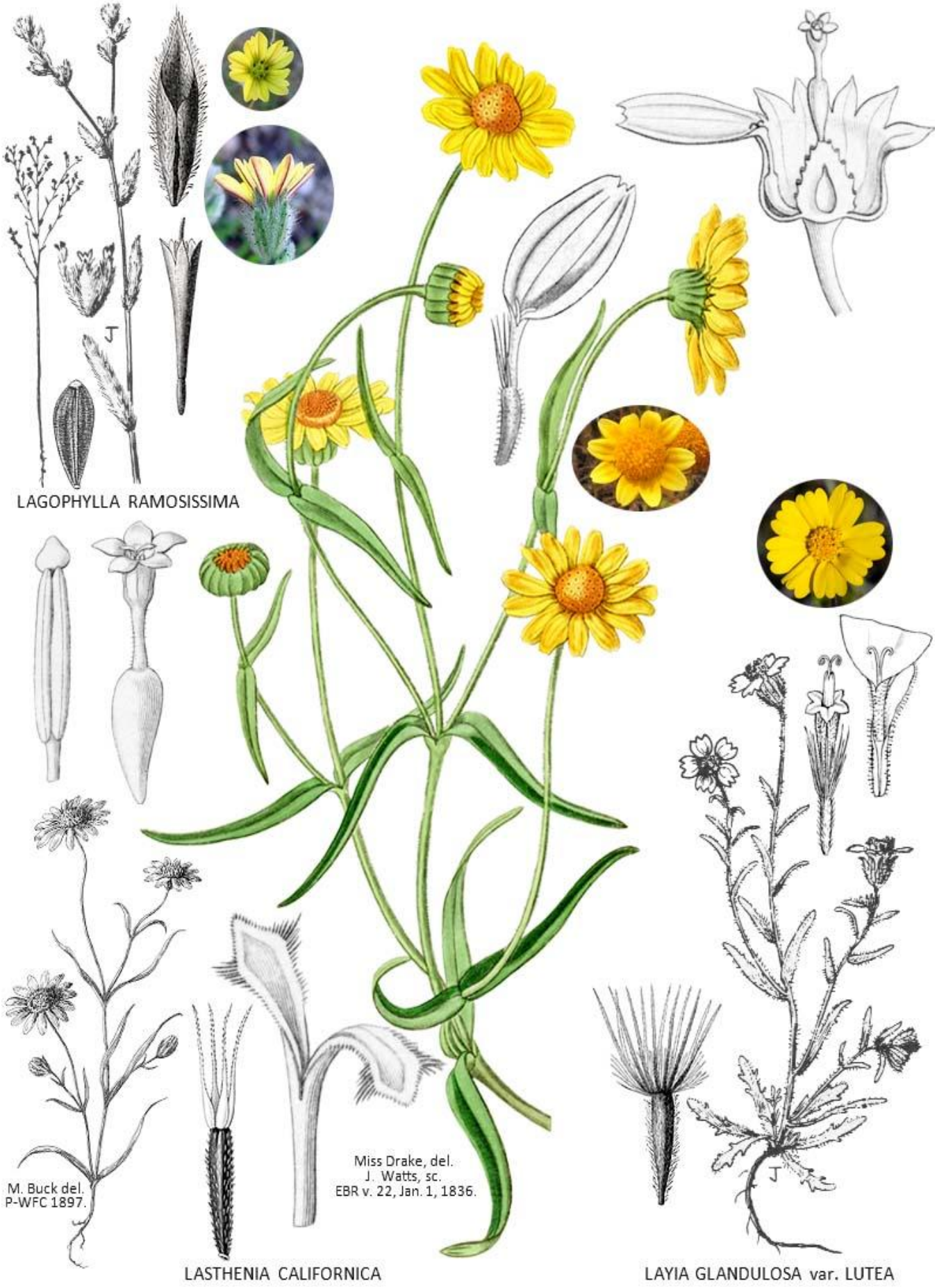
ERIGERON FOLIOSUS

ERIGERON CANADENSIS

ERIGERON PETROPHILUS


E. C. var. LAXIFLORUM
JM 1925.
EURYBIA RADULINA
JM 1925.
ERIOPHYLLUM CONFERTIFLORUM
JM 1925.
EUTHAMIA OCCIDENTALIS
HAZARDIA SQUARROSA
JM 1925.
HELENIUM PUBERULUM


HETEROTHECA SESSILIFLORA
JM 1925.
HIERACIUM ALBIFLORUM
HIERACIUM ARGUTUM
HULSEA HETEROCHROMA
F. Bauer del.
J. Sowerby sc.
S & S FG v. 9, 1837.
HYPOCHAERIS GLABRA
A. Dietrich del.
D–FRB v. 10, 1842.
LACTUCA SERRIOLA


LAGOPHYLLA RAMOSISSIMA
M. Buck del.
P-WFC 1897.
Miss Drake, del.
J. Watts, sc.
EBR v. 22, Jan. 1, 1836.
LASTHENIA CALIFORNICA
LAYIA GLANDULOSA var. LUTEA

LAYIA.

Layia is represented in the Tassajara region by one species. . . . . ***Layia glandulosa***. p. 77.

LESSINGIA.

1a. Style-branch appendage lanceolate and 0.3 to 1.3 mm. long; corolla tube not purple-brown banded inside. . . . . ***L. glandulifera***. p. 78

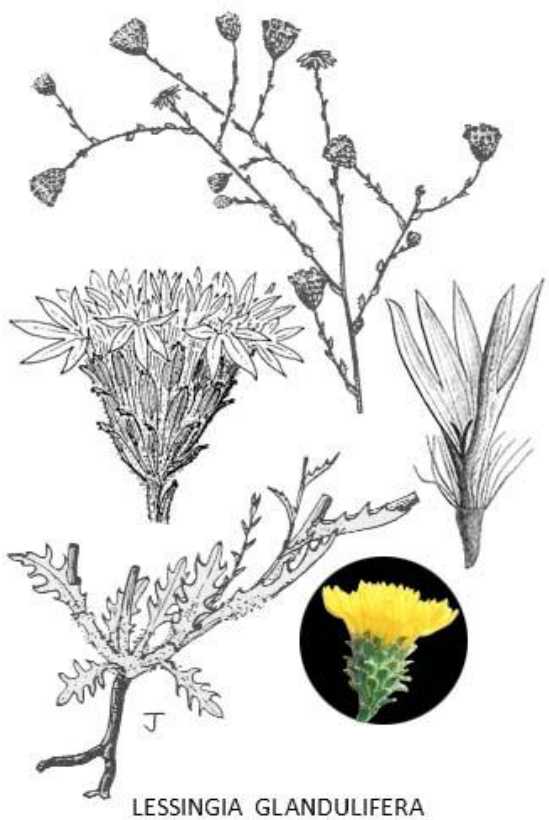
1b. Style-branch appendage short-triangular and 0.1 to 0.4 mm. long; corolla tube purple-brown banded inside. . . . . ***L. pectinata*** var. ***tenuipes***. p. 78

LOGFIA. COTTON ROSE, HERBA IMPIA.

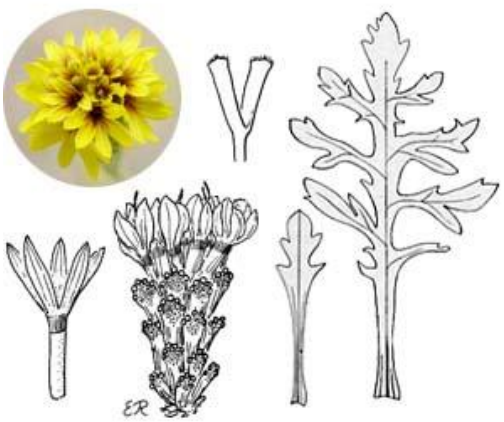
1a. Leaves subtending flower heads about as long to about 1.5 times as long as the heads, and generally oblong to linear or narrowly lanceolate. Lateral heads or clusters produced in the axils of the leaves. Outer chaff scales evenly curved above achenes, the longest less than 3.3 mm. . . . . ***L. filaginoides***. p. 78

1b. Leaves subtending flower heads mostly about 2 twice as long as the heads or longer, and generally narrowly lanceolate with a sharply acute and awl like apex. Lateral heads or clusters mostly restricted to the axils of the branches. Outer chaff scales bent abruptly inward above achenes, the longest 3.3 mm. or more in length. . . . . ***L. gallica***. p. 78

Continued on page 79.

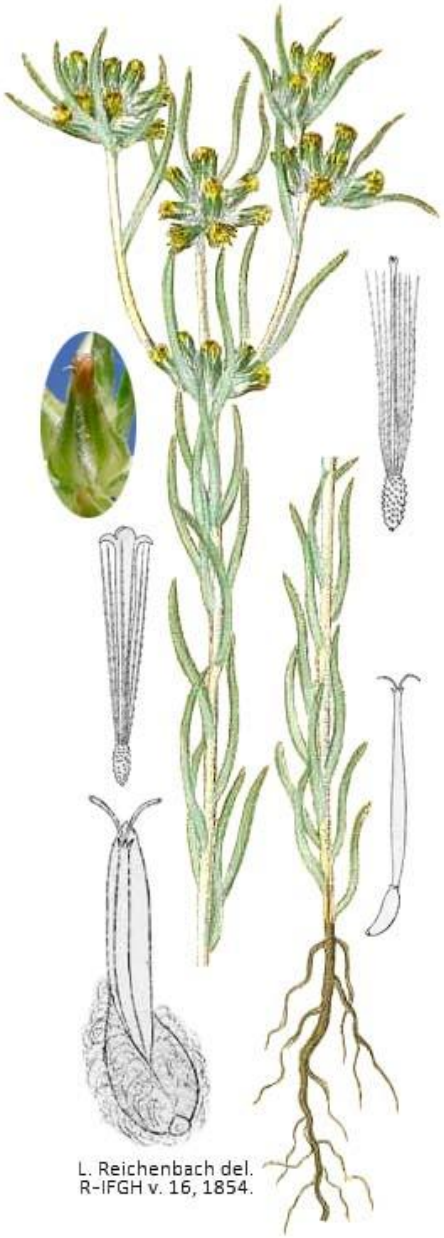


LESSINGIA GLANDULIFERA



LESSINGIA PECTINATA

LOGFIA FILAGINOIDES



LOGFIA GALLICA

MADIA. TARWEED, GUMWEED.

1a. Plants small and very inconspicuous. Disk flowers 1 or 2 per head, ray flowers 5 to 8, the ligules not exceeding 1 mm. in length. . . . . ***M. exigua***. p. 80.

1b. Plants larger and more conspicuous. Disk flowers more than 15 per head, ray flowers 5 to 20, the ligules 2 to 20 mm. long:

2a. Lateral flower heads mostly subsessile or on peduncles shorter than the head. Disk flowers fertile (perfect). Ray flowers 8 to 12, the ligules 2 to 8 mm. long. . . . . ***M. gracilis***. p. 80.

2b. Lateral flower heads mostly produced on peduncles longer to much longer than the head. Disk flowers sterile (staminate). Ray flowers mostly 8 to 20, the ligules 6 to 20 mm. long. . . . . ***M. elegans***. p. 80.

MALACOTHRIX.

1a. Plants acaulescent, and thus the flower heads are produced singularly on scapes. The leaves are strictly basal and are divided into linear segments. . . . . ***M. californica***. p. 81.

1b. Plants caulescent, and thus the flower heads are produced in branching inflorescens. The leaves are not strictly basal, but become much reduced in size and complexity upwards, and are variously lobed or toothed, but not into linear segments:

2a. Flowers bright yellow, the outer ligules generally exserted beyond the involucre less than 5 mm. . ***M. clevelandii***. p. 81.

2b. Flowers white (or sometimes yellowish or pinkish), the outer ligules exserted beyond involucre more than 5 mm. . . . ***M. floccifera***. p. 81.

MICROPUS.

Micropus is represented in the Tassajara region by one species. . . . . ***Micropus californicus***. p. 81.

PETASITES. COLT'S FOOT, BUTTERBUR.

Petasites is represented in the Tassajara region by one species. . . . . ***Petasites frigidus*** var. ***palmatus***. p. 82.

PSEUDOGNAPHALIUM. EVERLASTING, CUDWEED.

1a. Upper surface of leaves sparsely pubescent to subglabrous, and thus light to deep green:

2a. Leaves green on both surfaces. . . . . ***P. californicum***. p. 83.

2a. Leaves deep green above and densely white woolly below. . . . . ***P. biolettii***. p. 83.

1b. Leaves densely to loosely whitish to grayish woolly on both surfaces:

3a. Plants densely white woolly and more or less aromatic. Basal leaves more or less strongly tufted. Perennial or sometimes biennial herbs:

4a. Lower leaves spatulate to oblanceolate and not strongly decurrent at the base. . . . . ***P. microcephalum***. p. 83.

4b. Lower leaves narrowly oblong-oblanceolate and very strongly decurrent at the base. . . . . ***P. beneolens***. p. 83.

3b. Plants densely to loosely gray or whitish woolly and not or only slightly aromatic. Basal leaves often crowded but not strongly tufted. Annual or sometimes biennial herbs:

5a. Leaves strongly decurrent. Pappus bristles falling singularly. Flower heads 3.8 to 5.2 mm. long. ***P. stramineum***. p. 83.

5b. Leaves not or only slightly decurrent. Pappus bristles falling in clusters. Flower heads 3 to 4.2 mm. long. . . . . ***P. luteoalbum***. p. 83.

PSILOCARPHUS. WOOLLY ROUND HEADS, WOOLLY MARBLES.

Psilocarphus is represented in the Tassajara region by one species. . . . . ***Psilocarphus tenellus***. p. 84.

RAFINESQUIA.

Rafinesquia is represented in the Tassajara region by one species. . . . . ***Rafinesquia californica***. p. 84.

RIGIOPAPPUS. RIGID PAPPUS SLENDER STEM.

The genus *Rigiopappus* is comprised of one species. . . . . ***Rigiopappus leptocladus***. p. 84.

SENECIO. GROUNDSEL, BUTTERWEED, RAGWORT.

1a. Subshrubs up to 15+ dm (60+") tall. Leaves narrowly linear and entire or divided into narrowly linear lobes. . . . . ***S. flaccidus*** var. ***douglasii***. p. 84.

1b. Annual herbs less than 6 dm. (2') tall. Leaves oblong in outline and regularly or irregularly pinnately short lobed. . . . . ***S. vulgaris***. p. 84.

SOLIDAGO. GOLDEN ROD.

Solidago is represented in the Tassajara region by one species. . . . . ***Solidago velutina*** subsp. ***californica***. p. 85.

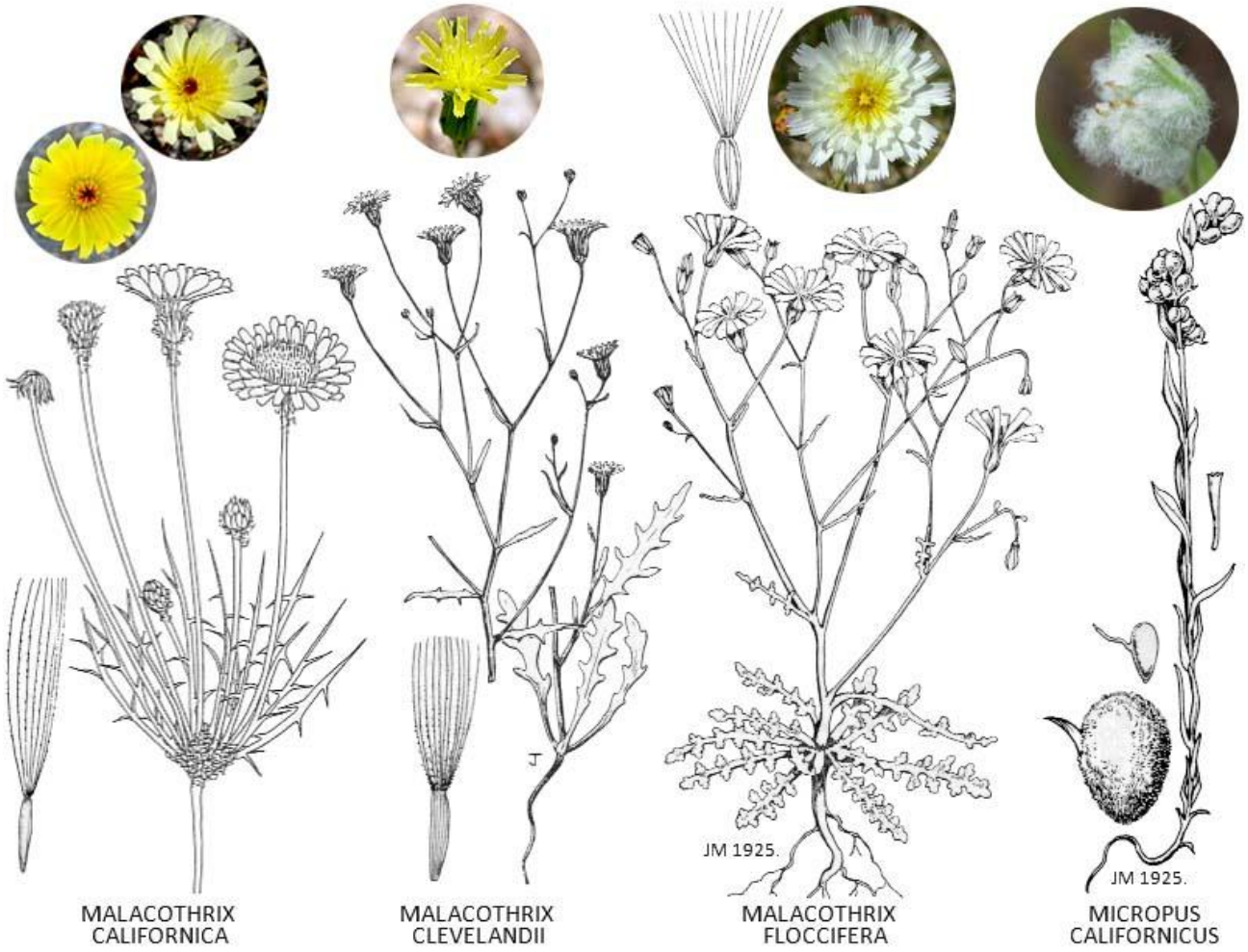
Continued on page 81.

Miss Drake, del.
J. Watts, sc.
EBR v. 17, Dec. 1, 1831.

MADIA ELEGANS

MADIA EXIGUA

MADIA GRACILIS



SONCHUS. SOW THISTLE.

Sonchus is represented in the Tassajara region by one introduced species. . . . . ***Sonchus oleraceus***. p. 85.

STEBBINSOSERIS. STEBBINS' CHICORY.

Stebbinsoseris is represented in the Tassajara region by one species. . . . . ***Stebbinsoseris heterocarpa***. p. 85.

STEPHANOMERIA. WREATH PLANT.

1a. Sides of achenes not grooved. Pappus bristles plumose throughout. . . . . ***S. virgata***. subsp. ***pleurocarpa***. p. 86.
1b. Sides of achenes longitudinally grooved. Pappus bristles plumose throughout or not:
2a. Outer phyllaries erect. Pappus bristles thickened at base, the lower portion of bristles not plumose. . . ***S. exigua*** subsp. ***coronaria***. p. 85.
2b. Outer phyllaries reflexed. Pappus bristles not thickened at base, the bristles plumose throughout. . . . . ***S. elata***. p. 85.

STYLOCLINE. NEST STRAW.

This genus is represented in the Tassajara region by one species. . . . . ***Stylocline gnaphaloides***. p. 86.

UROPAPPUS.

The genus *Uropappus* has only one species. . . . . ***Uropappus lindleyi***. p. 86.

WYETHIA. MULE EARS, COMPASS PLANT.

Wyethia is represented in the Tassajara region by one species. . . . . ***Wyethia helenioides***. p. 86.

Continued on page 87.

PETASITES FRIGIDUS var. PALMATUS

PSEUDOGNAPHALIUM BENEOLENS

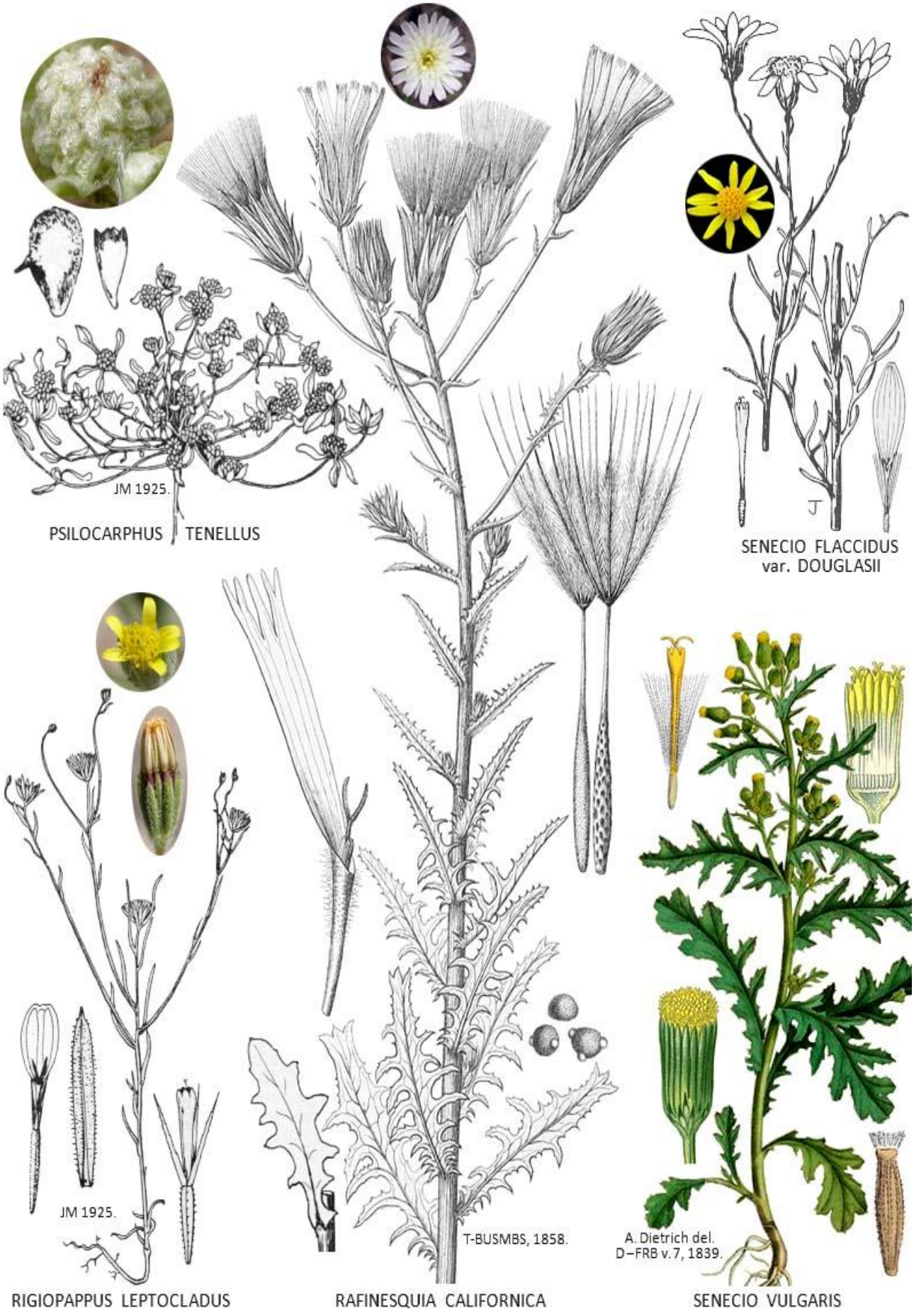
PSEUDOGNAPHALIUM BIOLETTII

PSEUDOGNAPHALIUM CALIFORNICUM

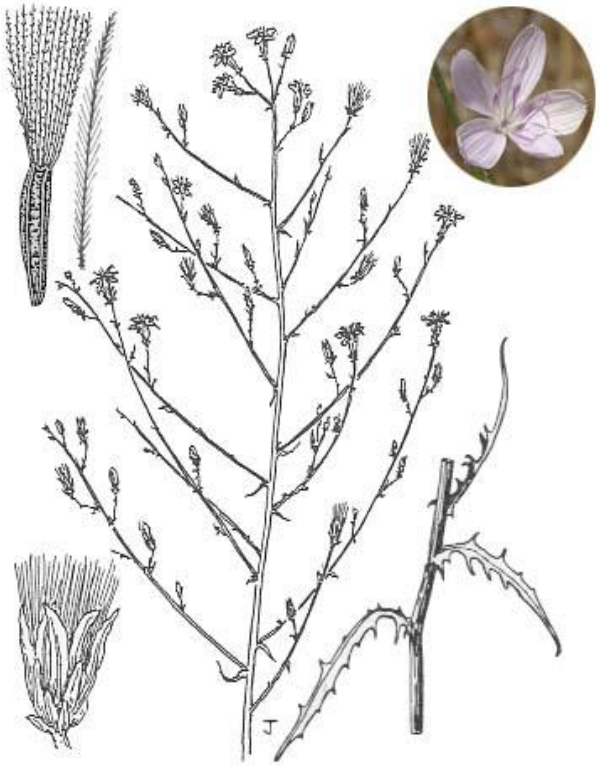
PSEUDOGNAPHALIUM LUETOALBUM

PSEUDOGNAPHALIUM MICROCEPHALUM

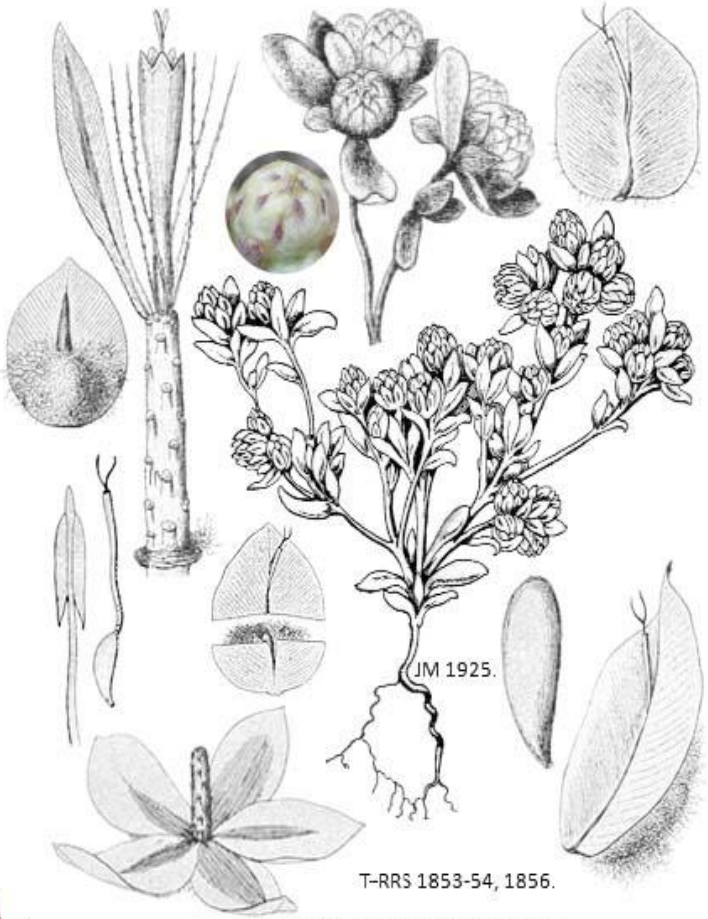
PSEUDOGNAPHALIUM STRAMINEUM


JM 1925.
PSILOCARPHUS TENELLUS
SENECIO FLACCIDUS
var. DOUGLASII
JM 1925.
T-BUSMBS, 1858.
A. Dietrich del.
D–FRB v.7, 1839.
RIGIOPAPPUS LEPTOCLADUS
RAFINESQUIA CALIFORNICA
SENECIO VULGARIS


C–FL v. 1, 1777
STEBBINSOSERIS HETEROCARPA
SONCHUS OLERACEUS
SOLIDAGO VELUTINA
subsp. CALIFORNICA
STEPHANOMERIA ELATA
STEPHANOMERIA EXIGUA subsp. CORONARIA

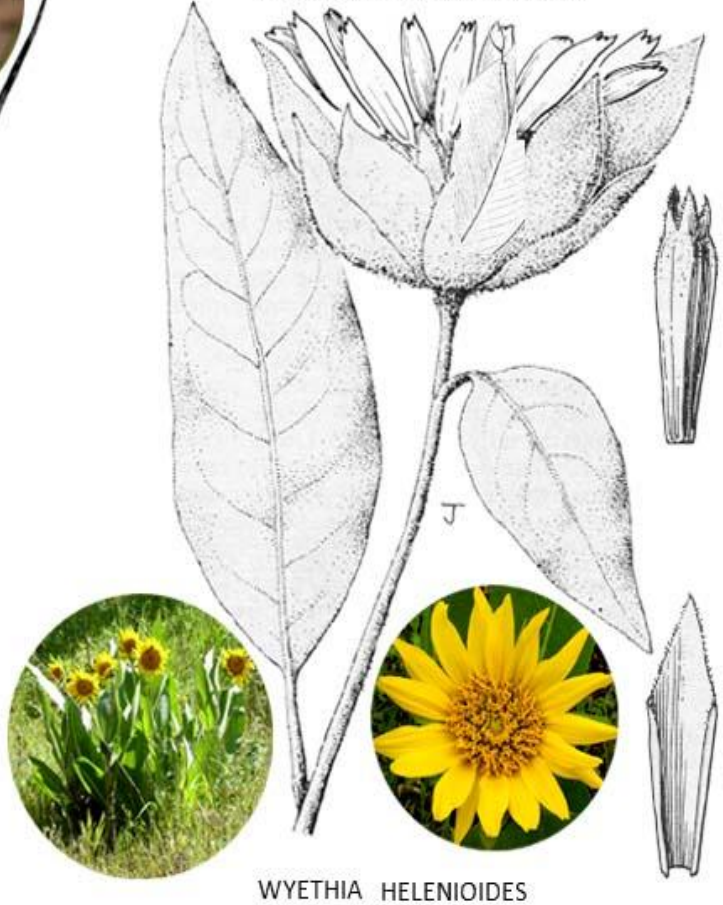


STEPHANOMERIA VIRGATA subsp. PLEUROCARPA

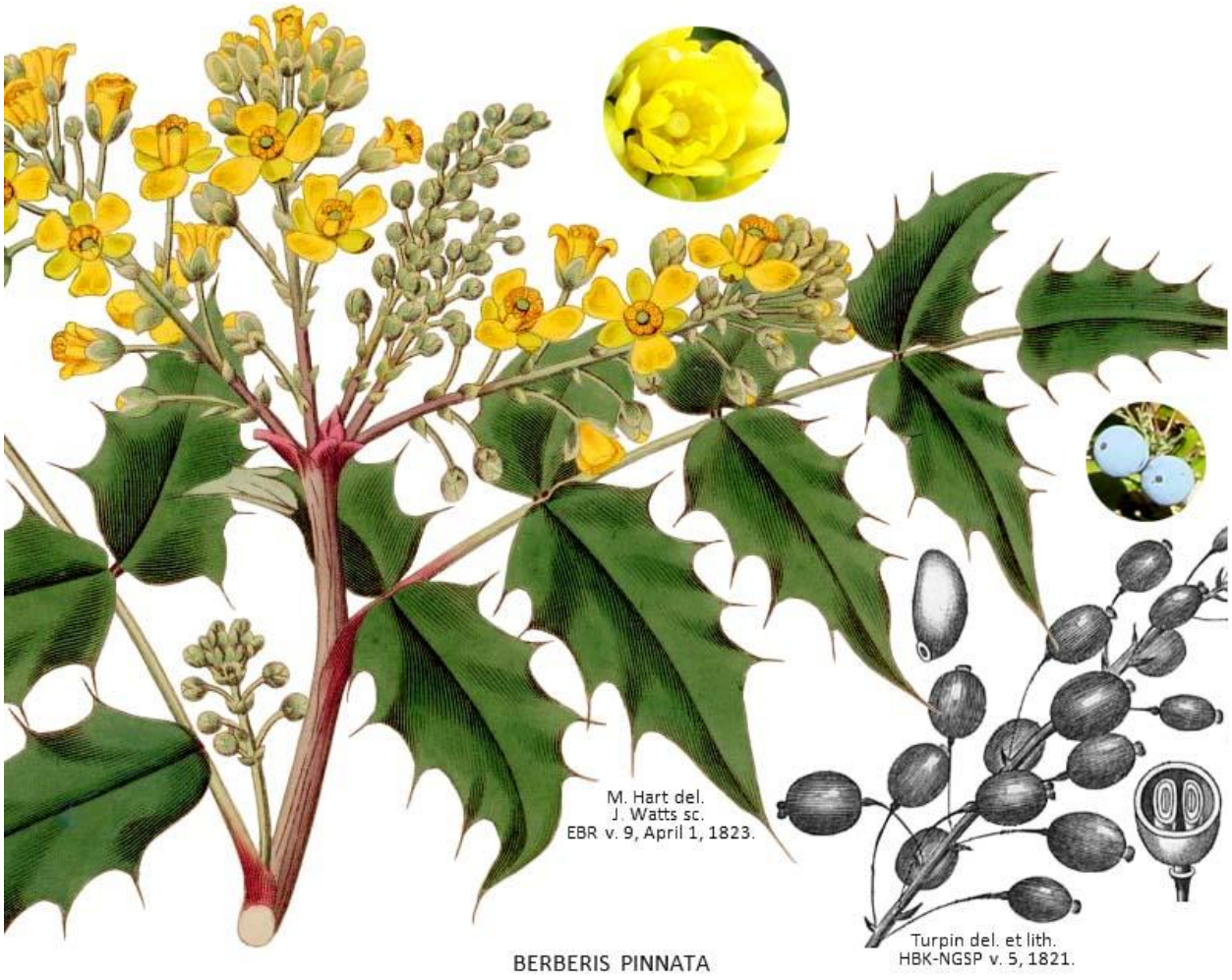


STYLOCLINE GNAPHALOIDES

UROPAPPUS LINDLEYI



WYETHIA HELENIOIDES



BERBERIDACEAE. BARBERRY FAMILY.

BERBERIS. BARBERRY, MAHONIA.

Berberis is represented in the Tassajara region by one species. . . . . ***Berberis pinnata***. p. 87.

BETULACEAE. BIRCH FAMILY.

ALNUS. ALDER.

Alnus is represented in the Tassajara region by one species. . . . . ***Alnus rhombifolia***. p. 88-89.

BORAGINACEAE. BORAGE FAMILY.

1a. Fruits consisting of one to four nutlets. The ovary is deeply lobed, and the style bases are more or less hidden within lobes:

2a. Perennial herbs from taproots. Leaf blades about 8 to 15+ cm. long, generally ovate, and abruptly constricting to a relatively long and clearly defined petiole. Corollas mostly blue, fading to rose violet with age. Nutlets armed with hooked barbs, which spread outward in maturity. . . . . ***Cynoglossum***.

2b. Annual herbs. Leaf blades narrowly linear to lanceolate or oblanceolate, and sessile or gradually tapering to a poorly defined petiole. Corollas white, yellow or orange. Fruits not armed and not spreading outward in maturity (except in *Pectocarya*):

3a. Corollas orange to yellow. . . . . ***Amsinckia***.

3b. Corollas white:

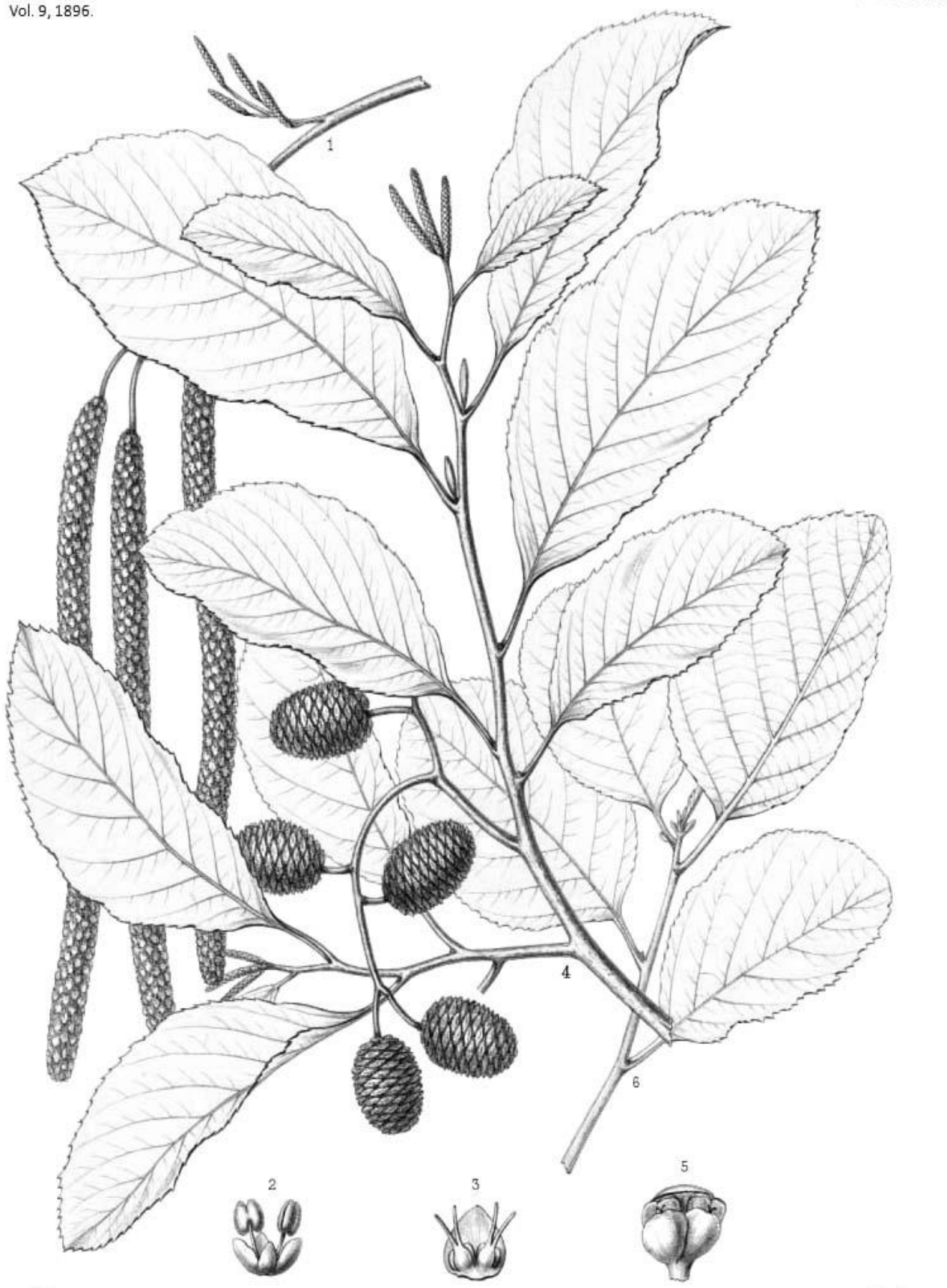
4a. Nutlets with hooked prickles on the upper margins, and spreading widely from the base in maturity (and thus are fully exposed). Very small and thus inconspicuous plants. . . . . ***Pectocarya***.

4b. Nutlets without hooked prickles on the margins, and not spreading in maturity (and thus remain hidden within the calyx lobes, except in Plagiobothrys nothofulvus, in which the upper portion of the calyx falls as a unit). Larger and thus more conspicuous plants:

Continued on page 90.

Silva of North America.
Vol. 9, 1896.

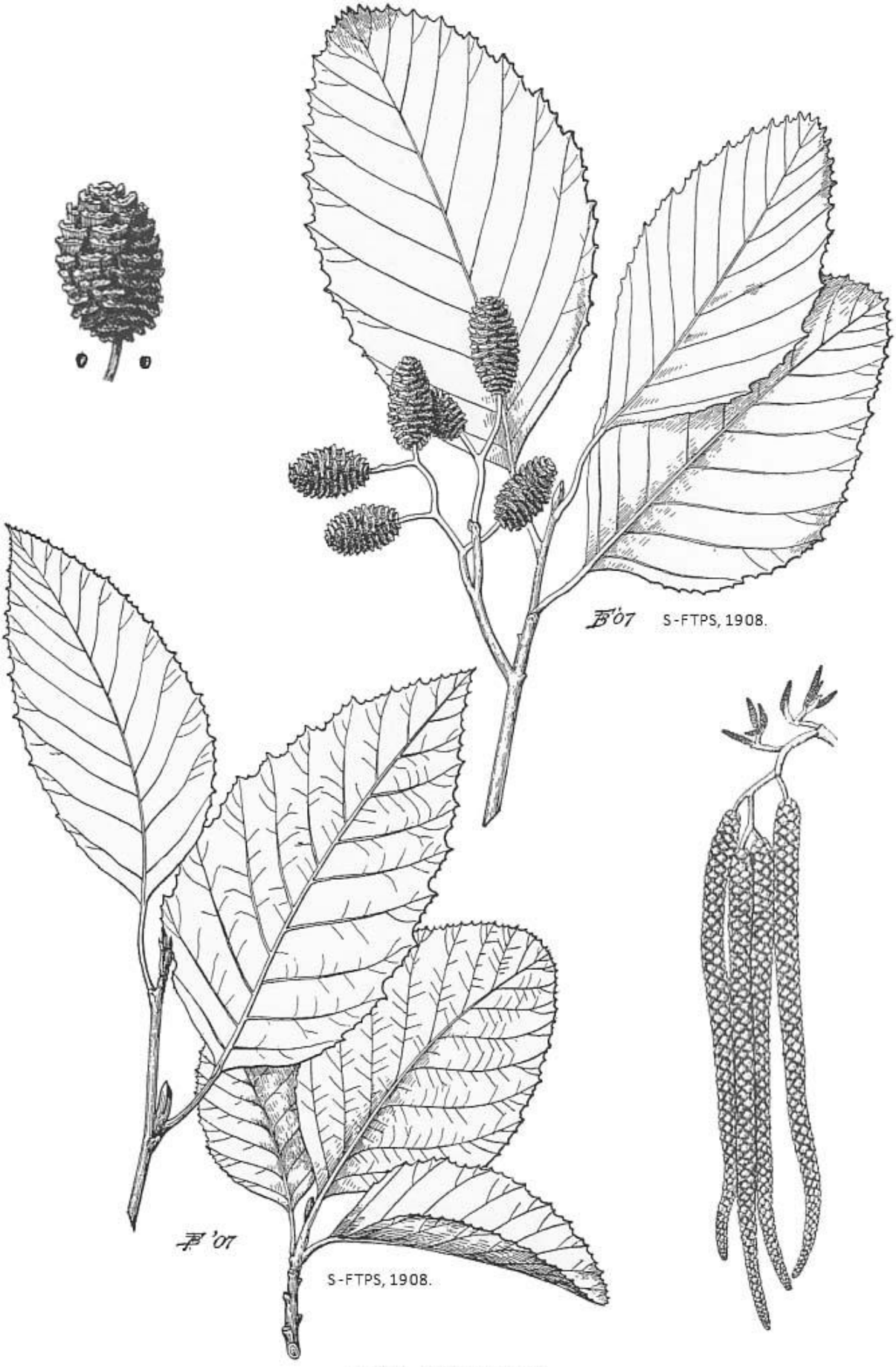
Tab. CCCCLVI.



C. E. Faxon del.
A. Riocreux direx.

Rapine sc.
Imp. J. Taneur, Paris

ALNUS RHOMBIFOLIA, Nutt.



ALNUS RHOMBIFOLIA

Boraginaceae key continued:

5a. Nutlets with vertical groves at the point of attachment to the ovary. Calyces armed with prickly hairs. . . . . ***Cryptantha***.

5b. Nutlets with elevated scars at the point of attachment to the ovary. Calyces with coarse but not prickly hairs. . . . ***Plagiobothrys***.

1b. Fruits consisting of capsules that contain one or more (usually many more) seeds. Ovary entire or shallow lobed, the style base visible:

6a. Rhizomatic evergreen shrubs or subshrubs. Leaves entire or toothed, but not lobed or divided into leaflets. . . . . ***Eriodictyon***.

6b. Annual or perennial herbs (some perennial species may be slightly woody near the base). Leaves mostly deeply lobed or divided into leaflets (simple and sharply toothed in some annual species):

7a. Flowers produced in readily evident and mostly strongly coiled racemes. Calyces without reflexed appendages between lobes. Ovary two chambered:

8a. Flowers generally pendulous. Corollas yellow, becoming dry and paper like, and persisting after the fruits are mature. . . . . ***Emmenanthe***.

8b. Flowers generally facing upward or outward. Corollas not yellow (or only the tube is yellow), not becoming dry, and generally readily deciduous. . . . . ***Phacelia***.

7b. Flowers solitary or remote in weakly coiled racemes. Calyces with minute or well developed reflexed appendages between the lobes. Ovary one chambered:

9a. Stems with backwardly curved prickles that allow the plant to climb on other plants. Leaves strongly clasping the stem. . . . . ***Pholistoma***.

9b. Stems without prickles. Leaves not clasping the stem. . . . . ***Nemophila***.

AMSINCKIA. FIDDLENECK, FIREWEED.

1a. Corollas deep to pale orange, about 7 to 11 mm. long, the tubes exceeding the calyx lobes. . . . . ***A. intermedia***.

1b. Corollas pale yellow or orangish yellow, about 4 to 7 mm. long, the tubes barely exceeding the calyx lobes. ***A. menziesii***.

CRYPTANTHA.

1a. Nutlets produced in 4's, and roughened with pronounced bumps:

2a. Plants loosely branched, usually with several well developed ascending laterals. Corolla limbs 3 to 8 mm. in diameter. ***A. muricata*** var. ***muricata***. p. 92.

2b. Plants with one erect stem or with several erect fastigiate laterals. Corolla limbs 1 to 3.5 mm. in diameter. . . . . ***C. muricata*** var. ***jonesii***. p. 92.

1b. Nutlets singular or in 2's or 3's, and either minutely roughened or very smooth and shiny:

3a. Nutlets textured with minute rounded bumps and pits, and thus they are semi glossy:

4a. Stems strigose. Calyx in fruit angled away from the stem; the calyx lobes are oblong and not finely bristly. Corollas less than 3.5 mm. wide. Nutlets singular and 2.2 to 2.5 mm. long. . . . . ***C. corollata***. p. 92.

4b. Stems strigose and spreading hispid. Calyx in fruit appressed to the stem; the calyx lobes are linear and finely bristly. Corolla up to 5 mm. wide. Nutlets often 2 (or rarely 3), and 1.5 to 2 mm. long. . . . . ***C. rattanii***. p. 92.

3b. Nutlets smooth and shiny:

5a. Calyx hairs strongly hooked or curved. . . . . ***C. flaccida***. p. 92.

5b. Calyx hairs straight, or just slightly curved:

6a. Fruiting calyx 1.5 to 2 mm. long, and with spines about as long or longer than the calyx. Styles less than half as long as the nutlets. . . . . ***C. microstachys***. p. 92.

6b. Fruiting calyx 2 to 3.5 mm. long, and with spines less than half as long as the calyx. Styles almost as long as the nutlets:

7a. Flowers sessile or on pedicels less than ½ mm. long. Fruiting calyxes more or less appressed to stem, the lobes linear. Corolla limbs 1 to 2.5 mm. in diameter. . . . . ***C. clevelandii*** var. ***clevelandii***. p. 92.

7b. Flowers on pedicels ½ mm to 1 mm. long. Fruiting calyxes not appressed to stem, the lobes ovate. Corolla limbs 2 to 5 mm. in diameter. . . . . ***C. clevelandii*** var. ***florosa***. p. 92.

CYNOGLOSSUM. HOUND'S TONGUE.

Cynoglossum is represented in the Tassajara region by one species. . . . . ***Cynoglossum grande***. p. 93.

EMMENANTHE.

Emmenanthe consists of one species. . . . . ***Emmenanthe penduliflora***. p. 93.

ERIODICTYON. YERBA SANTA.

1a. Leaves dark green and sticky (or blackish & sooty when old). Corollas 8 to 17 mm. long, funnel shaped, and pale lavender to purple. . . . . ***E. californicum***. p. 94.

1b. Leaves white woolly and not sticky. Corollas 2 to 5 mm. long, unshaped, and white to pale lavender. . . ***E. tomentosum***. p. 94.

NEMOPHILA.

1a. Corollas 15 to 35 mm. wide, bright blue with white centers, and thus very conspicuous. Plants generally of open habitats. ***N. menziesii***. p. 95.

1b. Corollas less than 7 mm. wide, white, bluish white or blue, and inconspicuous. Plants generally of shady habitats:

2a. Auricles (reflexed calyx appendages positioned between the sepals) up to 3 mm. long, and least 1/3 as long as the sepals. . . . . ***N. pedunculata***. p. 96.

2b. Auricles rudimentary, or 1 mm. or less long:

3a. Larger leaves deeply cleft, but mostly not divided into distinct leaflets. . . . . ***N. parviflora***. p. 96.

3b. Larger leaves pinnately divided into leaflets:

4a. All leaves opposite. Corollas white and about as long as the calyx lobes. . . . . ***N. pulchella*** var. ***fremontii***. p. 96.

4b. Uppermost leaves of mature plants alternate. Corollas white to blue and well exserted beyond the calyx lobes. . . . ***N. heterophylla***. p. 96.

PECTOCARYA. COMBED NUTS.

1a. Plants with prostrate stems and nutlets that are longer than wide. . . . . ***P. penicillata***. p. 96.

1b. Plants with generally erect stems and nutlets that are nearly as wide as long. . . . . ***P. pusilla***. p. 96.

PHACELIA.

1a. Annual herbs (some can be very robust during the first spring after a fire):

2a. Corollas mostly blue, purplish blue or purple:

3a. Corolla lobes blue. Main stem erect, simple or branched, the branches ascending. Cauline leaves well developed and simple. . . . . ***P. viscida***. p. 99.

3b. Corollas lobes purple to light blue. Stems basal and mostly prostrate to ascending. Leaves primarily basal and pinnately lobed. . . . . ***P. douglasii***. p. 97.

2a. Corollas white or mostly white (often pale or dingy white):

4a. Leaves pinnately or bipinnately divided into many pinnately lobed leaflets. . . . . ***P. distans***. p. 97.

4b. Leaves not divided into distinct leaflets (in *P. malvifolia*, some of the largest lower leaves can be pinnately divided into three leaflets):

5a. Leaves narrowly oblong to narrowly elliptic or narrowly oblanceolate outline, and pinnately divided into many deep to shallowly cut lobes. Corolla throats yellow. . . . . ***P. brachyloba***. p. 97.

5b. Leaves broadly elliptic, obovate or deltoid in outline, and simple (in *P. malvifolia*, some of the largest lower leaves can be pinnately divided into three leaflets): Corolla throats not yellow.

6a. Leaves elliptic to ovate or broadly obovate, the margins entire or shallowly to very deeply saliently lobed or toothed (all the leaves are simple). Stems without prickly bristles. . . . . ***P. grisea***. p. 98.

6b. Leaves ovate to deltate, the margins shallowly to deeply serrately lobed (lower and main stem cauline leaves of larger plants are often three foliate). Stems armed with stiff and prickly bulb based bristles. ***P. malvifolia***. p. 98.

1b. Perennial herbs, sometimes woody at the base, and generally evergreen:

7a. Leaves pinnately divided into leaflets with variously lobed, cleft or toothed margins. . . . . ***P. ramosissima***. p. 99.

7b. Leaves simple or pinnately divided into simple leaflets, the margins are entire:

8a. Corolla more or less tubular, the lobes mostly erect or curving inward at the apex. Calyx lobes generally overlapping (imbricated) during the fruiting stage of the flowers. . . . . ***P. imbricata***. p. 97.

8b. Corollas campanulate (bell or bowl shaped), the lobes curving outward at the apex. Calyx lobes not overlapping during the fruiting stage of the flowers:

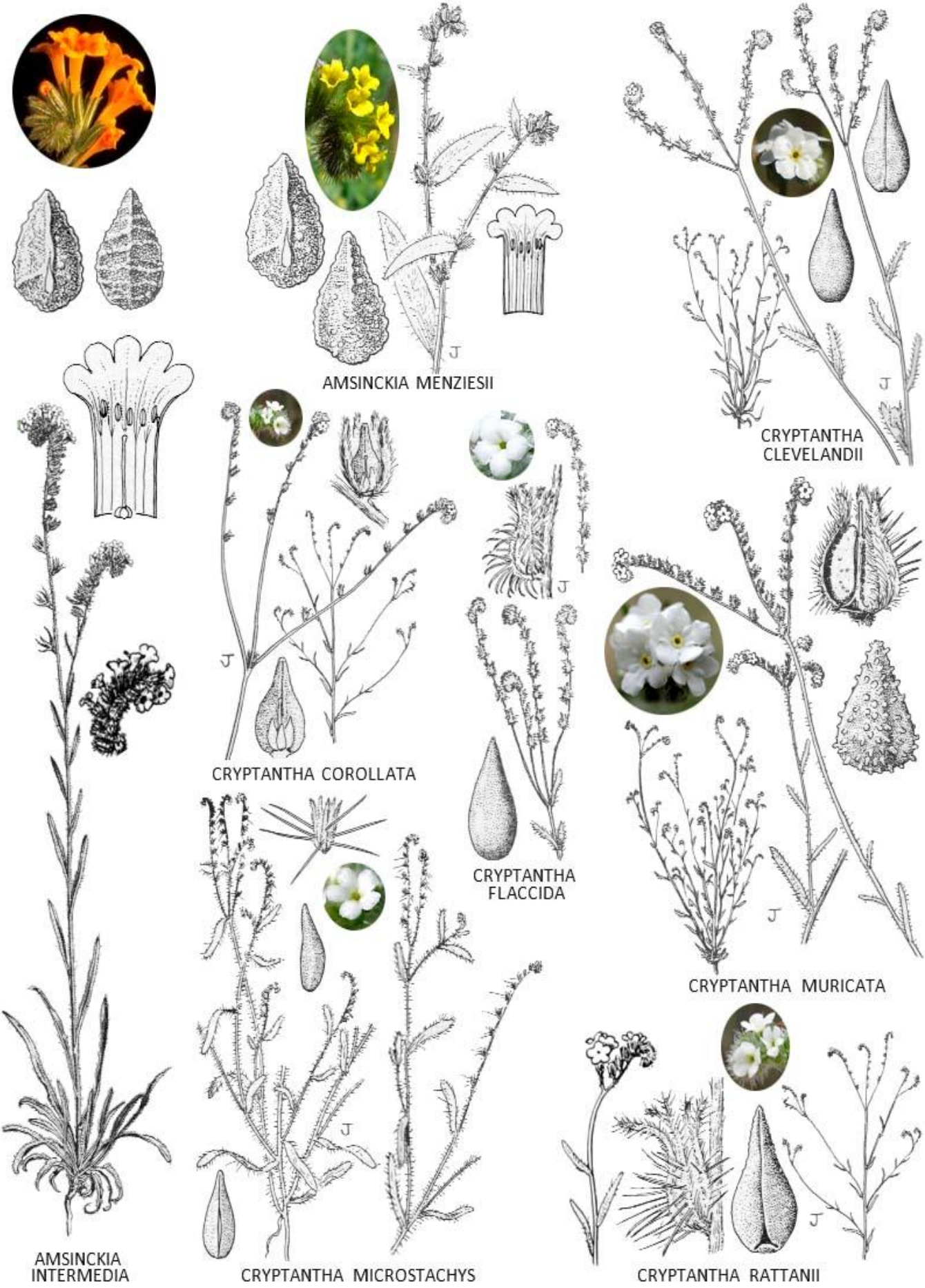
9a. Corollas white or creamy white and 4 to 8 mm. in diameter. Calyx lobes 8 to 12 mm. long during the fruiting stage. ***P. egena***. p. 97.

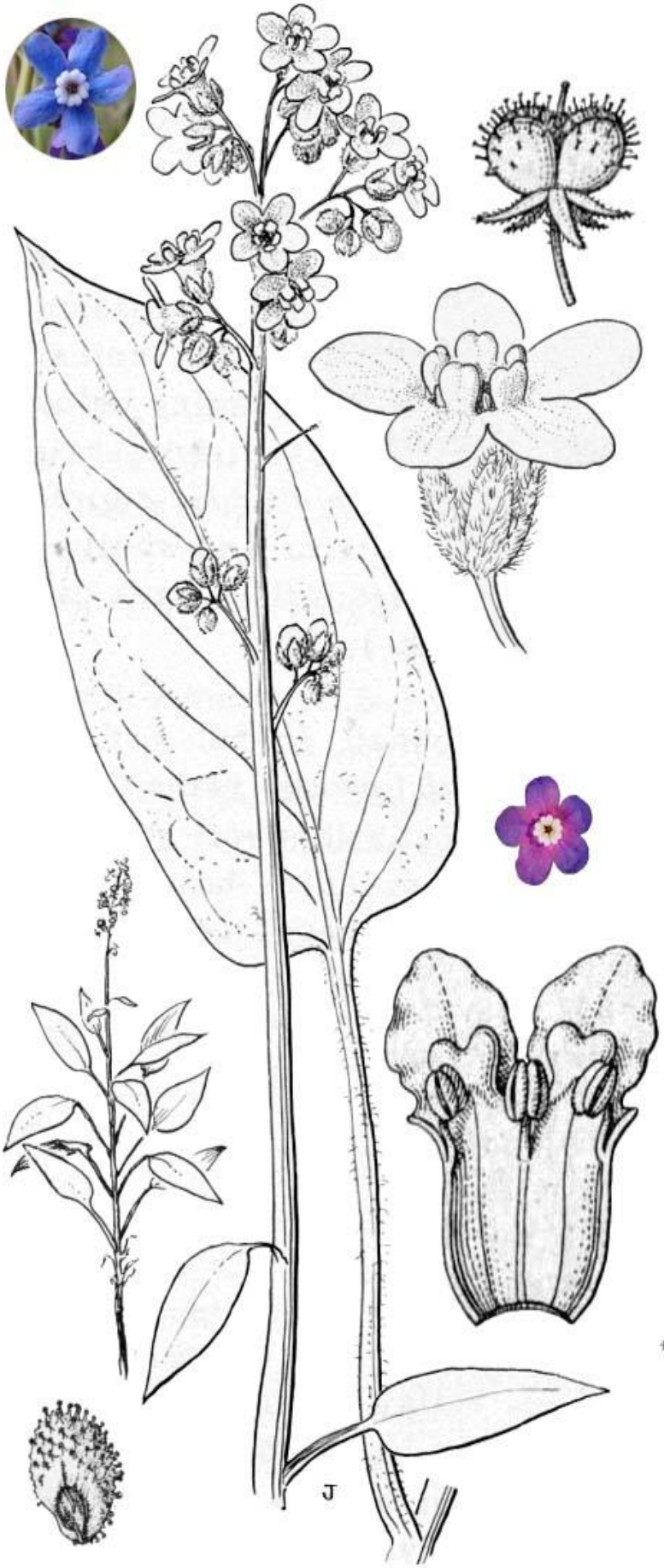
9b. Corollas pale green to yellowish white and 3 to 6 mm. in diameter. Calyx lobes 5 to 8 mm. long during the fruiting stage. . . . . ***P. nemoralis***. p. 98.

PHOLISTOMA. FIESTA FLOWER.

The genus *Pholistoma* is represented in the Tassajara region by one species. . . . . ***P. auritum***. p. 100.

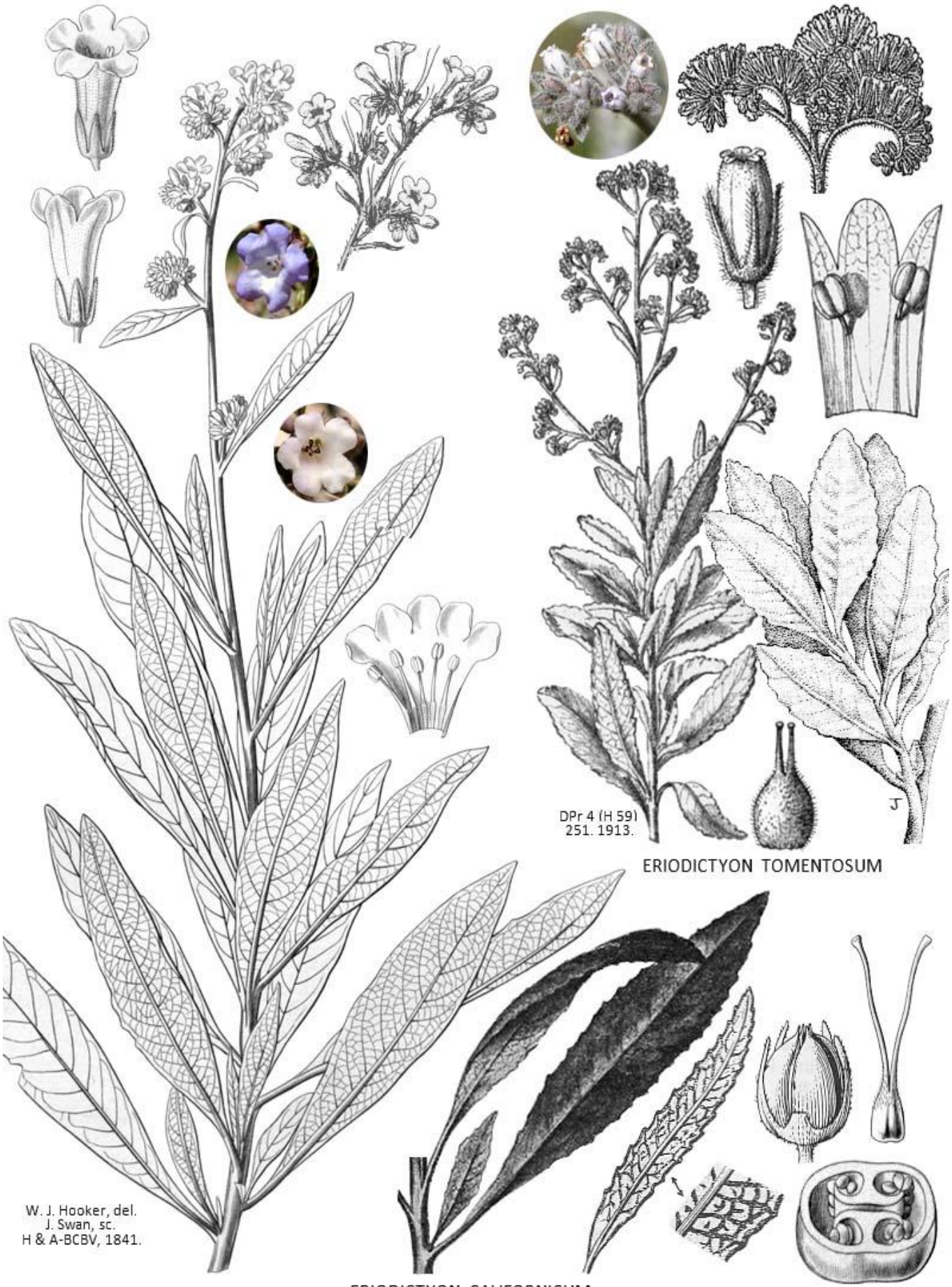
Continued on page 102.


AMSINCKIA MENZIESII
CRYPTANTHA CLEVELANDII
CRYPTANTHA COROLLATA
CRYPTANTHA FLACCIDA
CRYPTANTHA MURICATA
AMSINCKIA INTERMEDIA
CRYPTANTHA MICROSTACHYS
CRYPTANTHA RATTANII



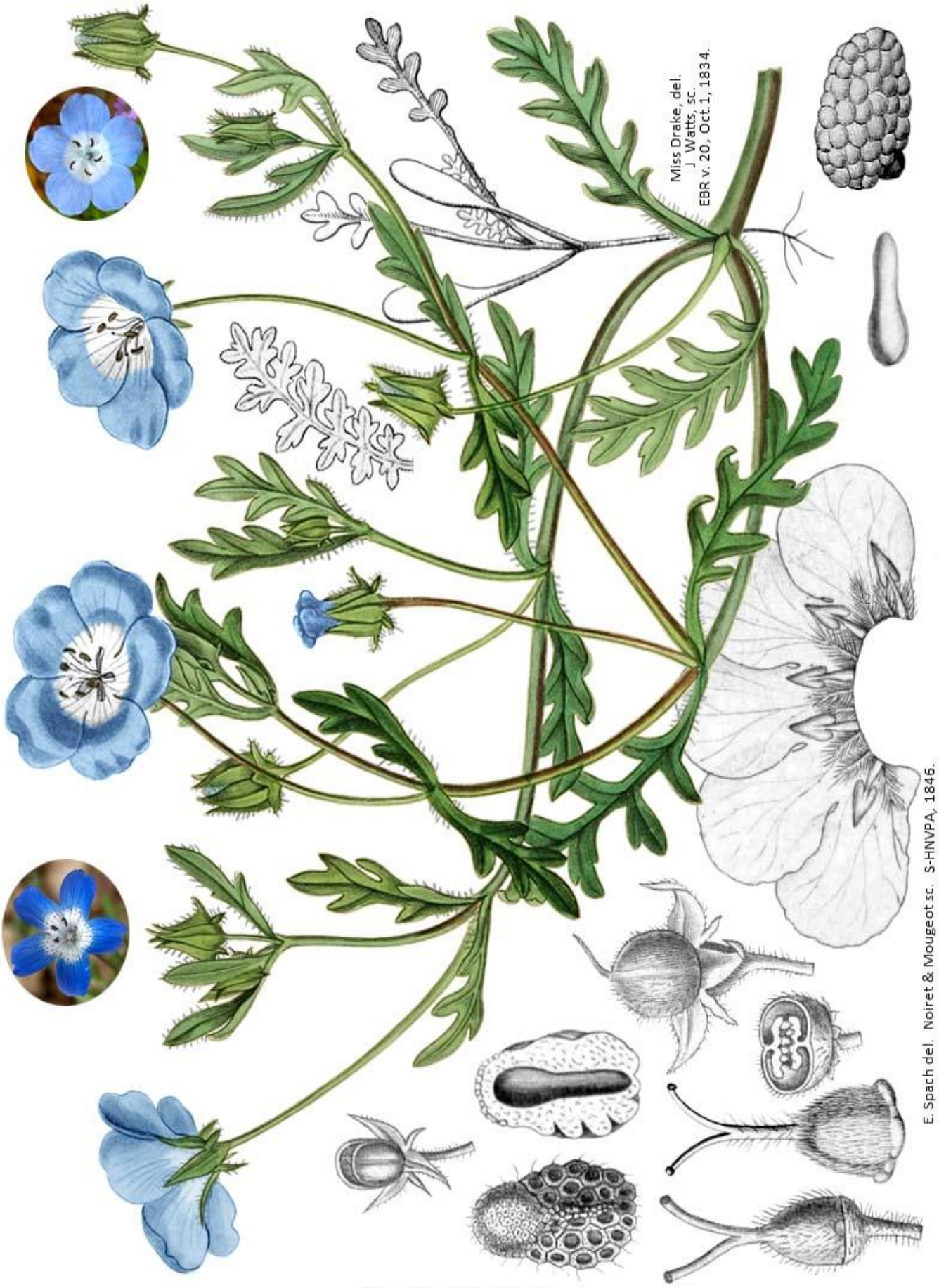
CYNOGLOSSUM GRANDE

EMMENANTHE PENDULIFLORA

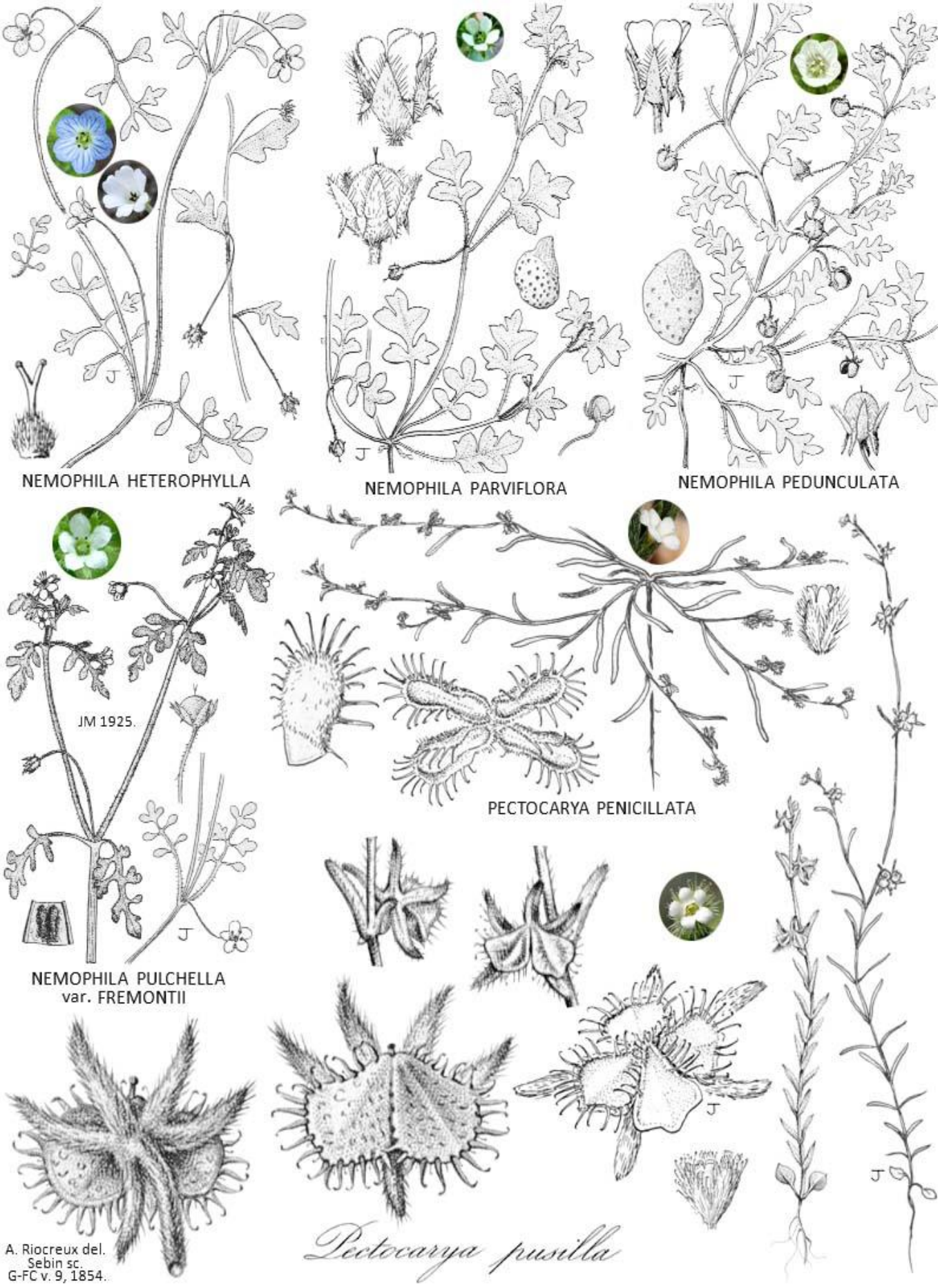


ERIODICTYON TOMENTOSUM

ERIODICTYON CALIFORNICUM

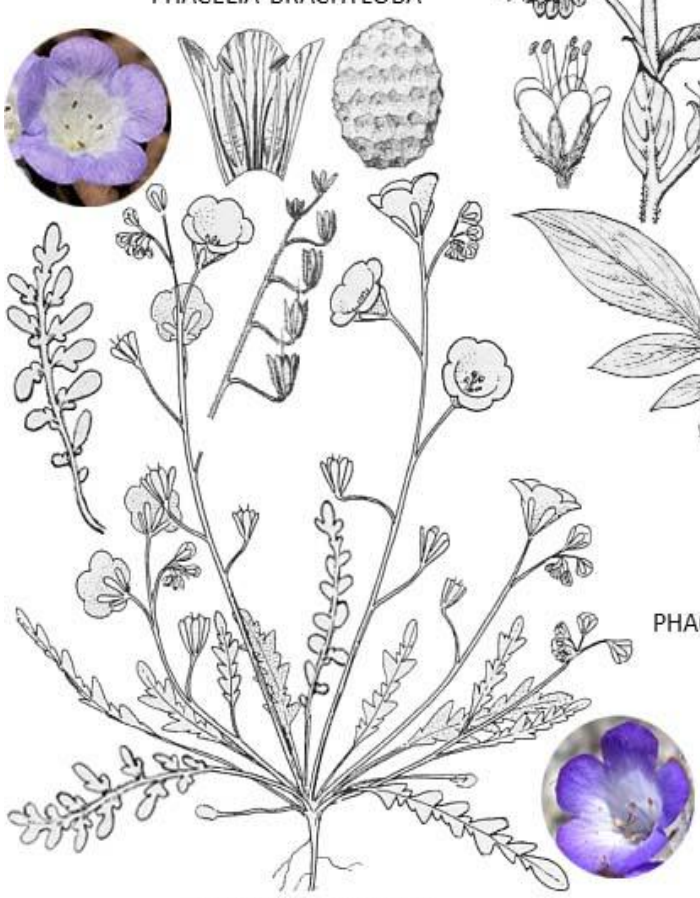


NEMOPHILA MENZIESII


NEMOPHILA HETEROPHYLLA
NEMOPHILA PARVIFLORA
NEMOPHILA PEDUNCULATA
JM 1925.
NEMOPHILA PULCHELLA
var. FREMONTII
PECTOCARYA PENICILLATA
A. Riocreux del.
Sebin sc.
G-FC v. 9, 1854.
Pectocarya pusilla

PHACELIA BRACHYLOBA

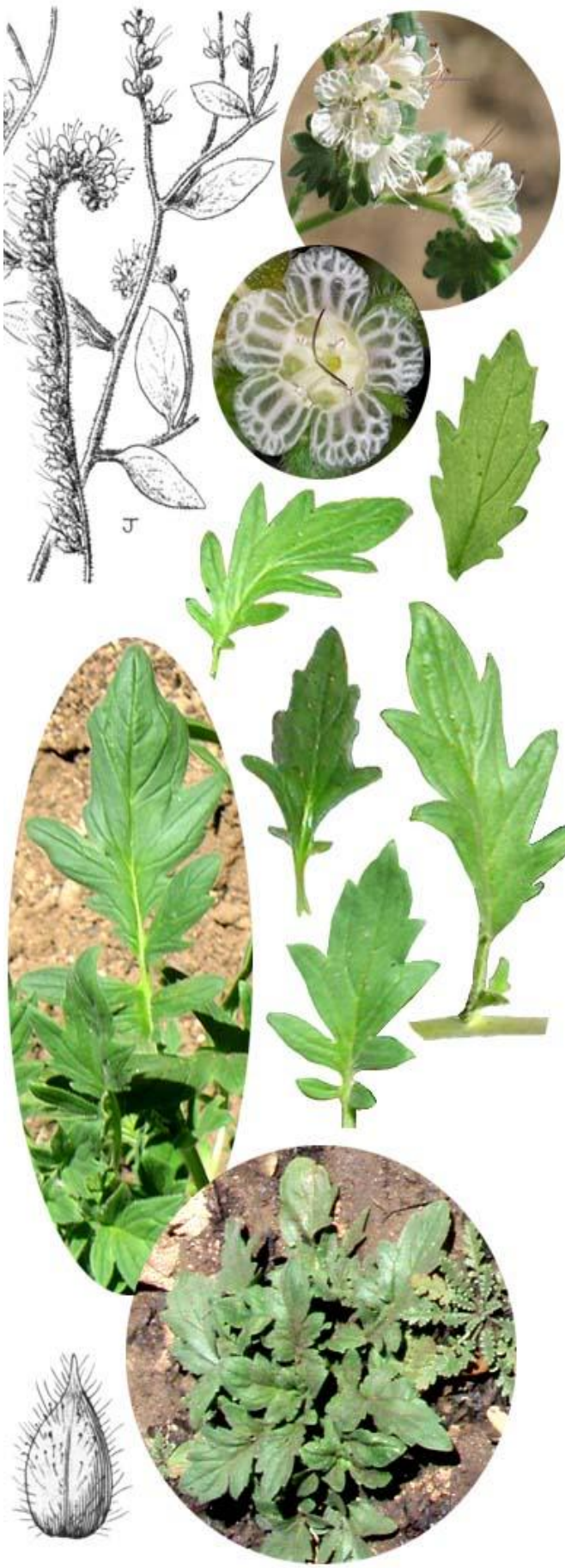
PHACELIA DISTANS



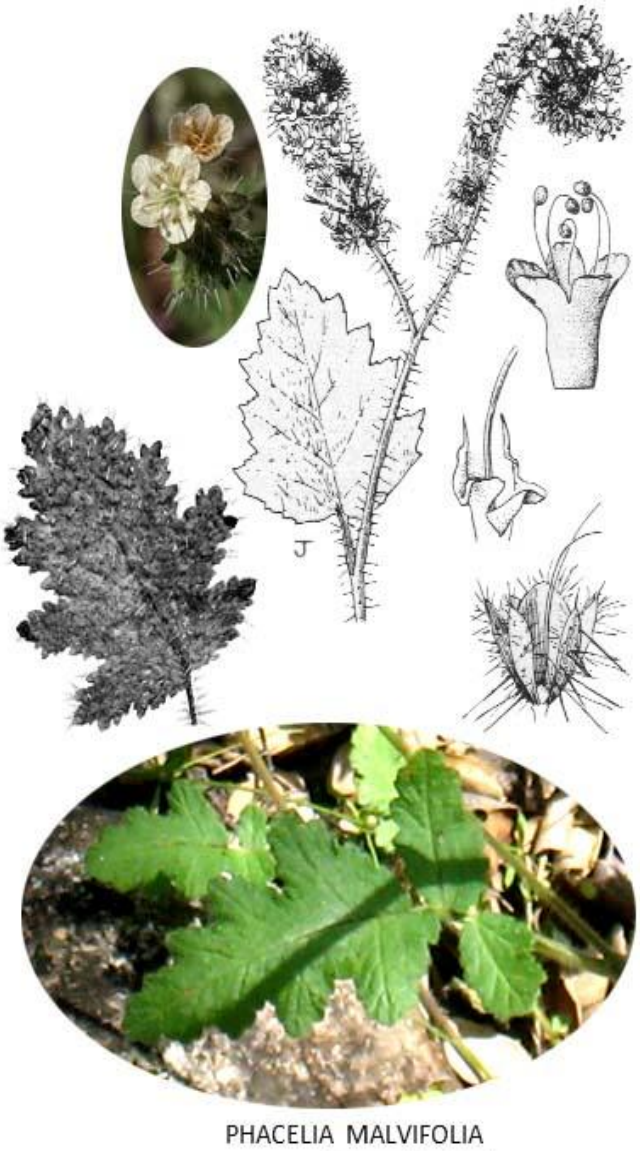
PHACELIA DOUGLASII

PHACELIA EGENA

PHACELIA IMBRICATA

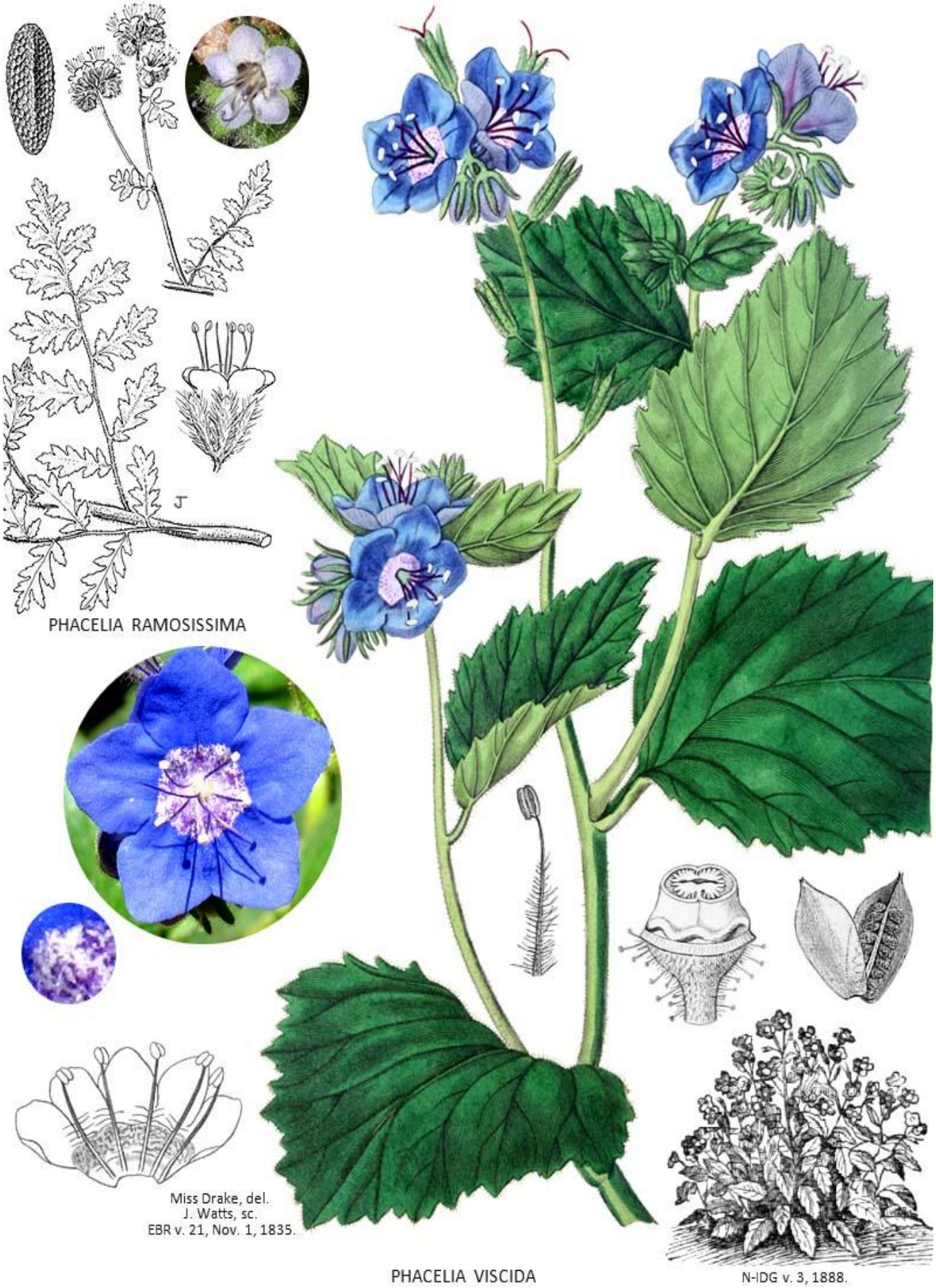


PHACELIA GRISEA



PHACELIA MALVIFOLIA

PHACELIA NEMORALIS

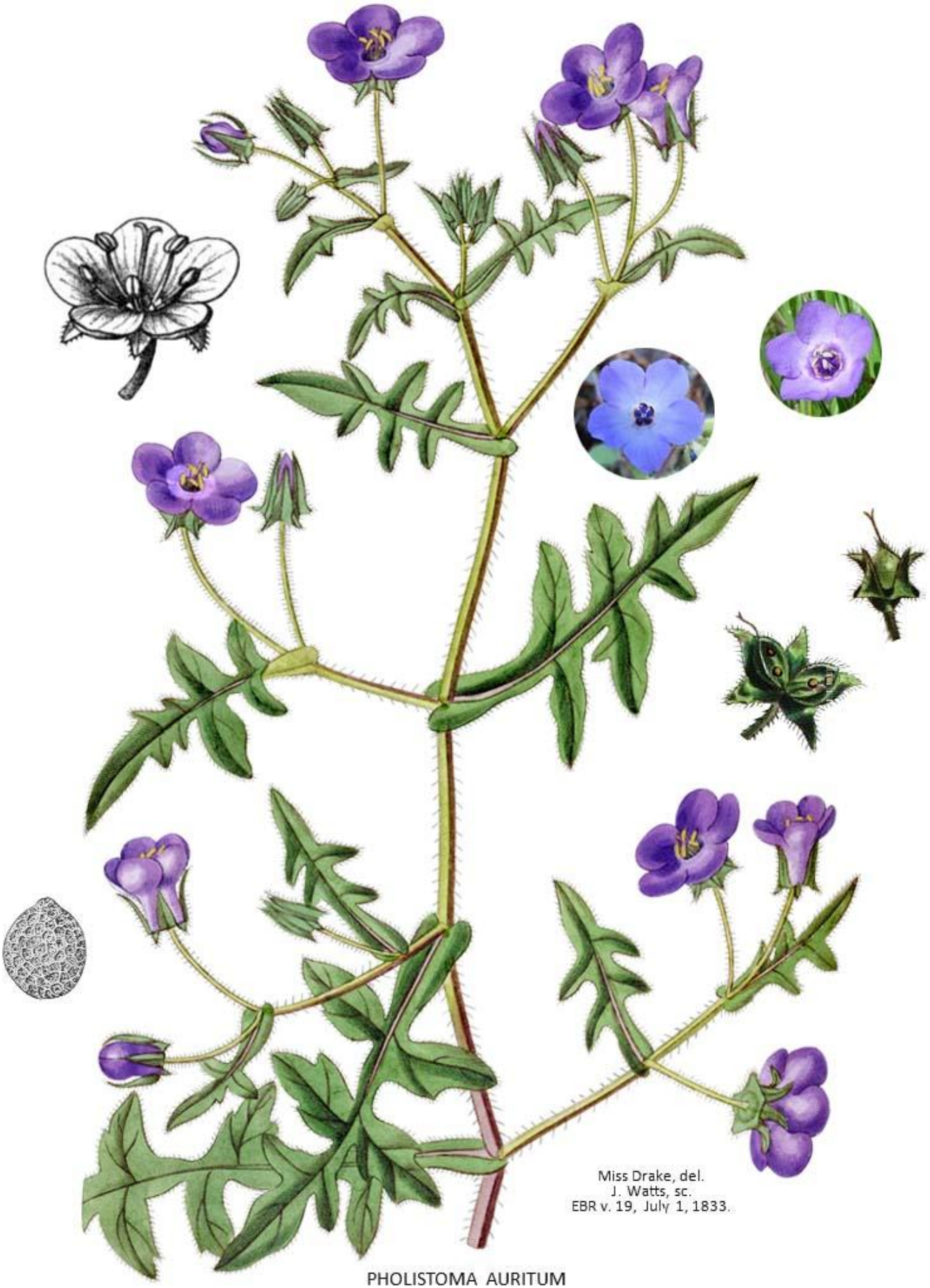


PHACELIA RAMOSISSIMA

Miss Drake, del.
J. Watts, sc.
EBR v. 21, Nov. 1, 1835.

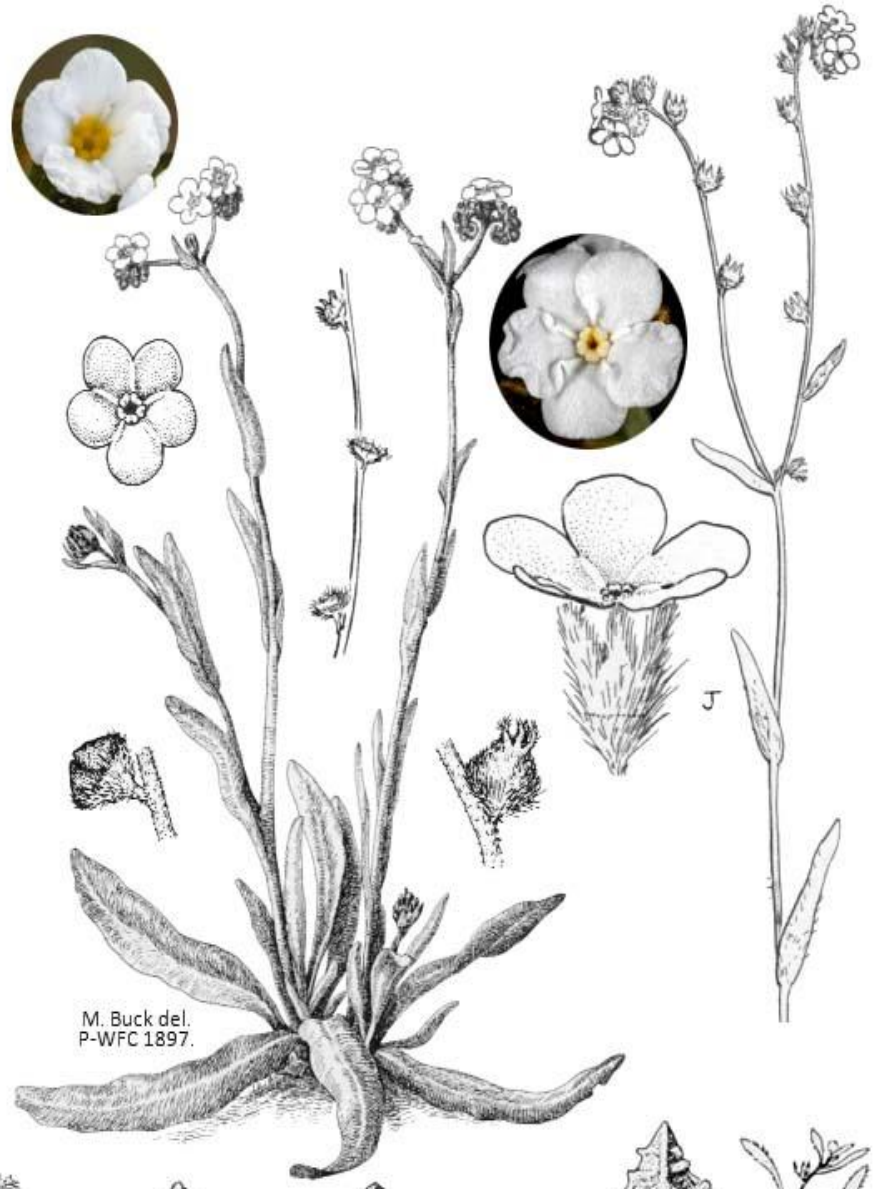
PHACELIA VISCIDA

N-IDG v. 3, 1888.



PHOLISTOMA AURITUM

PLAGIOBOTHRYS CANESCENS



PLAGIOBOTHRYS NOTHOFULVUS

PLAGIOBOTHRYS TENELLUS

PLAGIOBOTHRYS TRACHYCARPUS

PLAGIOBOTHRYS. POPCORN FLOWER.

1a. Lower leaves not forming a rosette. Lower cauline leaves opposite. Nutlets attached to receptacle near the base. . . . . ***P. trachycarpus***. p. 101.

1b. Lower leaves forming a rosette. Cauline leaves alternate. Nutlets attached to receptacle at or near the middle:

2a. Nutlets cross shaped (like the Red Cross emblem) . . . . . ***P. tenellus***. p. 101.

2b. Nutlets more or less pear shaped (but more abruptly constricted towards the apex):

3a. Stems generally erect or ascending. Calyx lobes generally curved over the nutlets. . . . . ***P. nothofulvus***. p. 101.

3b. Stems generally prostrate, decumbent or ascending. Calyx lobes generally erect or spreading. . ***P. canescens***. p. 101.

BRASSICACEAE (*Cruciferae*). MUSTARD FAMILY.

1a. Fruits less than three times longer than wide (they are known as silicles):

2a. Fruits one seeded:

3a. Fruits with conspicuous marginal wings, the body glabrous or nearly so. . . . . ***Thysanocarpus***.

3b. Fruits not winged, the body covered with short, stiff hairs. . . . . ***Athysanus***.

2b. Fruits two to many seeded:

4a. Fruits acute at both ends, and thus elliptical. . . . . ***Draba***.

4b. Fruits roundish to triangular, and usually notched at the apex:

5a. Fruits triangular to heart shaped, and containing many seeds. Plants erect. . . . . ***Capsella***.

5b. Fruits ovoid to orbicular and two seeded. Plants prostrate. . . . . ***Lepidium***.

1b. Fruits more than three times longer than wide (they are known as siliques):

6a. Small (bonsai-like) evergreen perennials with woody above ground roots that grow out of crevices in cliffs and rock outcrops. Petals reddish purple or sometimes pinkish white. . . . . ***Boechera***.

6b. Plants not like the above, and not restricted to cliffs and rock outcrops:

7a. Petals narrowly oblong or oblong linear, channeled, and curved backward. Sepals pouched at the base and turned inward toward the apex, and thus the calyx is urn shaped. Sepals nearly black or purplish black (*S. glandulosus*), or purple, purplish, gray green or yellowish (*S. tortuosus*). . . . . ***Streptanthus***.

7b. Plants with flowers that are not like the above:

6a. Siliques (fruits) turned downward in maturity. . . . . ***Caulanthus***.

6b. Siliques erect, ascending or widely spreading in maturity:

7a. Petals orange. . . . . ***Erysimum***.

7b. Petals not orange:

8a. Petals white, white with pink or rose tinges, or creamy white (sepals are yellow or yellowish in *Turritis*):

9a. Cauline leaves petiolate, and pinnately or palmately divided into leaflets. . . . . ***Cardamine***.

9b. Cauline leaves sessile and clasping, and simple with entire margins. . . . . ***Turritis***.

8b. Petals yellow or pale yellow:

10a. Plants generally wet and/or deeply shady habitats (except after fires) . . . . . ***Barbarea***.

10b. Plants generally of open and dry habitats:

11a. Siliques terminating with a fairly stout and conspicuous beak. . . . . ***Brassica***.

11b. Siliques beakless or with a slender and obscure beak. . . . . ***Sisymbrium***.

ATHYSANUS. DWARF SAND WEED.

Athysanus is represented in the Tassajara region by one species. . . . . ***Athysanus pusillus***. p. 104.

BARBAREA. WINTER CRESS.

Barbarea is represented in the Tassajara region by one species. . . . . ***Barbarea orthoceras***. p. 104.

BOECHERA. ROCK CRESS.

Boechera is represented in the Tassajara region by one species. . . . . ***Boechera breweri***. p. 105.

BRASSICA. MUSTARD.

The genus *Brassica* is represented in the Tassajara region by one species. . . . . ***Brassica nigra***. p. 105.

CAPSELLA.

Capsella is represented in the Tassajara region by one species. . . . . ***Capsella bursa-pastoris***. p. 105.

CARDAMINE. MILKMAIDS, BITTER CRESS.

1a. Plants with vertical taproots; all the leaves are produced on the stems. Leaves divided into 7 seven or more leaflets. . . . ***C. oligosperma***. p. 106.

1b. Plants with fleshy tuber like rhizomes; the leaves are of two types: those that rise from the ground independently from the stems, and those that are produced on the stems. Leaves simple or divided into 3 (or sometimes 5) leaflets:
2a. Rhizomatic leaves three foliate, the leaflet margins entire. Foliage thin. . . . . ***C. californica*** var. ***californica***. p. 105.
2b. Rhizomatic leaves simple, the margins wavy lobed (sinuate). Foliage semi succulent. . . . ***C. californica*** var. ***sinuata***. p. 105.

CAULANTHUS. WILD CABBAGE.

Caulanthus is represented in the Tassajara region by one species. . . . . ***Caulanthus lasiophyllus***. p. 106.

DRABA.

Draba is represented in the Tassajara region by one species. . . . . ***Draba verna***. p. 106.

ERYSIMUM. WALLFLOWER.

Erysimum is represented in the Tassajara region by one species. . . . . ***Erysimum capitatum***. p. 106.

LEPIDIUM. PEPPER GRASS.

Lepidium is represented in the Tassajara region by one species. . . . . ***Lepidium strictum***. p. 107.

SISYMBRIUM.

1a. Siliques (fruits) widely ascending to widely spreading, and about 5 to 10 cm. long. . . . . ***S. altissimum***. p. 107.
1b. Siliques upwardly appressed, and only about 1 to 1.5 cm. long. . . . . ***S. officinale***. p. 107.

STREPTANTHUS. JEWEL FLOWER.

1a. Upper leaves linear to lanceolate and usually with toothed margins. . . . . ***S. glandulosus***. p. 108.
1b. Upper leaves oblong-ovate to orbicular, convex, and with entire margins. . . . . ***S. tortuosus***. p. 108.

THYSANOCARPUS. LACE POD, FRINGE POD.

1a. Plants usually glabrous throughout. Lower leaves not produced in rosettes, and linear oblanceolate and nearly entire to dentate or pinnately slender lobed. Cauline leaves linear to linear-elliptic, the bases not or only slightly auriculate (lobed and clasping), the blades entire to pinnately lobed or toothed. . . . . ***T. laciniatus***. p. 109.
1b. Lower stems usually pubescent. Basal leaves in dense to very loose rosettes (or not), and nearly entire to dentate or pinnately round lobed. Cauline leaves generally lanceolate and usually strongly auriculate at the base:
2a. Silicles (fruits) 5.5 to 7 (-9) mm wide; the wings are perforated. . . . . ***T. curvipes*** subsp. ***elegans***. p. 108.
2b. Silicles 3-5.5 (-6.5) mm wide; the wings are entire, crenate, divided into spoon-shaped lobes, or perforated. . . . . ***T. curvipes*** subsp. ***curvipes***. p. 108.

TURRITIS. TOWER MUSTARD.

Turritis is represented in the Tassajara region by one species. . . . . ***Turritis glabra***. p. 109.

CAMPANULACEAE. BELL FLOWER FAMILY.

1a. Perennial herbs of wet habitats. Corollas strongly bilabiate. Filaments and anthers fused into a tube. . . . . ***Lobelia***.
1b. Annual herbs of dry or wet habitats. Corollas symmetrical or only slightly bilabiate. Filaments and anthers free or only the filaments are fused into a tube:
2a. Corollas white and slightly bilabiate. Leaves basal and cauline, but the basal leaves are often absent by the time the flowers open, and the cauline leaves are small, linear and bract like. Filaments fused into a tube above the base. . . . . ***Nemacladus***.
2b. Corollas mostly blue to purple and symmetrical. Leaves well developed on the stems (floral bracts are generally leaf like). Filaments free:
3a. All flowers opening. Capsules dehiscent at the apex. . . . . ***Githopsis***.
3b. Lower flowers cleistogamous (not opening). Capsules dehiscent on the side:
4a. Corollas cylindric and about 3 to 5 mm. long. Sepals broadly triangular. Plants of wet habitats. . . . ***Heterocodon***.
4b. Corollas rotate and about 5 to 10 mm. long. Sepals narrowly triangular. Plants of dry habitats. . . . . ***Triodanis***.

GITHOPSIS. BLUE CUP.

1a. Ovary cylindrical to slightly obconic, narrowed a bit near the middle, the base slightly swollen. . . . . ***G. diffusa***. p. 112.
1b. Ovary obconic, top slightly narrowed, the base long tapered. . . . . ***G. specularioides***. p. 112.

Continued on page 110.

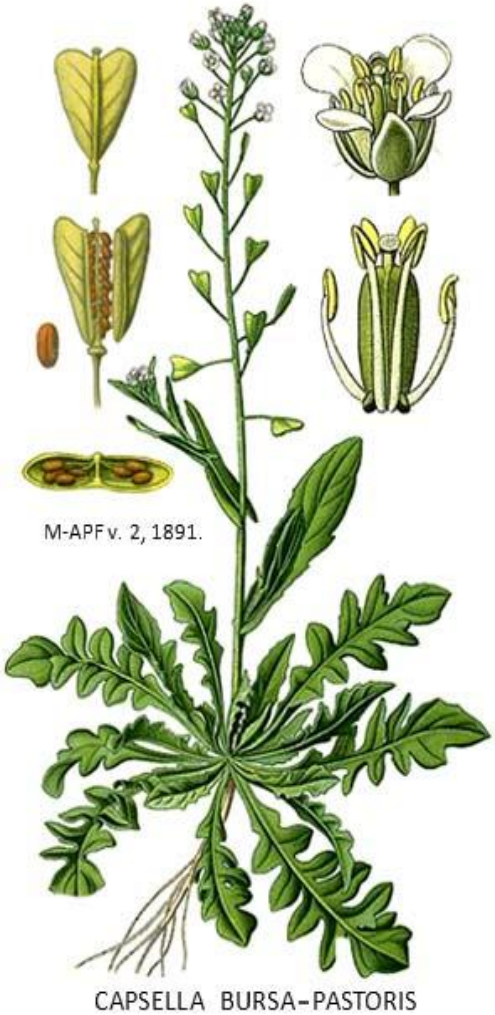
ATHYSANUS PUSILLUS

BARBAREA ORTHOCERAS

BOECHERA BREWERII

J. Sowerby del.
S-EB v. 1, 1863.

BRASSICA NIGRA



M-APF v. 2, 1891.

CAPSELLA BURSA-PASTORIS

M. Buck del.
P-WFC 1897.

var.
CALIFORNICA

var.
SINUATA

CARDAMINE CALIFORNICA

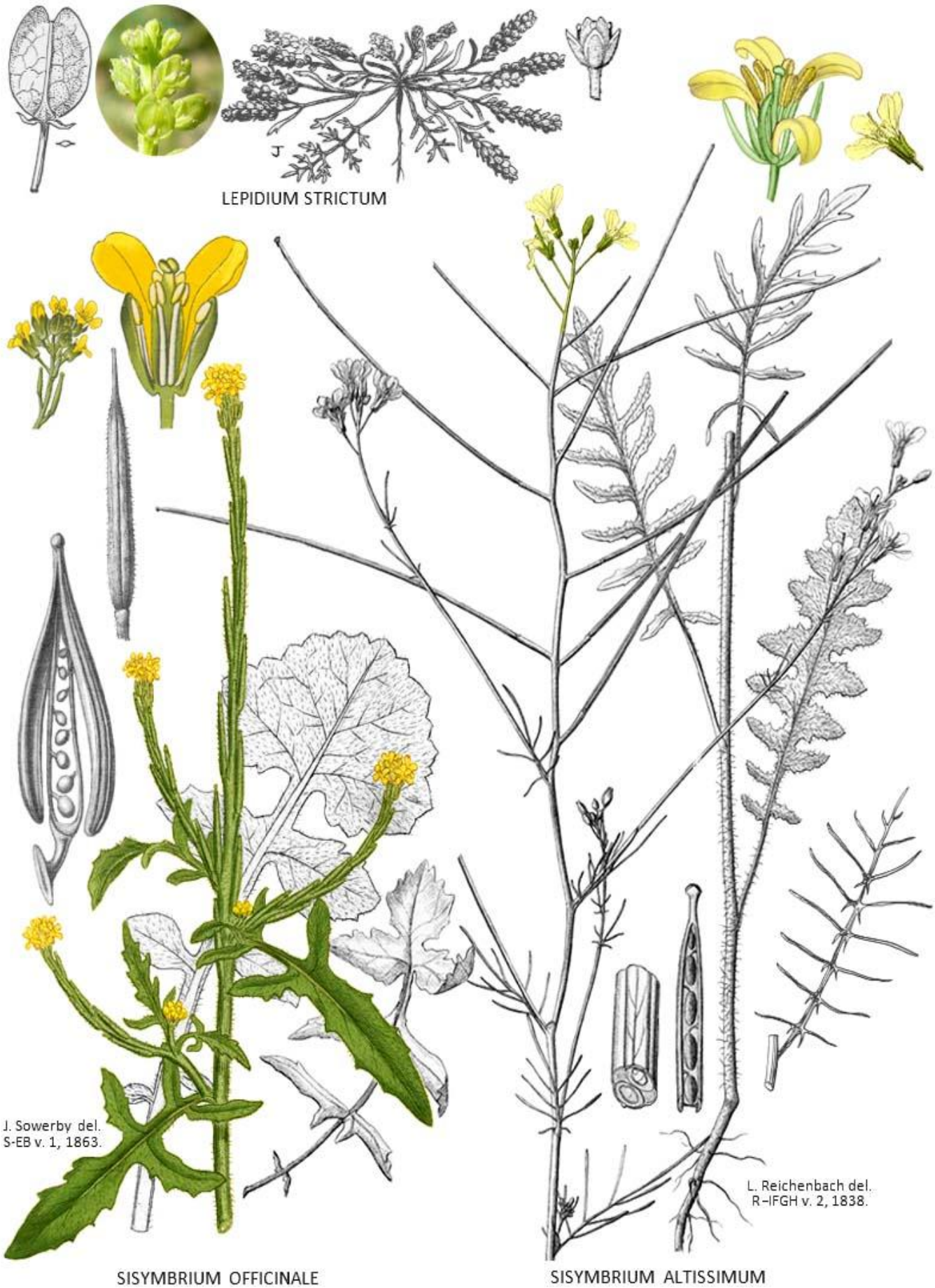
CARDAMINE OLIGOSPERMA

DRABA VERNA

CAULANTHUS LASIOPHYLLUS

ERYSIMUM CAPITATAUM

ANTHOPHYTA: EUDICOTYLEDONEAE. BRASSICACEAE: LIPIDIUM to SISYMBRIUM.



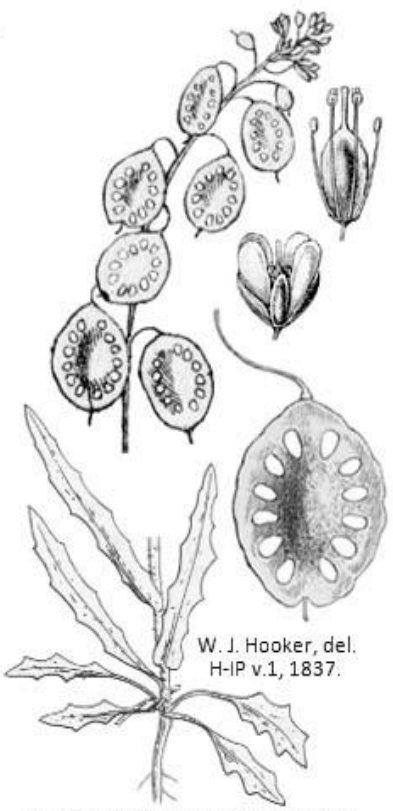
SISYMBRIUM OFFICINALE

SISYMBRIUM ALTISSIMUM

W. J. Hooker, del.
H-IP v.1, 1837.

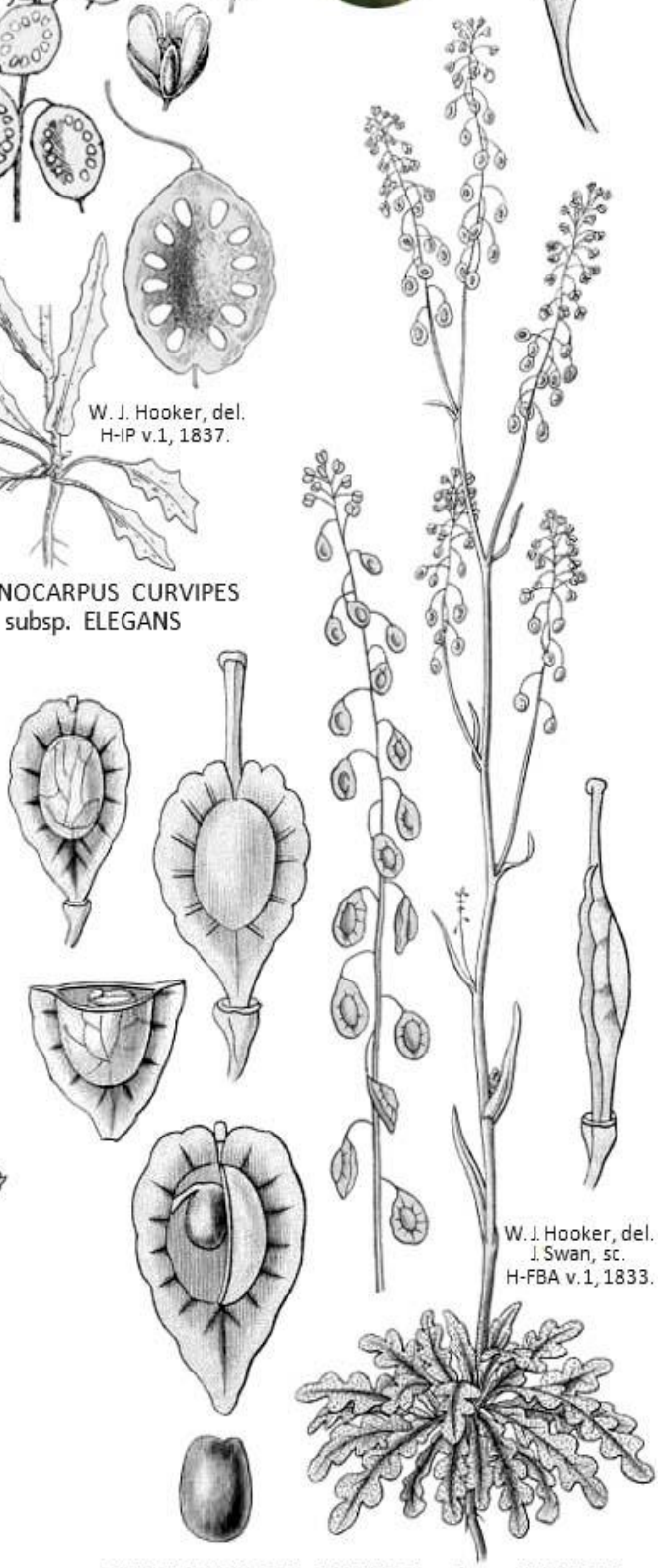
STREPTANTHUS GLANDULOSUS

STREPTANTHUS TORTUOSUS



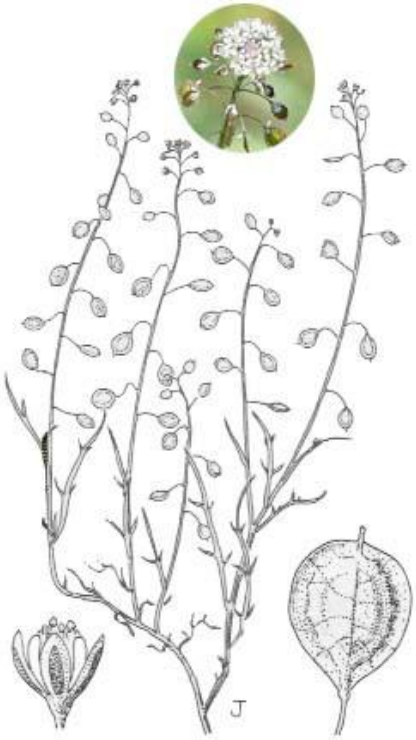
W. J. Hooker, del.
H-IP v.1, 1837.

THYSANOCARPUS CURVIPES
subsp. ELEGANS

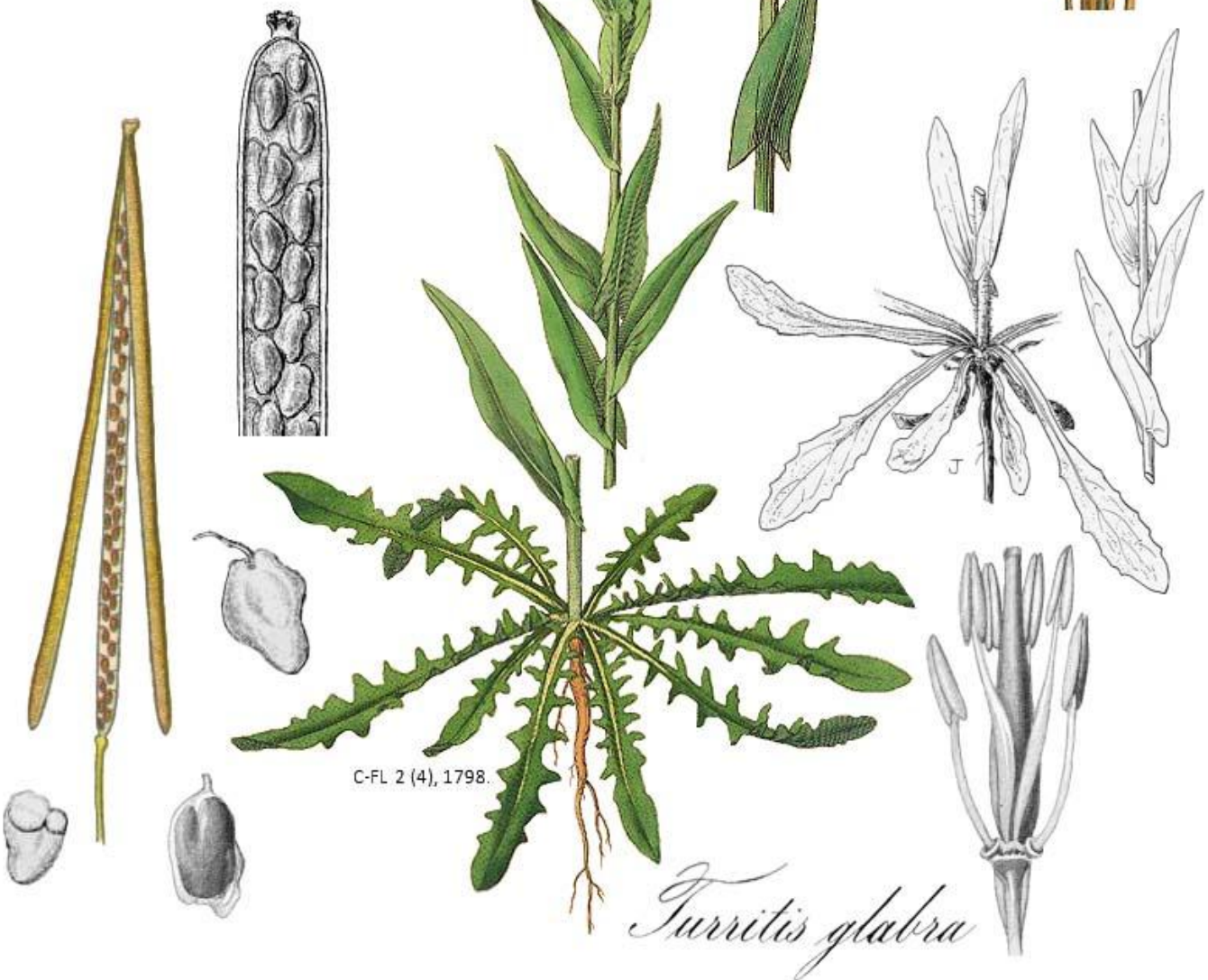


W. J. Hooker, del.
J. Swan, sc.
H-FBA v.1, 1833.

THYSANOCARPUS CURVIPES subsp. CURVIPES



THYSANOCARPUS LACINIATUS



Turritis glabra

HETEROCODON.

The genus *Heterocodon* is represented in the Tassajara region by one species. . . . . ***Heterocodon rariflorum***. p. 112.

LOBELIA.

Lobelia is represented in the Tassajara region by one species. . . . . ***Lobelia dunnii*** var. ***serrata***. p. 113.

NEMACLADUS. THREAD STEM.

The genus *Nemacladus* is represented in the Tassajara region by one species. . . . . ***Nemacladus ramosissimus***. p. 114.

TRIODANIS. VENUS LOOKING GLASS.

The genus *Triodanis* is represented in the Tassajara region by one species. . . . . ***Triodanis biflora***. p. 112.

CAPRIFOLIACEAE. HONEYSUCKLE FAMILY.

1a. Corollas strongly bilabiate and creamy yellow to reddish orange or greenish. Fruits red to yellowish and juicy. . . . . ***Lonicera***.

1b. Corollas urn or bell shaped, and white with a rose pink tinge. Fruits white, dry and waxy. . . . . ***Symphoricarpos***.

LONICERA. HONEYSUCKLE.

1a. Upper leaves united into disk like formations surrounding the stem. Leaves and stems nearly glabrous and not glandular. Corolla yellow to orangish red and glabrous. . . . . ***L. interrupta***. p. 115.

1b. Upper leaves not (or rarely) united. Leaves and stems mostly covered with fine hairs, the hairs of the inflorescence glandular. Corolla creamy yellow to greenish and often hairy. . . . . ***L. subspicata***. p. 116.

SYMPHORICARPOS. SNOWBERRY, WAXBERRY.

1a. Plants erect and mostly about 6 to 18 dm. (2-6') tall. Corolla swollen on one side and glandular within the swelling. Inflorescence mostly 8 to 16 flowered. . . . . ***S. albus*** var. ***laevigatus***. p. 117.

1b. Plants sprawling and usually less than 6 dm. (2') tall. Corolla scarcely or not swollen to one side, and with five nectar glands below each corolla lobe. Inflorescence generally 2 to 8 flowered. . . . . ***S. mollis***. p. 117.

CARYOPHYLLACEAE. PINK FAMILY.

1a. Calyx united into a tube. . . . . ***Silene***.

1b. Calyx divided into distinct sepals:

2a. Capsules cylindrical. . . . . ***Cerastium***.

2b. Capsules roundish or elliptical:

3a. Petals notched or lobed at apex. . . . . ***Stellaria***.

3b. Petals entire:

4a. Annual herbs that are common in the Tassajara region. Ovary three valved. . . . . ***Minuartia***.

4b. Perennial herbs that are rare in the Tassajara region. Ovary six valved. . . . . ***Moehringia***.

CERASTIUM. MOUSE EARED CHICKWEED, POWDER HORN.

Cerastium is represented in the Tassajara region by one species. . . . . ***Cerastium glomeratum***. p. 118.

MINUARTIA. SANDWORT.

Minuartia is represented in the Tassajara region by one species. . . . . ***Minuartia douglasii***. p. 118.

MOEHRINGIA.

Moehringia is represented in the Tassajara region by one species. . . . . ***Moehringia macrophylla***. p. 118.

SILENE. CAMPION, CATCHFLY, INDIAN PINK.

1a. Annual herbs:

2a. Stems, leaves and calyces glabrous or subglabrous. Upper internodes sticky. . . . . ***S. antirrhina***. p. 119.

2b. Stems, leaves and calyces pubescent. Upper internodes not sticky. . . . . ***S. gallica***. p. 118.

1b. Perennial herbs:

3a. Petals bright red. . . . . ***S. laciniata*** subsp. ***californica***. p. 120.

3b. Petals white to yellowish or pinkish:

4a. Flowers nodding. Petal limbs reflexed and divided into 4 slender lobes. . . . . ***S. lemmonii***. p. 121.

4b. Flowers erect or ascending. Petal limbs spreading and divided into 2 broad lobes. . . . . ***S. verecunda***. p. 121.

STELLARIA. CHICKWEED, STARWEED.

1a. Leaves more or less evenly spaced, the blades ovate. Stems with a line of hair on one side. . . . . ***S. media***. p. 121.
1b. Leaves crowded near base, the blades mostly linear-lanceolate. Stems glabrous or with scattered hairs. ***S. nitens***. p. 121.

CHENOPODIACEAE. GOOSEFOOT FAMILY.

1a. Plants non-aromatic and more or less covered with a meal-like powder. . . . . ***Chenopodium***.
1b. Plants aromatic and covered with three-forked glandular hairs. . . . . ***Dysphania***.

CHENOPODIUM. GOOSEFOOT, PIGWEED.

1a. Annual herbs. Calyx tube shorter than the lobes. Seeds horizontal. . . . . ***C. album***. p. 121.
1b. Perennial herbs from a stout caudex. Calyx tube about as long or longer than the lobes. Seeds vertical. . ***C. californicum***. p. 122.

DYSPHANIA.

The genus *Dysphania* is represented in this region by one introduced species. . . . . ***D. pumilio***. p. 122.

CISTACEAE. ROCK ROSE FAMILY.

CROCANTHEMUM. ROCK ROSE, RUSH ROSE, SUN ROSE.

Crocanthemum is represented in the Tassajara region by one species. . . . . ***Crocanthemum scoparium***. p. 122.

CONVOLVULACEAE. MORNING GLORY FAMILY.

1a. Calyx more than 7 mm. long. Corollas usually more than 3 cm. long. Stigma lobes cylindric or oblong, and more or less flattened. . . . . ***Calystegia***.
1b. Calyx less than 5 mm. long. Corollas less than 3 cm. long. Stigma lobes cylindric or thread like, and not flattened. . . . ***Convolvulus***.

CALYSTEGIA. MORNING GLORY.

1a. Plants with prostrate and non climbing stems that are less than 1 m. (3') long. Leaves and stems densely woolly. . . . . ***C. malacophylla*** subsp. ***pedicellata***. p. 122.
1b. Plants with sprawling and climbing stems that are up to 6 m. (20') or more long. Leaves and stems glabrous or short hairy. . . . . ***C. purpurata*** subsp. ***purpurata***. p. 122.

CONVOLVULUS. MORNING GLORY, BINDWEED.

Convolvulus is represented in the Tassajara region by one introduced species. . . . . ***Convolvulus arvensis***. p. 122.

CUSCUTA. DODDER.

Cuscuta is represented in the Tassajara region by one species. . . . . ***Cuscuta californica***. p. 123.

CORNACEAE. DOGWOOD FAMILY.

CORNUS. DOGWOOD.

Cornus is represented in the Tassajara region by one species. . . . . ***Cornus sericea*** subsp. ***occidentalis***. p. 123.

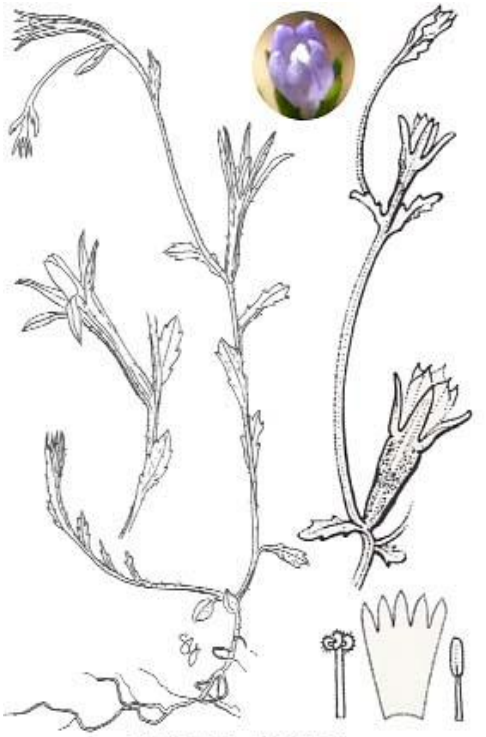
CRASSULACEAE. STONECROP FAMILY.

1a. Minute annual herbs of open areas with poor and/or compacted soils. Leaves opposite and less than 4 mm. long. . . . . ***Crassula***.
1b. Succulent evergreen perennial herbs of cliffs, rock out crops, or rocky s lopes. Leaves more than 1 cm. long and produced in basal rosettes:
2a. Plants unbranched and not forming mats. Leaves generally acuminate at the apex. . . . . ***Dudleya***.
2b. Plants branching and tending to form mats. Leaves generally rounded at the apex. . . . . ***Sedum***.

CRASSULA.

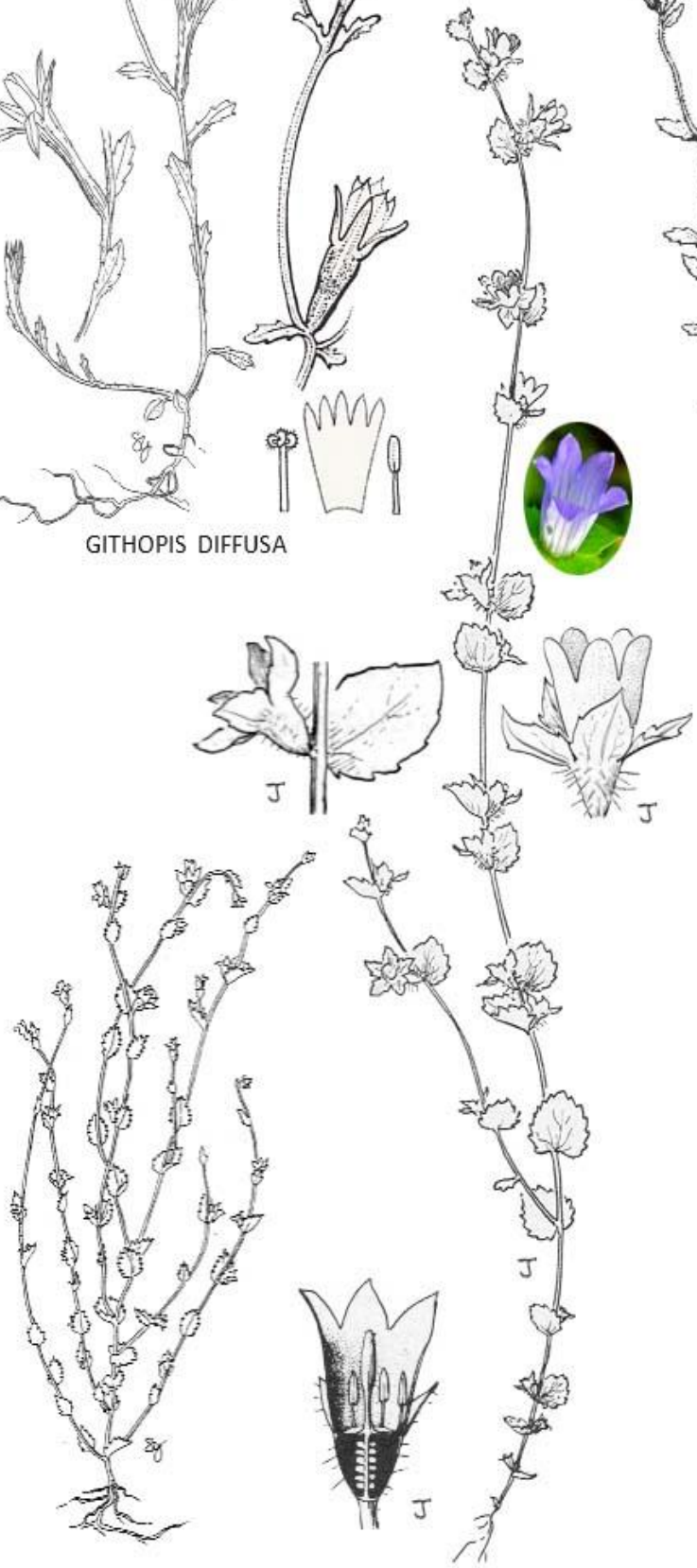
Crassula is represented in the Tassajara region by one species. . . . . ***Crassula connata***. p. 123.

Continued on page 127.



GITHOPIS DIFFUSA

GITHOPIS SPECULARIOIDES

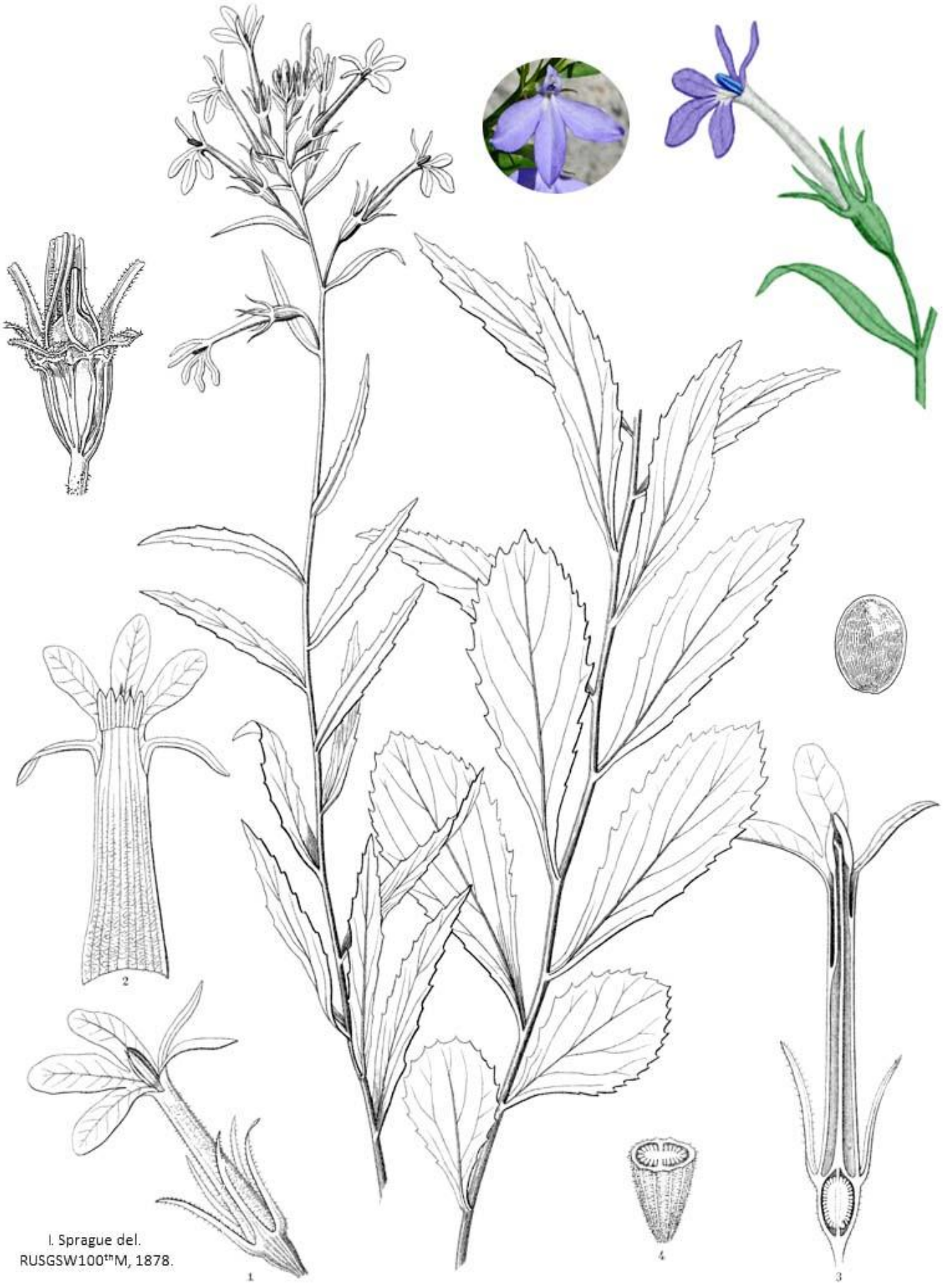


HETEROCODON RARIFLORUM

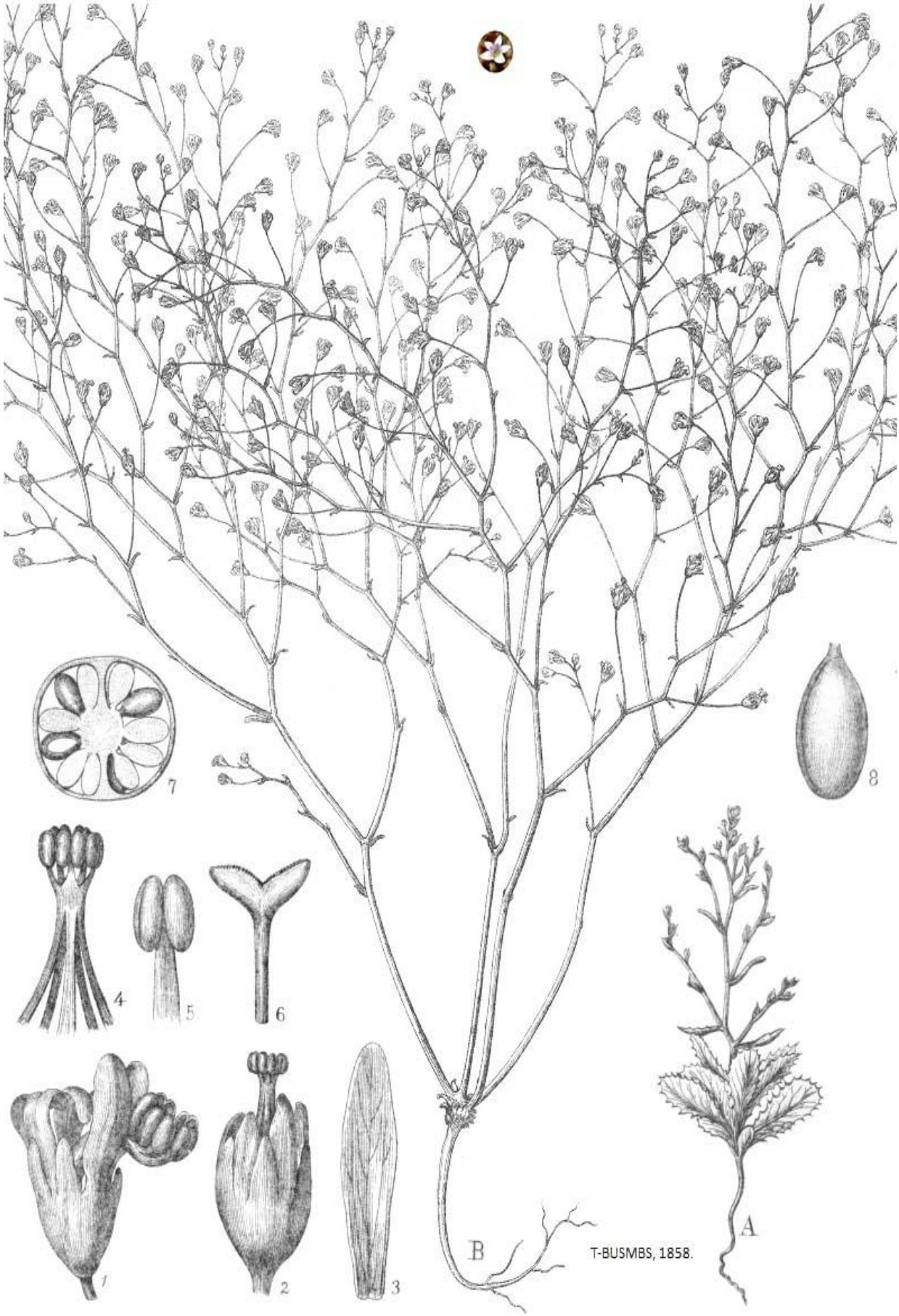
H. Sharp del.
S-WCSAP, 1910.

RS & P-FPC v. 2, 1802.

TRIODANIS BIFLORA

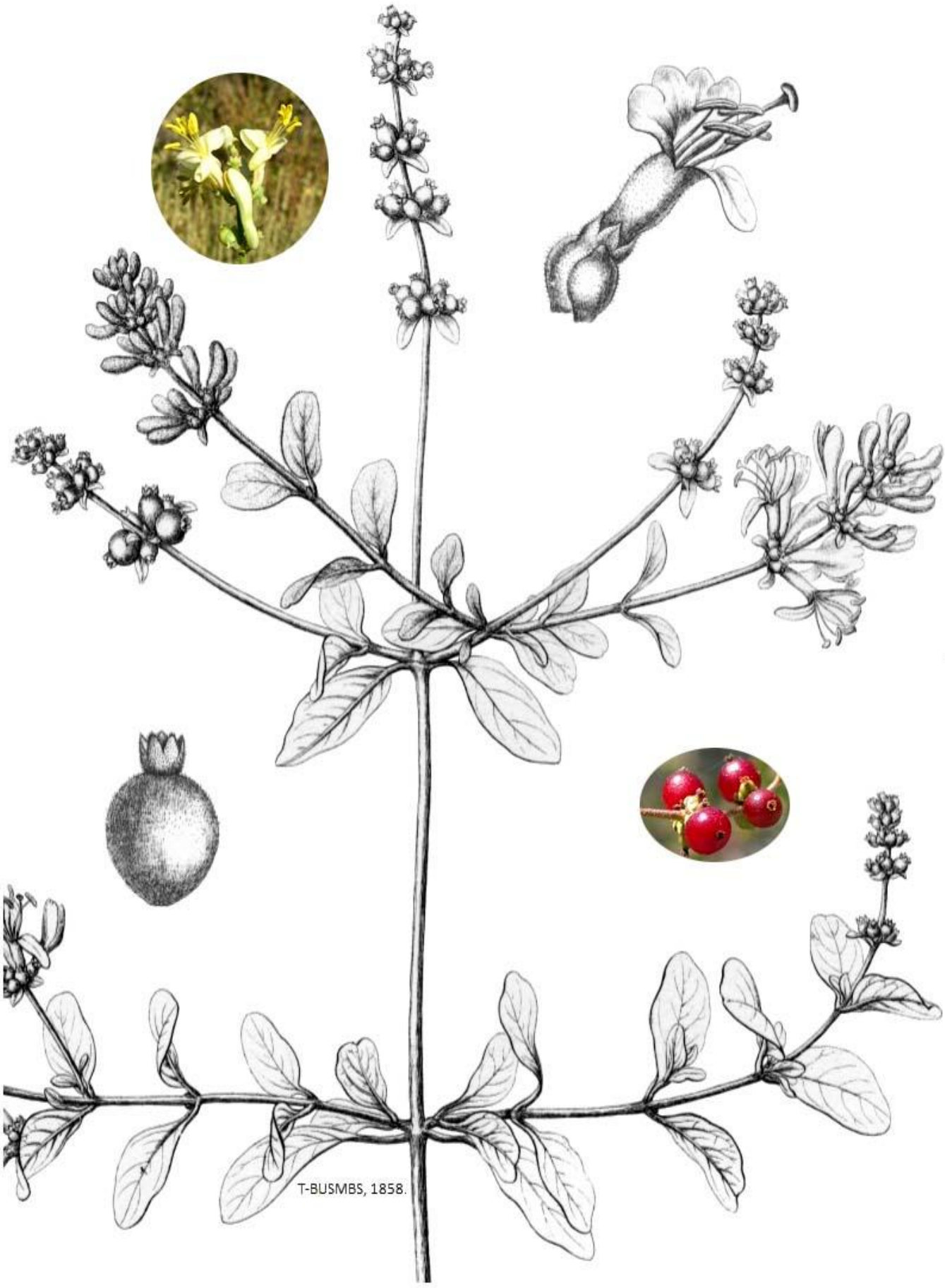


LOBELIA DUNNII var. SERRATA



NEMACLADUS RAMOSISSIMUS

LONICERA INTERRUPTA



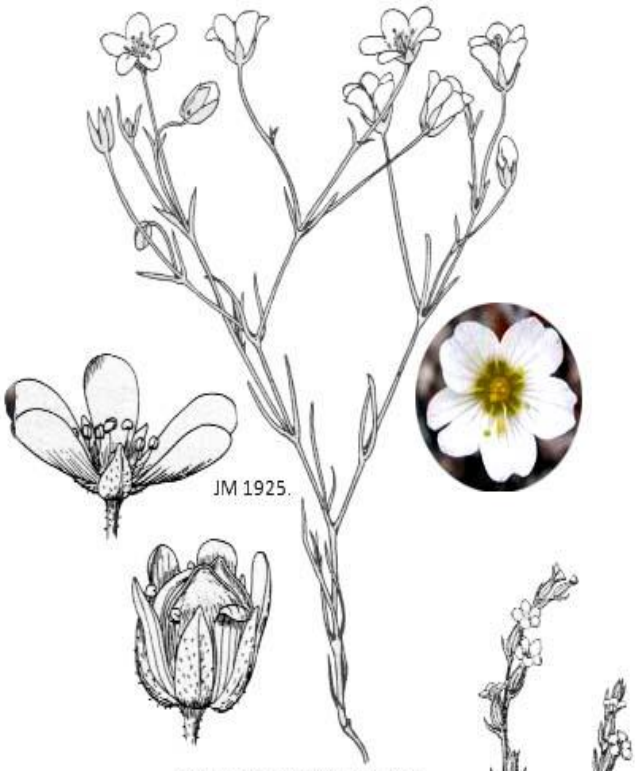
LONICERA SUBSPICATA

Addisonia v. 3, 1918.

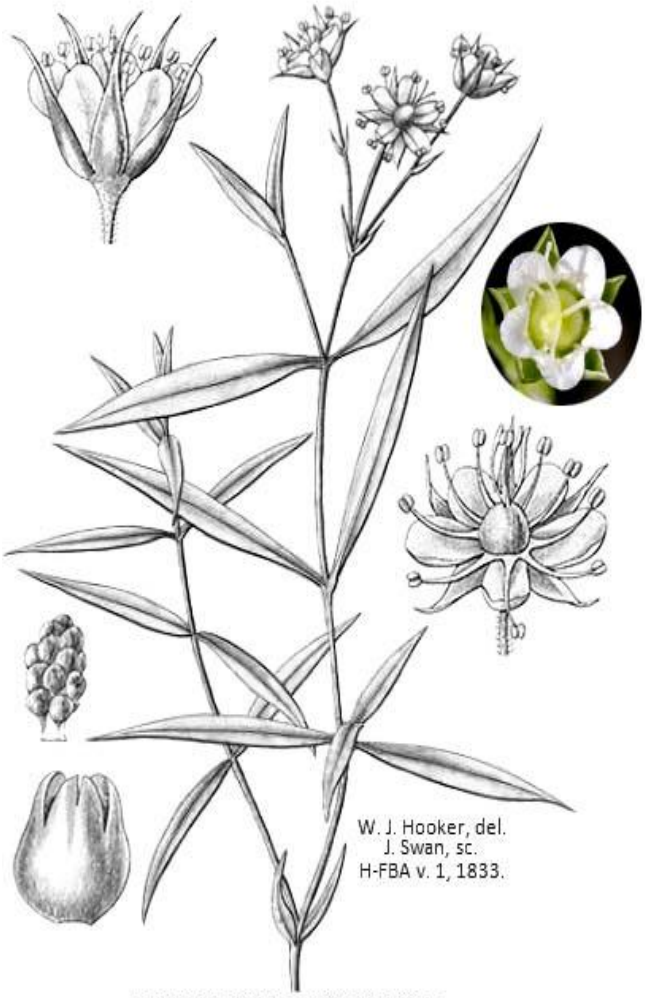
SYMPHORICARPOS ALBUS var. LAEVIGATUS

SYMPHORICARPOS MOLLIS

CERASTIUM GLOMERATUM

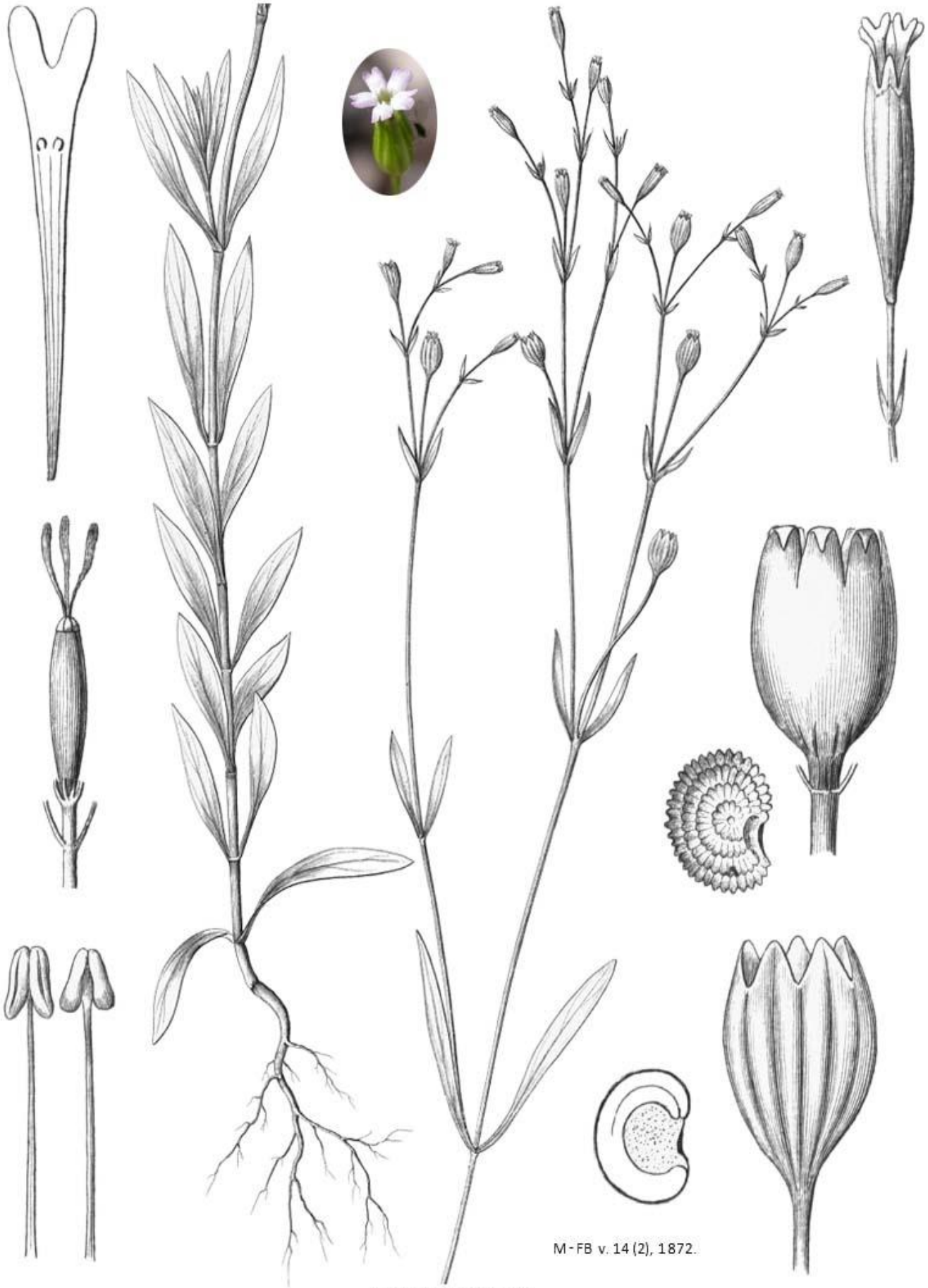


MINUARTIA DOUGLASII

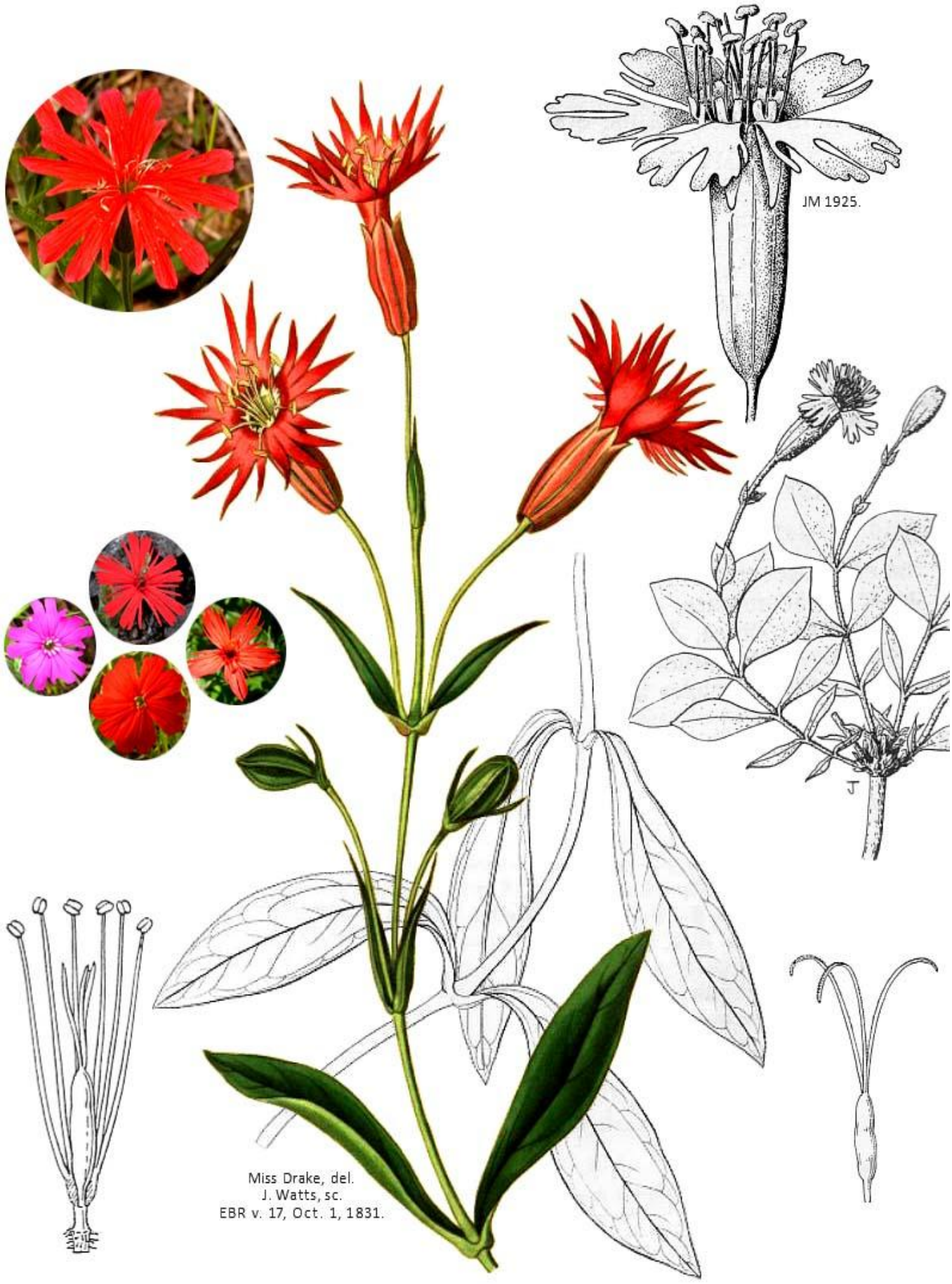


MOEHRINGIA MACROPHYLLA

SILENE GALLICA



SILENE ANTIRRHINA



SILENE LACINIATA subsp. CALIFORNICA

SILENE LEMMONII

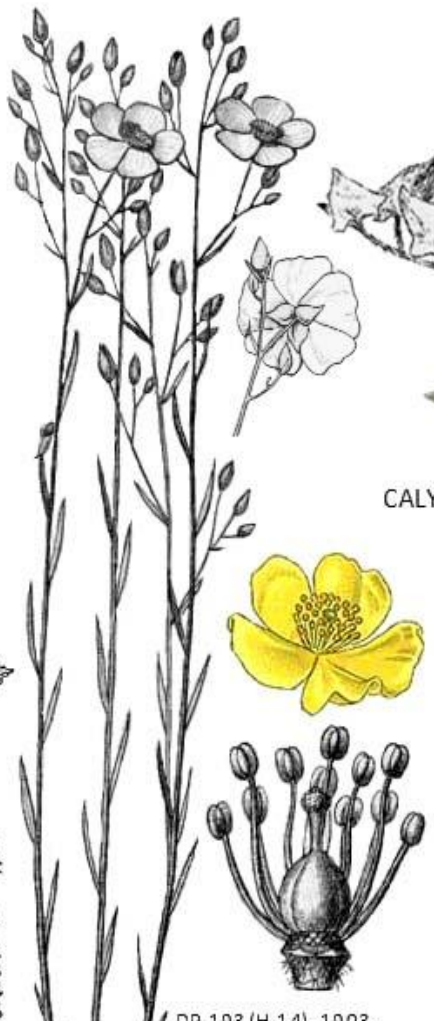
SILENE VERECUNDA

STELLARIA MEDIA

STELLARIA NITENS

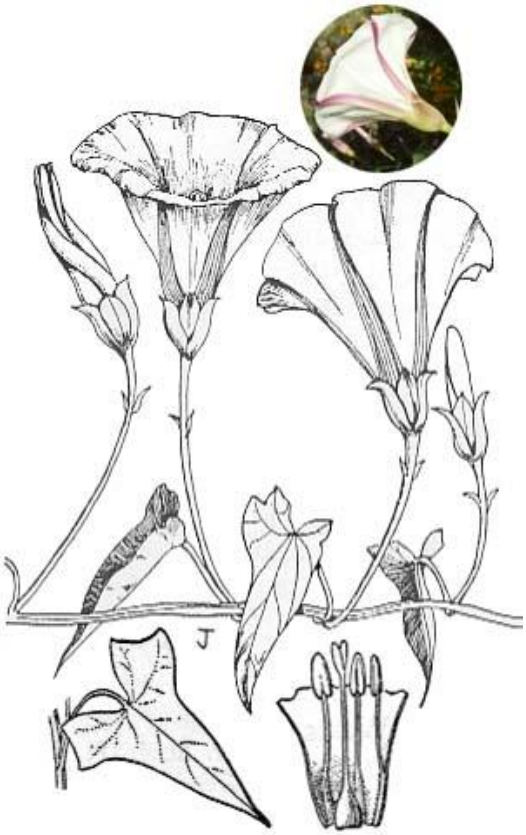
CHENOPODIUM ALBUM

CHENOPODIUM CALIFORNICUM



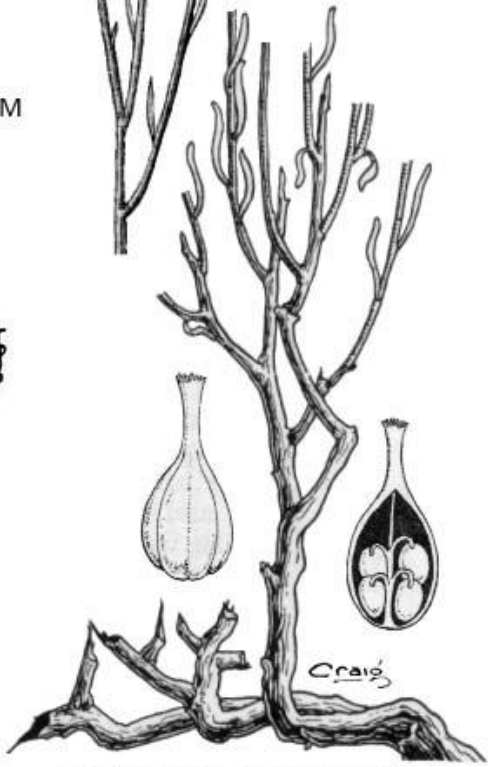
DP 193 (H 14), 1903.

CALYSTEGIA MALACOPHYLLA subsp. PEDICELLATA

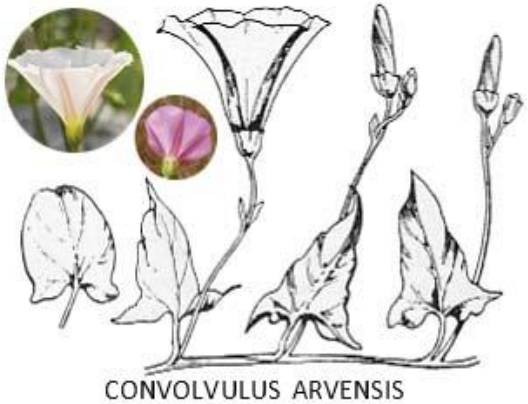


CALYSTEGIA PURPURATA subsp. PURPURATA

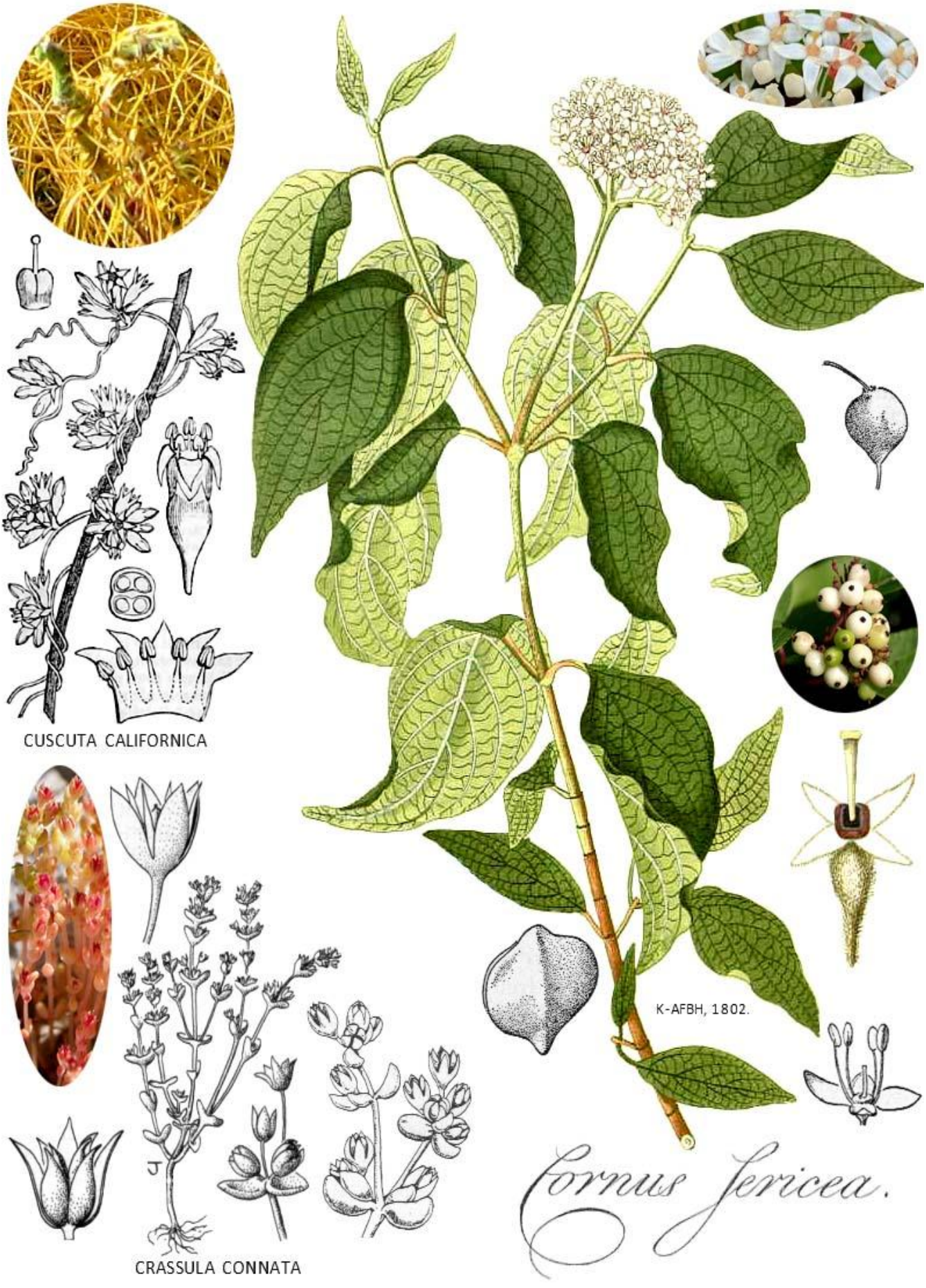
DYSPHANIA PUMILIO



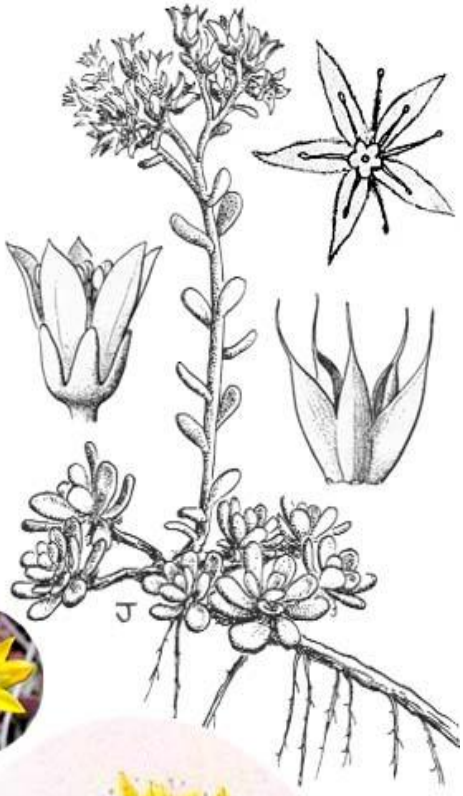
CROCANTHEMUM SCOPARIUM



CONVOLVULUS ARVENSIS


CUSCUTA CALIFORNICA
K-AFBH, 1802.
Cornus Sericea.
CRASSULA CONNATA

DUDLEYA CYMOSA subsp. CYMOSA



DUDLEYA CYMOSA subsp. PUMILA

G v. 24, 1883.

SEDUM SPATHULIFOLIUM

Alf. Riocreux del.
Mme Douliot sc.
ASNB s. 4, v. 12, 1859.

MARAH FABACEUS

DATISCA GLOMERATA

DUDLEYA. LIVE FOREVER, ROCK LETTUCE.

1a. Rosette leaves up to 12+ cm. long. Flowering stems 1.5 to 3.2 (-4.5) dm. tall. . . . . ***D. cymosa*** subsp. ***cymosa***. p. 124.
1b. Rosette leaves usually less than 5 cm. long. Flowering stems usually less than 1.5 dm. tall. . . ***D. cymosa*** subsp. ***pumila***. p. 124.

SEDUM. STONECROP.

Sedum is represented in the Tassajara region by one species. . . . . ***Sedum spathulifolium***. p. 124.

CUCURBITACEAE. CUCUMBER or GOURD FAMILY.

MARAH. MANROOT.

Marah is represented in the Tassajara region by one species. . . . . ***Marah fabacea***. p. 125.

DATISCACEAE. FALSE HEMP FAMILY.

DATISCA. FALSE HEMP.

Datisca is represented in the Tassajara region by one species. . . . . ***Datisca glomerata,*** p. 126.

ERICACEAE. HEATH FAMILY.

1a. Small perennial herbs. Corollas divided into five reflexed petals. . . . . ***Chimaphilla***.
1b. Trees and shrubs. Corollas united and urn shaped:
2a. Evergreen trees ranging from about 5 to 30 m. (16-100') tall. Leaves about 5 to 12 cm. long. Fruits soft and juicy. . . . ***Arbutus***.
2b. Evergreen shrubs ranging from about .3 to 6 m. (1-20') tall. Leaves about 1 to 5 cm. long. Fruits firm and dry. . . . . ***Arctostaphylos***.

ARBUTUS. MADRONE, STRAWBERRY TREE.

The genus *Arbutus* is represented in the Tassajara region by one species. . . . . .***Arbutus menziesii***. p. 128, 129.

ARCTOSTAPHYLOS. MANZANITA, BEAR BERRY.

1a. Shrubs without fire resistant burls at the base of the their trunks, and thus plants are killed by fires:
2a. Budding inflorescence bracts generally leaf like and flat. Rare in the Tassajara region. . . . . ***A. canescens*** subsp. ***canescens***. p. 130.
2b. Budding inflorescence bracts fleshy, scoop shaped or generally scale like, deltate to awl shaped, keeled or not:
3a. Inflorescence a panicle, usually three to eight branched. Stones connate into a single sphere. Locally common in the Tassajara region. . . . . ***A. glauca***. p. 131, 132.
3b. Inflorescence generally a raceme or raceme like, occasionally one or two branched. Stones free. Rare in the Tassajara region. . . . . ***A. pungens***. p. 133.
1b. Shrubs with fire resistant burls at the base of their trunks, from which they produce new growth after fires:
4a. Leaves with stomata (pores) only on the under (abaxial) surfaces; the upper and lower leaf surfaces usually differing in hue and/or hairiness. Bark of older stems persistent, gray and shredded:
5a. Twigs glandular. . . . . ***A. tomentosa*** subsp. ***bracteosa***. p. 134.
5b. Twigs not glandular:
6a. Lower surface of the leaves tomentose, at least when young. . . . . ***A. tomentosa*** subsp. ***tomentosa***. p. 134.
6b. Lower surface of the leaves glabrous. . . . . ***A. tomentosa*** subsp. ***hebeclada***. p. 134.
4b. Leaves with stomata on both surfaces; the upper and lower leaf surfaces usually of the same hue and/or hairiness. Old bark smooth or pealing; the smooth bark is brownish red:
7a. Twigs glandular hairy or not, the bracts and/or young inflorescence stems glandular-hairy:
8a. Twigs glandular-hairy. . . . . ***A. glandulosa*** subsp. ***glandulosa***. p. 130.
8b. Twigs not glandular-hairy. . . . . ***A. glandulosa*** subsp. ***howellii***. p. 130.
7b. Twigs, bracts and young inflorescence stems not glandular-hairy:
9a. Twig hairs soft and wavy, and with longer white hairs. . . . . ***A. glandulosa*** subsp. ***mollis***. p. 130.
9b. Twig hairs not soft and wavy. . . . . ***A. glandulosa*** subsp. ***cushingiana***. p. 130.

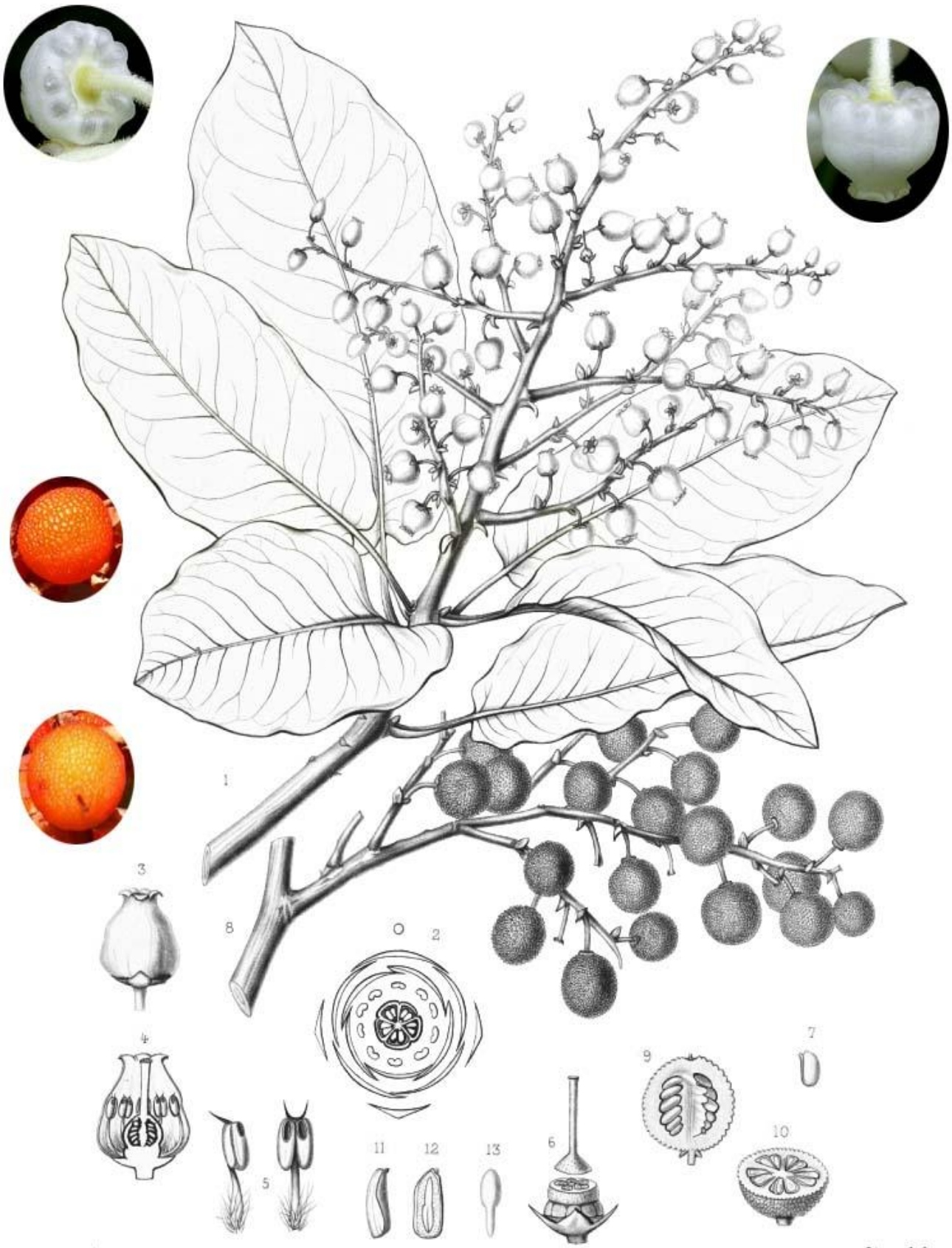
CHIMAPHILA. PIPSISSEWA, PRINCE'S PINE.

Chimaphila is represented in the Tassajara region by one species. . . . . ***Chimaphila menziesii***. p. 135.

Continued on page 137.

Silva of North America.
v. 5, 1893.

Tab. CCXXXI.

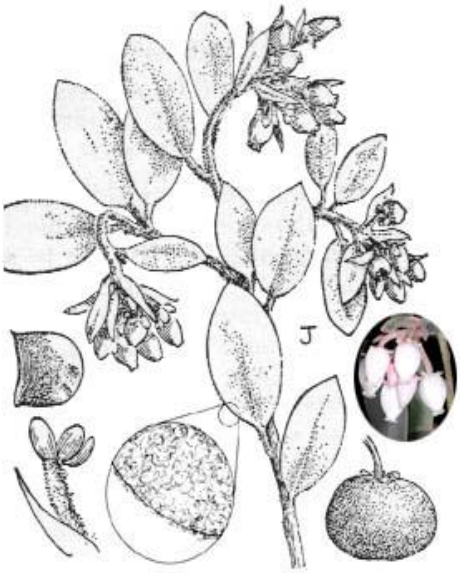


C.E.Faxon del.
A.Riocreux direx.

ARBUTUS MENZIESII, Pursh.

Lovendal sc.
Imp. J. Taneur, Paris.

ARBUTUS MENZIESII



ARCTOSTAPHYLOS CANESCENS

A. GLANDULOSA
subsp. CUSHINGIANA

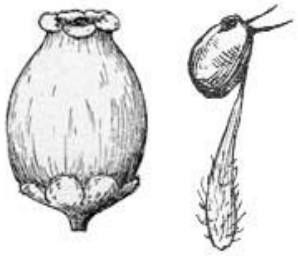
A. GLANDULOSA
subsp. HOWELLII

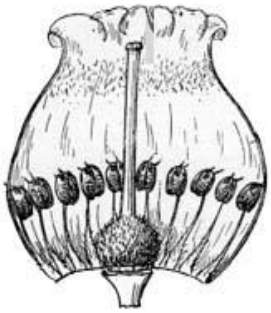
A. GLANDULOSA
subsp. MOLLIS

J-FC v. 3, 1939.

The burl of an old plant.

The burl of a young plant.

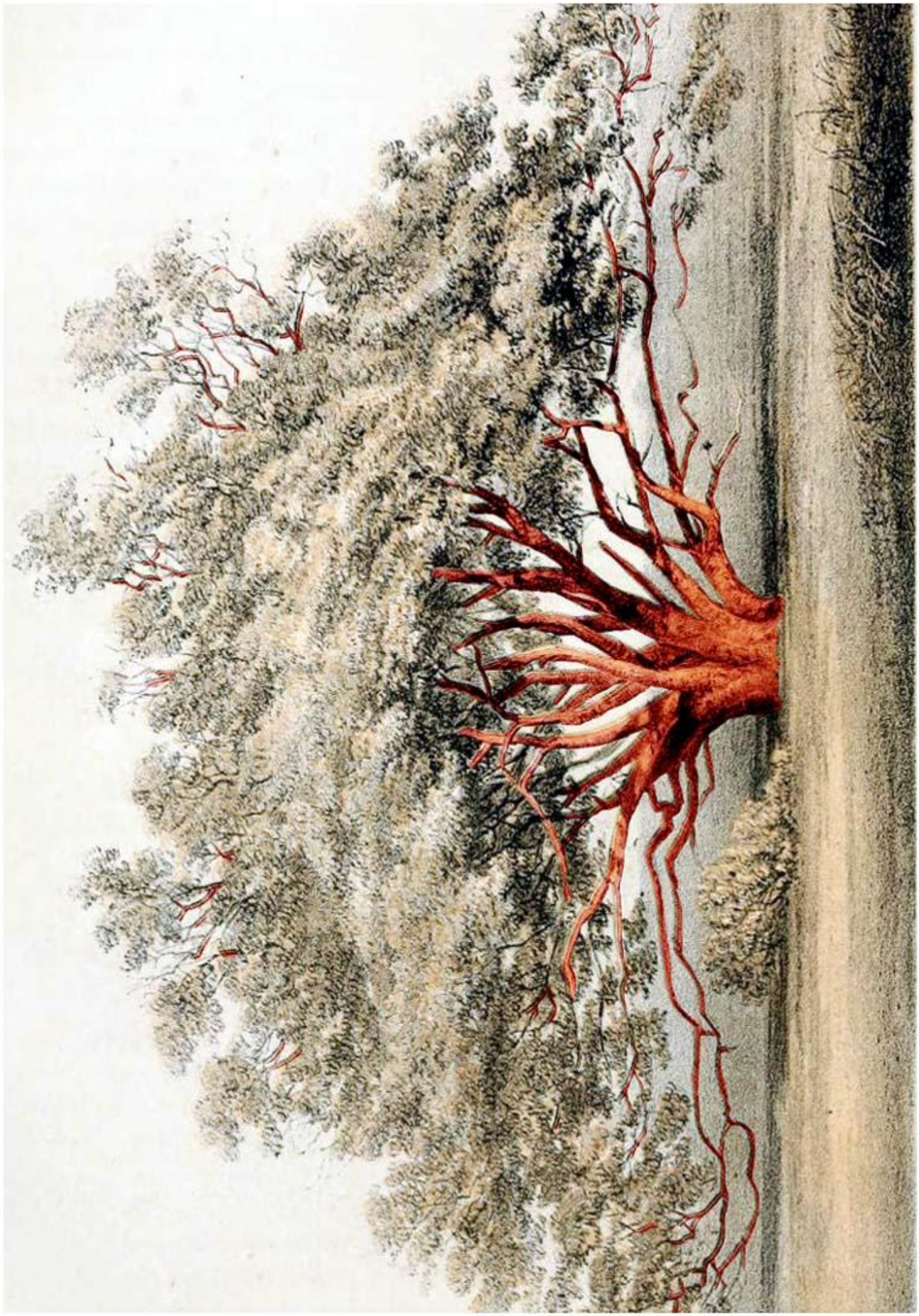




C. E. Faxon, del.
S-TS v. 1, 1905.

C. E. Faxon, del.
S-TS v. 1, 1905.

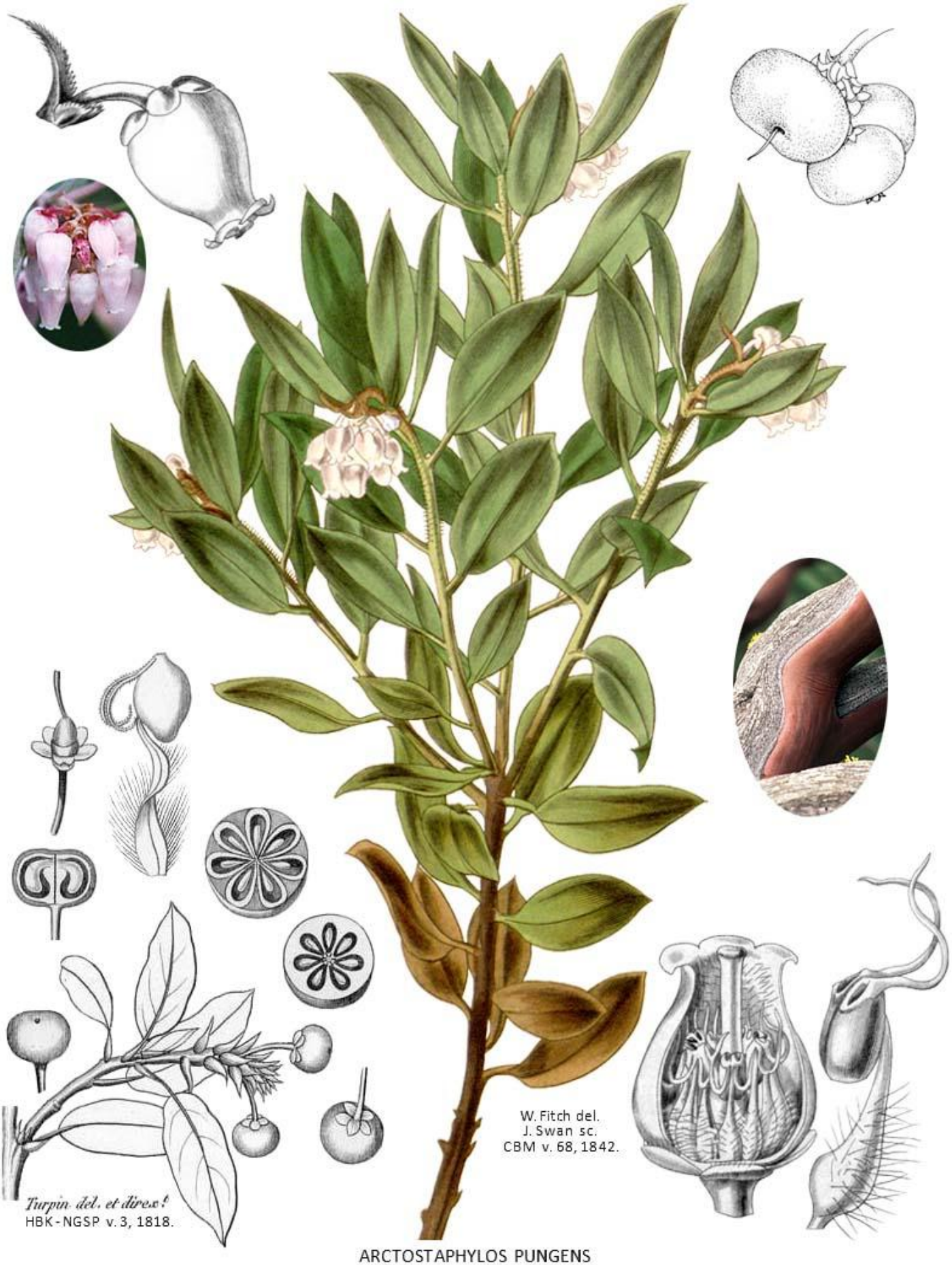
ARCTOSTAPHYLOS GLANDULOSA subsp. GLANDULOSA



ARCTOSTAPHYLOS GLAUCA

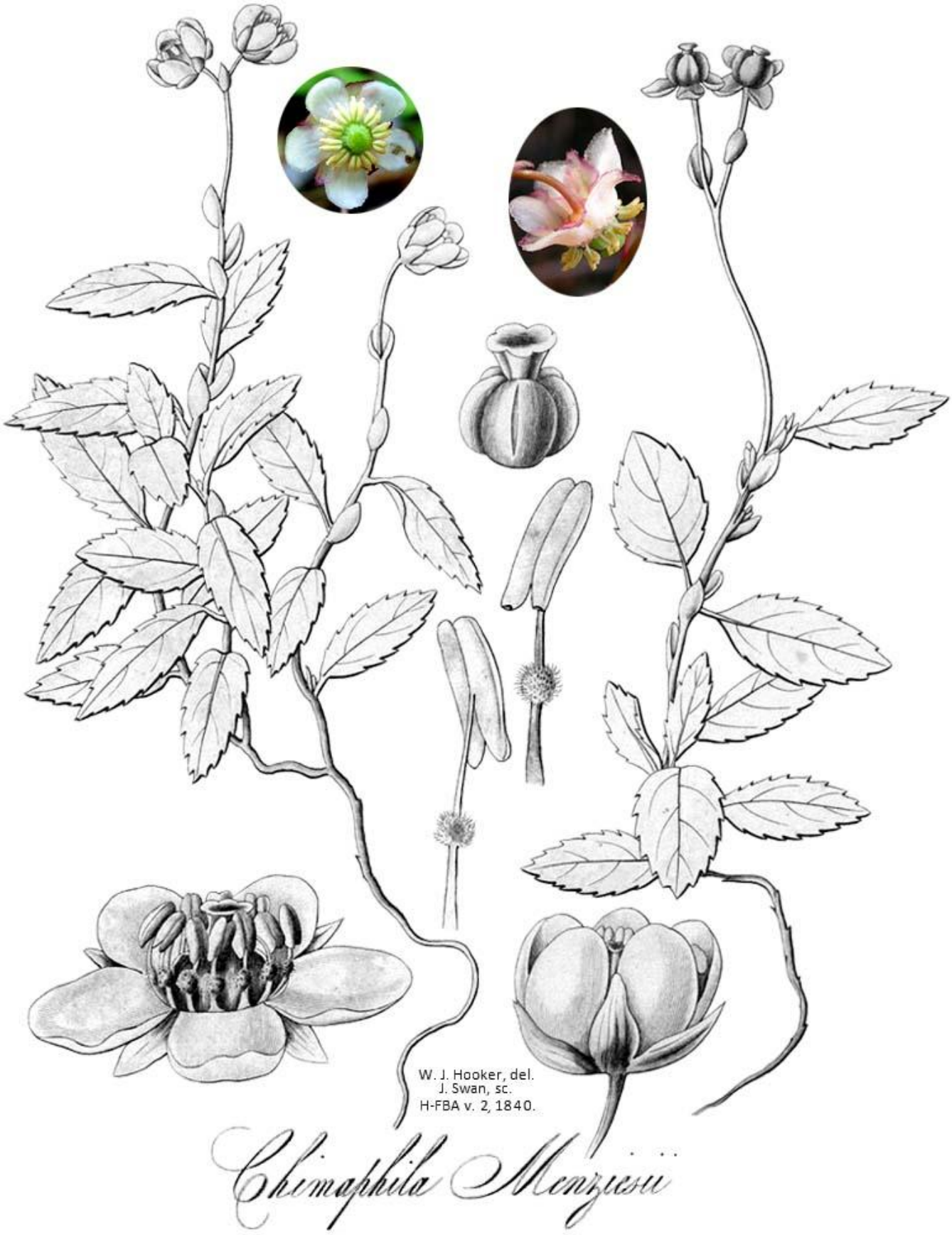
RRR 1854-55, 1857.

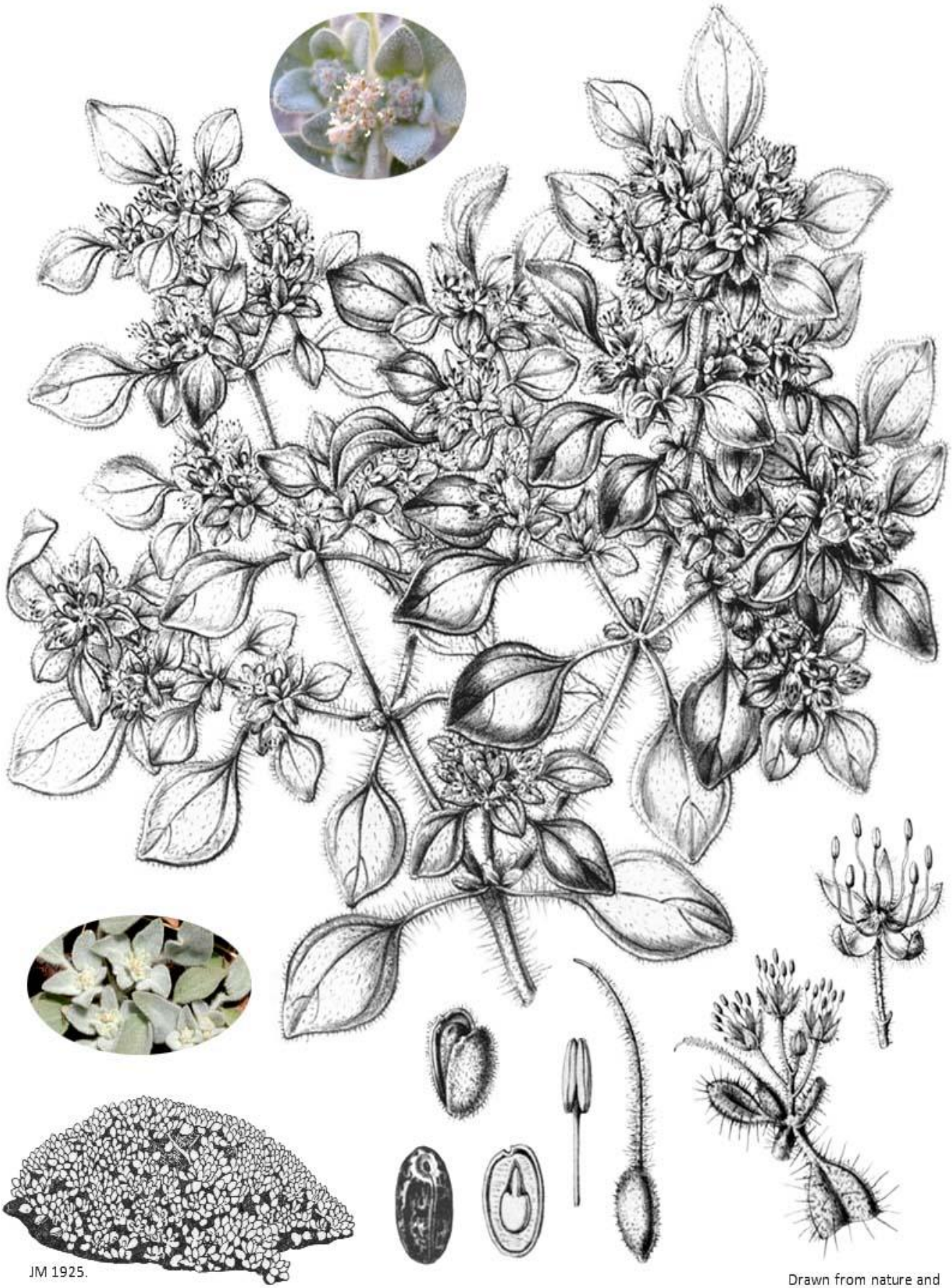
ARCTOSTAPHYLOS GLAUCA



ARCTOSTAPHYLOS PUNGENS

ARCTOSTAPHYLOS TOMENTOSA subsp. TOMENTOSA

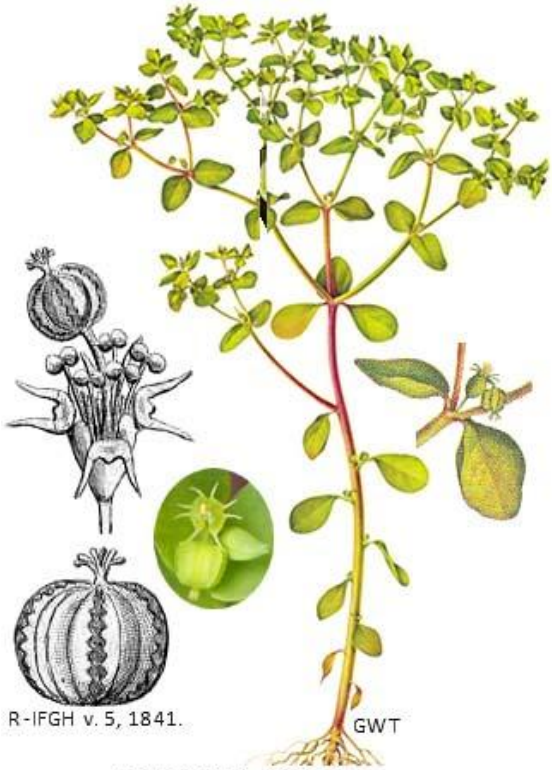

W. J. Hooker, del.
J. Swan, sc.
H-FBA v. 2, 1840.
Chimaphila Menziesii



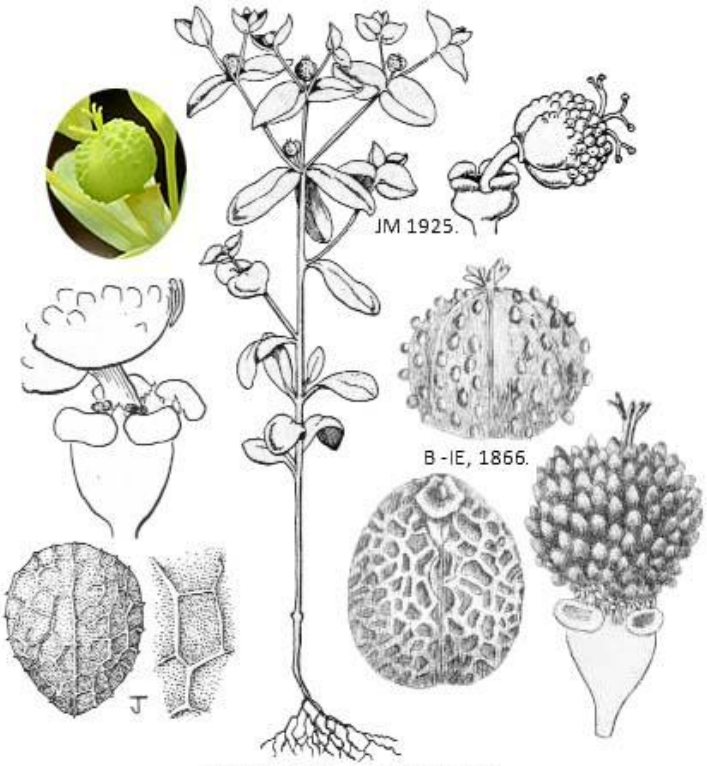
JM 1925.

CROTON SETIGER

Drawn from nature and
on stone by Miss Drake.
B-BHMSS, 1844.



EUPHORBIA PEPLUS



EUPHORBIA SPATHULATA

EUPHORBIACEAE. SPURGE FAMILY.

1a. Plants sprawling and tufted, gray green, and strongly aromatic. Calyces present. . . . . ***Croton***.
1b. Plants erect, green, and not strongly aromatic. Calyces absent. . . . . ***Euphorbia***.

CROTON.

Croton is represented in the Tassajara region by one species. . . . . ***Croton setiger***. p. 136.

EUPHORBIA. SPURGE.

1a. Petal like glands of staminate flowers crescent shaped, and thus the involucres are surrounded by eight slender horn like projections. Leaves entire. . . . . ***E. peplus***. p. 137.
1b. Petal like glands of staminate flowers roundish to shortly oblong, and thus the involucres lack projections. Most leaf margins finely toothed. . . . . ***E. spathulata***. p. 137.

FABACEAE (*Leguminosae*). PEA, BEAN OR LEGUME FAMILY.

1a. Shrubs and subshrubs:
  2a. Leaves (or most leaves) divided into 3 leaflets:
    3a. Shrubs. . . . . ***Genista***.
    3a. Subshrubs (the stems are woody only near the base):
      4a. Stout stemmed plants of wet habitats. Flowers blue to purple. . . . . ***Hoita macrostachya***.
      4b. Slender stemmed plants of dry habitats. Flowers yellow or mostly yellow. . . . . ***Acmispon glaber***.
  2b. Leaves divided into 4 or more leaflets:
    5a. Leaves palmately divided into leaflets. Petals 5. . . . . ***Lupinus***.
    5b. Leaves pinnately divided into leaflets. Petals 1. . . . . ***Amorpha***.
1b. Annual and perennial herbs:
  6a. Vines or vine like plants. Stems and/or leaves terminating with coiling tendrils that allow the plant to climb on other objects:
    7a. Styles with a ring of hair just below stigma. Wings and keel joined for more than half the length of the keel. . ***Vicia***.
    7b. Styles with a line of hairs along upper margin just below stigma. Wings and keel joined for less than half the length of the keel. . . . . ***Lathyrus***.
  6b. Plants not vine like. Stems and/or leaves not terminating with tendrils:
    8a. Leaves palmately divided into 5 or more leaflets (or rarely 4 in *Lupinus cervinus*) . . . . . ***Lupinus***.
    8b. Leaves not palmately divided into 5 or more leaflets:
      9a. Stipules at the base of the petioles very large and strongly resembling the leaflets. Stamen filaments free to the very

base. Yellow flowered inflorescences strongly resembling those of lupines. . . . . ***Thermopsis***.

9b. Stipules absent, dot like or bract like, and if bract like, they are much smaller than the leaflets and do not resemble them. Stamen filaments united, or at least 9 are united or partially united. Inflorescences mostly not resembling those of lupines, but if so (as in *Hoita*), the petals are not yellow:

10a. Leaves irregularly divided into leaflets. . . . . ***Acmispon***.

10b. Leaves regularly divided into leaflets:

11a. Leaves (or most leaves) divided into 4 or more leaflets:

12a. Stipules expanded and membranaceous or leaf like. . . . . ***Hosackia.***

12b. Stipules absent or reduced to dot like glands:

13a. Flowers produced in racemes. Fruits becoming inflated with age. . . . . ***Astragalus***.

13b. Flowers produced singularly or in small groups or umbels. Fruits not becoming inflated with age. . . . . ***Acmispon***.

11b. Leaves divided into 3 leaflets:

14a. Leaves pinnately divided into leaflets (there is a large gap between the terminal & lateral leaflets). Perennial herbs or subshrubs:

15a. Plants of wet or seasonally wet habitats. Racemes spike like, the petals mostly purple or blue. . . . . ***Hoita***.

15b. Plants of woodlands or chaparral. Racemes not spike like, the petals greenish or yellowish white. . ***Rupertia***.

14b. Leaves palmately or sub palmately divided into leaflets (the leaflets diverge from a common point or nearly so). Annual herbs (except for *Trifolium wormskioldii*):

16a. Leaflet margins entire. The flowers are produced singularly or in umbellate or whorled clusters that are sessile in the axils of the leaves. . . . . ***Acmispon*** (*A. americanus* & *glaber*).

16b. Leaflet margins at least finely serrulate. The flowers are produced in clusters or racemes that are not sessile in the axils or the leaves:

17a. Flowers produced in dense head like clusters. Fruits remaining concealed within the calyces. . . ***Trifolium***

17b. Flowers produced in small clusters or in dense or loose racemes. Fruits fully exposed:

18a. Fruits straight (except for the style). Flowers produced in elongated racemes. . . . . ***Melilotus***.

18b. Fruits curved or spirally coiled. Flowers produced in small clusters or in short and compact racemes. . . ***Medicago***.

ACMISPON. DEER VETCH, DEER WEED.

1a. Perennial herbs and subshrubs:

2a. Fruits dehiscent (readily opening when mature to discharge the seeds), straight or nearly so, and abruptly short beaked. ***A. grandiflorus***. p. 141.

2b. Fruits indehiscent, often strongly curved, and tapering to an elongated beak:

3a. Broom like plants with many erect and ascending stems. Most leaves divided into 3 leaflets. . . . . ***A. glaber***. p. 141.

3b. Plants with relatively few prostrate or decumbent-ascending stems. Most leaves divided into 4 or more leaflets:

4a. Inflorescence less than 1 cm. wide and loosely 4 to 8 flowered. Corollas 6 to 10 mm. long. . . ***A. argophyllus*** var. ***argophyllus***. p. 141.

4b. Inflorescence more than 1 cm. wide and densely 10 to 15 flowered. Corollas 8 to 12 mm. long. . . . . ***A. argophyllus*** var. ***fremontii***. p. 141.

1b. Annual herbs:

5a. Petals basically white, pink or pinkish, but may turn red with age (in *A. americanus* the flowers are rarely yellow, and if so it can be distinguished from the other yellow flowered species by its leaves, most of which are divided into 3 leaflets, not 4 or more):

6a. Calyx lobes much longer than the tube. . . . . ***A. americanus***. p. 141.

6b. Calyx lobes much shorter than the tube. . . . . ***A. parviflorus***. p. 142.

5b. Petals basically yellow (but may turn red with age or be marked with red when still fairly young):

7a. Flowers pedunculate, the peduncles 3 to 25 mm. long:

8a. Wings conspicuously longer than the keel. Fruits strigose, the seeds squared. . . . . ***A. strigosus***. p. 142.

8b. Wings about as long as the keel. Fruits glabrous, the seeds globose to oblong-ovoid. . . . . ***A. maritimus***. p. 142.

7b. Flowers sessile or nearly so:

9a. Plants generally with a more or less dense coat of spreading hairs. Calyx lobes 1 to 2 times longer than the tube. Fruits mostly 3 to 4 mm. wide. . . . . ***A. brachycarpus***. p. 141.

9b. Plants generally with a relatively sparse coat of short appressed hairs. Calyx lobes .8 to 1.2 times longer than the tube. Fruits mostly 2.3 to 3 mm. wide. . . . . ***A. wrangelianus***. p. 142.

AMORPHA. FALSE INDIGO.

Amorpha is represented in the Tassajara region by one species. . . . . ***Amorpha californica***. p. 142.

ASTRAGALUS. MILK VETCH, LOCOWEED, RATTLE WEED.

1a. Annual herbs with erect or ascending stems. The corollas are about 2.5 to 3.3 mm. long. The fruits are less than 4 mm. wide and not strongly curved. . . . . ***A. gambellianus***. p. 143.
1b. Perennial herbs with more or less prostrate stems radiating outward from the root crown. The corollas are about 10 to 12 mm. long. The fruits are about 5 to 16 mm. wide and strongly upwardly curved. . . ***A. lentiginosus*** var. ***idriensis***. p. 143.

GENISTA. BROOM.

Genista is represented in the Tassajara region by one introduced species. . . . . ***Genista monspessulana***. p. 143.

HOITA. LEATHER ROOT.

1a. Stems erect. Leaflets lance-ovate to ovate-rhombic. . . . . ***H. macrostachya***. p. 144.
1b. Stems prostrate and rooting at the nodes. Leaflets round to round-obovate. . . . . ***H. orbicularis***. p. 145.

HOSACKIA.

1a. Plants of wet habitats. Leaflets narrowly oblong or elliptic. . . . . ***H. oblongifolia***. p. 147.
1b. Plants of woodland or chaparral habitats. Leaflets broadly oblong to ovate or obovate:
2a.. Plants usually more or much more that 5 dm. (20") tall. Stems glabrous or with appressed hairs. Stipules scarious, fragile and not leaflet like. . . . . ***H. crassifolia***. p. 146.
2b. Plants usually less than 5 dm. tall. Stems villous pubescent. Stipules often wide, persistent and leaflet like. . . . . ***H. stipularis***. p. 147.

LATHYRUS. WILD PEA, SWEET PEA.

The genus *Lathyrus* is represented in the Tassajara region by one species. . . . . ***Lathyrus vestitus*** var. ***vestitus***. p. 147.

LUPINUS. LUPINE.

1a. Shrubs, subshrubs and perennial herbs:
2a. Shrubs and subshrubs:
3a. Erect shrubs ranging from about 6 to 20 dm. (2-6.5 ft.) tall. . . . . ***L. albifrons*** var. ***albifrons***. p. 148.
3b. Tufted and spreading woody based subshrubs, commonly forming dense mats:
4a. Pubescence appressed and silky. . . . . ***L. albifrons*** var. ***collinus***. p. 148.
4b. Pubescence woolly or shaggy. . . . . ***L. albifrons*** var. ***abramsii***. p. 148.
2b. Perennial herbs:
5a. Taprooted plants (the stem rising from a more or less vertical root stock). The leaves are concentrated toward the base of the plant; the leaflets are broadly oblanceolate to long-obovate, and mostly 1 to 3 cm. wide. . . ***L. cervinus***. p. 150.
5b. Rhizomatic plants (the stems rising from a generally horizontal root stock). The leaves are well distributed on the stems; the leaflets are narrowly oblanceolate and mostly .5 to 1.5 cm. wide. . . . . ***L. formosus***. p. 150.
1b. Annual herbs:
6a. Banners yellow, wings rose pink. . . . . ***L. stiversii***. p. 153.
6b. Banners and wings of different colors:
7a. Petals basically white, but may be tinged with yellow and/or streaked with lavender. . . . . ***L. microcarpus*** var. ***densiflorus***. p. 151.
7a. Petals mostly blue, reddish purple or lavender. Banners typically with a white or yellowish patch in lower center, which changes color (usually to a reddish to purplish shade) after fertilization:
8a. Most flowers produced in distinct whorls:
9a. Keel ciliate on lower margin near base. Leaves semi succulent, major stems usually hollow. Rare in this region. . ***L. succulentus***. p. 153.
9b. Keel not ciliate on lower margin. Leaves not succulent, stems solid. Locally common to abundant:
10a. Flowers 8 to 15 mm. long, pedicels 3 to 5 mm. long. . . . . ***L. nanus***. p. 152.
10b. Flowers 4 to 8 mm. long, pedicels 0 to 3 mm. long. . . . . ***L. bicolor***. p. 149.
8b. Flowers produced singularly along the axis of the inflorescence (which can be densely or loosely flowered):
11a. Upper leaves usually intermixed with lower flowers. Leaves with relatively dense gray green hairs. Keel glabrous or nearly so. . . . . ***L. concinnus***. p. 150.
11b. Upper leaves positioned below the lower flowers. Stems prickly hairy or nearly bald. Keel ciliate toward base:
12a. Leaves and stems covered with long, stiff, prickly hairs. Leaflets broadly cuneate-obovate and rounded at the apex. . . . . ***L. hirsutissimus***. p. 153.
12b. Leaves and stems without long, stiff and prickly hairs. Leaflets narrowly linear to very narrowly oblanceolate. ***L. truncatus***. p. 153.

MEDICAGO. ALFALFA, MEDICK.

1a. Pods one seeded, more or less kidney shaped, and not prickly. . . . . ***M. lupulina***. p. 154.
1b. Pods several seeded, spirally coiled, and with prickly margins (and thus burr like):
2a. Leaflets usually with a dark or reddish brown central spot, which can be of various shapes. Stipule teeth less than a third as long as the stipules are wide. . . . . ***M. arabica***. p. 154.
2b. Leaflets without a dark central spot. Stipule teeth about half as long or longer than the stipules are wide. . . . . ***M. polymorpha***. p. 154.

MELILOTUS. MELILOT, SWEET CLOVER.

Melilotus is represented in the Tassajara region by one species. . . . . ***M. alba***. p. 154.

RUPERTIA. SCURF PEA.

The genus *Rupertia* is represented in the Tassajara region by one species. . . . . ***Rupertia physodes***. p. 154.

THERMOPSIS. FALSE LUPINE.

Thermopsis is represented in the Tassajara region by one species. . . . . ***Thermopsis californica*** var. ***californica***. p. 155.

TRIFOLIUM. CLOVER.

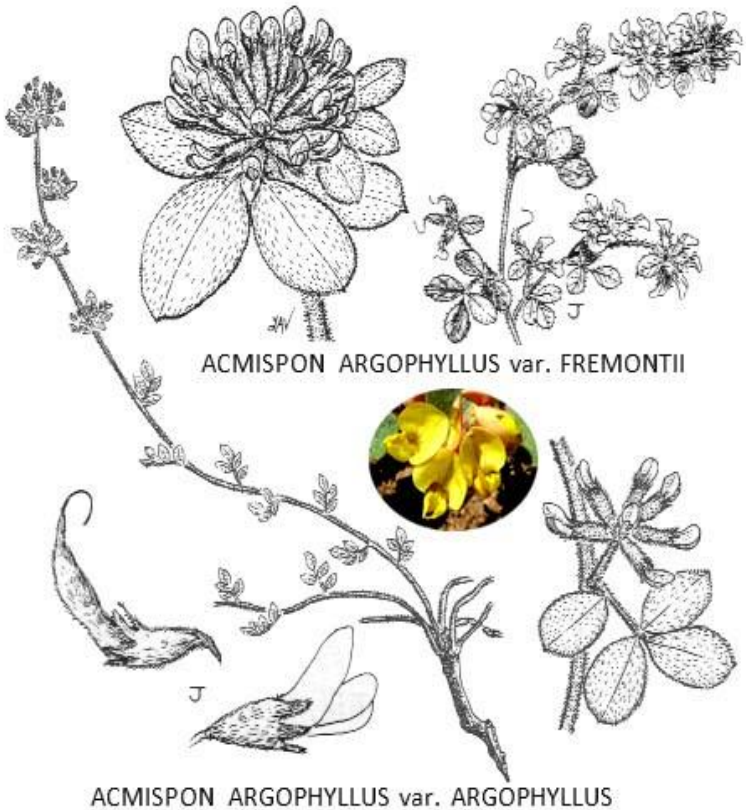
1a. Flower heads not subtended by disk or bowl shaped involucres:
2a. Flowers borne on short pedicels and turning outward or downward with age, exposing the upper rachis of the inflorescence, which resembles a pin point:
3a. Leaflets obtuse (rounded) at the apex. Calyx lobe margins with short, flat and teeth like bristles on the margins. . . . ***T. ciliolatum***. p. 155.
3b. Leaflets with an emarginate (notched) or retuse (slightly notched) apex. Calyx lobe margins glabrous or with fine hairs:
4a. Calyx lobe margins glabrous, the tube 1.5 to 2.5 mm. long. . . . . ***T. gracilentum***. p. 155.
4b. Calyx lobe margins with fine hairs, the tube .08 to 1.4 mm. wide. . . . . ***T. bifidum***. var. ***decipiens***. p. 155.
2b. Flowers nearly sessile and tightly compacted, and not turning outward or downward with age:
5a. Leaflets oblanceolate to obovate and less than 3 times longer than broad. Flowers purple with white spots. . . . . ***T. albopurpureum***. p. 155.
5b. Leaflets narrowly oblong to oblanceolate and 3 to 8 times longer than broad. Flowers white to pale pink. . . . . ***T. arvense***. p. 155.
1b. Flower heads subtended by disk or bowl shaped involucres:
6a. Involucres bowl or cup shaped:
7a. Involucre lobes entire. . . . . ***T. microcephalum***. p. 156.
7b. Involucre lobes toothed. . . . . ***T. microdon***. p. 156.
6b. Involucres more or less flat:
8a. Plants generally of open and dry habitats, especially in grassy areas:
9a. Calyx lobes longer than the tube; the tube not splitting between the upper lobes. . . . . ***T. variegatum*** var. ***geminiflorum***. p. 156.
9b. Calyx lobes shorter than the tube, the tube splitting between the upper lobes:
10a. Corollas exserted from the calyx tube for less than half their length. Involucres with about ten deep lobes. . . . . ***T. oliganthum***. p. 156.
10b. Corollas exserted from the calyx tube for more than half their length. Involucres with about forty shallow spine like lobes. . . . . ***T. willdenovii***. p. 156.
8b. Plants of stream banks or other wet or seasonally wet habitats:
11a. Rhizomatic perennial herbs. Banner tips notched. Fruits 2 to 4 (-6) seeded. . . . . ***T. wormskioldii***. p. 157.
11b. Annual herbs. Banner tips not or only slightly notched. Fruits 1 or 2 seeded:
12a. Calyx lobes shorter than the calyx tube. . . . . ***T. obtusiflorum***. p. 156.
12b. Calyx lobes longer that the calyx tube. . . . . ***T. variegatum***. p. 156.
13a. Flower heads 1 to 1.5 cm. wide and containing 5 to 10 flowers. Corollas 6 to 10 mm. long. . . . . ***T. variegatum*** var. ***variegatum***. p. 156.
13b. Flower heads 1.5 to 3 cm. wide and containing 10 or more flowers. Corollas 9 to 17 mm. long. . . . . ***T. variegatum*** var. ***major***. p. 156.

VICIA. VETCH, TARE.

1a. Flowers produced in three or more flowered axillary racemes. . . . . ***V. americana***. p. 158.
1b. Flowers produced in two's (or sometimes singularly) in the axils of the leaves. . . . . ***V. sativa***. p. 158.

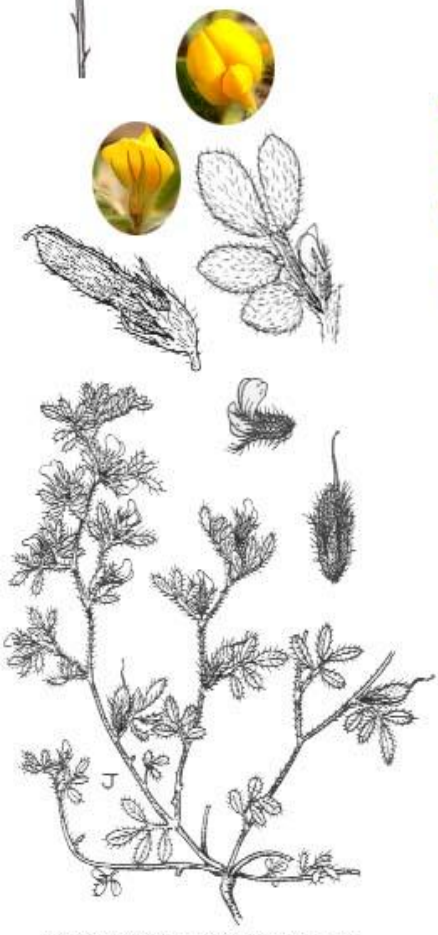
Continued on page 159.

ACMISPON AMERICANUS

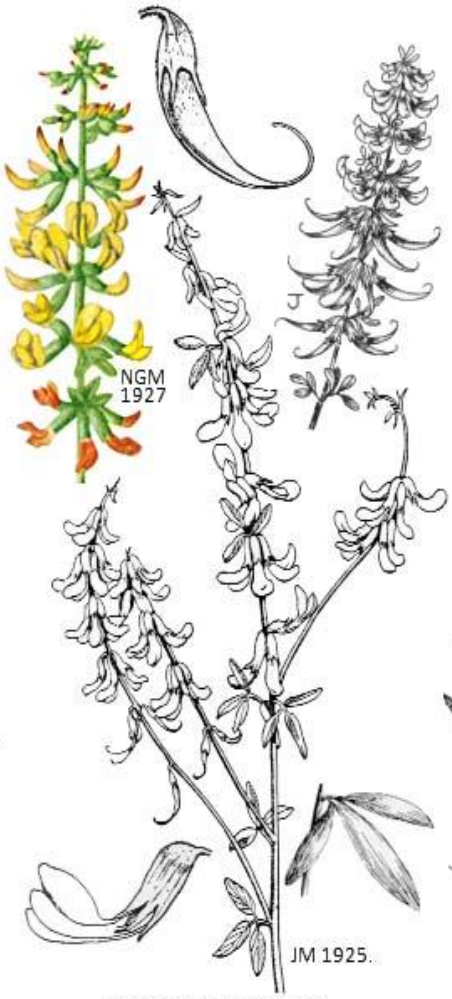


ACMISPON ARGOPHYLLUS var. FREMONTII

ACMISPON ARGOPHYLLUS var. ARGOPHYLLUS



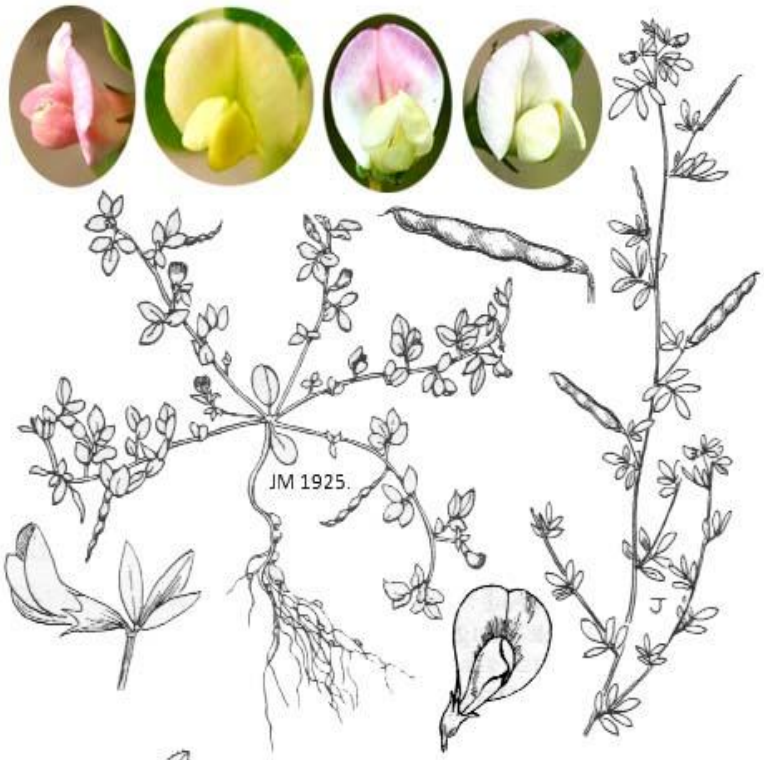
ACMISPON BRACHYCARPUS



ACMISPON GLABER

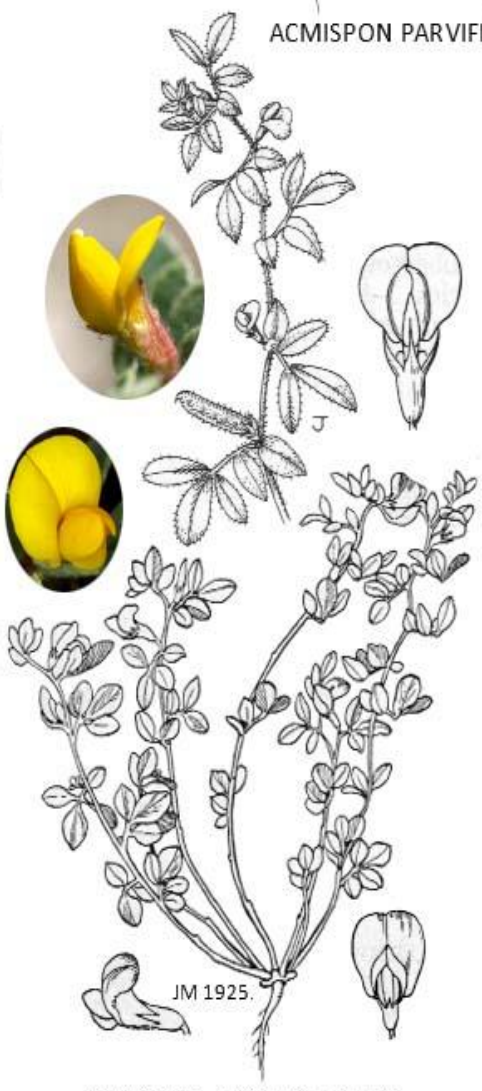
ACMISPON GRANDIFLORUS

ACMISPON MARITIMUS

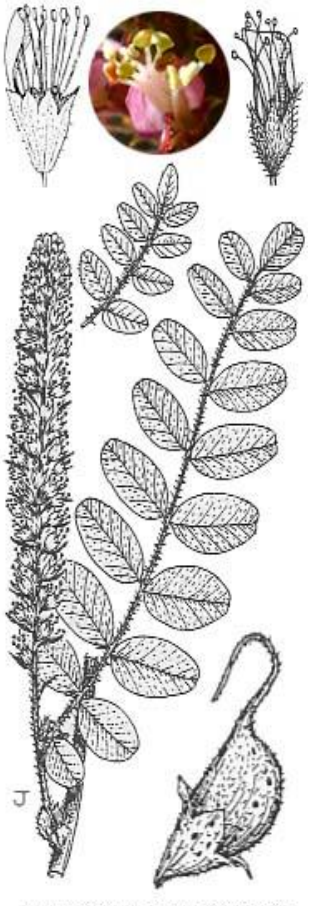


ACMISPON PARVIFLORUS

ACMISPON STRIGOSUS



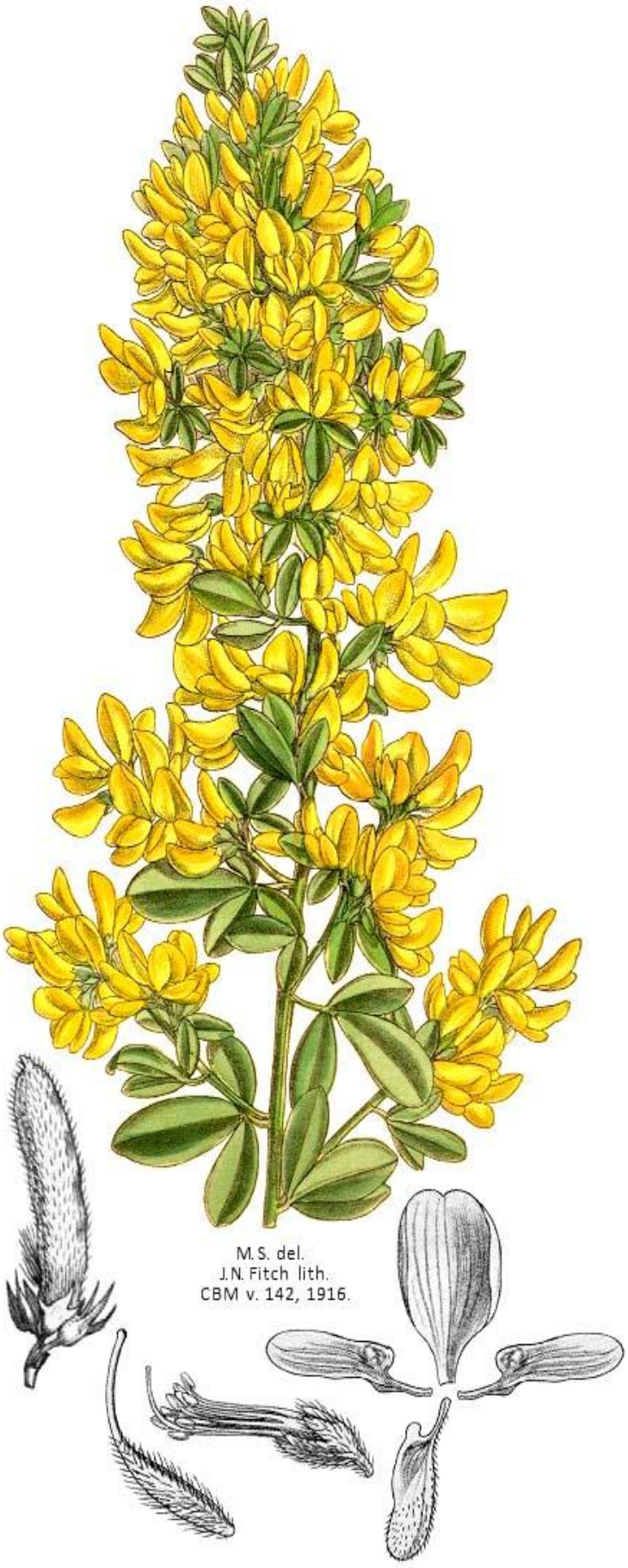
ACMISPON WRANGELIANUS



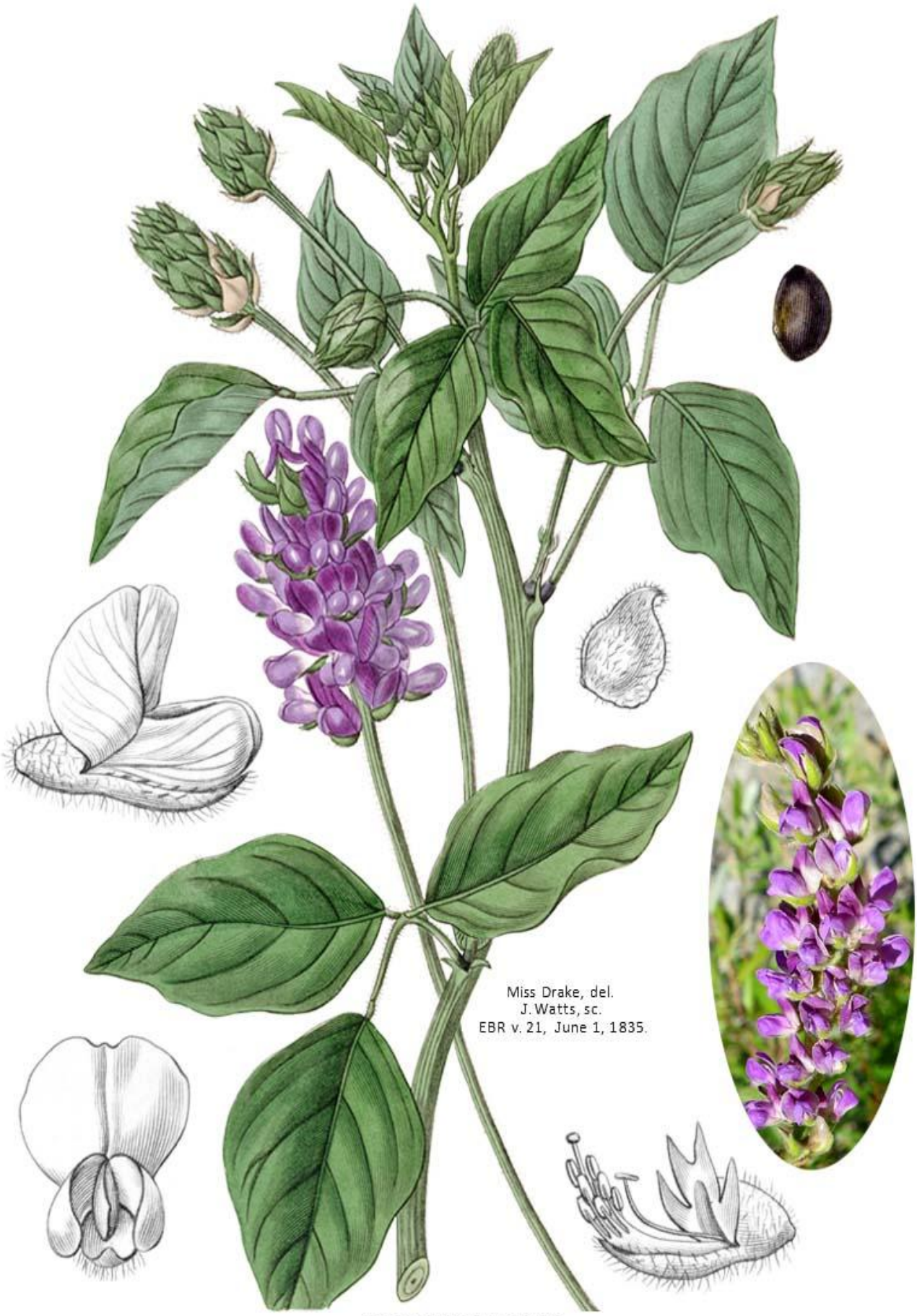
AMORPHA CALIFORNICA

ASTRAGALUS GAMBELLIANUS

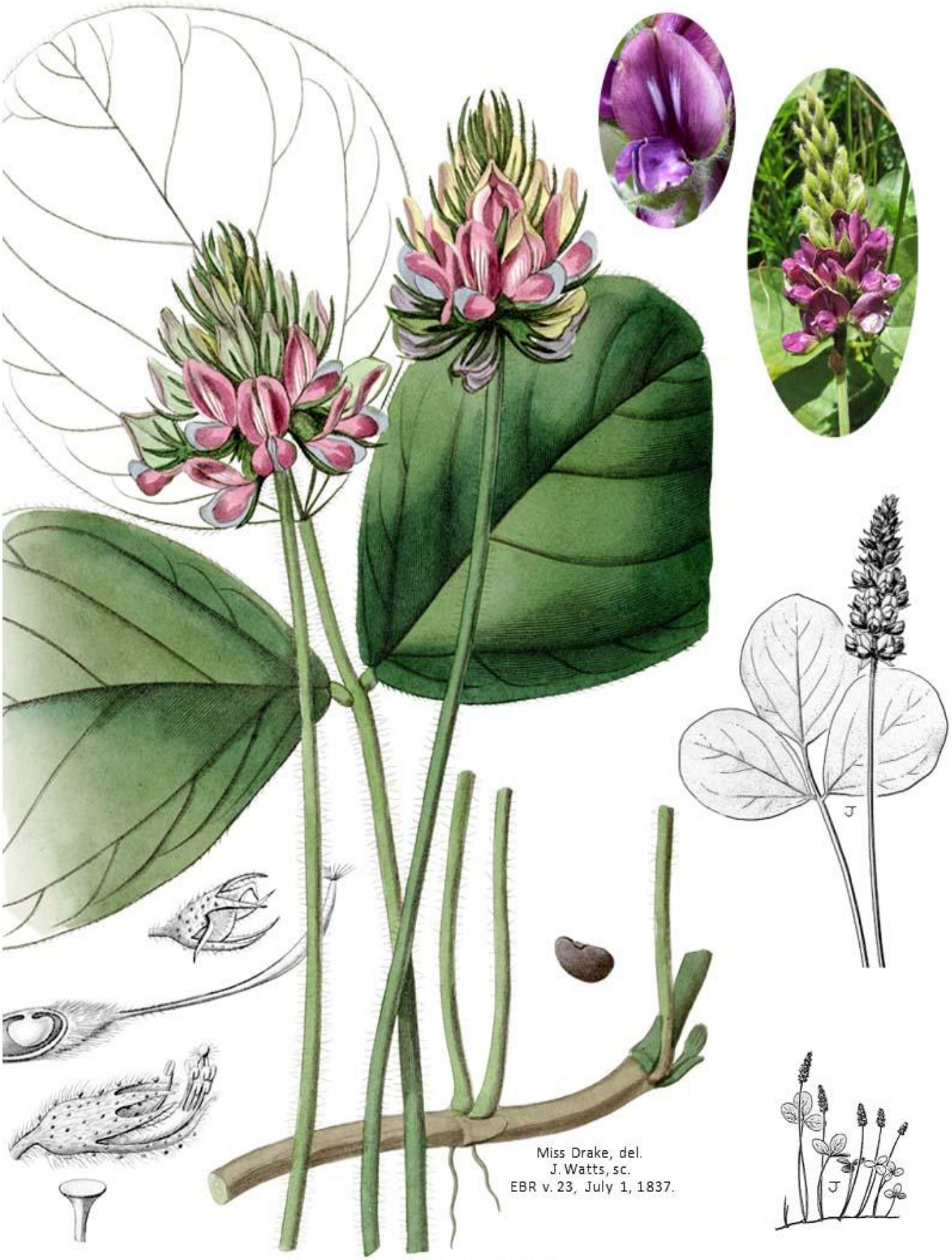
ASTRAGALUS LENTIGINOSUS var. IDRIENSIS



GENISTA MONSPESSULANA

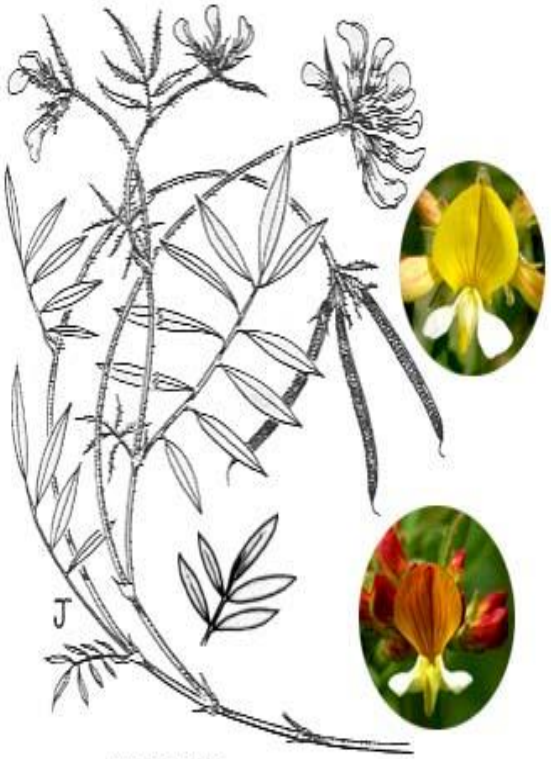


HOITA MACROSTACHYA



HOITA ORBICULARIS

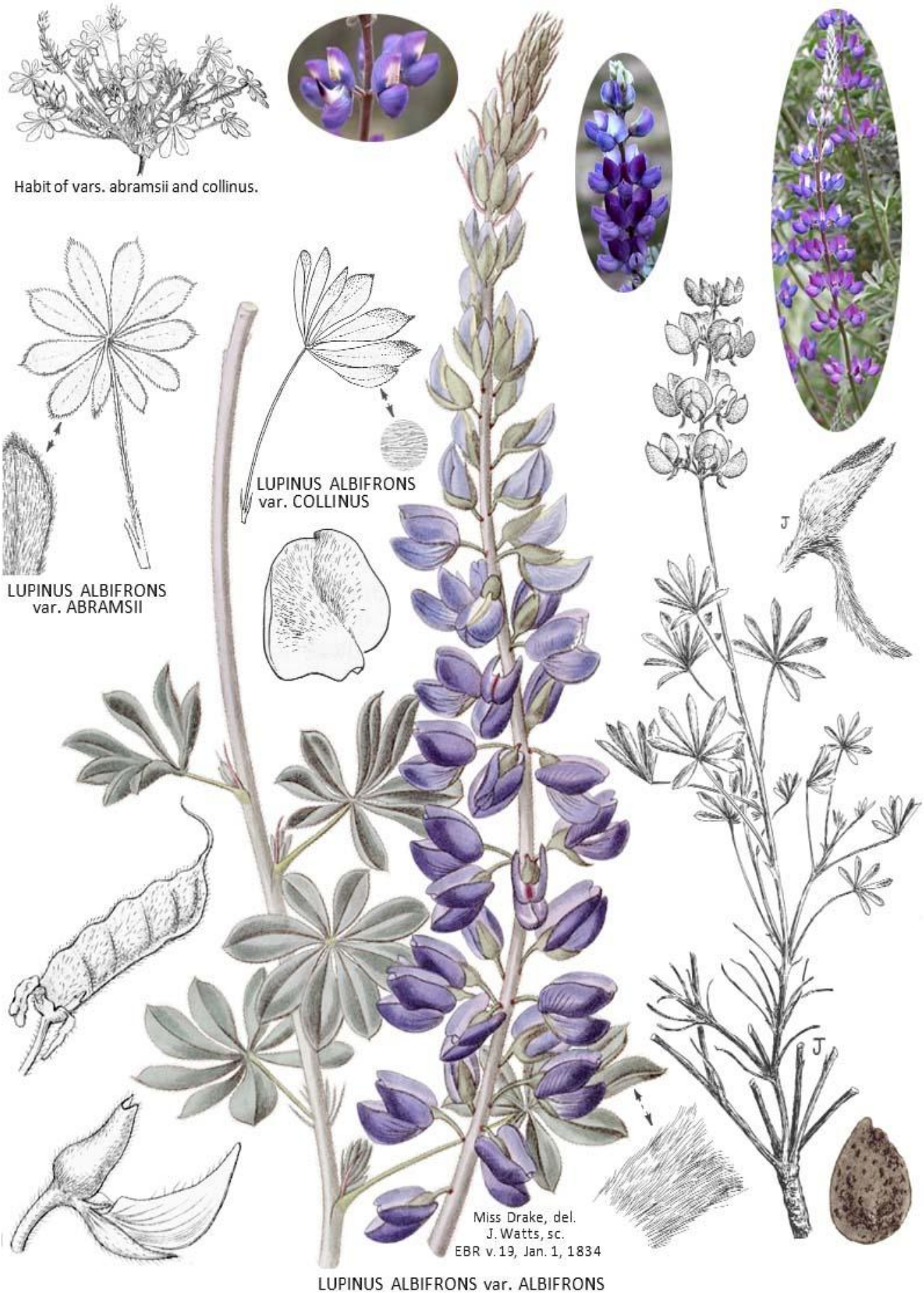
HOSACKIA CRASSIFOLIA



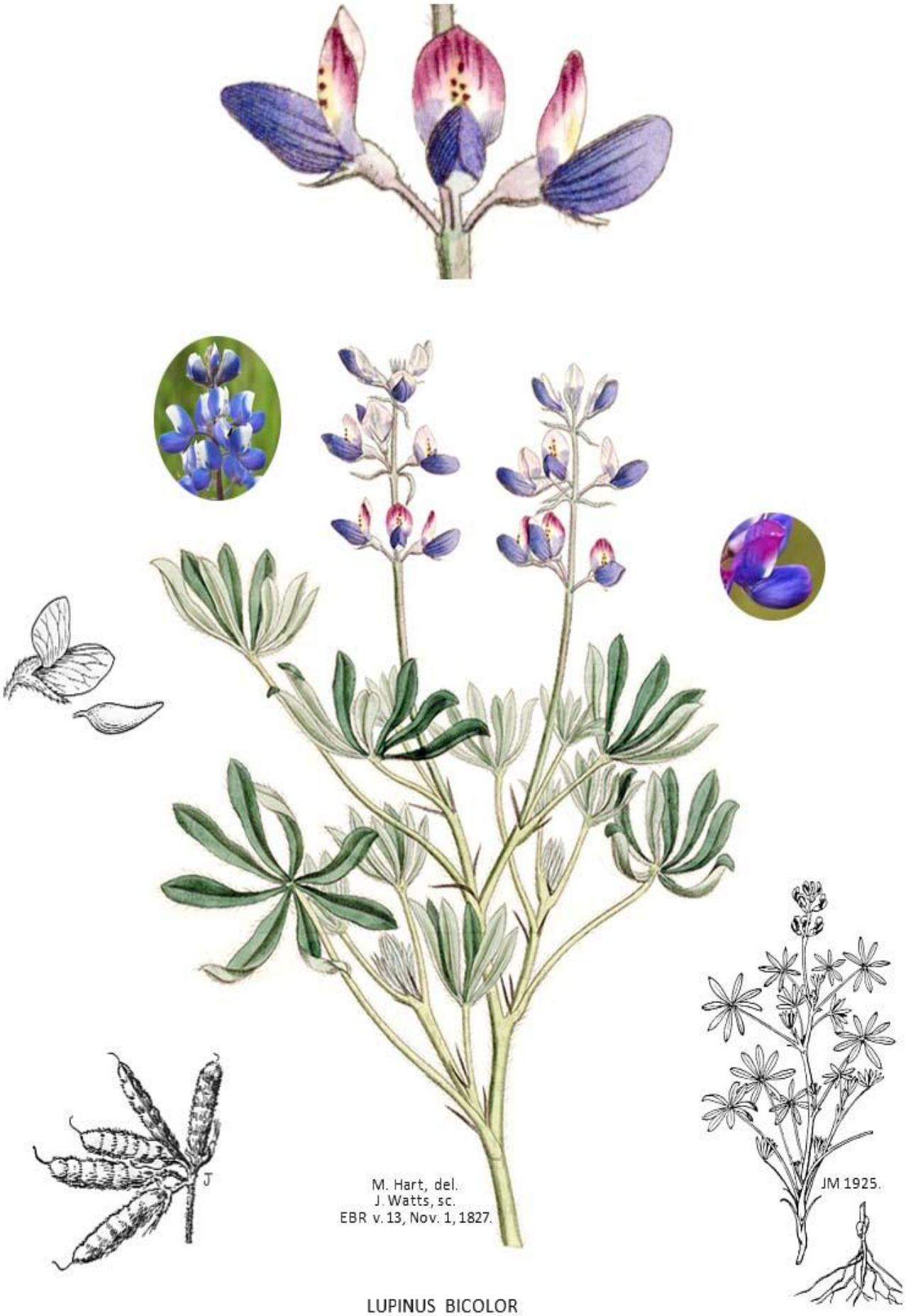
HOSACKIA OBLONGIFOLIA

HOSACKIA STIPULARIS

LATHYRUS VESTITUS

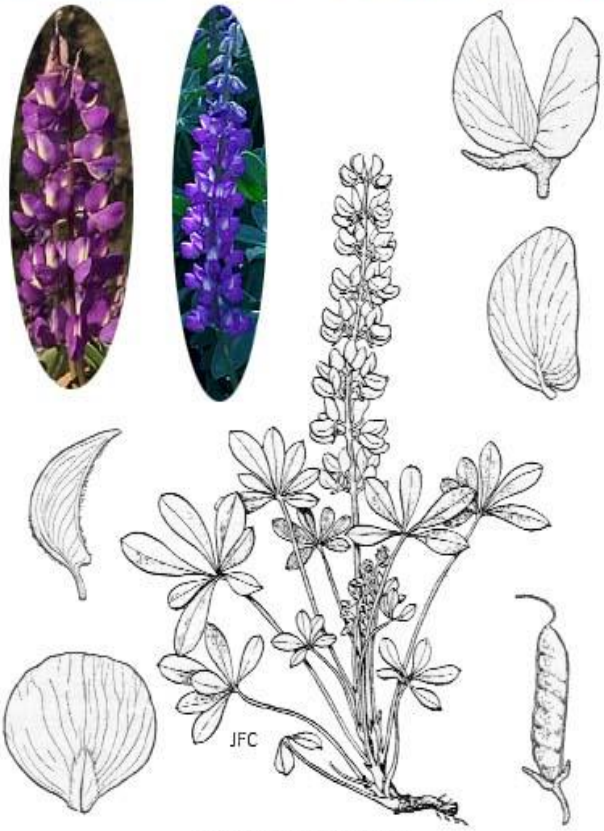


LUPINUS ALBIFRONS var. ALBIFRONS



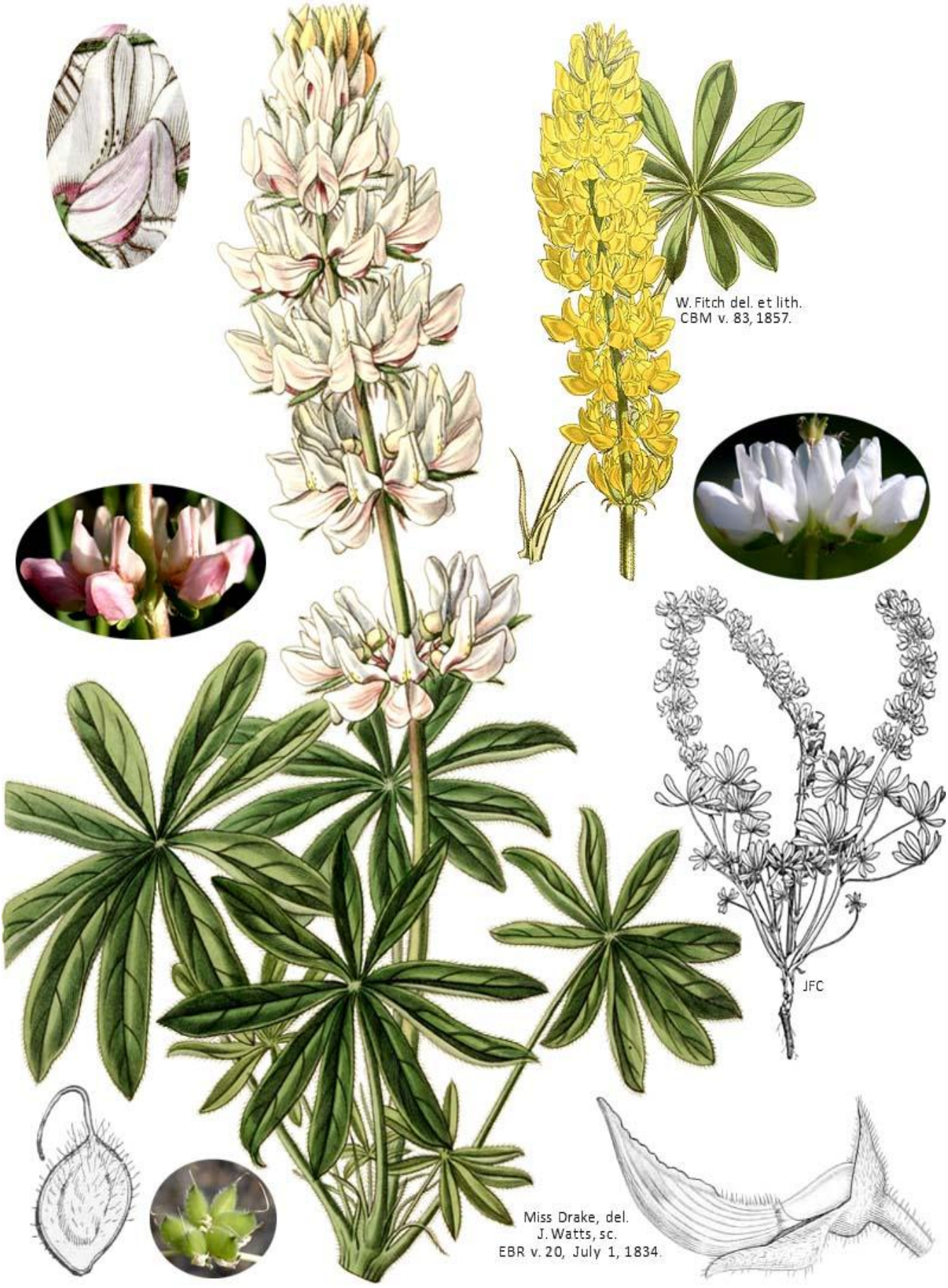
LUPINUS BICOLOR

LUPINUS CONCINNUS

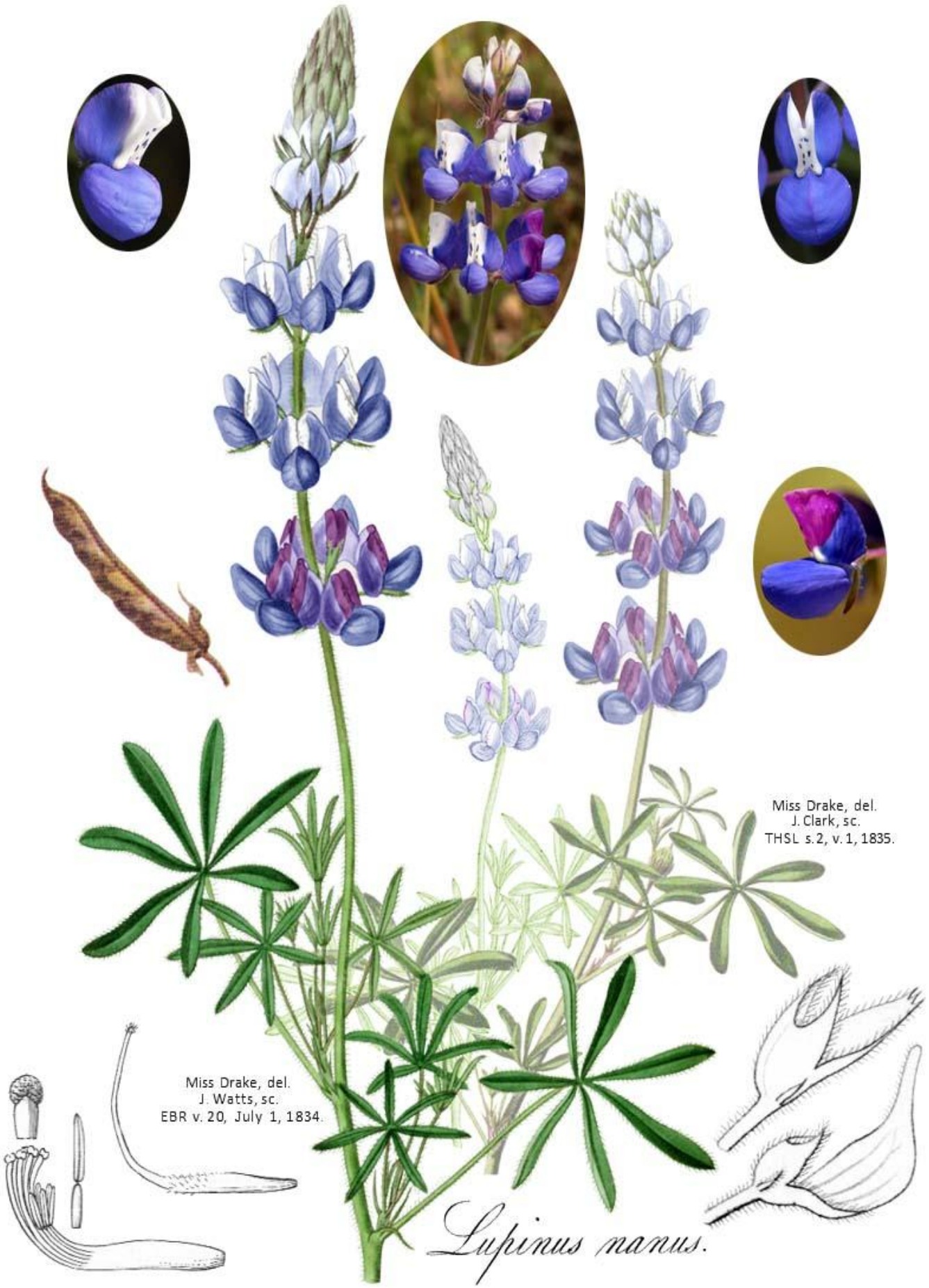


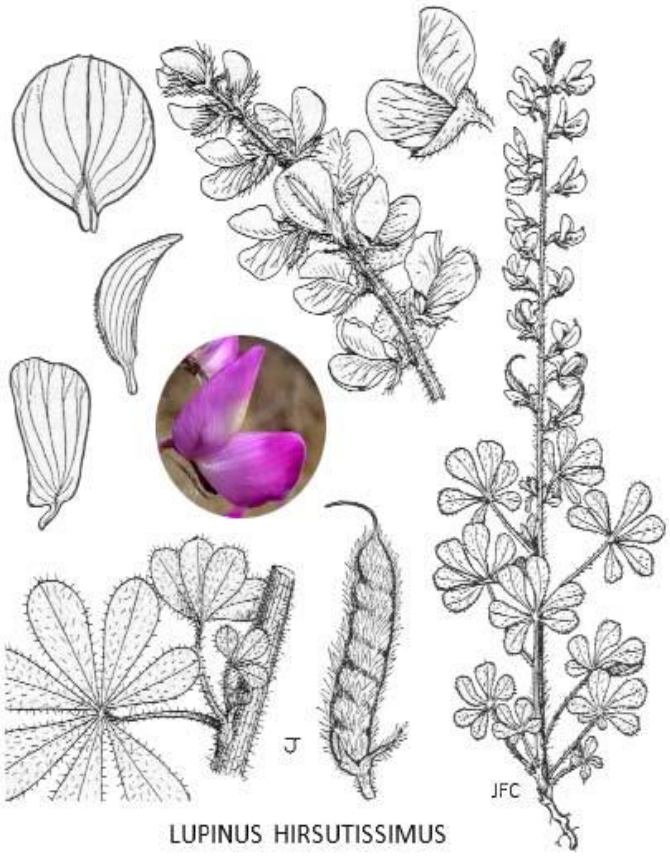
LUPINUS CERVINUS

LUPINUS FORMOSUS



LUPINUS MICROCARPUS var. DENSIFLORUS


Miss Drake, del.
J. Clark, sc.
THSL s.2, v.1, 1835.
Miss Drake, del.
J. Watts, sc.
EBR v. 20, July 1, 1834.
Lupinus nanus.

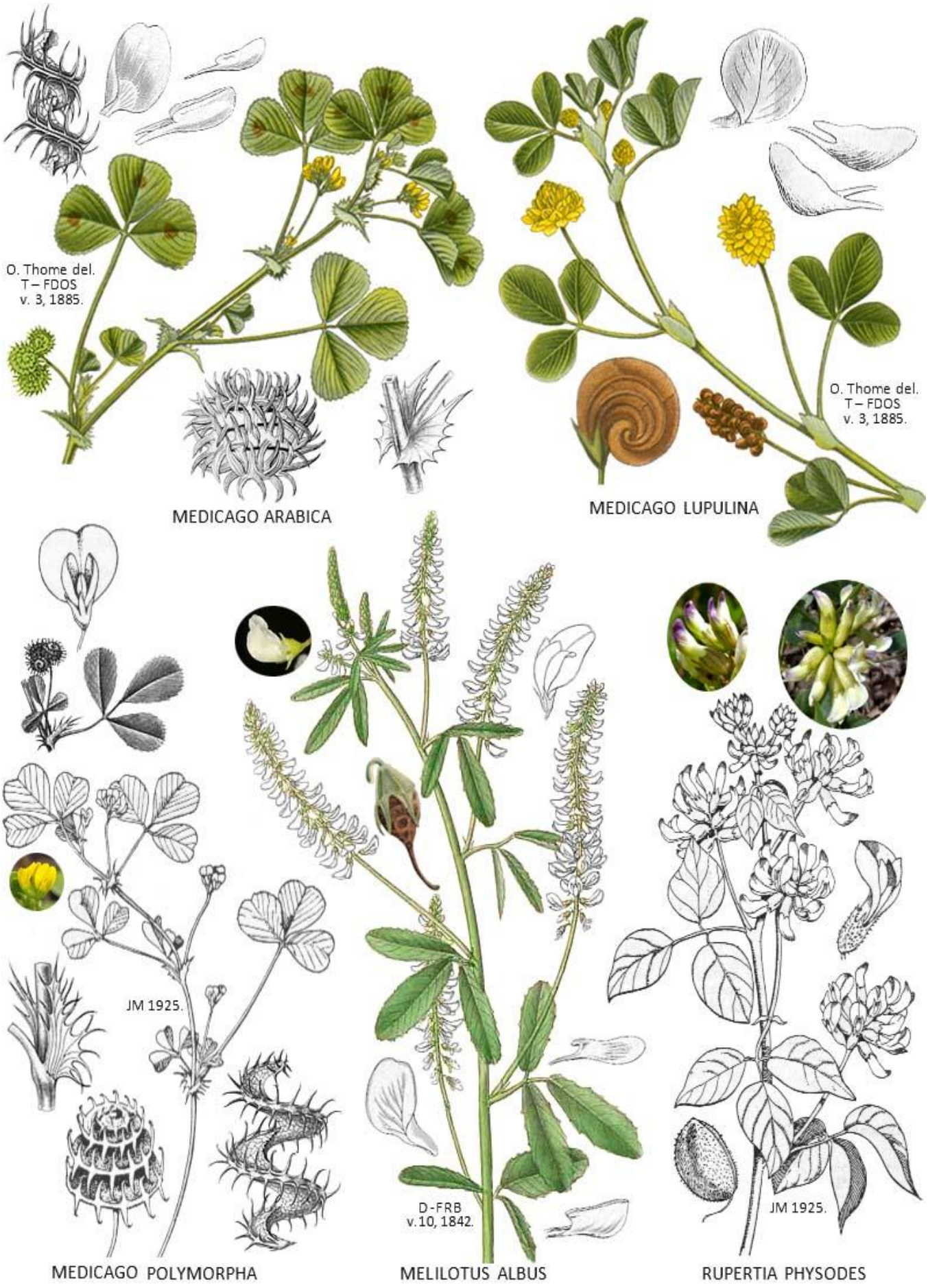


LUPINUS HIRSUTISSIMUS

LUPINUS STIVERSII

LUPINUS SUCCULENTUS

LUPINUS TRUNCATUS


O. Thome del.
T – FDOS
v. 3, 1885.
MEDICAGO ARABICA
O. Thome del.
T – FDOS
v. 3, 1885.
MEDICAGO LUPULINA
JM 1925.
MEDICAGO POLYMORPHA
D-FRB
v. 10, 1842.
MELILOTUS ALBUS
JM 1925.
RUPERTIA PHYSODES

THERMOPSIS CALIFORNICA

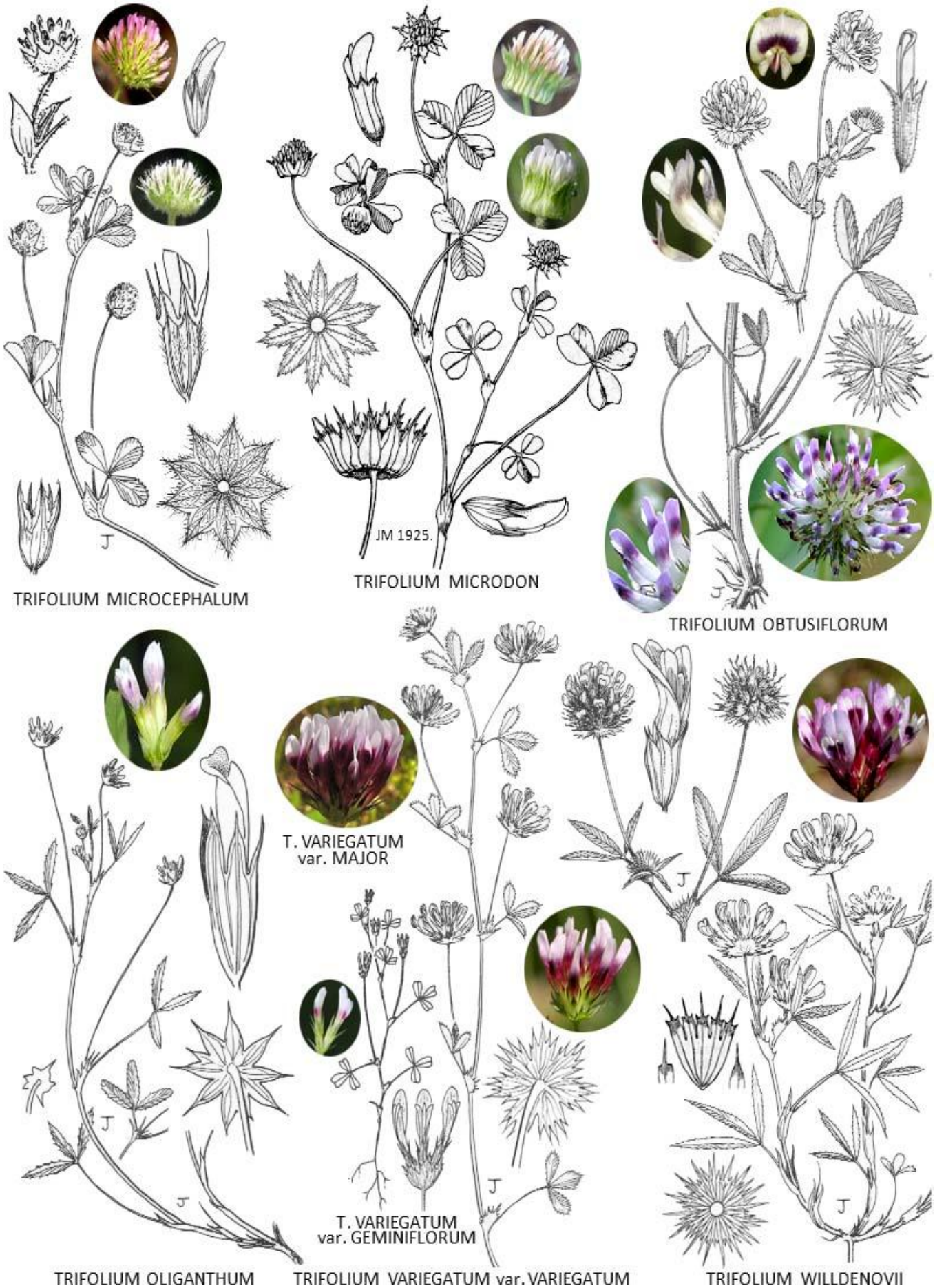
TRIFOLIUM ALBOPURPUREUM

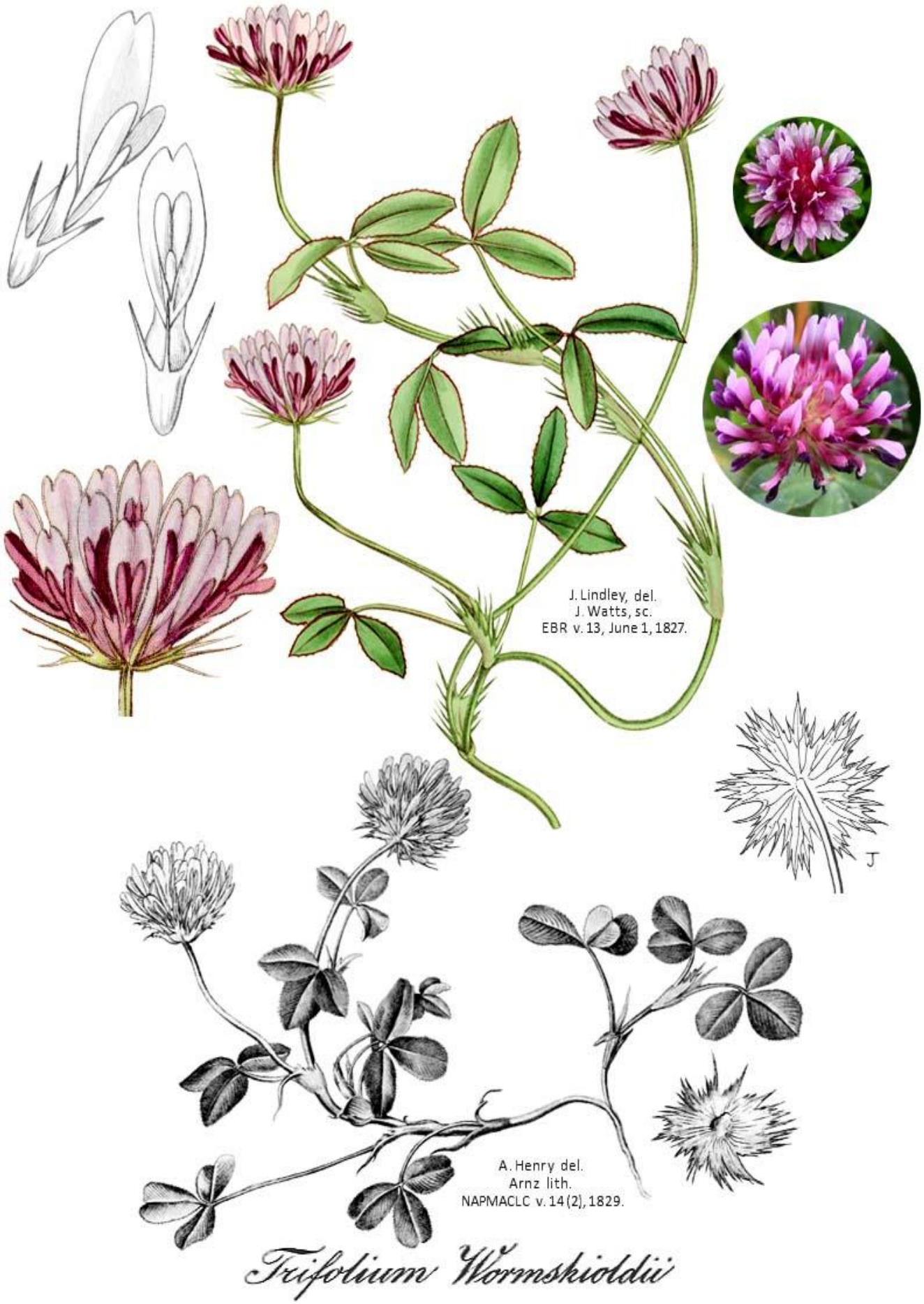
TRIFOLIUM ARVENSE

TRIFOLIUM CILIOLATUM

TRIFOLIUM BIFIDUM

TRIFOLIUM GRACILENTUM


TRIFOLIUM MICROCEPHALUM
TRIFOLIUM MICRODON
JM 1925.
TRIFOLIUM OBTUSIFLORUM
T. VARIEGATUM
var. MAJOR
T. VARIEGATUM
var. GEMINIFLORUM
TRIFOLIUM OLIGANTHUM
TRIFOLIUM VARIEGATUM var. VARIEGATUM
TRIFOLIUM WILLDENOVII


J. Lindley, del.
J. Watts, sc.
EBR v. 13, June 1, 1827.
J
A. Henry del.
Arnz lith.
NAPMACLC v. 14 (2), 1829.
Trifolium Wormskioldii

VICIA AMERICANA

VICIA SATIVA

FAGACEAE. BEECH OR OAK FAMILY.

1a. Staminate and pistillate flowers produced in catkins that are relatively stiff and generally erect from the point of attachment (the staminate flowers are positioned above the pistillate flowers). Scales of acorn cups spreading. . . . . ***Notholithocarpus***.

1b. Staminate flowers produced in limber and thus dangling catkins; pistillate flowers produced in axillary clusters. Scales of acorn cups appressed. . . . . ***Quercus***.

NOTHOLITHOCARPUS. TAN OAK, TANBARK OAK, FALSE LITHOCARPUS.

The genus *Notholithocarpus* has only one species. . . . . ***Notholithocarpus densiflorus***. p. 160- 161

QUERCUS. OAK TREES AND SHRUBS.

1a. Acorn cup scales thin. The inner side of the acorn shells are woolly. The outer most bark surfaces usually range from medium light gray to very dark gray, gray-brown, or nearly black:

2a. Deciduous trees with deeply lobed leaves, the outer portions of the lobes with 1 to 5 sharp (but not spiny) teeth. . . . . ***Q. kelloggii***. p. 169, 170.

2b. Evergreen trees or shrubs with entire or toothed leaves, the teeth abruptly pointed or spine-tipped:

3a. Leaf blades usually convex, the margins often rolled under. The lower surfaces of the blades usually have tufts of hair in the axils of the larger veins. The acorns are lanceolate in outline and mature in 1 year. . . ***Q. agrifolia***. p. 162, 163.

3b. Leaf blades generally flat or wavy. The lower surfaces of the blades without tufts of hairs. The acorns are ovoid, cylindric ovoid or barrel shaped, and mature in 2 years:

4a. Trees. Leaf blades mostly 3 to 9 cm. long, the upper surfaces are olive green and the lighter lower surfaces are dull olive green or grayish green. Acorns oblong or barrel shaped in outline, abruptly tapering to the tip. . . . . ***Q. parvula*** var. ***shrevei***. p. 173.

4b. Trees or shrubs. Leaf blades 2 to 5 cm. long, the upper surfaces are usually a shiny dark green and the lower surfaces are more or less shiny and yellow-green. Acorns ovoid to cylindric ovoid in outline, and acute to somewhat obtuse at the tip:

5a. Trees ranging from about 10 to 22 m. (33-72') tall. Leaf blades 2 to 5 cm. long. . . . . ***Q. wislizenii*** var. ***wislizenii***. p. 174.

5b. Shrubs ranging from about 2 to 4 (-6) m. (6-20') tall. Leaf blades 1.8 to 4 cm. long. . . . . ***Q. wislizenii*** var. ***frutescens***. p. 174.

1b. Acorn cup scales thick, and, to varying degrees, outwardly protruding. The inner side of the acorn shells are glabrous (except for in *Q. chrysolepis*). The outer most bark surfaces usually range from light gray to whitish:

6a. Deciduous trees with lobed or wavy leaf margined leaves (they are sometimes entire in *Q. douglasii*). Acorns maturing in one year:

7a. Leaves moderately to shallowly lobed (occasionally entire or nearly so), the upper surface generally dull green with a blue-green cast. . . . . ***Q. douglasii***. p. 167, 168.

7b. Leaves moderately to deeply lobed, the upper surface generally shiny dark green. . . . . ***Q. lobata***. p. 171, 172.

6b. Evergreen trees and shrubs with entire or spiny toothed leaf margins. Acorns maturing in one or two years:

8a. Trees or shrubs with most leaf blades ranging from 3 to 6 cm. long; the tips are generally pointed. Some leaf blades have entire margins. Acorns maturing in two years; the shells are woolly inside. . . ***Q. chrysolepis***. p. 164, 165, 166.

8b. Shrubs with leaf blades ranging from 1.5 to 3 cm. long; the tips are generally rounded in outline. All leaf blades have toothed margins. Acorns maturing in one year; the shells are glabrous inside. . . . . ***Q. berberidifolia***.

GARRYACEAE. SILK TASSEL FAMILY.

GARRYA. SILK TASSEL.

Garrya is represented in the Tassajara region by one species. . . . . ***Garrya flavescens***. p. 175.

GERANIACEAE. GERANIUM FAMILY.

1a. Leaves pinnately divided. Fertile stamens 5. . . . . ***Erodium***.

1b. Leaves palmately divided. Fertile stamens 10. . . . . ***Geranium***.

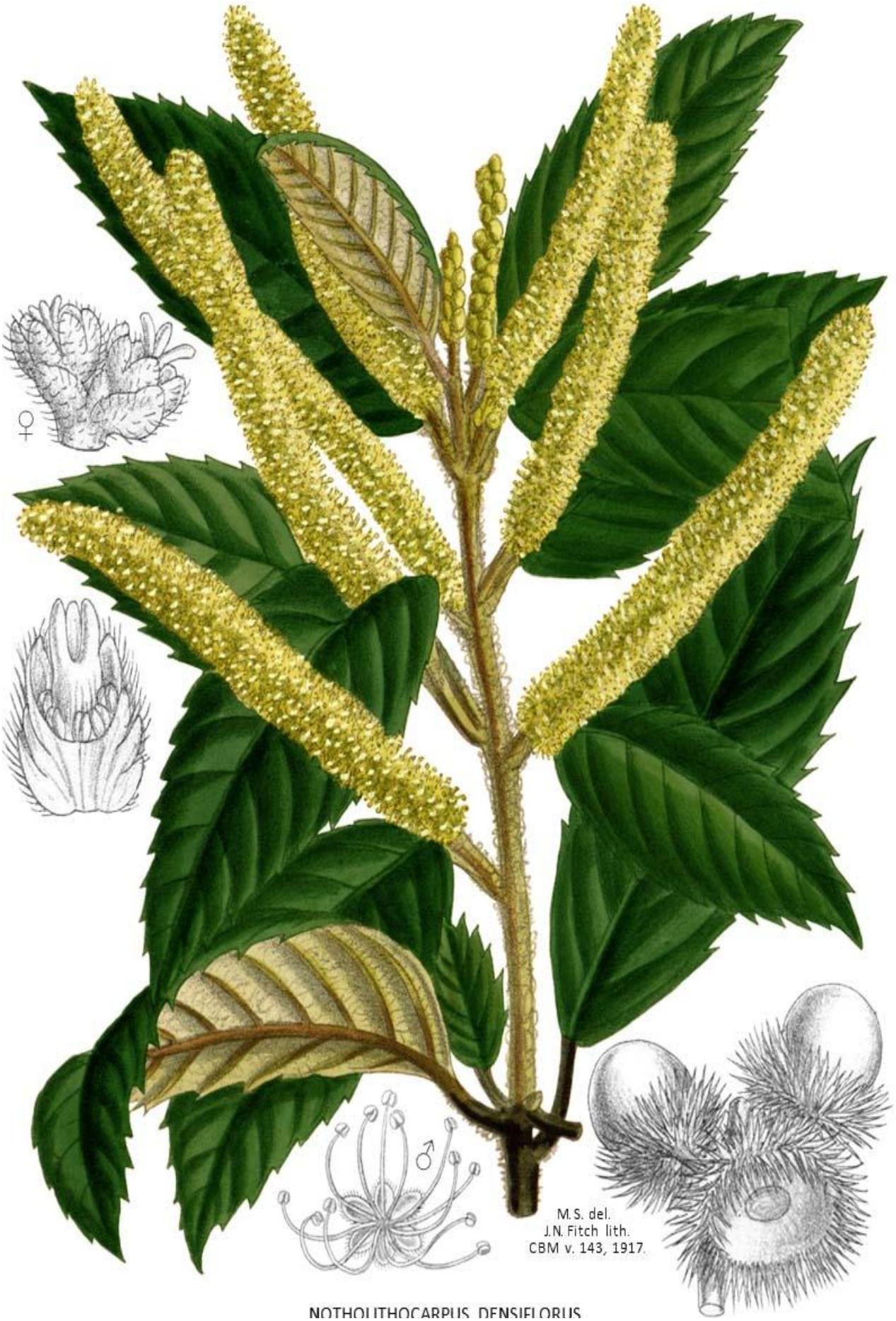
ERODIUM. FILAREE, STORK'S BILL, CLOCKS.

Erodium is represented in the Tassajara region by one introduced species. . . . . ***Erodium cicutarium***. p. 175.

GERANIUM. CRANE'S BILL.

Geranium is represented in the Tassajara region by one introduced species. . . . . ***Geranium dissectum***. p. 175.

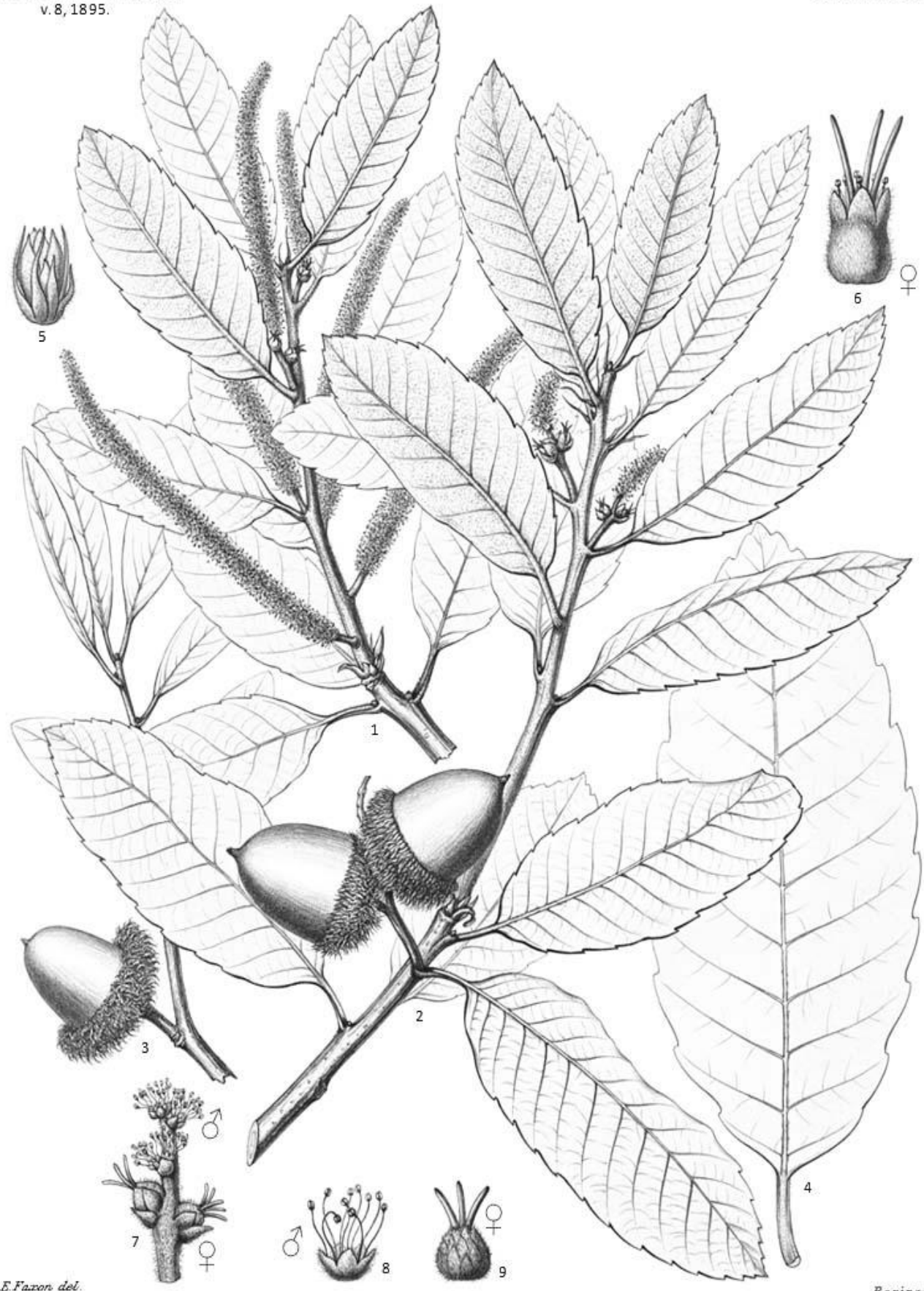
Continued on page 176.



NOTHOLITHOCARPUS DENSIFLORUS

Silva of North America.
v. 8, 1895.

Tab. CCCCXXXVIII.



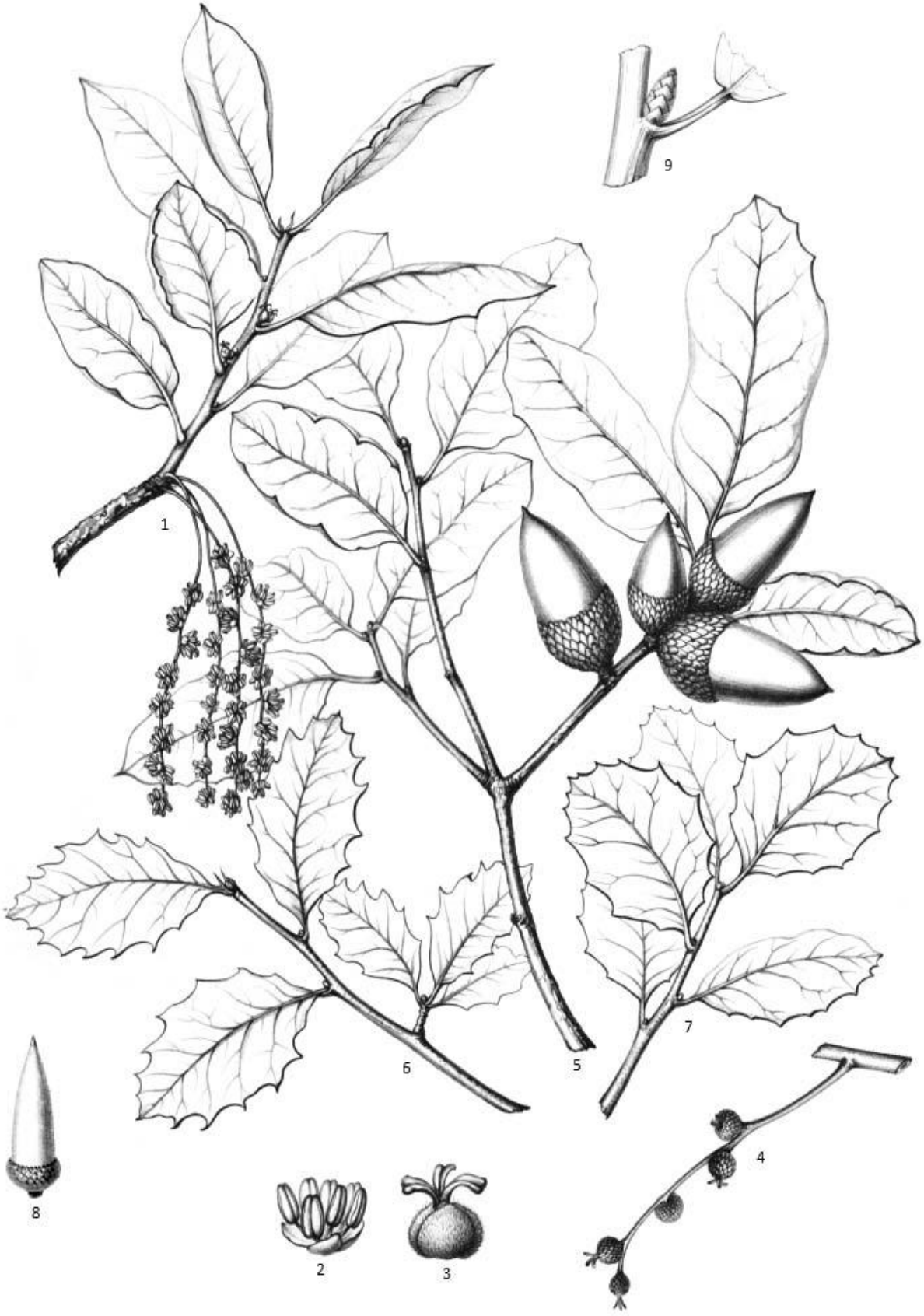
C.E. Faxon del.
A. Riocreux direx.

NOTHOLITHOCARPUS DENSIFLORUS

Rapine sc.
Imp. J. Taneur, Paris.

Silva of North America.
v. 8, 1895.

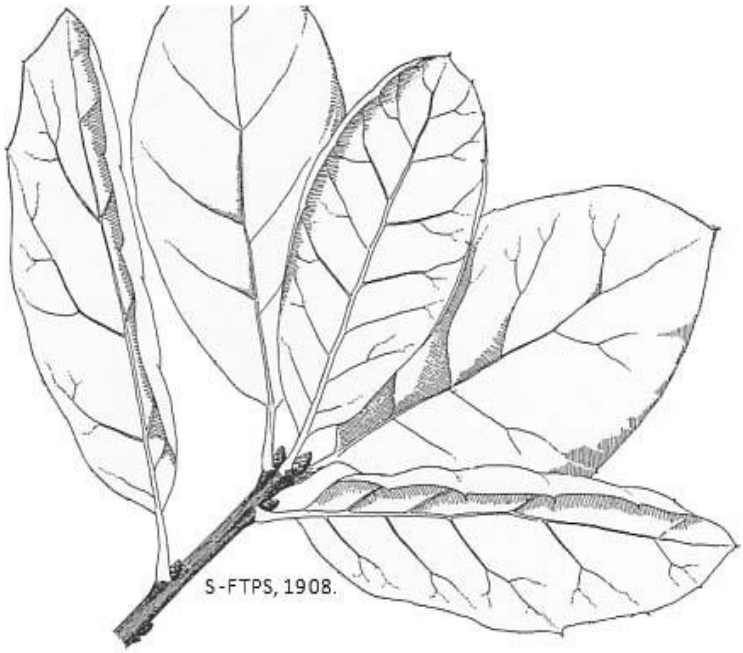
Tab. CCCCIII.

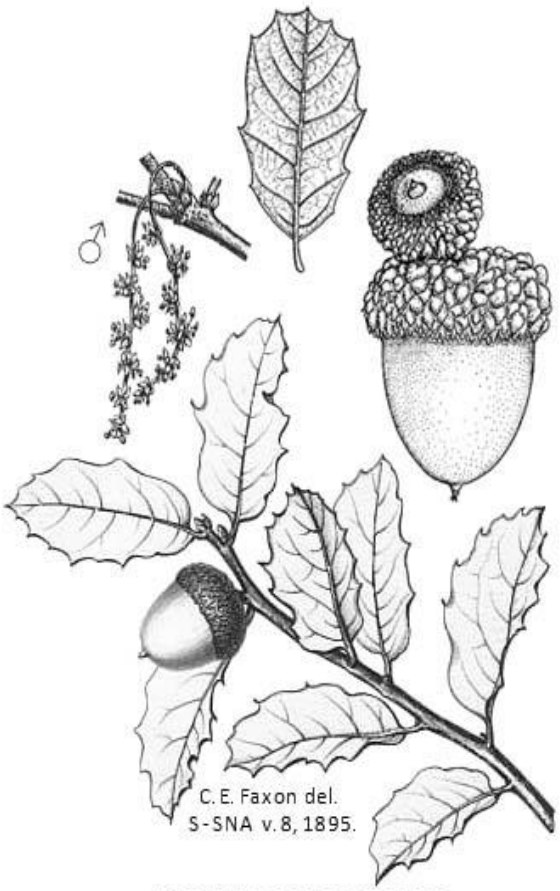


C. E. Faxon del.
A. Hiocreau direx.r

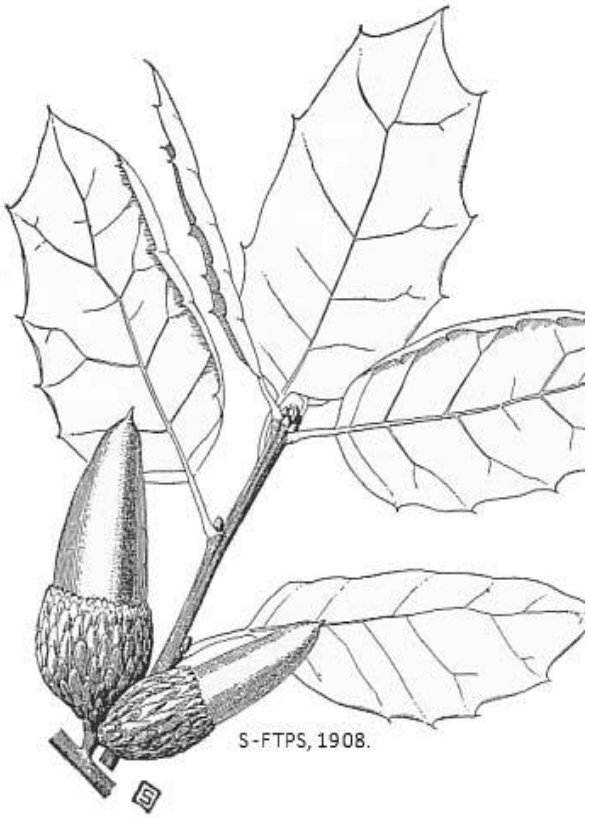
QUERCUS AGRIFOLIA, Née.

Mignerac sc.
Imp. J. Taneur, Paris.

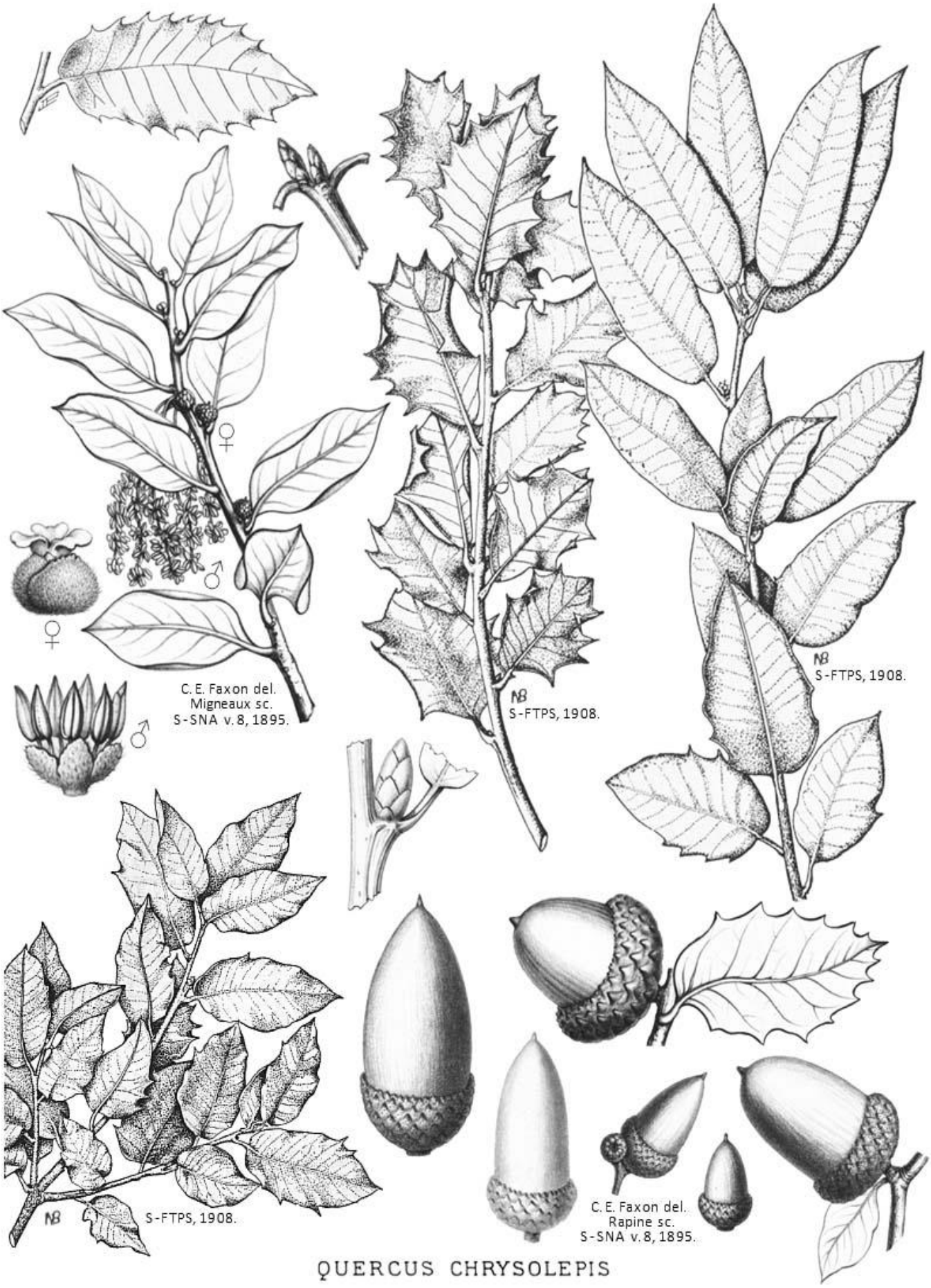




QUERCUS BERBERIDIFOLIA



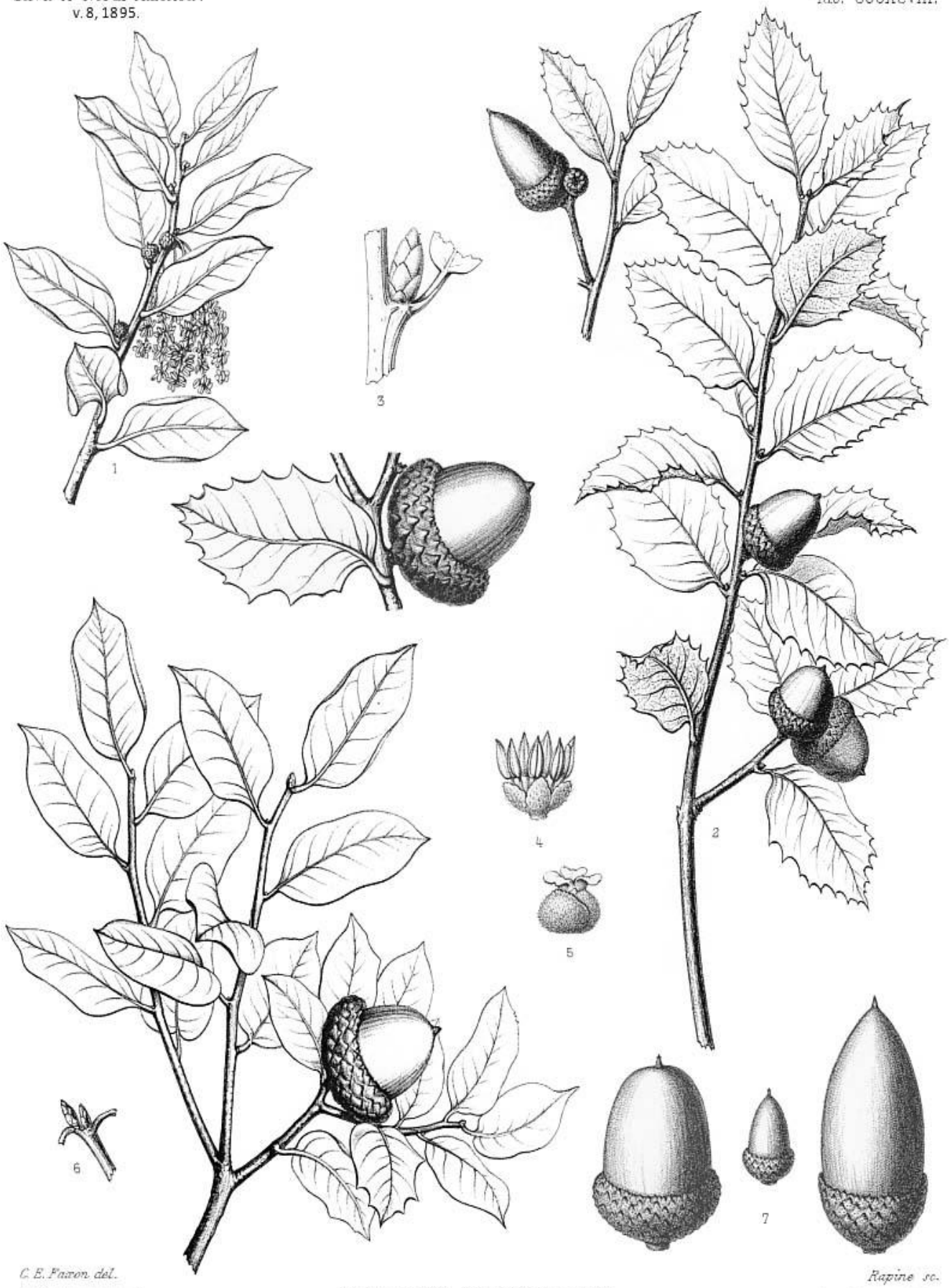
QUERCUS AGRIFOLIA



QUERCUS CHRYSOLEPIS

Silva of North America.
v. 8, 1895.

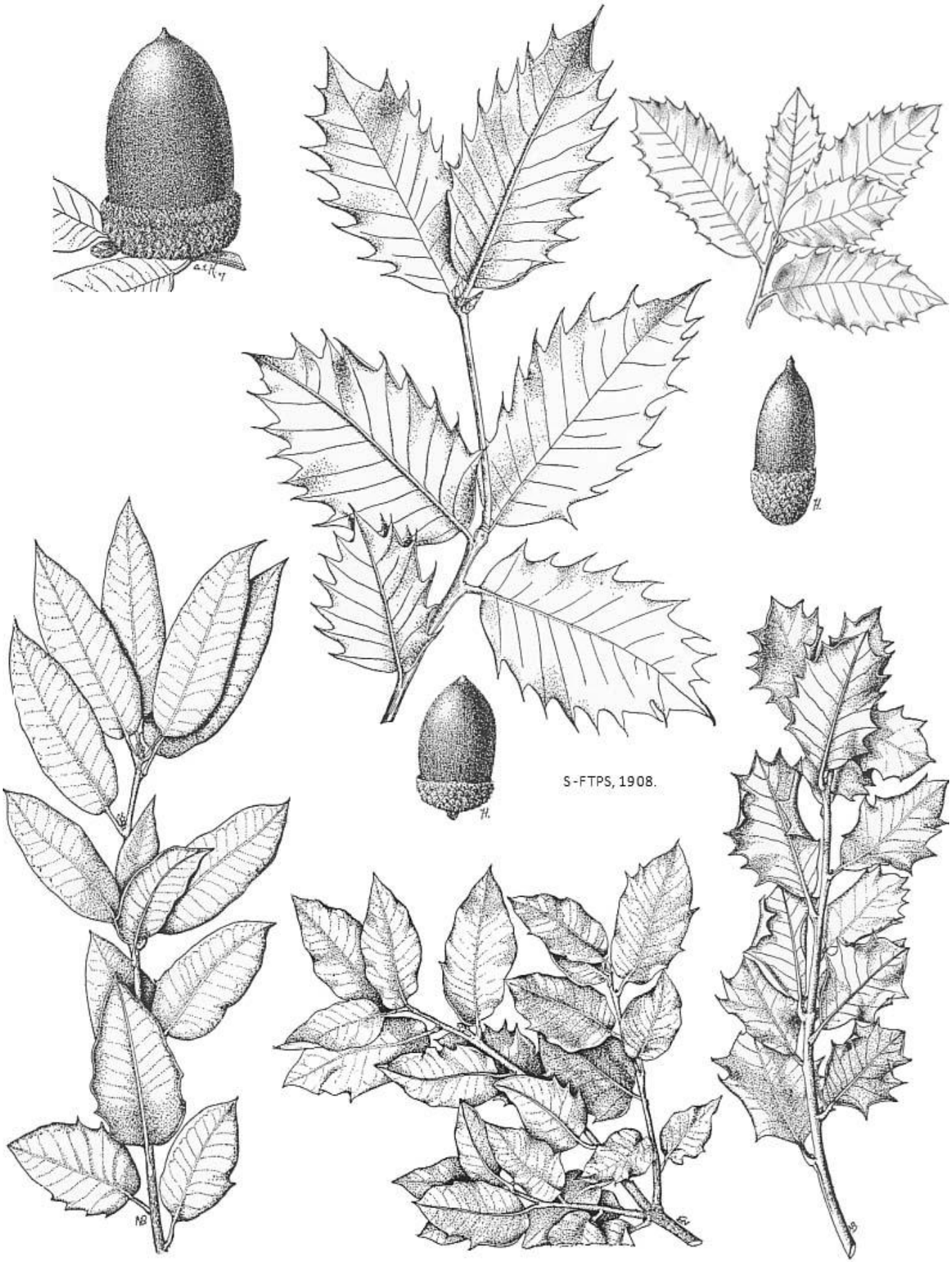
Tab. CCCXCVIII.



C. E. Faxon del.
A. Riocreux direx.t

QUERCUS CHRYSOLEPIS

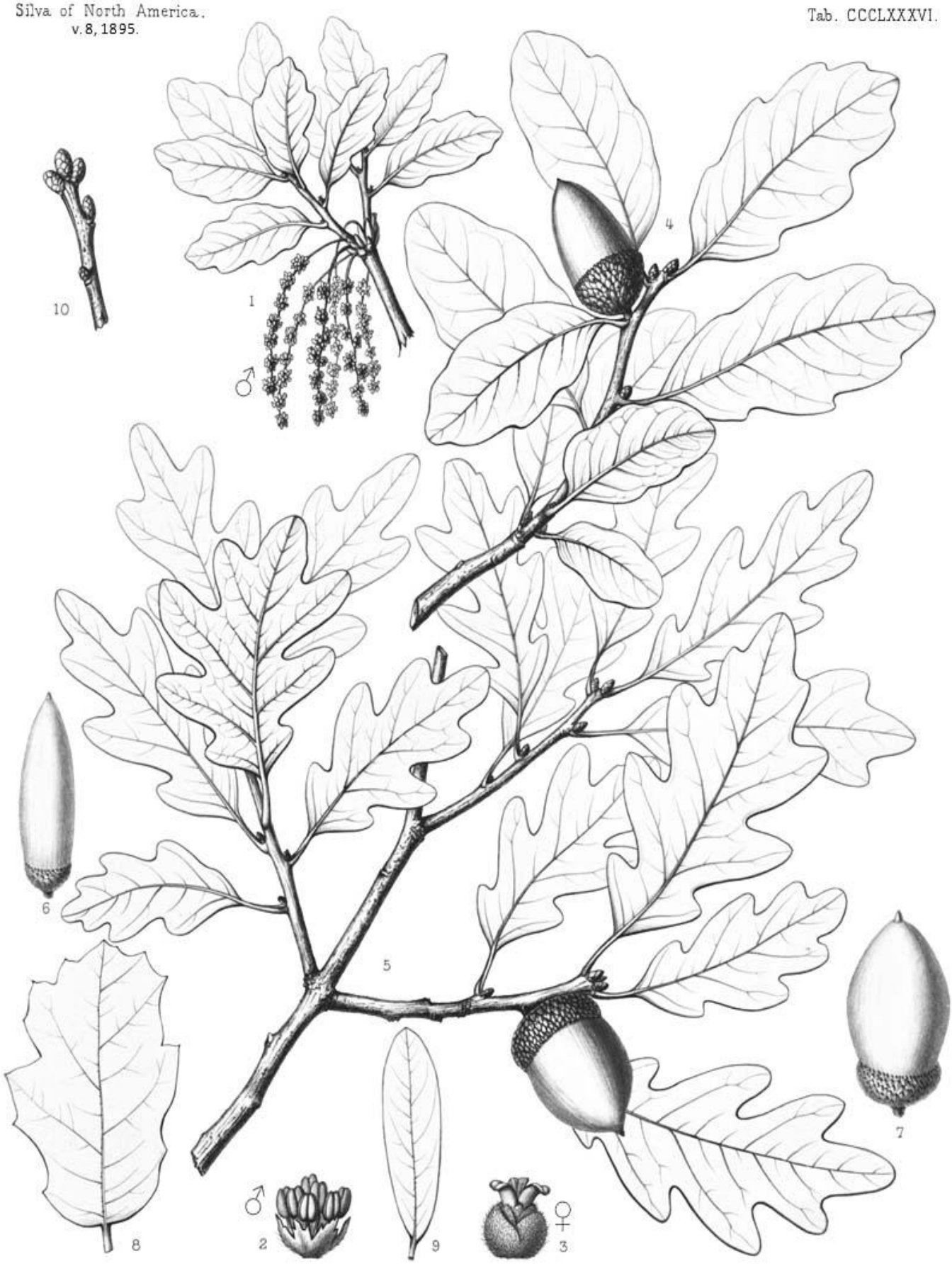
Rapine sc.
Imp. J. Taneur, Paris.



QUERCUS CHRYSOLEPIS

Silva of North America.
v. 8, 1895.

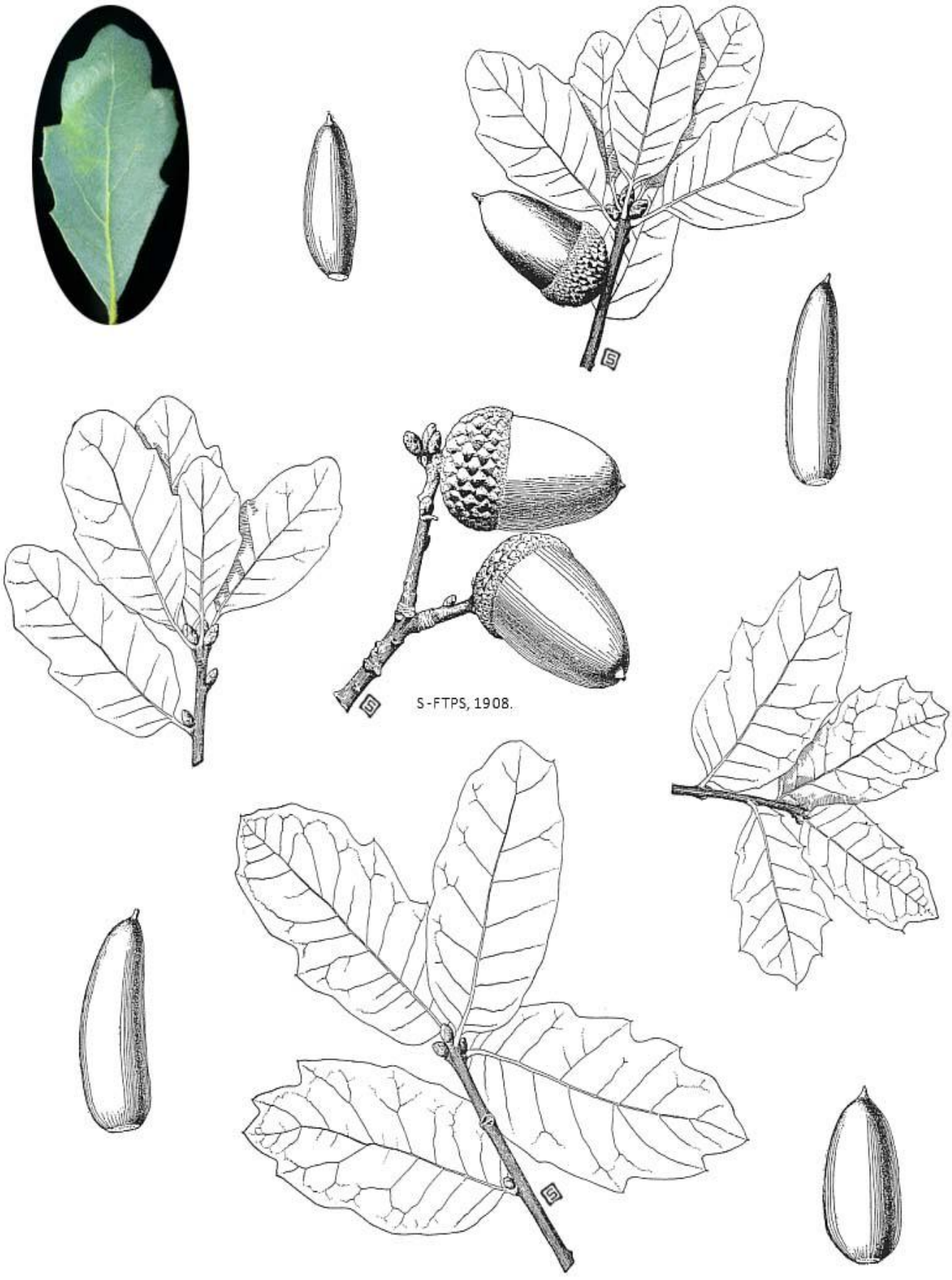
Tab. CCCLXXXVI.



C. E. Faxon del.
A. Riocreux direx.t

QUERCUS DOUGLASII, Hook. & Arn.

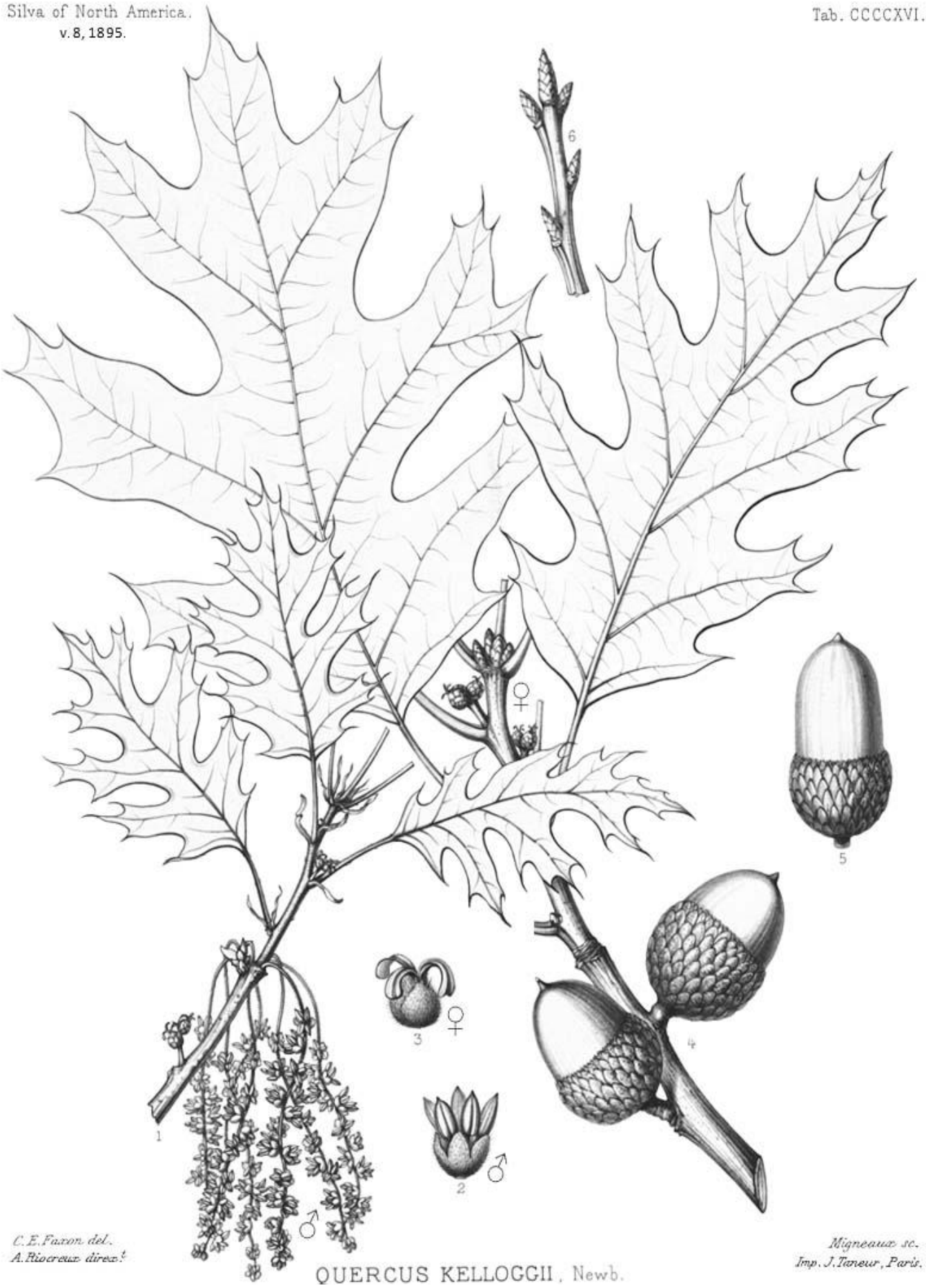
Lebrun sc.
Imp. J. Taneur, Paris.



QUERCUS DOUGLASII

Silva of North America.
v. 8, 1895.

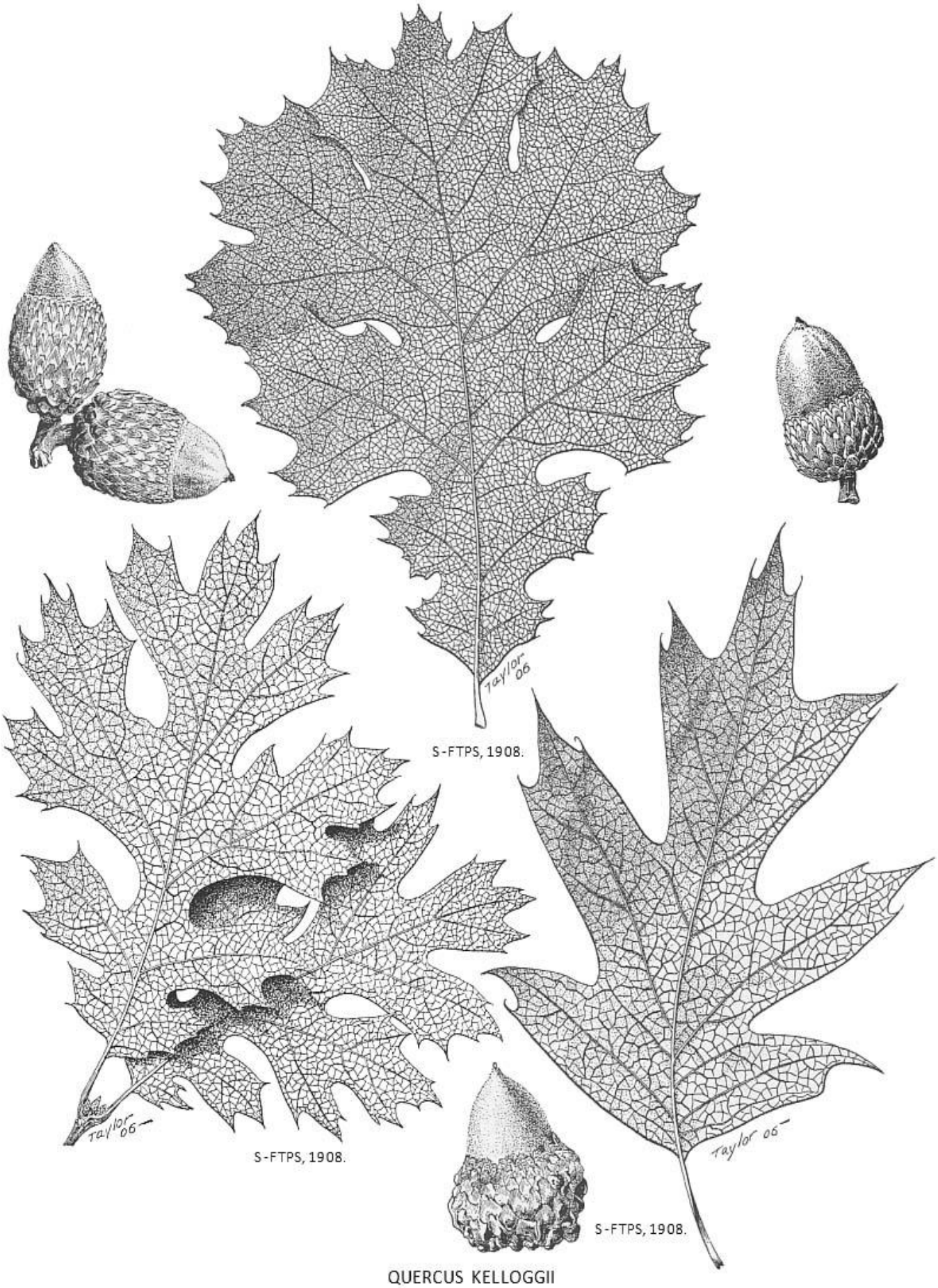
Tab. CCCCXVI.



C. E. Faxon del.
A. Riocreux direx.t

QUERCUS KELLOGGII, Newb.

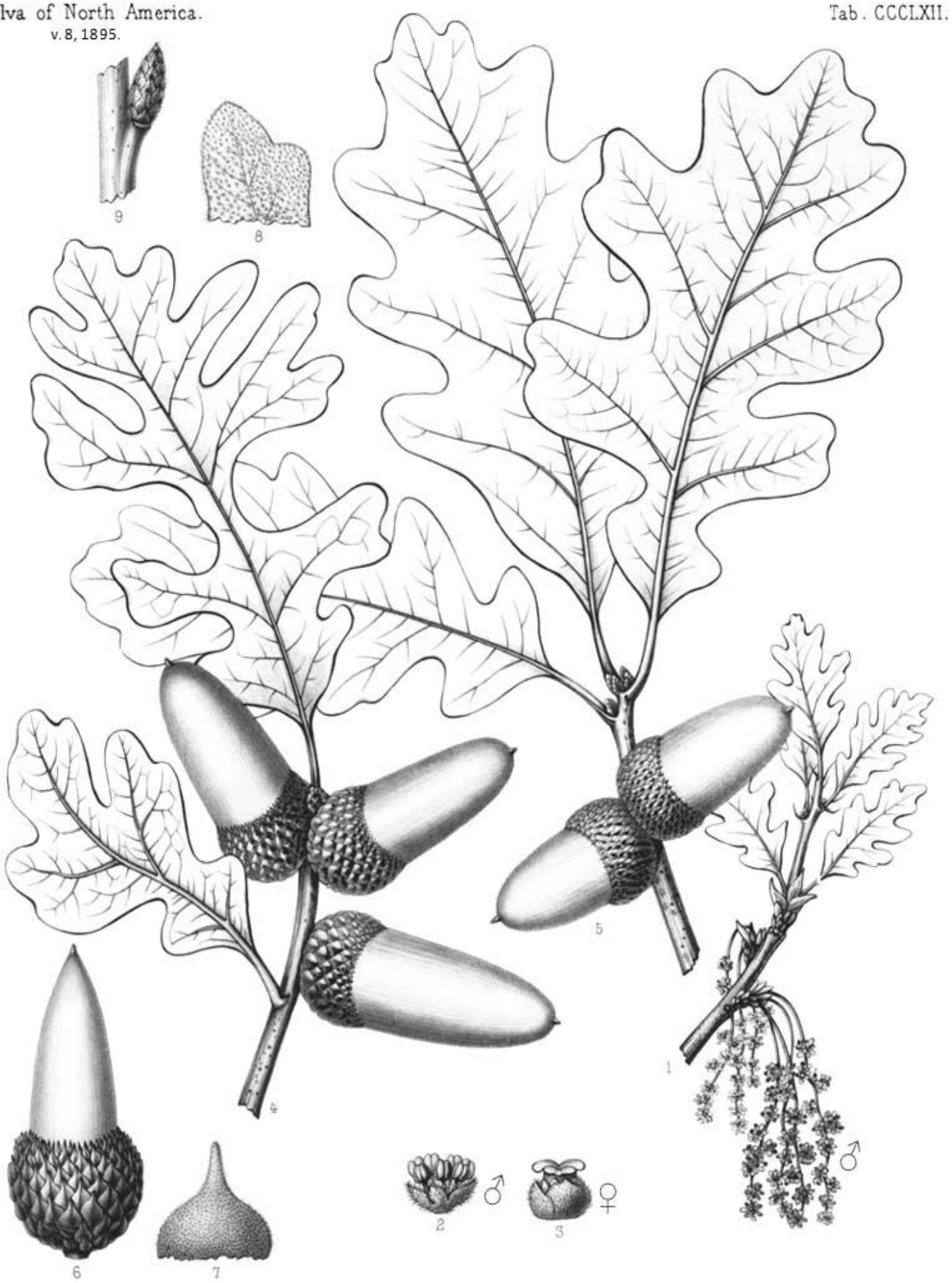
Migneaux sc.
Imp. J. Taneur, Paris.



QUERCUS KELLOGGII

Silva of North America.
v. 8, 1895.

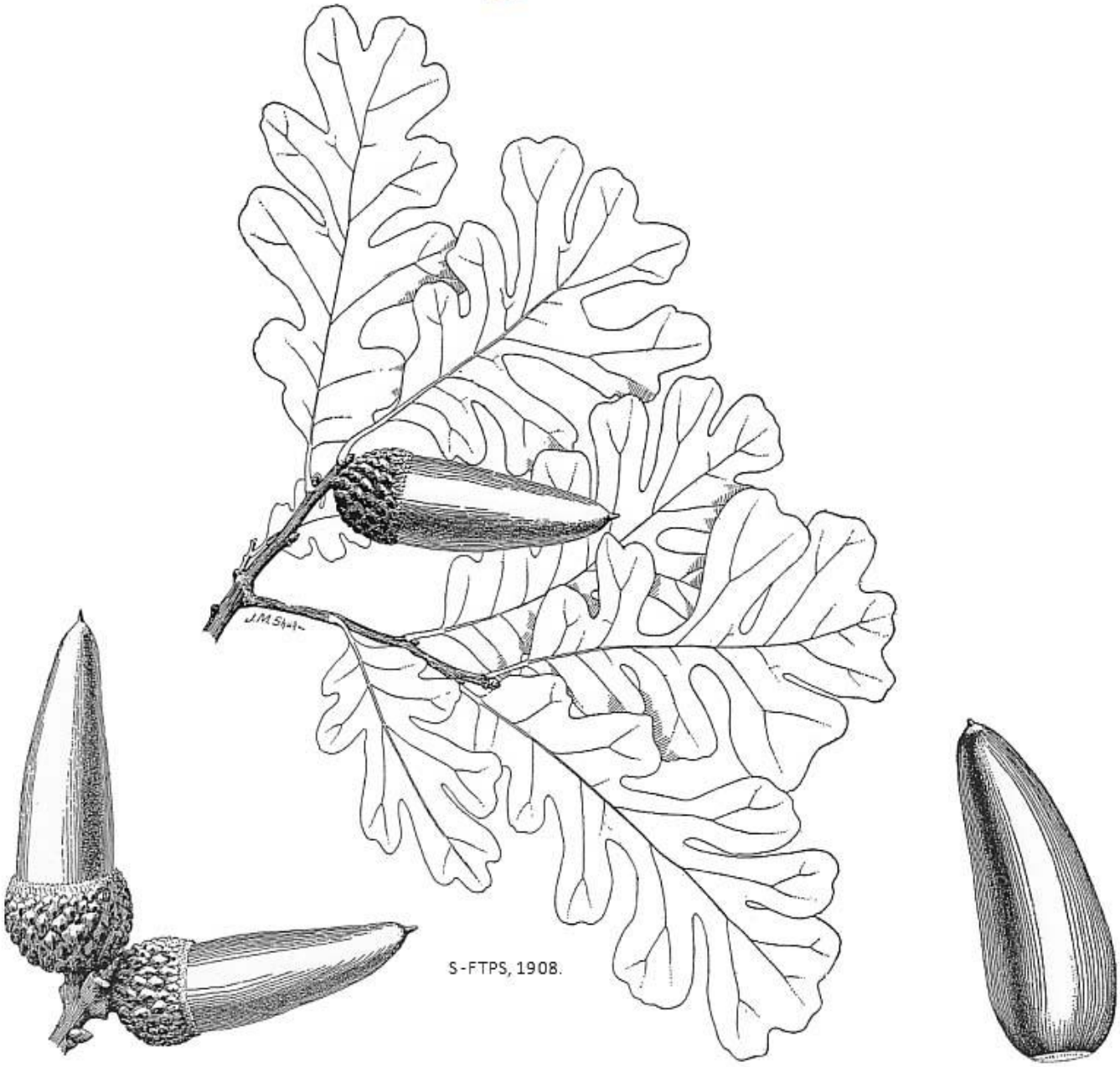
Tab. CCCLXII.



C.E. Faxon del.
A. Riocreux direx.t

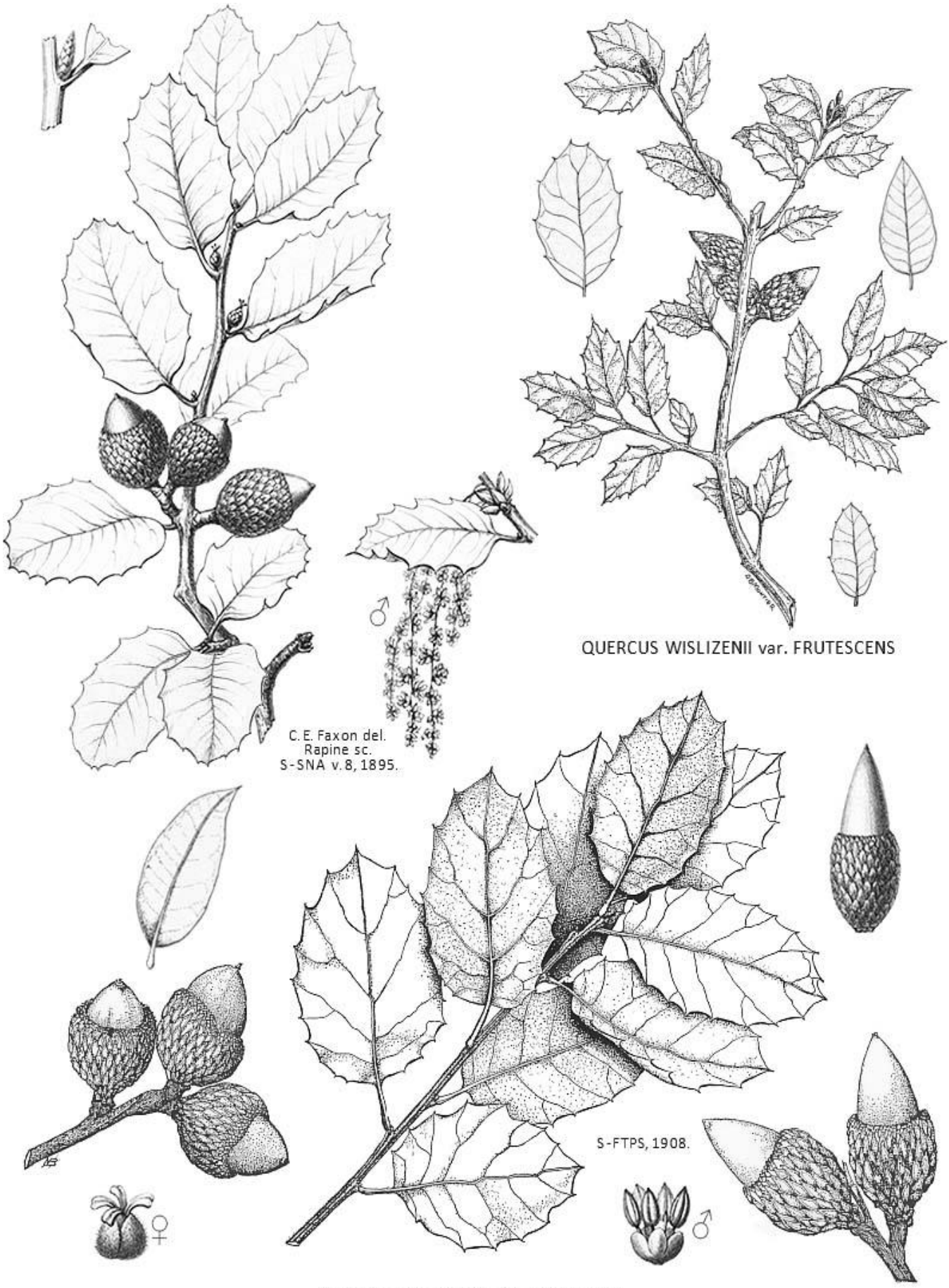
QUERCUS LOBATA. Née.

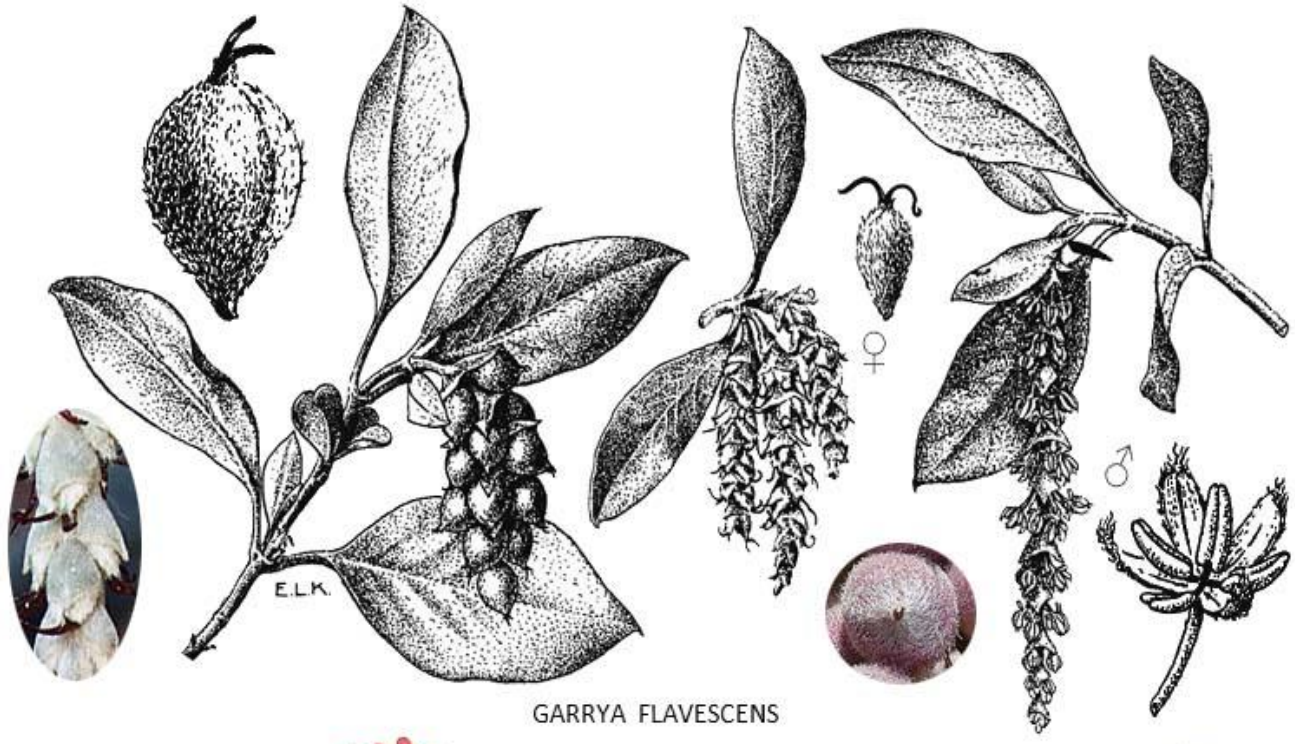
Toulet sc.
Imp. J. Taneur, Paris.



QUERCUS LOBATA

QUERCUS PARVULA var. SHREVEI


♂
QUERCUS WISLIZENII var. FRUTESCENS
C. E. Faxon del.
Rapine sc.
S-SNA v. 8, 1895.
S-FTPS, 1908.
♀
♂
QUERCUS WISLIZENII var. WISLIZENII



GARRYA FLAVESCENS

ERODIUM CICUTARIUM

GERANIUM DISSECTUM

GROSSULARIACEAE. GOOSEBERRY AND CURRANT FAMILY.

RIBES. CURRANTS AND GOOSEBERRIES.

1a. Stems without thorns or spines. Flowers produced in terminal racemes. Fruits not bristly. . . . . ***R. malvaceum***. p. 179.
1b. Stems with at least some thorns at the nodes, and sometimes with internodal spine like bristles, which can be dense. Flowers produced singularly or in groups of two's or three's from the axils of the leaves. Fruits bristly (except in *R. divaricatum*):
2a. Stems with bristly spines between the nodes. Free part of flower tube about as long as broad. . . . ***R. sericeum***. p. 178.
2b. Stems not bristly between the nodes. Free part of flower tube longer than broad:
3a. Fruits not bristly. . . . . ***R. divaricatum***. p. 178.
3b. Fruits bristly:
4a. Leaf blades mostly 2 to 4 cm. long, the lower surface dotted with glandular pores. . . . . ***R. amarum***. p. 178.
4b. Leaf blades mostly 1 to 2 cm. long, the lower surface not dotted without glandular pores. . . . . ***R. roezlii***. p. 180.

HYDRANGEACEAE. HYDRANGEA FAMILY.

WHIPPLEA. MODESTY, YERBA DE SELVA.

Whipplea is a monotypic (one species) genus. . . . . ***Whipplea modesta***. p. 181.

HYPERICACEAE. ST. JOHN'S WORT FAMILY.

HYPERICUM. ST. JOHN'S WORT, TINKER'S PENNY.

Hypericum is represented in the Tassajara region by one species. . . . . ***Hypericum scouleri***. p. 181.

LAMIACEAE (*Labiatae* or *Menthaceae*). MINT FAMILY.

1a. Stamens and style exserted beyond the corolla tube (and lobes) by at least twice the length of the tube. Nutlets attached wholly or partially by the side, and thus may appear as a unit before separation. . . . . ***Trichostema***.
1b. Stamens and/or style generally not exserted beyond the corolla tube for more than twice the length of the tube, and not or only slightly beyond the corolla lobes. Nutlets attached at the base, thus each nut let is distinct, even before full maturation:
2a. Corollas weakly bilabiate, the five lobes nearly equal in length, the upper two lobes united for most of their length:
3a. Plants prostrate, the stems slightly woody and trailing. . . . . ***Clinopodium douglasii***.
3b. Plants erect or the stems ascending:
4a. Inflorescens head like and terminal, and subtended by an involucre like whorl of bracts. . . . . ***Monardella***.
4b. Inflorescens axillary and/or spike like, and subtended by two small leaf like bracts) . . . . . ***Mentha***.
2b. Corollas strongly bilabiate, the two to five lobes not equal in size and/or shape in most species:
5a. Calyces with ten hooked teeth that become hardened when dry, thus the calyces are bur like in maturity. Stems covered with a dense coat of white woolly hair. . . . . ***Marrubium***.
5b. Calyces two or five lobed (or toothed), the calyces not becoming bur like in maturity. Stems not white woolly:
6a. Flowers with two fertile (anther bearing) stamens. . . . . ***Salvia***.
6b. Flowers with four fertile stamens:
7a. Calyces with 2 entire lobes of nearly equal size and shape. Stamens concealed within a dome like upper lip. . . . ***Scutellaria***.
7b. Calyces with five lobes or teeth of equal or unequal length. Stamens exposed:
8a. Shrubs or subshrubs. Corolla tube strongly inflated, the upper lips four lobed. . . . . ***Lepechinia***.
8b. Herbaceous perennials (sometimes slightly woody at the base). Corolla tube slender, the upper lips two lobed:
9a. Flowers produced singularly and opposite in the axils of the leaves. . . . . ***Clinopodium mimuloides***.
9b. Flowers produced in whorls in a terminal spike or head like inflorescence (the lower most flowers may be present in the axils of the upper most leaves). . . . . ***Stachys***.

CLINOPODIUM. SAVORY.

1a. Evergreen herbs with slender, trailing, and slightly woody stems. Leaves less than 3 cm. long and with sparse and minute hairs. Corollas white and about 3 to 8 mm. long. . . . . ***C. douglasii***. p. 181.
1b. Winter deciduous herbs with relatively stout, generally erect, and non woody stems. Leaves up to 8 cm. long and covered with long appressed hairs. Corollas red to orangish red and about 15 to 40 mm. long. . . . . ***C. mimuloides***. p. 182.

LAMIUM.

Lamium is represented in the Tassajara region by one introduced species. . . . . ***Lamium amplexicaule***. p. 183.

LEPECHINIA. PITCHER SAGE.

Lepechinia is represented in the Tassajara region by one species. . . . . ***Lepechinia calycina***. p. 183.

MARRUBIUM. HOREHOUND.

Marrubium is represented in the Tassajara region by one introduced species. . . . . ***Marrubium vulgare***. p. 183.

MENTHA. MINT.

1a. Cauline leaves nearly sessile. Inflorescence clusters usually less than 5 mm. wide. . . . . ***M***. ***spicata***. p. 184.
1b. Cauline leaves petiolate (petioles 3-8 mm. long). Inflorescence clusters usually more than 10 mm. wide. . ***M***. x ***piperita***. p. 184.

MONARDELLA. COYOTE MINT.

1a. Corollas red or scarlet red, and about 3.5 to 4.5 cm. long. . . . . ***M***. ***macrantha***. subsp. ***macrantha***. p. 184.
1b. Corollas blue to purplish lavender or sometimes quite pale, and about 1 to 2 cm. long:
2a. Plants ranging from pubescent to glabrous, and hairs, if present, are simple. . . . . ***M***. ***villosa*** subsp. ***villosa***. p. 185.
2b. Plants pubescent, with some to nearly all of the hairs forked, especially on the under surface of the leaves. . . . . ***M***. ***villosa*** subsp. ***obispoensis***. p. 185.

SALVIA. SAGE.

1a. Annual herbs with pinnately or bipinnately lobed or parted leaves. . . . . ***S***. ***columbariae***. p. 186.
1b. Perennial herbs or shrubs with simple and entire or toothed leaves:
2a. Shrubs with leafy branches. . . . . ***S***. ***mellifera***. p. 187.
2b. Perennial herbs with primarily basal leaves:
3a. Leaves ovate-hastate to oblong-hastate. Corollas red or reddish. . . . . ***S***. ***spathacea***. p. 187.
3b. Leaves oblong-elliptic to oblong-spatulate. Corollas blue to blue violet. . . . . ***S***. ***sonomensis***. p. 187.

SCUTELLARIA. SKULL CAP.

Scutellaria is represented in the Tassajara region by one species. . . . . ***Scutellaria tuberosa***. p. 188.

STACHYS. HEDGE NETTLE.

1b. Inflorescence usually less than 5 cm. long in maturity, the flowers produced in adjoining whorls, with the lower most flowers positioned above the upper most leaves. Plants strictly of wet habitats. . . . . ***S***. ***pycnantha***. p. 188.
1a. Inflorescence generally more than 5 cm. long in maturity, the flowers produced in relatively remote whorls, with the lower flowers commonly produced in the axils of the upper leaves. Plants of moist or dry habitats:
2a. Corolla tubes not pouched. Ring of hairs within corolla tube perpendicular to the axis of the tube. . . ***S***. ***bullata***. p. 188.
2b. Corolla tubes pouched toward base on lower side. Ring of hairs within corolla tube oblique to the axis of the tube. . . . ***S***. ***rigida***. var. ***quercetorum***. p. 188.

TRICHOSTEMA. BLUE CURS.

1a. Evergreen sub shrubs primarily of chaparral habitats. Leaves linear. Inflorescence densely woolly. . ***T***. ***lanatum***. p. 189.
1b. Annual herbs of open and usually grassy habitats. Leaves lanceolate. Inflorescence not densely woolly. . . . . ***T***. ***lanceolatum***. p. 188.

LINACEAE. FLAX or LINEN FAMILY.

HESPEROLINON. WESTERN LINEN.

Hesperolinon is represented in the Tassajara region by one species. . . . . ***Hesperolinon micranthum***. p. 190.

LOASACEAE. LOASA FAMILY.

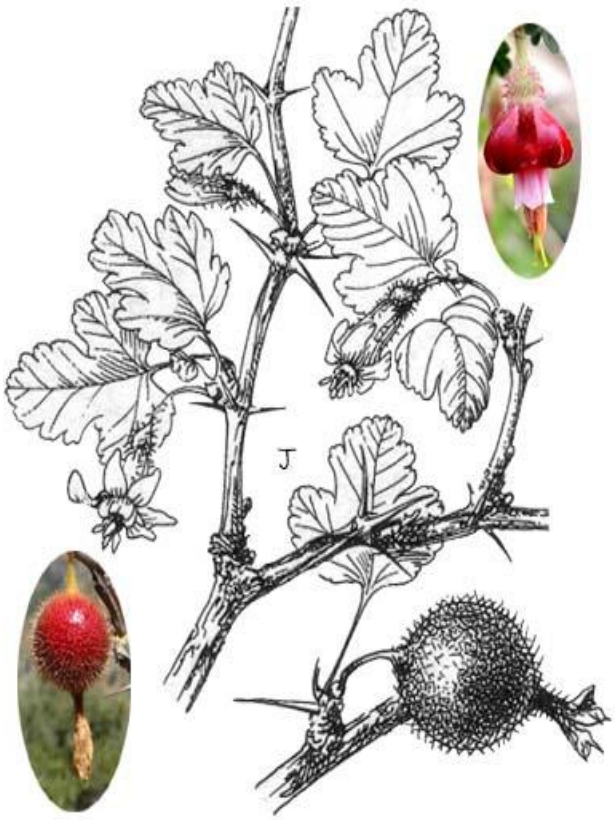
MENTZELIA. STICK LEAF, BLAZING STAR.

1a. Floral bracts relatively small and not obscuring the flowers. Filaments not widened or forked at the apex. . ***M***. ***dispersa***. p. 190.
1b. Floral bracts relatively large and obscuring the flowers when viewed from the side. Outer filaments widened, and forked at the apex. . . . . ***M***. ***micrantha***. p. 190.

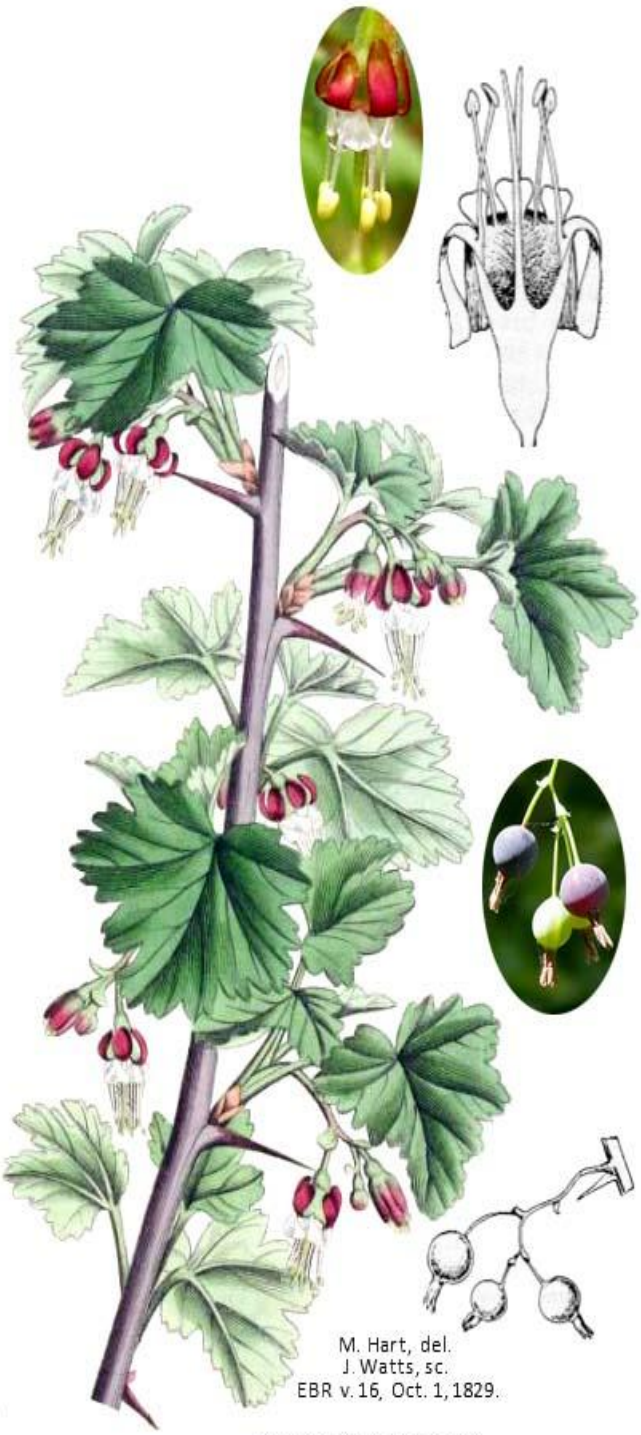
LYTHRACEAE. LOOSESTRIFE FAMILY.

LYTHRUM. LOOSESTRIFE.

The genus *Lythrum* is represented in the Tassajara region by one species. . . . . ***Lythrum californicum***. p. 190.
Continued on page 191.

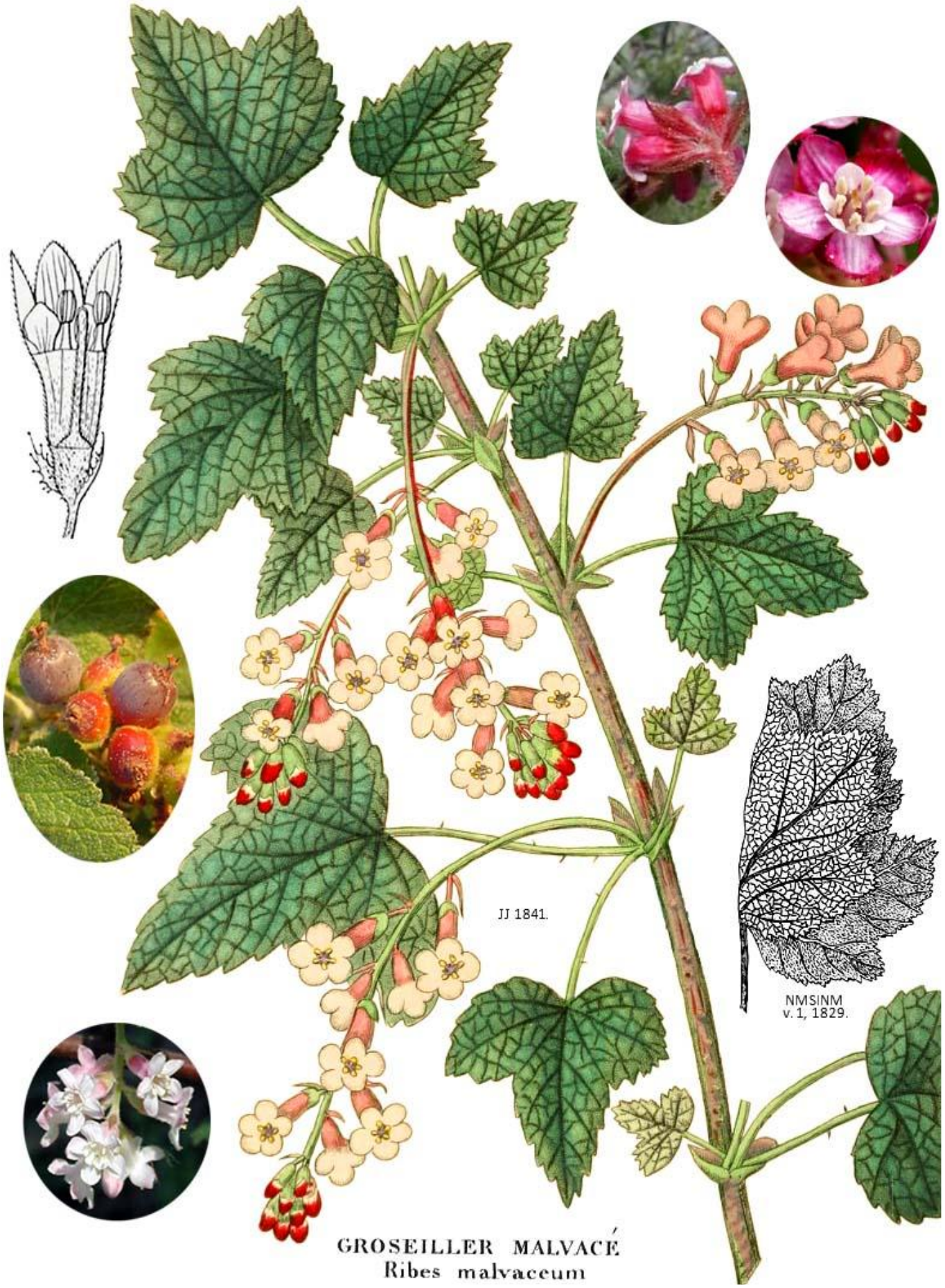


RIBES AMARUM



RIBES DIVARICATUM

RIBES SERICEUM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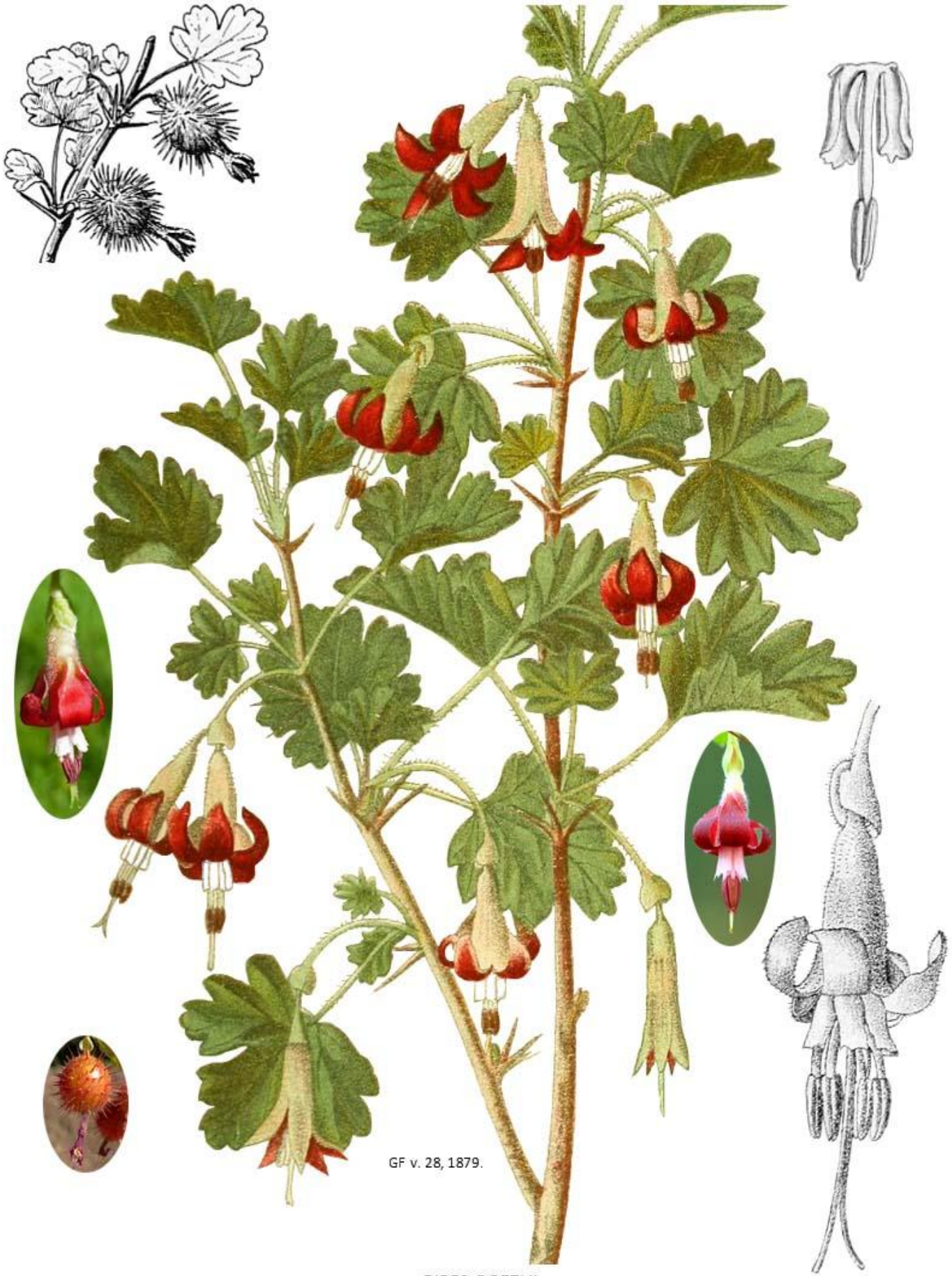
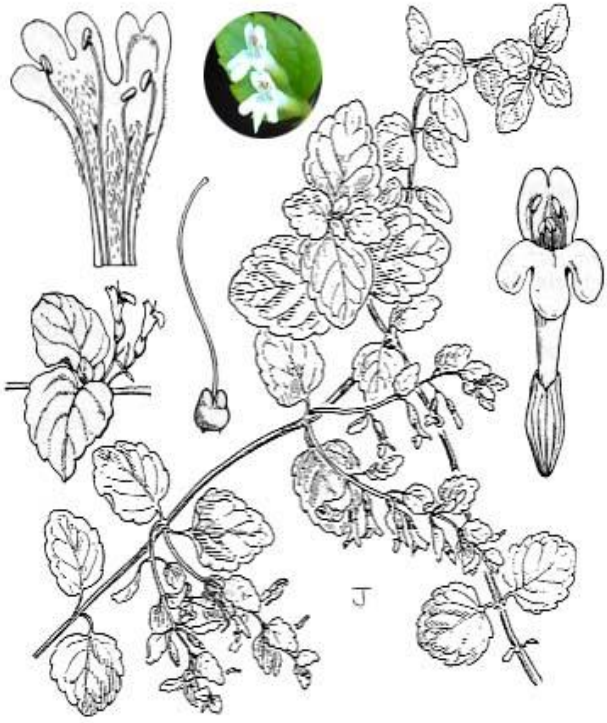
GROSEILLER MALVACÉ
Ribes malvaceum



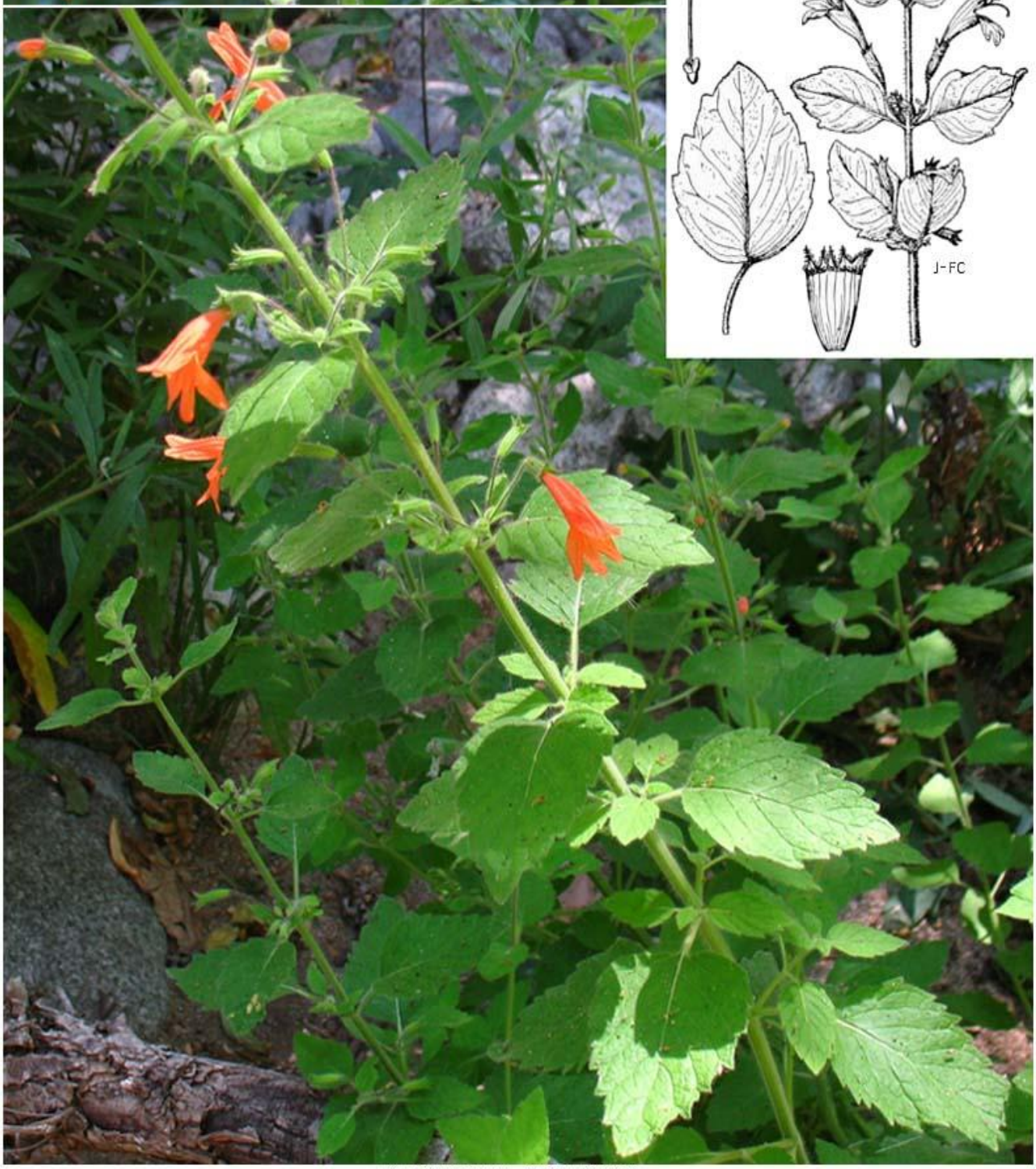
RIBES ROEZLII

WHIPPLEA MODESTA

HYPERICUM SCOULERI



CLINOPODIUM DOUGLASII



CLINOPODIUM MIMULOIDES

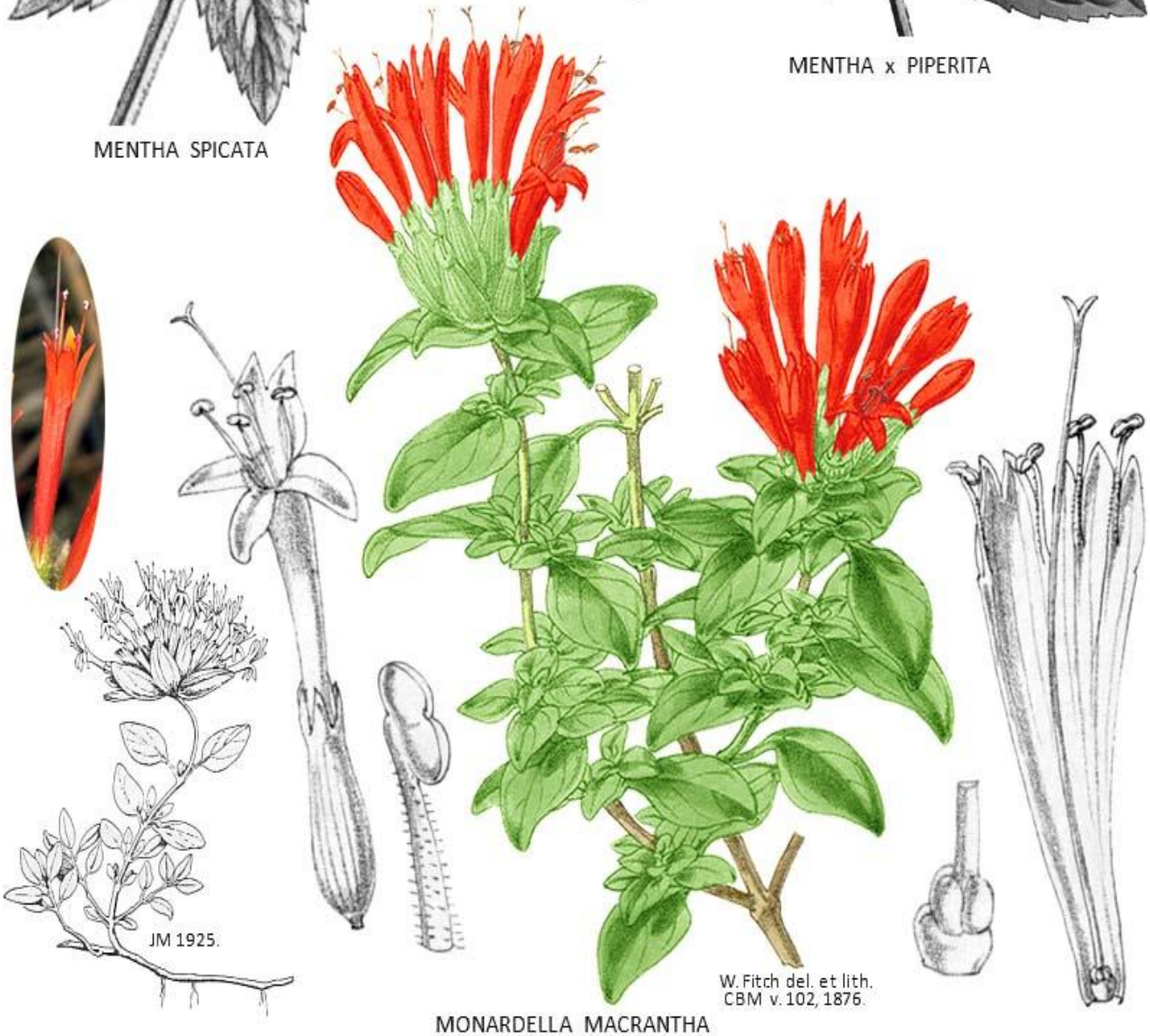
LAMIUM AMPLEXICAULE

MARRUBIUM VULGARE

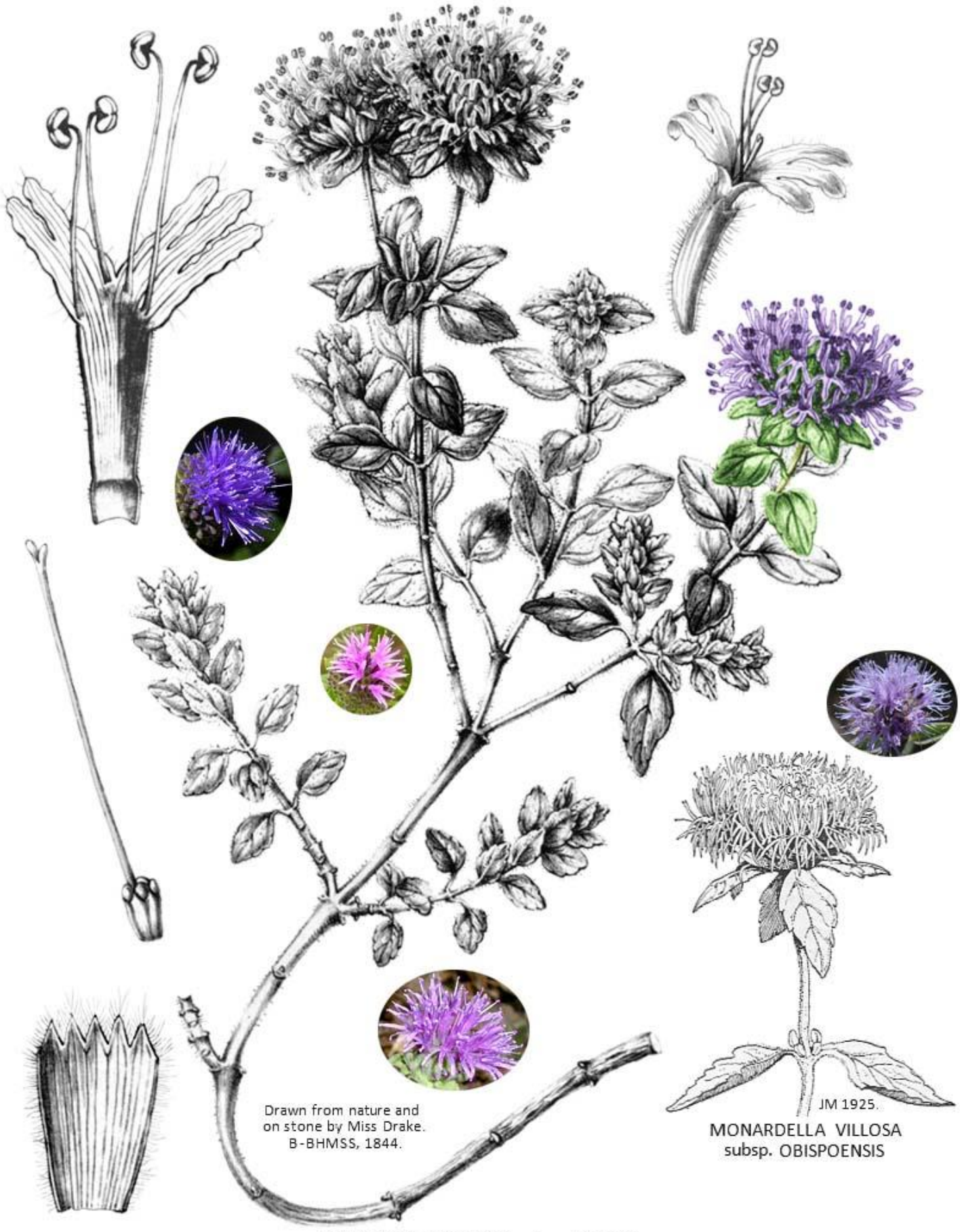
LEPECHINIA CALYCINA

MENTHA SPICATA

MENTHA x PIPERITA



MONARDELLA MACRANTHA



MONARDELLA VILLOSA subsp. VILLOSA

SALVIA COLUMBARIAE

SALVIA MELLIFERA

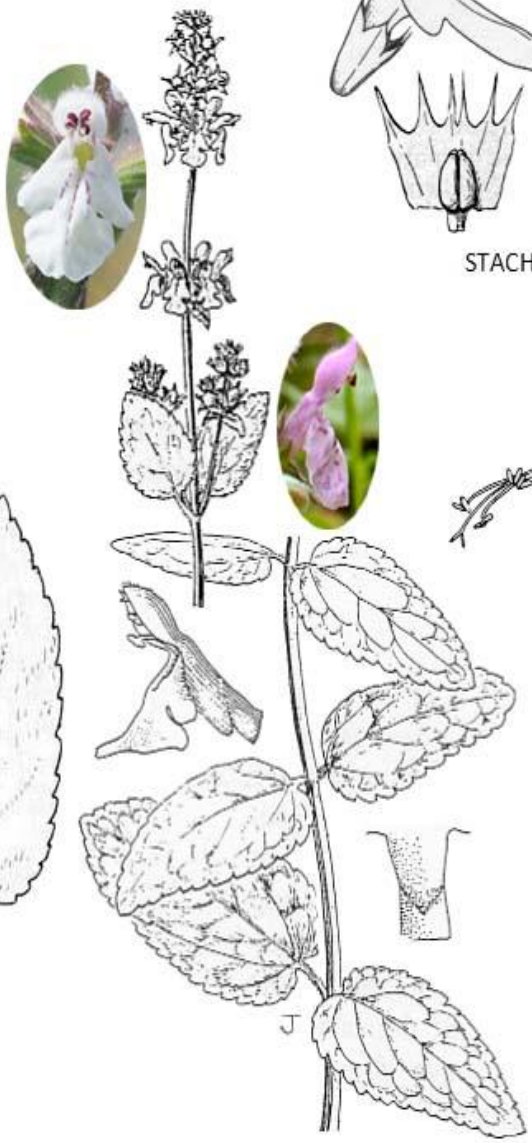
SALVIA SONOMENSIS

SALVIA SPATHACEA

SCUTELLARIA TUBEROSA

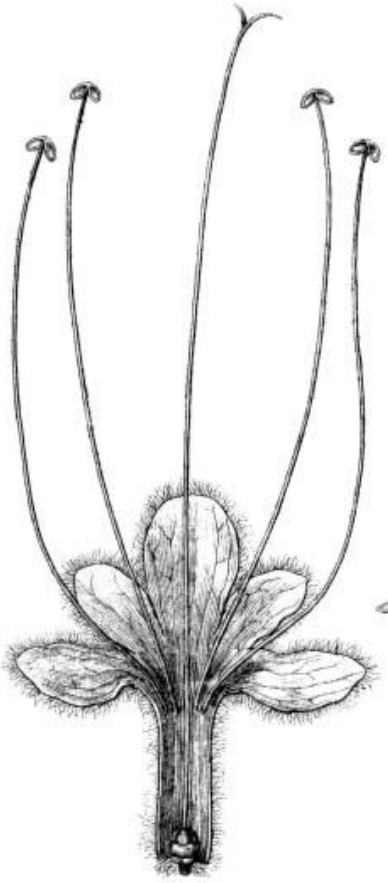
STACHYS BULLATA

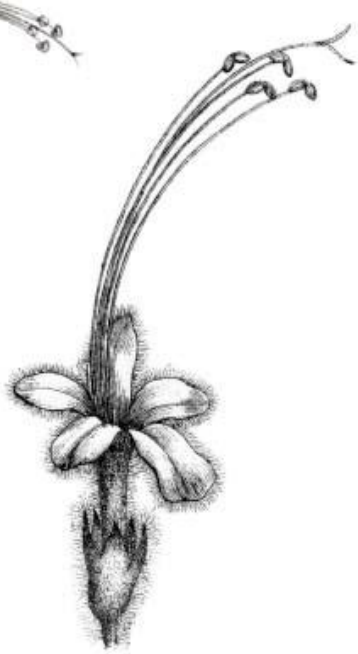
STACHYS PYCNANTHA



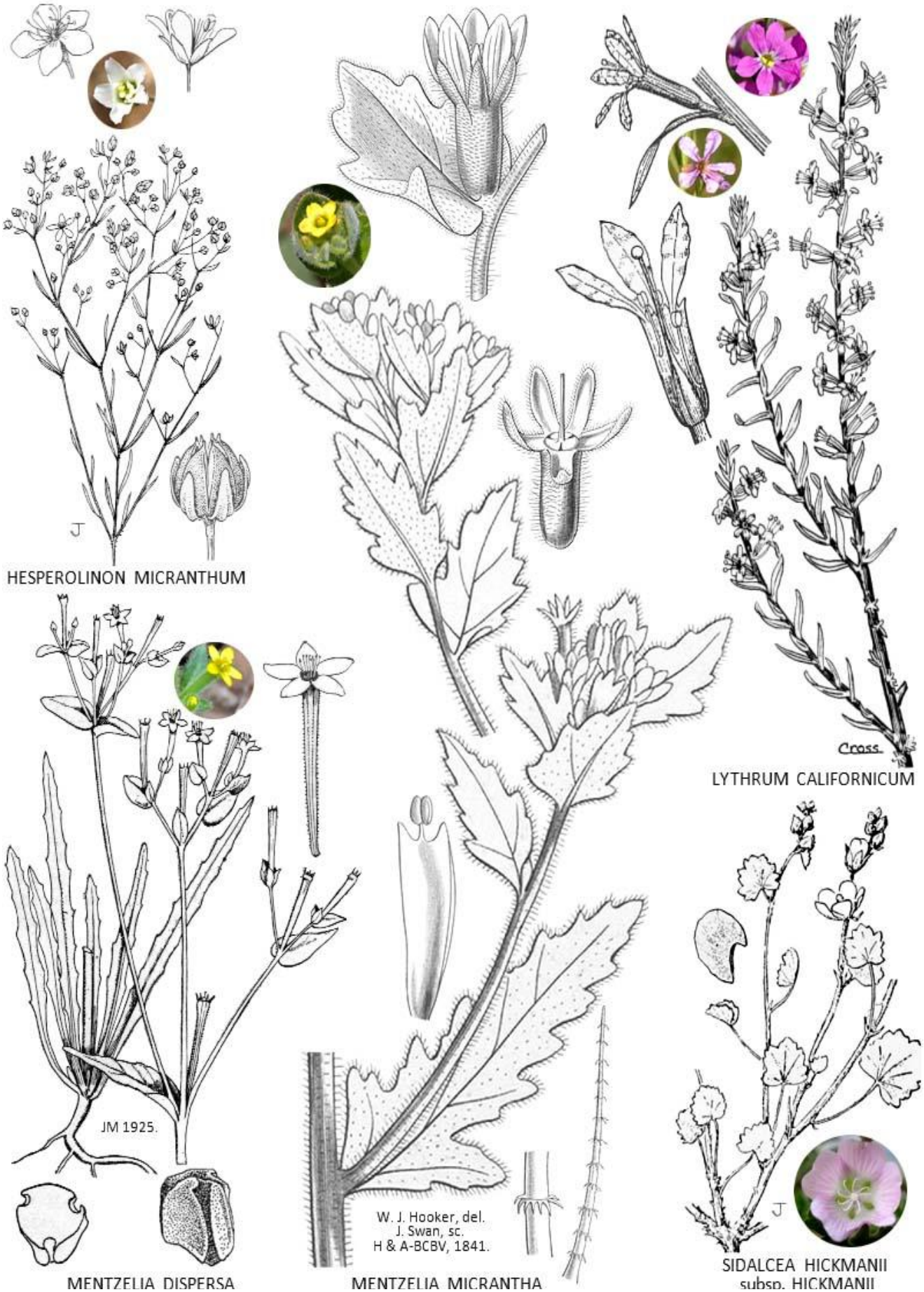
STACHYS RIGIDA var. QUERCETORUM

TRICHOSTEMA LANCEOLATUM





TRICHOSTEMA LANATUM


HESPEROLINON MICRANTHUM
LYTHRUM CALIFORNICUM
JM 1925.
MENTZELIA DISPERSA
W. J. Hooker, del.
J. Swan, sc.
H & A-BCBV, 1841.
MENTZELIA MICRANTHA
SIDALCEA HICKMANII
subsp. HICKMANII

MALVACEAE. MALLOW FAMILY.

SIDALCEA. CHECKERBLOOM.

Sidalcea is represented in the Tassajara region by one species. . . . . ***Sidalcea hickmanii*** subsp. ***hickmanii***. p. 190.

MONTIACEAE. MINER'S LETTUCE FAMILY.

1a. Leaves primarily basal; the cauline leaves are opposite, or more commonly, partially to completely fused into a disk like formation. . . . . ***Claytonia***.

1b. Leaves basal and cauline; the cauline leaves are alternate, and are often much smaller than the basal leaves:

2a. Petals red to purplish red or rose pink, and about 3 to 10 (-15) mm. long. Styles 3 branched. Capsules 3 valved. . . . . ***Calandrinia***.

2b. Petals white to pink and about 1 to 3 mm. long. Styles unbranched or absent (the stigmas sessile). Capsules 2 valved. ***Calyptridium***.

CALANDRINIA. RED MAIDS.

1a. Capsules oblong and about twice as long as the calyx lobes. Leaf development is strongly accentuated towards the base of the plant. . . . . ***C. breweri***. p. 195.

1b. Capsules ovoid and barely exceeding the calyx lobes. Leaf development is not strongly accentuated towards the base of the plant. . . . . ***C. menziesii***. p. 195.

CALYPTRIDIUM. PUSSYPAWS.

1a. Capsules more than twice as long as the sepals. . . . . ***C. monandrum***. p. 195.

1b. Capsules less than twice as long as the sepals. . . . . .***C. parryi*** var. ***hesseae***. p. 195.

CLAYTONIA. MINER'S LETTUCE, SPRING BEAUTY.

1a. Basal leaves linear to narrowly oblanceolate, the blades indistinctly or gradually narrowing to the petiole, and more than 3 times longer than wide:

2a. Cauline leaves free or partially fused on one side, the sections narrowly ovate to narrowly linear. Seeds dull black. . . ***C. exigua***. p. 196.

2b. Cauline leaves fused on both sides, the sections forming a more or less disk like structure. Seeds shiny black. . . . . ***C. parviflora***. p. 196.

1b. Blades of basal leaves elliptic to reniform, less than 3 times longer than wide to wider than long, and wedge shaped to cordate at the base:

3a. Plants reddish or pinkish throughout. Cauline leaves fused only on one side of the stem. . . . . ***C. rubra***. p. 198.

3b. Plants green (or yellowish or reddish with age). Cauline leaves fused on both sides of the stem:

4a. Blades of basal leaves generally longer than wide, the base wedge shaped, the apex obtuse to acute. . . . . ***C. perfoliata*** subsp. ***perfoliata***. p. 198.

4b. Blades of basal leaves commonly wider than long, the base truncate to cordate, the apex abruptly acute. . . . . ***C. perfoliata*** subsp. ***mexicana***. p. 197.

MYRSINACEAE. MYRSINE FAMILY.

LYSIMACHIA.

Lysimachia is represented in the Tassajara region by one species. . . . . ***Lysimachia arvensis***. p. 198.

OLEACEAE. OLIVE FAMILY.

FRAXINUS. ASH.

Fraxinus is represented in the Tassajara region by one species. . . . . ***Fraxinus dipetala***. p. 199.

ONAGRACEAE. EVENING PRIMROSE FAMILY.

1a. Sepals remaining erect after the flowers open. Seeds with commas (tufts of hairs at the apex), except in *E. densiflorum*. . ***Epilobium***.

1b. Sepals spreading or turning downward as the flowers open. Seeds without commas:

2a. Stigmas 4 lobed and dry; anthers generally maturing before stigmas. . . . . ***Clarkia***.

2b. Stigmas head like (roundish or hemispheric) and wet; anthers not maturing before stigmas:

3a. Petals white, drying pink or red. Ovaries two celled. . . . . ***Gayophytum***.
3b. Petals yellow, often with red spots, and often turning red or green with age. Ovaries four celled:
4a. Plants acaulescent (without stems). Flowers have long and slender scape like tubes. . . . . ***Tetrapteron***.
4b. Plants caulescent. Flowers without long tubes:
5a. Leaves narrowly linear to very narrowly elliptic. Flowers or fruits never present in the basal or lower nodes. Fruits round or roundish in cross section; seeds glossy. . . . . ***Camissonia***.
5b. Leaves of various shapes, but never narrowly linear or very narrowly elliptic. Flowers or fruits usually present in the basal nodes, and always present at the lower nodes. Fruits four angled, at least when fully mature; seeds dull. . ***Camissoniopsis***.

CAMISSONIA.

1a. Plant hairs strigose, or some hairs spreading and glandular, or occasionally coarsely spreading and non glandular toward base. Less than 10% of pollen grains 4-angled. . . . . ***C. strigulosa***. p. 200.
1b. Plant hairs spreading, generally coarse, often glandular in inflorescence. More than 30% of pollen grains 4-angled. . . . ***C. contorta***. p. 200.

CAMISSONIOPSIS.

1a. Fruits coiled up to 5 times. Upper cauline leaves with petioles up to 2.5 mm. long. . . . . ***C. ignota***. p. 200.
1b. Fruits straight or coiled up to 3 times. Upper cauline leaves sessile or subsessile:
2a. Inflorescence with at least an understory of gland tipped hairs:
3a. Plants most commonly with ascending to erect branches. Capsules .75 to .9 mm. wide at base. Upper most leaves about as long as wide and strongly clasping the stem. . . . . ***C. hirtella***. p. 200.
3b. Plants most commonly with a single erect stem. Capsules .9 to 2.2 mm. wide at base. Upper most leaves longer than wide, and not or only scarcely clasping the stem. . . . . ***C. intermedia***. p. 201.
2b. Inflorescence without gland tipped hairs or only with a few remotely scattered gland tipped hairs:
4a. Branches erect or ascending. Petals 4 to 7 mm. long, and frequently with lobes or notches at the apex. . . . ***C. luciae***. p. 201.
4b. Branches semi prostrate and sprawling (or rarely with a single erect stem). Petals 1.5 to 3.5 (-4) mm. long, and without lobes or notches at the apex. . . . . ***C. micrantha***. p. 201.

CLARKIA. FAREWELL TO SPRING.

1a. Petals with claws (narrowed bases), and are thus spade like in shape:
2a. Claw with two small opposing marginal lobes. Petals 6 to 12 mm. long. . . . . ***C. rhomboidea***. p. 204.
2b. Claw with entire margins. Petals 10 to 20 mm. long. . . . . ***C. unguiculata***. p. 205.
1b. Petals without claws (or with very short, obscure claws), and thus are fan shaped or elliptic:
3a. Axis of budding portion of inflorescence reflexed (turned downward); the buds are pendant:
4a. Petals 10 to 35 mm. long and broadly fan shaped. Immature capsules four grooved. Stigma higher than anthers. . . . ***A. lewisii***. p. 202.
4b. Petals 5 to 12 mm. long and elliptic to obovate, widest near or above the middle, and more or less tapering to the apex. Immature capsules eight grooved or ribbed. Stigma not higher than anthers. . . . . ***C. modesta***. p. 202.
3b. Axis of budding portion of inflorescence erect; the buds are erect or reflexed:
5a. Buds reflexed. Inner anthers shorter than the outer anthers. . . . . ***C. jolonensis***. p. 202.
5b. Buds erect. Anthers alike:
6a. Petals mostly pale rose pink or lavender, with a distinct reddish to purplish spot or wedge shaped spot:
7a. Petals with a wedge shaped spot starting near the center, that widens (but fades) towards the upper margin. . . . . ***C. purpurea*** subsp. ***quadrivulnera***. p. 203.
7b. Petals with a semi circular, uniform or streaked spot in lower center. . . . . ***C. speciosa***. p. 202.
6b. Petals mostly or uniformly dark reddish purple, without a distinct spot:
8a. Petals mostly dark, although some gradation of pigment is evident. Capsule covered with upwardly appressed hairs. . . . . ***C. speciosa***. p. 202.
8b. Petals uniformly dark reddish purple. Capsule covered with spreading hairs. . ***C. purpurea*** subsp. ***quadrivulnera*** var. ***rubra-purpurea***. p. 202.

EPILOBIUM. WILLOW HERBS, COTTON WEEDS, FIRE WEEDS, ZAUSCHNERIA, BOISDUVALIA.

1a. Tufted evergreen perennial herbs or subshrubs, sometimes becoming woody at the base with age. Flowers with elongated corolla like floral tubes that are about 2 to 4 cm. long. The petals and floral tubes are red:
2a. Leaves narrowly linear to narrowly lanceolate, and usually with fascicles (clusters of small leaves) in the axils. Plants becoming woody at the base with age. . . . . ***E. canum*** subsp. ***canum***. p. 207.
2b. Leaves broadly lanceolate to ovate and more than 6 mm. wide, and usually without fascicles. Plants herbaceous throughout. . . . . ***E. canum*** subsp. ***latifolium***. p. 208.

1b. Annual or perennial herbs that never become tufted or woody. Flowers without floral tubes or with tubes less than 3 mm. long. Petals pink to purplish or sometimes nearly white:
3a. Plants of wet or seasonally wet habitats. Leaves narrowly lanceolate to rather broadly oblong-lanceolate or elliptic:
4a. Plants perennial. Leaves opposite up to inflorescence. Epidermis not peeling. Seeds with tufts of hairs at the apex:
5a. Petals white to pink and 2 to 6 (-9) mm. long. Leaves lanceolate and reduced in size upwards in the inflorescence, which is less densely flowered. . . . . ***E. ciliatum*** subsp. ***ciliatum***. p. 209.
5b. Petals pink to rose purple and 4 to 14 mm. long. Leaves lanceolate to ovate, and little reduced in size upward in the inflorescence, which is more densely flowered. . . . . ***E. ciliatum*** subsp. ***watsonii***. p. 209.
4b. Plants annual. Leaves opposite only near base. Epidermis of lower stems peeling. Seeds without tufts of hairs. . . . ***E. densiflorum***. p. 210.
3b. Plants of dry habitats (or only incidentally occurring in wet or moist habitats). Leaves narrowly linear to narrowly lance-linear, elliptic or oblanceolate:
6a. Plants glandular and more to much more than 2 dm. tall. Hypanthium 1.5 to 16 mm. long, sepals 2 to 8 mm. long. . . . ***E. brachycarpum***. p. 206.
6b. Plants not glandular and mostly about 1 to 3 dm. tall. Hypanthium .4 to 1 mm. long, sepals 1.5 to 4 mm. long. . . . . ***E. minutum***. p. 211.

GAYOPHYTUM.

Gayophytum is represented in the Tassajara region by one species. . . . . ***Gayophytum heterozygum***. p. 211.

TETRAPTERON.

Tetrapteron is represented in the Tassajara region by one species. . . . . ***Tetrapteron graciliflorum***. p. 211.

OROBANCHACEAE. BROOM RAPE FAMILY.

1a. Plants not green and totally parasitic (holoparasites). Leaves reduced to bract like structures. . . . . ***Aphyllon***.
1b. Plants green or mostly green, and only partially parasitic (hemiparasites). Leaves fully developed:
2a. Flowers mostly yellow (or yellow and white) and not subtended by bracts that are petal like in color and texture. . . . . ***Triphysaria***.
2b. Flowers not yellow (or only partially yellow) and, in some species, subtended by large bracts that are petal like in color and/or texture:
3a. Leaves pinnately divided into sharply toothed segments. . . . . ***Pedicularis***.
3b. Leaves simple, three lobed, or cleft into narrowly linear segments:
4a. Calyces united for about half of the length. Corolla narrow, the lower lip shorter than the upper lip. . . . ***Castilleja***.
4b. Calyces divided to the base. Corolla laterally expanded, the lower lip about as long as the upper lip. . . . . ***Cordylanthus***.

APHYLLON. BROOM RAPE, CANCER ROOT.

1a. Flowers produced on elongated scape like pedicels, the pedicels without bractlets:
2a. Flowers (and plants) pale straw yellow. Flowers several (to many) on a caudex that is frequently partially emerged. . ***A. fasciculatum***. p. 212.
2b. Flowers purple or bluish purple (ours). Flowers mostly singular on long pedicels rising from a below ground caudex. . ***A. purpureum***. p. 212.
1b. Flowers sessile or with short pedicels, the flowers (or pedicels) subtended by bractlets:
3a. Corollas 10 to 18 mm. long; calyces 6 to 10 mm. long. . . . . ***A. tuberosum***. p. 212.
3b. Corollas 25 to 35 mm. long; calyces 12 to 20 mm. long. . . . . ***A. californicum***. subsp. ***condensum***. p. 212.

CASTILLEJA. PAINTBRUSH, OWL'S CLOVER.

1b. Perennial herbs, sometimes slightly woody at the base:
2a. Plants dark green and glandular. . . . . ***C. applegatei*** subsp. ***martinii***. p. 213.
2b. Plants densely whitish to grayish woolly and not glandular. . . . . ***C. foliolosa***. p. 214.
1a. Annual herbs:
3a. Plants of wet or seasonally wet habitats. Leaves entire. Floral bracts entire and distally red. Lower corolla lip less than 1/4 the length of the upper lip. . . . . ***C. minor***. p. 214.
3b. Plants mainly of open grassland habitats. Leaves or some leaves divided into narrow segments. Floral bracts divided into narrow segments that are tipped white or rose lavender. Lower corolla lip at least ½ the length of the upper lip:
4a. Inflorescence narrow and mostly pale green to white. . . . . ***C. attenuata***. p. 213.
4b. Inflorescence broad and colorful:
5a. Upper corolla lip hooked and densely shaggy hairy at the apex. Filaments puberulent. . . . . ***C. exserta***. p. 214.
5b. Upper corolla lip straight and puberulent at the apex. Filaments glabrous. . . . . ***C. densiflora***. p. 214.

CORDYLANTHUS. BIRD'S BEAK.

Cordylanthus is represented in the Tassajara region by one species. . . . . ***Cordylanthus rigidus***. p. 215.

PEDICULARIS. LOUSEWORT, ELEPHANT HEADS.

Pedicularis is represented in the Tassajara region by one species. . . . . ***Pedicularis densiflora***. p. 215.

TRIPHYSARIA.

Triphysaria is represented in the Tassajara region by one species. . . . . ***T. eriantha***. p. 215.

OXALIDACEAE. OXALIS FAMILY.

OXALIS.

1a. Plants with trailing stems and cauline leaves. Flowers axillary; petals less than 1 cm. long. . . . ***O. corniculata***. p. 215.
1b. Plants with erect flowering stems and basal leaves. Flowers terminal; petals more than 1 cm. long. . . . . ***O. pes-caprae***. p. 215.

PAPAVERACEAE. POPPY FAMILY.

1a. Corollas asymmetrical. Petals 4, the inner 2 connected at the apex, the outer 2 connected at the base. . . . . ***Ehrendorferia***.

1b. Corollas symmetrical. Petals 4 or 6 and totally distinct:
2a. Petals six, white, and less than 5 mm. long. Leaves opposite or whorled, and simple. . . . . ***Meconella***.
2b. Petals four, yellow to orange or sometimes red, and more than 5 mm. long. Leaves alternate or strictly basal, and simple or divided into lobes or narrow segments:
3a. Shrubs or shrubby plants of chaparral habitats. Leaves simple. . . . . ***Dendromecon***.
3b. Herbaceous plants primarily of open grassy habitats or on recent burns. Leaves lobed or dissected into narrow segments:
4a. Ovaries y and fruits more than 3 times longer than wide. . . . . ***Eschscholzia***.
4b. Ovaries and fruits less than 3 time longer than wide. . . . . ***Papaver***.

DENDROMECON. BUSH POPPY.

Dendromecon is represented in the Tassajara region by one species. . . . . ***Dendromecon rigida***. p. 216.

EHRENDORFERIA. GOLDEN EAR DROPS.

Ehrendorferia is represented in the Tassajara region by one species. . . . . ***Ehrendorferia chrysantha***. p. 217.

ESCHSCHOLZIA. GOLDEN POPPY.

1a. Petals and capsules subtended by a rim about .5 to 5 mm. wide. . . . . ***E. californica***. p. 219, 220.
1b. Petals and capsules not subtended by a rim, or subtended with a rim less than .3 mm. wide. . . . . ***E. caespitosa***. p. 218.

MECONELLA. LITTLE POPPY.

Meconella is represented in the Tassajara region by one species. . . . . ***Meconella denticulata***. p. 221.

PAPAVER. POPPY.

Papaver is represented in the Tassajara region by one species. . . . . ***Papaver californicum***. p. 221.

PARNASSIACEAE. GRASS OF PARNASSUS FAMILY.

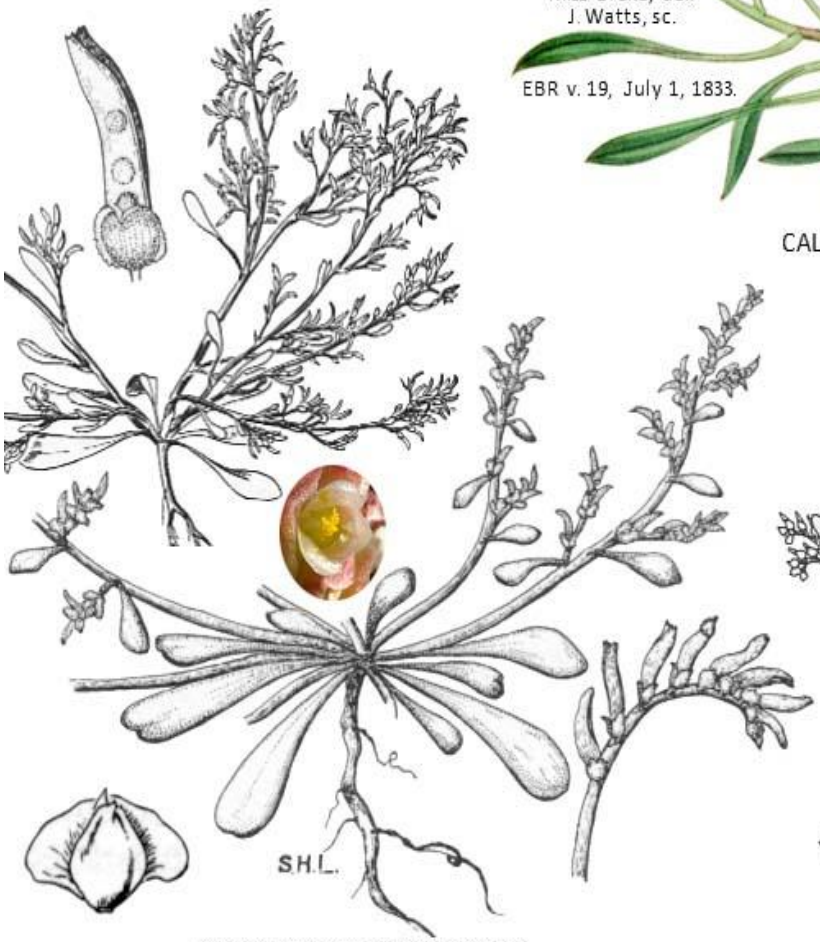
PARNASSIA. GRASS OF PARNASSUS.

Parnassia is (or has been) represented in the Tassajara region by one species. . . . . ***Parnassia palustris***. p. 221.

Continued on page 222.

CALANDRINIA BREWERI

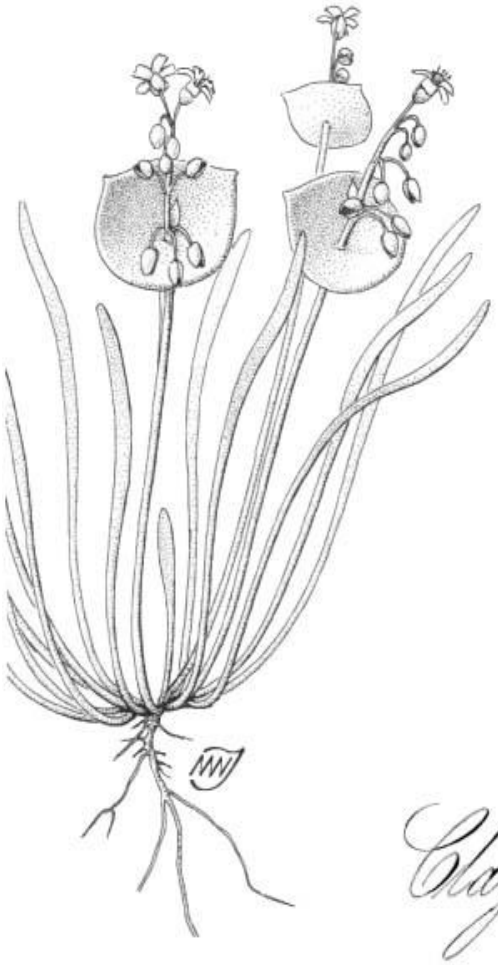
CALANDRINIA MENZIESII



CALYPTRIDIUM MONANDRUM

CALYPTRIDIUM PARRYI var. HESSEAE

CLAYTONIA EXIGUA



Claytonia parviflora.

CLAYTONIA PERFOLIATA subsp. MEXICANA

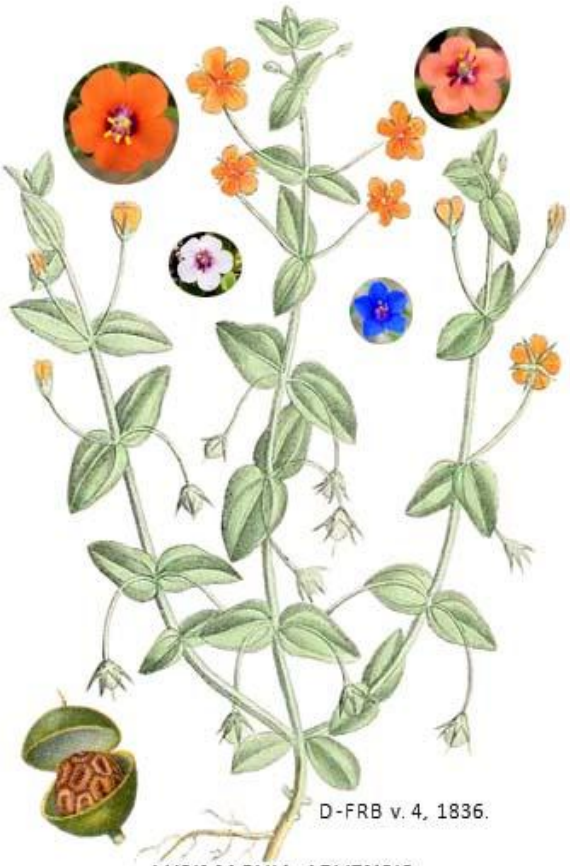
H & B-PE v. 1, 1808.

FB v. 14, 1872.

Claytonia perfoliata

CLAYTONIA PERFOLIATA subsp. PERFOLIATA

CLAYTONIA RUBRA



D-FRB v. 4, 1836.

LYSIMACHIA ARVENSIS

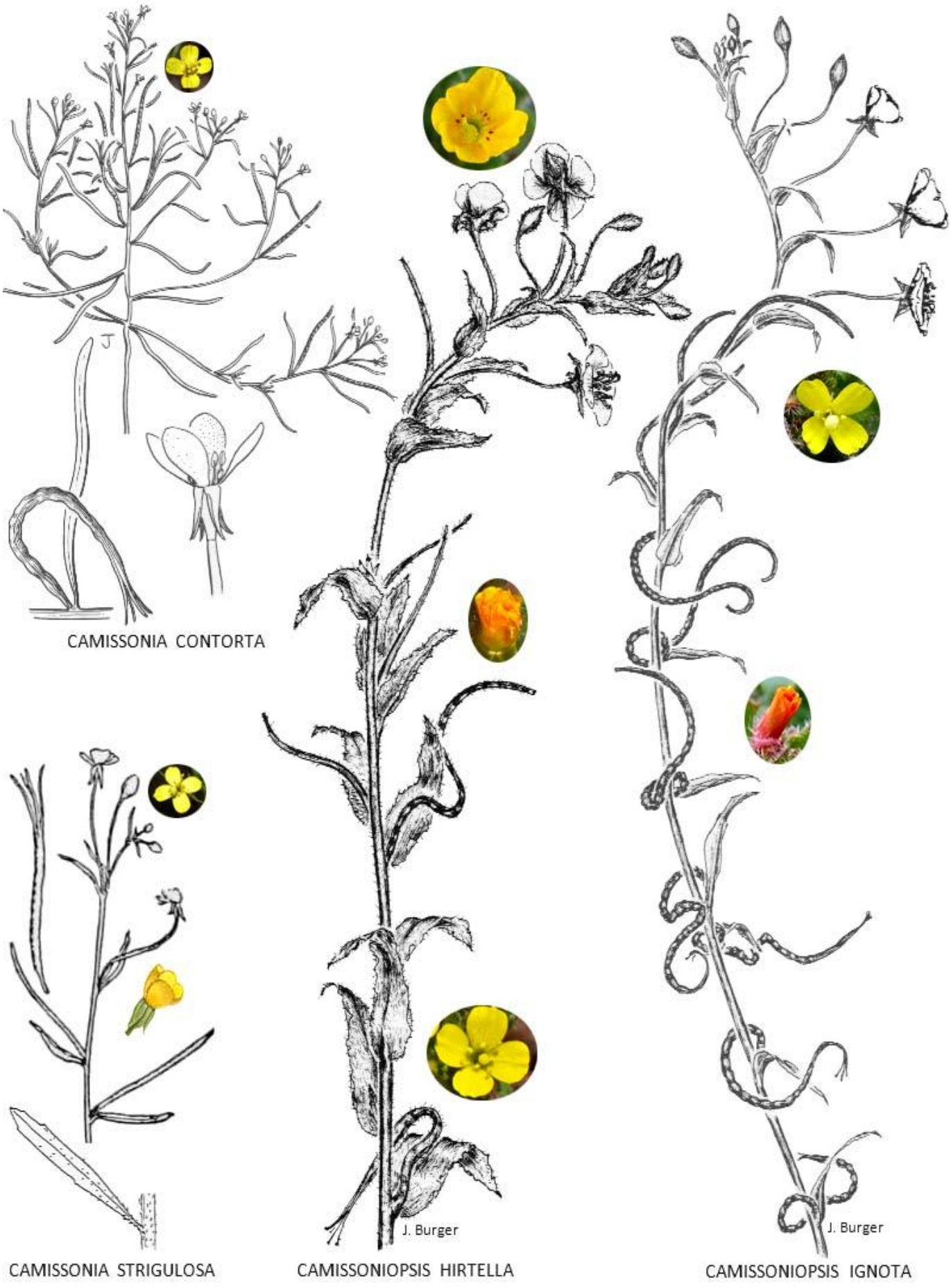
Silva of North America.
v. 6, 1894.

Tab. CCLXI

C. E. Faxon del.
A. Riocreux direx.t

Rapine sc.
Imp. J. Taneur, Paris

FRAXINUS DIPETALA, Hook et Arn.

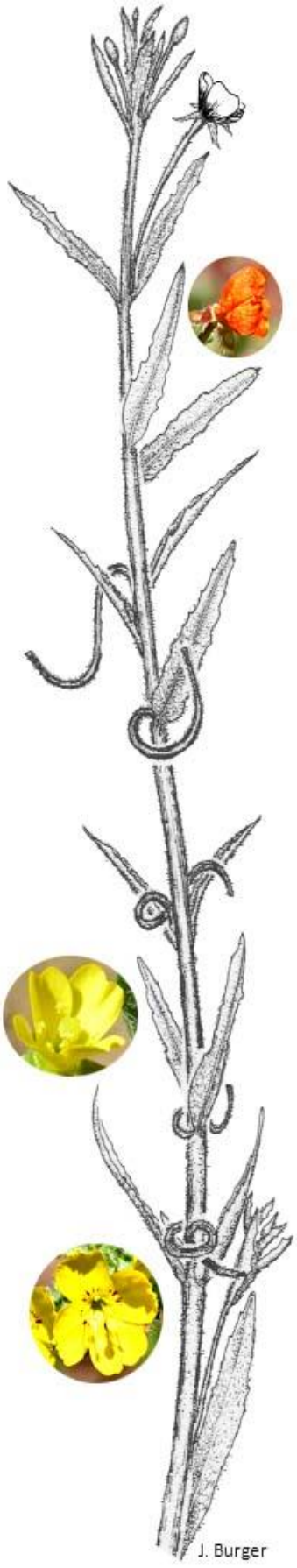


CAMISSONIA CONTORTA

CAMISSONIA STRIGULOSA

CAMISSONIOPSIS HIRTELLA

CAMISSONIOPSIS IGNOTA



CAMISSONIOPSIS INTERMEDIA

CAMISSONIOPSIS LUCIAE

CAMISSONIOPSIS MICRANTHA

ANTHOPHYTA: EUDICOTYLEDONEAE. ONAGRACEAE: CLARKIA.

CLARKIA JOLONENSIS

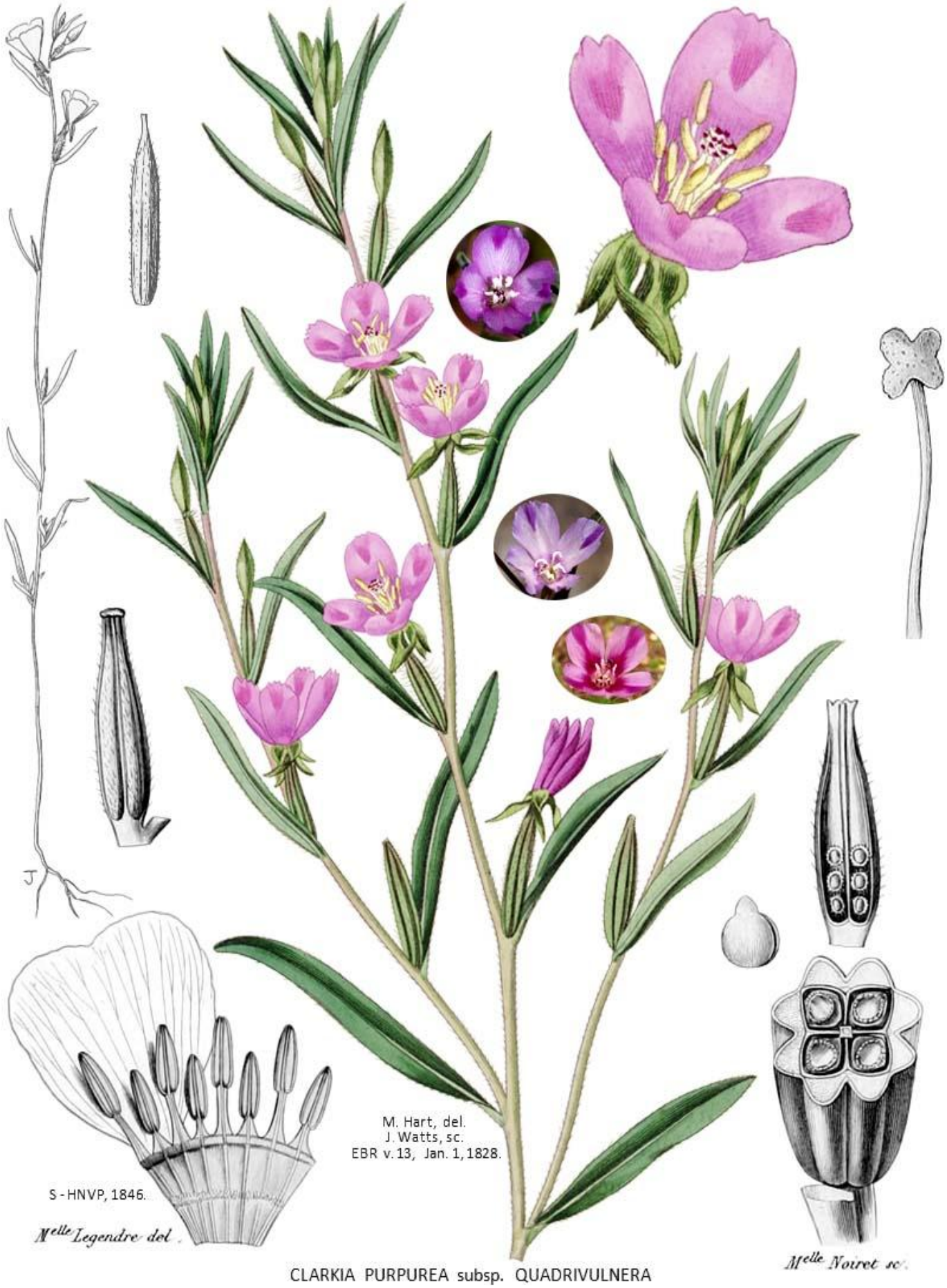
J-FC

CLARKIA MODESTA

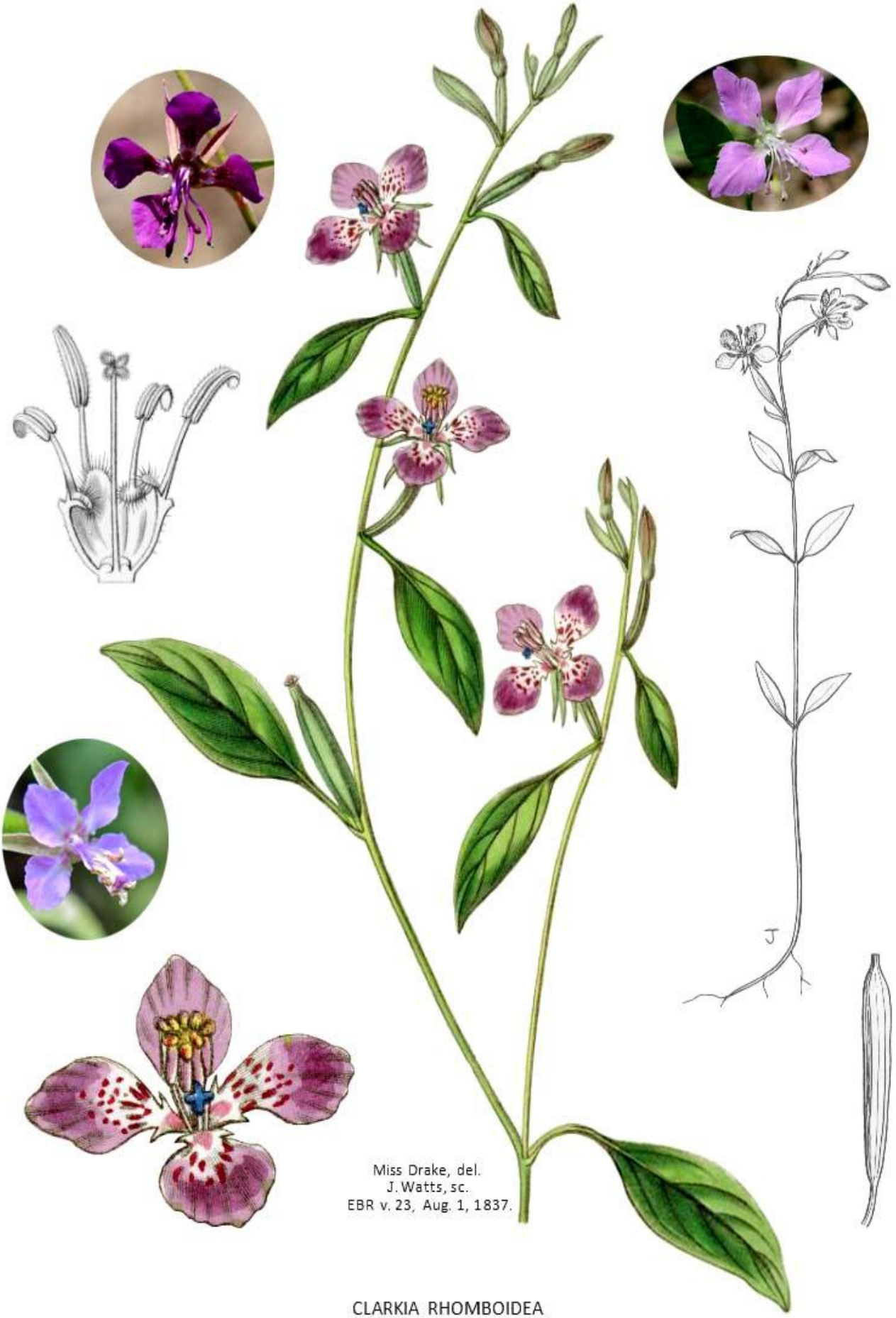
CLARKIA PURPUREA subsp. QUADRIVULNERA LOCAL RACE

CLARKIA LEWISII

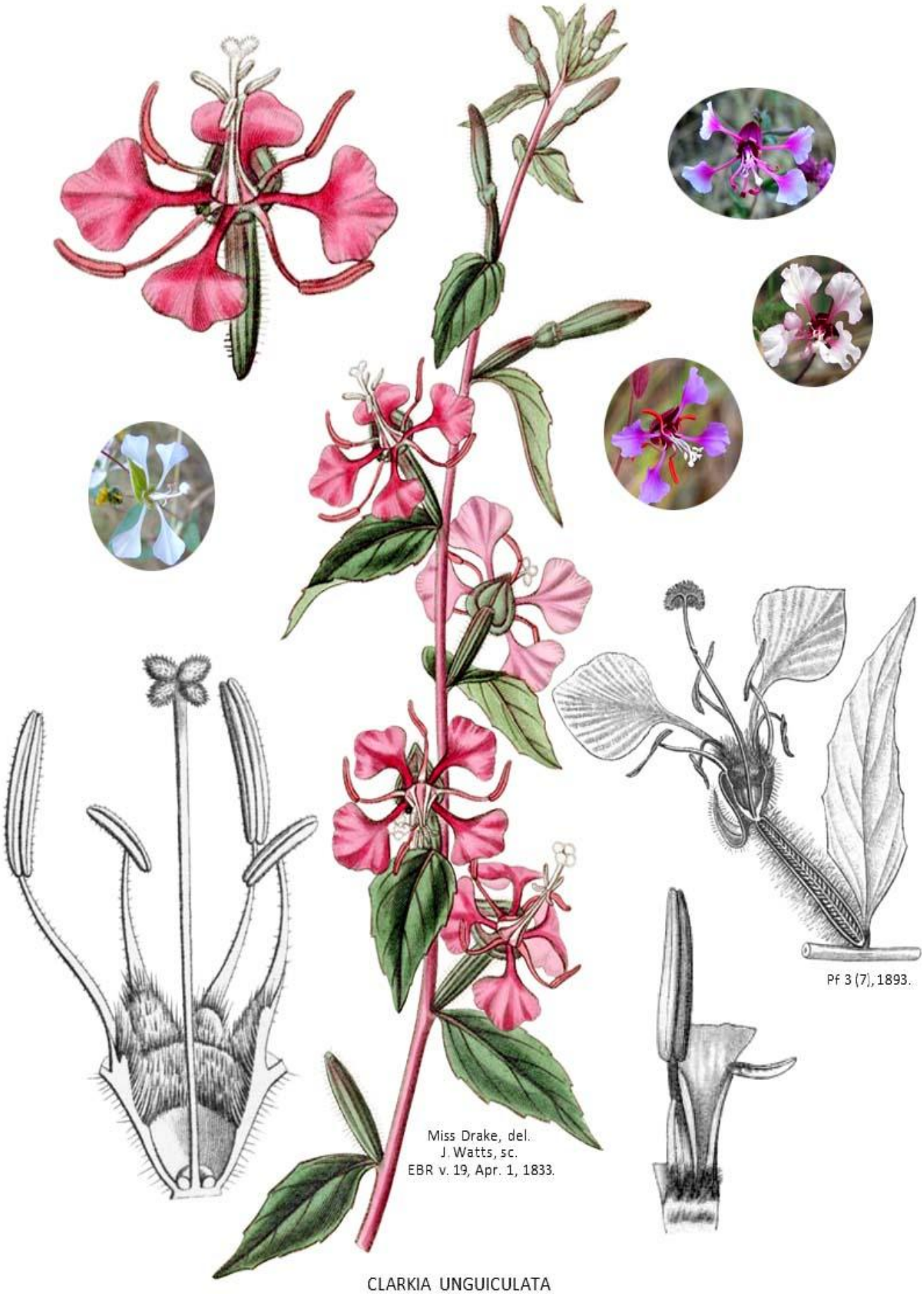
CLARKIA SPECIOSA



CLARKIA PURPUREA subsp. QUADRIVULNERA



CLARKIA RHOMBOIDEA



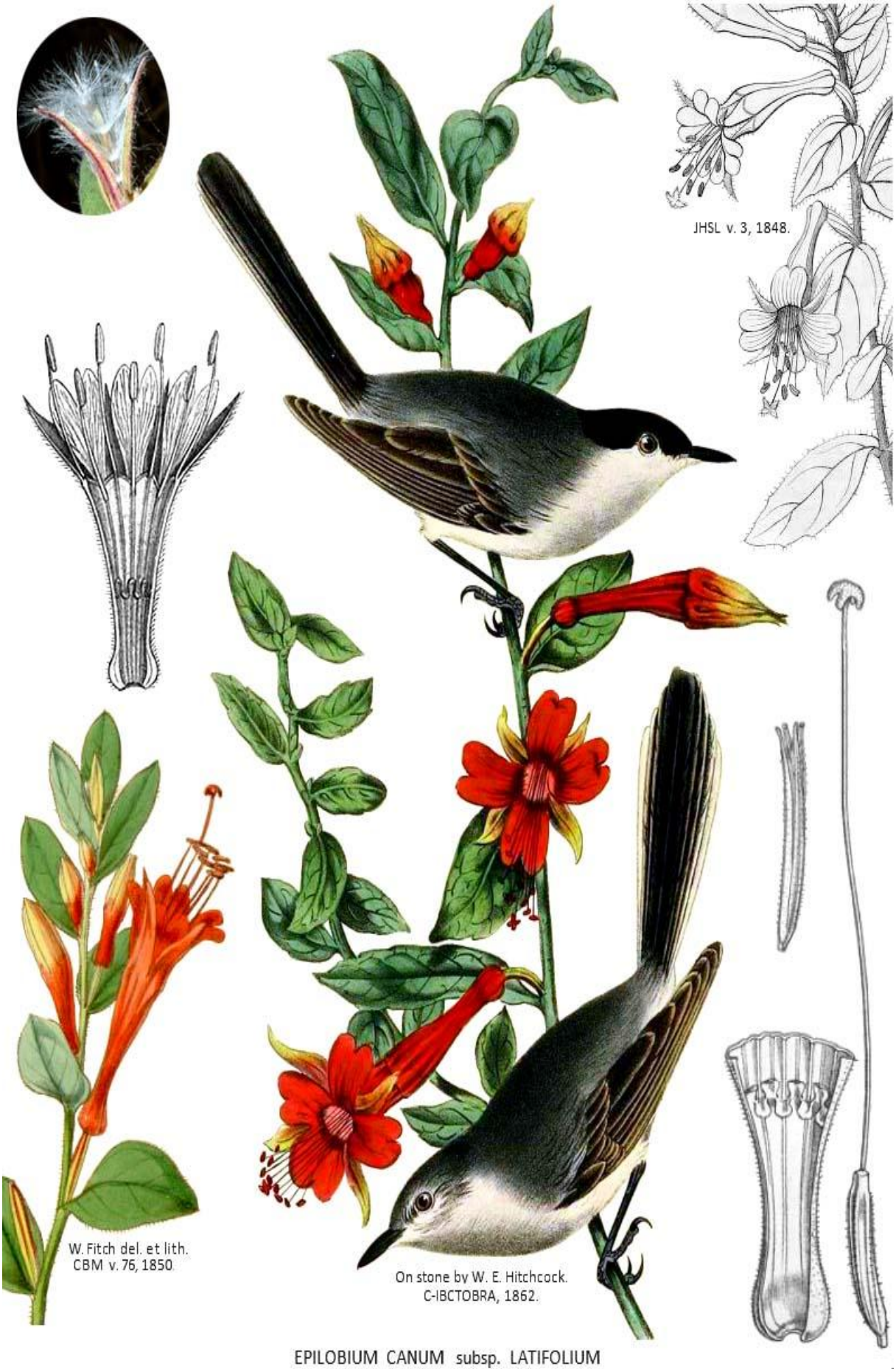
CLARKIA UNGUICULATA

Ch. Cuisin del. et lith.
B-EG, 1885.

Imp. Becquet, Paris.

EPILOBIUM BRACHYCARPUM

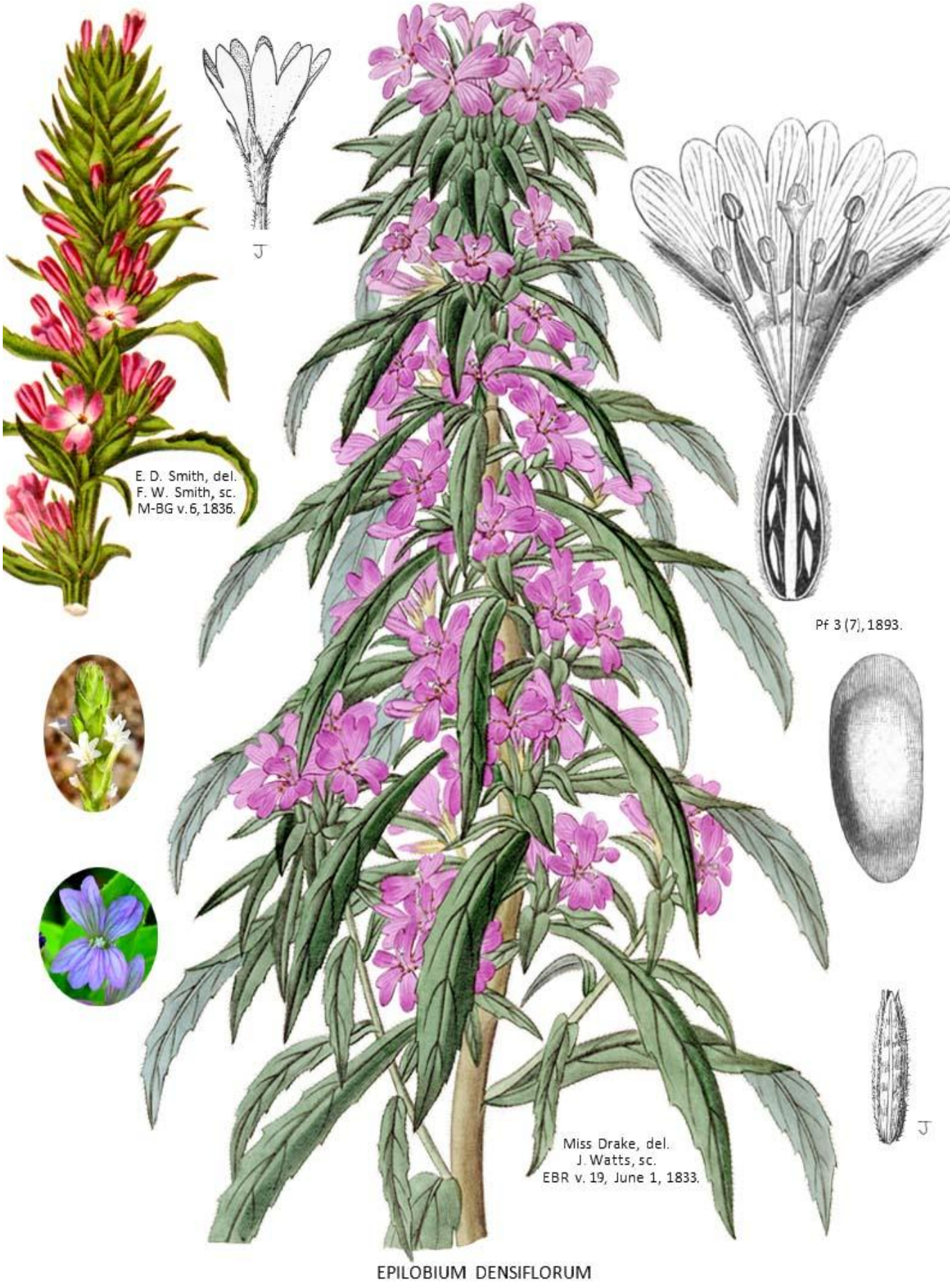
EPILOBIUM CANUM subsp. CANUM



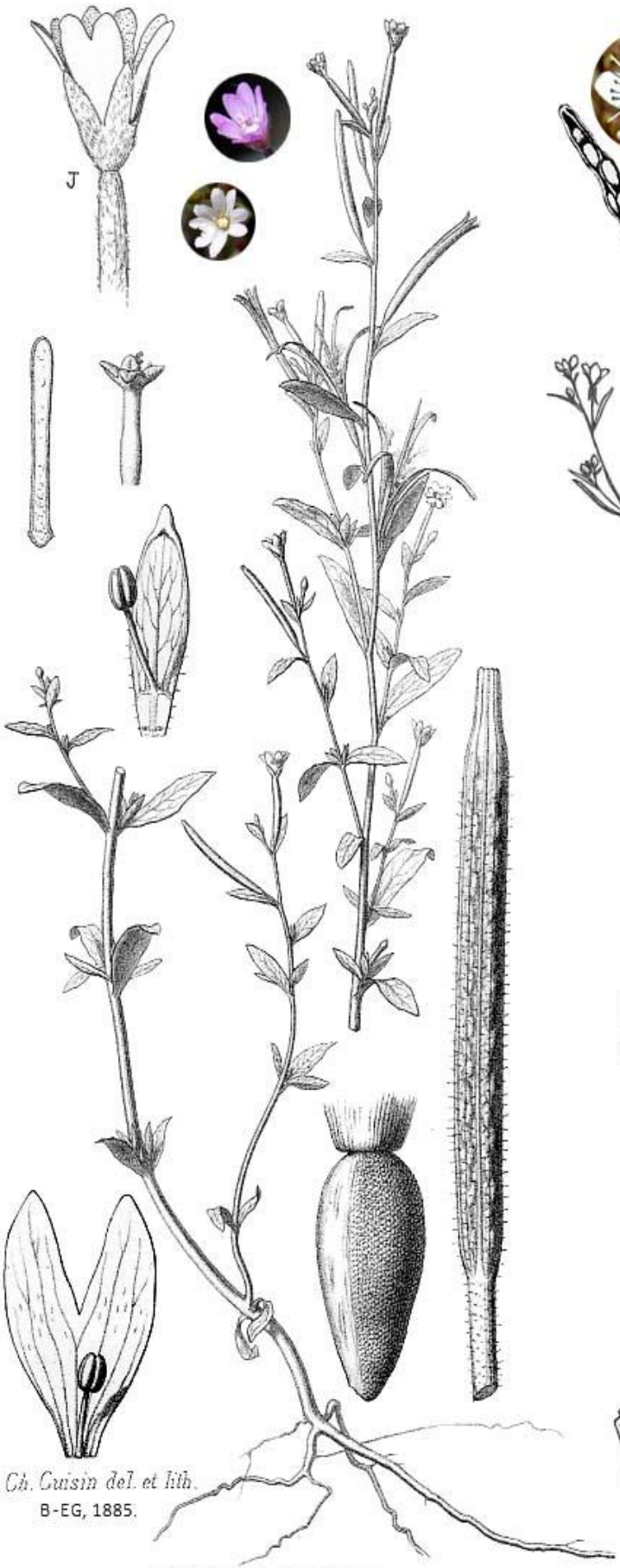
EPILOBIUM CANUM subsp. LATIFOLIUM

EPILOBIUM CILIATUM subsp. CILIATUM

EPILOBIUM CILIATUM subsp. WATSONII



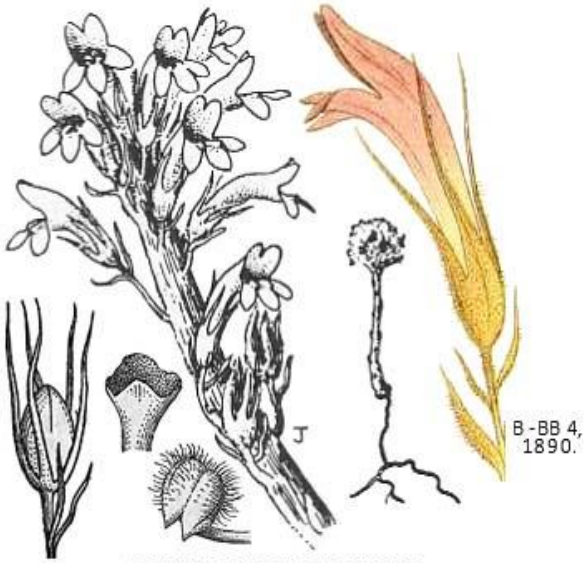
EPILOBIUM DENSIFLORUM



EPILOBIUM MINUTUM

GAYOPHYTUM HETEROZYGUM

TETRAPTERON GRACILIFLORUM

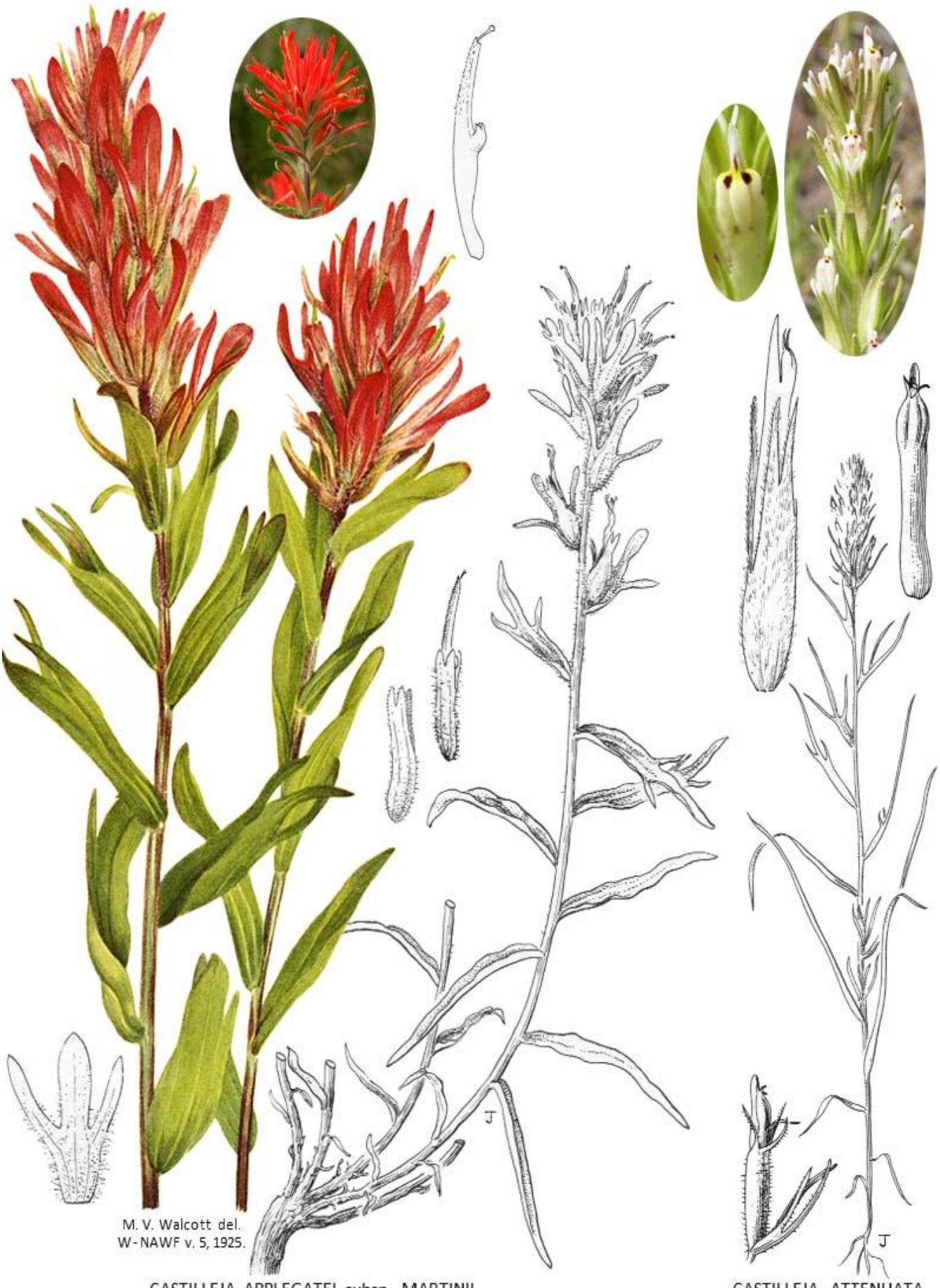


APHYLLON CALIFORNICUM

APHYLLON PURPUREUM

APHYLLON FASCICULATUM

APHYLLON TUBEROSUM



CASTILLEJA APPLEGATEI subsp. MARTINII

CASTILLEJA ATTENUATA

CASTILLEJA EXSERTA

CASTILLEJA DENSIFLORA

CASTILLEJA FOLIOLOSA

CASTILLEJA MINOR

CORDYLANTHUS RIGIDUS

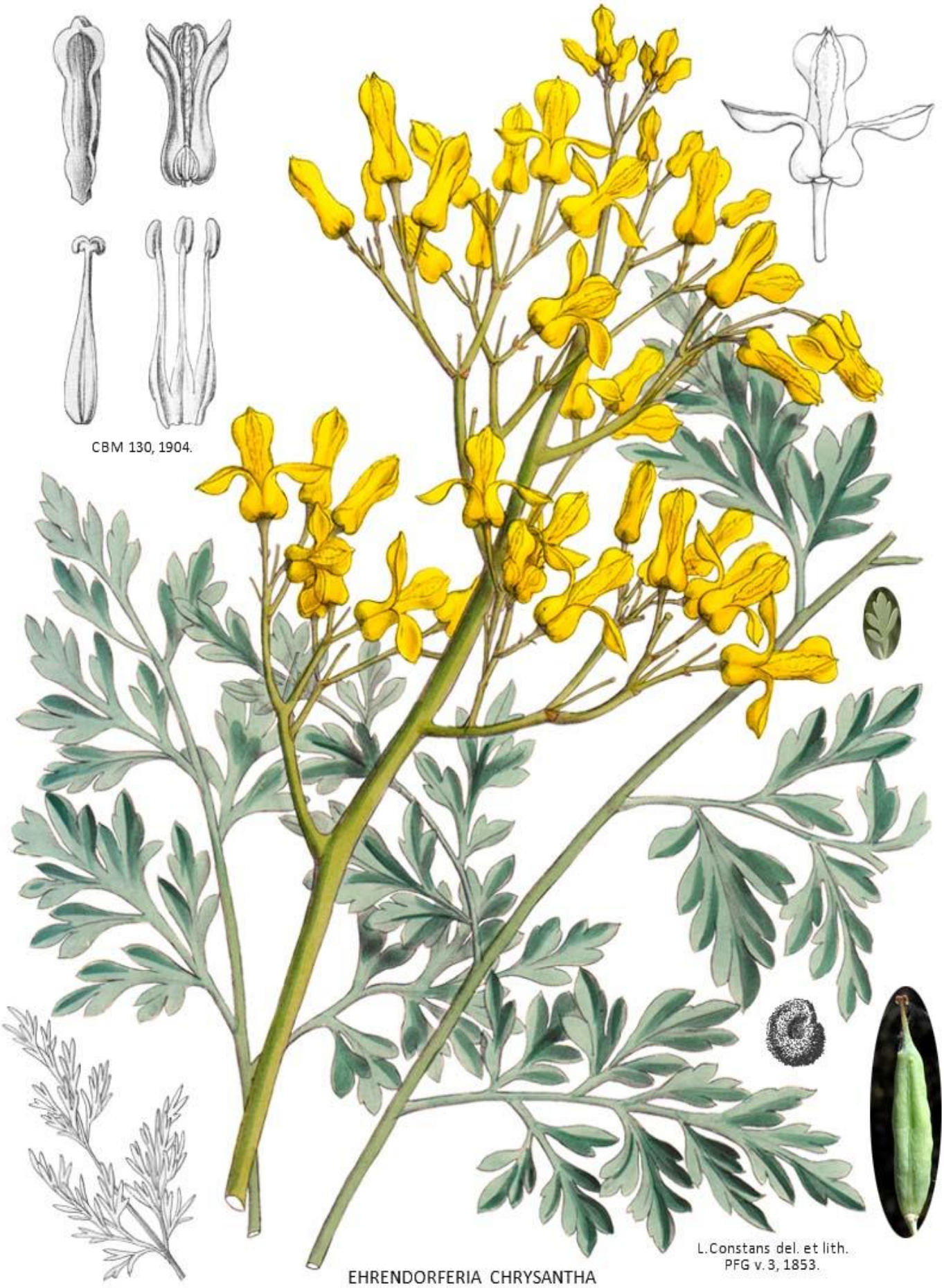
PEDICULARIS DENSIFLORA

TRIPHYSARIA ERIANTHA

OXALIS CORNICULATA

OXALIS PES-CAPRAE

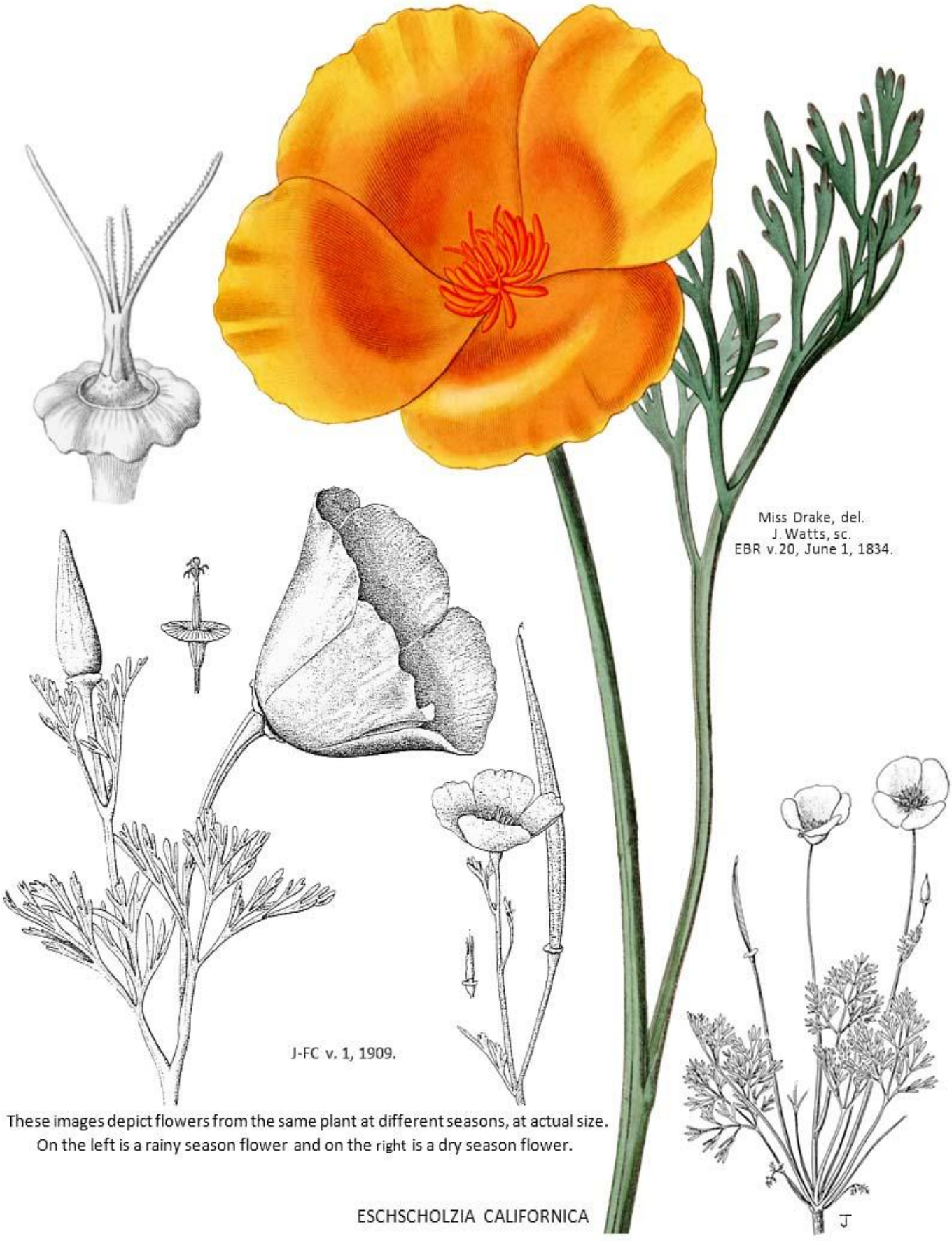

Pf 3(2), 1889.
W. Fitch, del. et lith.
CBM v. 85, 1859.
T-BUSMBS, 1858.
DENDROMECON RIGIDA


CBM 130, 1904.
L.Constans del. et lith.
PFG v. 3, 1853.
EHRENDORFERIA CHRYSANTHA

ESCHSCHOLZIA CAESPITOSA
The color illustration depicts an extremely caespitose (tufted) plant.

ESCHSCHOLZIA CALIFORNICA

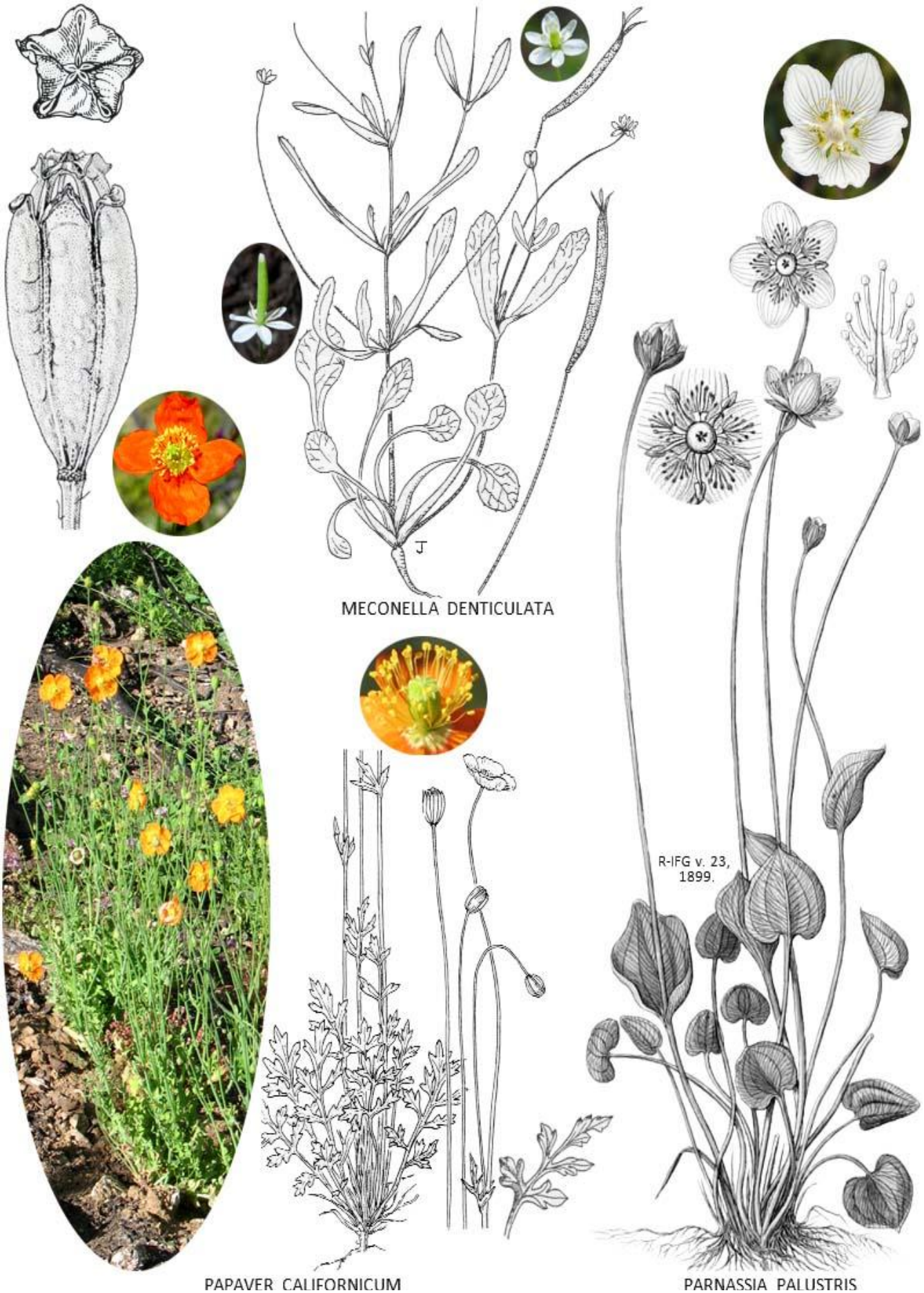
Depicted on this plate are plants that are similar to those that are native to the Tassajara region.



These images depict flowers from the same plant at different seasons, at actual size.
On the left is a rainy season flower and on the right is a dry season flower.

ESCHSCHOLZIA CALIFORNICA

Depicted on this plate is the form that has been named *E. c.* var. *crocea*. This is the variation that is most commonly planted in gardens, and it is present in the developed area of Tassajara.


MECONELLA DENTICULATA
R-IFG v. 23, 1899.
PAPAVER CALIFORNICUM
PARNASSIA PALUSTRIS

PHRYMACEAE. MONKEY FLOWER OR LOP SEED FAMILY.

1a. Pedicels shorter than the calyces. Plants of dry habitats (except *D. douglasii*). Shrubs, subshrubs and annual herbs. . . . ***Diplacus***.

1b. Pedicles longer than the calyces. Plants restricted to wet habitats (except sometimes *E. nasuta*). Annual and perennial herbs:

2a. Calyx tube longer than the calyx lobes; calyx midribs strongly angled. . . . . ***Erythranthe***.

2b. Calyx tube about as long as the calyx lobes; calyx midribs faint and not raised. . . . . ***Mimetanthe***.

DIPLACUS..

1a. Evergreen shrubs or subshrubs. Flowers yellow to orange or saffron. . . . . ***D. linearis***. p. 227.

1b. Annual herbs. Flowers primarily purplish pink:

2a. Lower corolla lips nearly absent. Fruits hard, asymmetrical-ovate in outline, and indehiscent while stems are alive. . . ***D. douglasii***. p. 226.

2b. Lower corolla lips fully developed. Fruits fragile, narrowly lanceolate in outline, and promptly dehiscent:

3a. Flowers produced singularly at the nodes. . . . . ***D. fremontii***. p. 226.

3b. Flowers (or at least some flowers) produced in opposite pairs at the nodes. . . . . ***D. bolanderii***. p. 226.

ERYTHRANTHE.

1a. Corollas red to reddish orange (very rarely yellow or brown); the lateral lobes are reflexed. . . ***E. cardinalis***. p. 228, 229.

1b. Corollas yellow (often with red spots or markings); the lateral lobes are spreading:

2b. Corollas weakly bilabiate; the throat is open. . . . . ***E. floribunda***. p. 230.

2a. Corollas strongly bilabiate; the throat is nearly closed by an upwardly swollen palate:

3a. Rhizomatic perennial herbs. The lower corolla lips usually have small reddish dots. . . . . ***E. guttata***. p. 231, 232.

3b. Fibrous rooted annual herbs. The lower corolla lips usually have a large diamond or triangular shaped red spot. . . . ***E. nasuta***. p. 231.

MIMETANTHE

The genus *Mimetanthe* is comprised of one species. . . . . ***Mimetanthe pilosa***. p. 230.

PLANTAGINACEAE. PLANTAIN FAMILY.

1a. Leaves strictly basal. Corollas dry, scarious, translucent, and persistent in fruit. . . . . ***Plantago***.

1b. Leaves basal and cauline. Corollas petal like in color and texture, and deciduous:

2a. Cauline leaves alternate, or only the upper cauline leaves are alternate:

3a. Cauline leaves ovate-deltate to roundish in outline, and shallowly 5 to 7 lobed or toothed:

4a. Small perennial vines that are restricted to rock walls. Corollas spurred. . . . . ***Cymbalaria***.

4b. Small annual herbs that occur in and about the developed area of Tassajara. Corollas not spurred. . . . . ***Veronica***.

3b. Cauline leaves narrowly linear to narrowly elliptic, lanceolate or oblong, and entire:

5a. Corolla tubes with narrowly linear spurs. Basal leaves whorled; the lower most cauline leaves are often opposite or produced in 3's. . . . . ***Nuttallanthus***.

5b. Corolla tubes with a swollen pouch or sac like formations at the base. Basal leaves not whorled; the basal and lower cauline leaves are sometimes opposite. . . . . ***Antirrhinum***.

2b. Cauline leaves opposite:

6a. Sterile filament absent or just a small rudiment. Bases of corollas upwardly swollen. . . . . ***Collinsia***.

6b. Sterile filament well developed. Bases of corollas not upwardly swollen:

7a. Fertile filament bases glabrous and attached to corolla at different levels. Upper corolla lip turned upward. . . . . ***Penstemon***.

7b. Fertile filament bases densely hairy and attached to corolla at one level. Upper corolla lip nearly straight or turned downward. . . . . ***Keckiella***.

ANTIRRHINUM. SNAPDRAGON.

1a. Plants glabrous. Upper stems weak, twining, and often supported by their coiling capillary pedicels. Capsules symmetrical. . . . . ***A. kelloggii***. p. 233.

1b. Plants glandular hairy. Upper stems not weak or twining. Capsules asymmetrical due to a displacement of the upper and lower halves. . . . . ***A. multiflorum***. p. 233.

COLLINSIA. CHINESE HOUSES, BLUE EYED MARY.

1a. Corollas 10 to 20 mm. long. Pedicels shorter than the calyces. . . . . ***C. heterophylla***. p. 234.

1b. Corollas 4 to 8 mm. long. Pedicels of at least the lower flowers longer than the calyces. . . . . ***C. childii***. p. 234.

CYMBALARIA.

Cymbalaria is represented in the Tassajara region by one species. . . . . ***Cymbalaria muralis***. p. 235.

KECKIELLA.

1a. Corollas white to pale pink with pinkish to purplish lines, 12 to 18 mm. long, the tube mostly included within the calyx. Leaves narrowly lanceolate to narrowly oblanceolate. Widely distributed in this region. . . . . ***K. breviflora***. p. 235.
1b. Corollas red, 22 to 40 mm. long, the tube well exserted from the calyx. Leaves ovate to oblong-elliptic. Restricted to cliffs and major rock outcrops. . . . . ***K. corymbosa***. p. 235.

NUTTALLANTHUS. AMERICAN TOAD FLAX.

Nuttallanthus is represented in the Tassajara region by one species. . . . . ***Nuttallanthus texanus***. p. 236.

PENSTEMON. PENSTEMON, BEARD TONGUE FLOWERS.

1a. Corollas red to orangish red, the tubes narrowly cylindrical, the lips short and faintly bilabiate. . . . ***P. centranthifolius***. p. 237.
1b. Corollas blue to purple or magenta, the tubes expanded, the lips spreading and strongly bilabiate:
2a. Leaves broadly lanceolate and with toothed margins. Corolla throats abruptly expanding from the tube. Sterile filament densely hairy. . . . . ***P. grinnellii***. Var. ***scrophularioides***. p. 239.
2b. Leaves narrowly linear, narrowly elliptic or narrowly oblanceolate, and with entire margins. Corolla throats more gradually expanding from the tube. Sterile filament not hairy:
3a. Plants mostly glabrous. Largest leaves 2 to 4 mm. wide. . . . . ***P. heterophyllus*** var. ***heterophyllus***. p. 238.
3b. Plants minutely pubescent. Largest leaves generally less than 2 mm. wide. . . ***P. heterophyllus*** var. ***australis***. p. 238.

PLANTAGO. PLANTAIN.

1a. Annual herbs. Leaves narrowly linear and grass like, light green, delicate, and inconspicuously veined. Outer sepals completely separate. Stamens not exserted. . . . . ***P. erecta***. p. 239.
1b. Perennial herbs. Leaves oblong-lanceolate, dark green, rather coarse, and strongly ribbed. Outer sepals united. Stamens exserted. . . . . ***P. lanceolata***. p. 239.

VERONICA. SPEEDWELL, BROOKLIME.

Veronica is represented in the Tassajara region by one introduced species. . . . . ***Veronica persica***. p. 239.

PLATANACEAE. SYCAMORE or PLANE TREE FAMILY.

PLATANUS. SYCAMORE OR PLANE TREES.

Platanus is represented in the Tassajara region by one species. . . . . ***Platanus racemosa***. p. 240, 241, 242.

POLEMONIACEAE. PHLOX FAMILY.

1a. Short evergreen perennials herbs that become densely tufted and woody at the base with age (ours) . . . . . ***Eriastrum***.
1b. Annual herbs:
2a. Leaves opposite, or at least some of the leaves are opposite:
3a. Leaves entire. The occurrence of opposite leaves varies from almost all to only a few. . . . . ***Microsteris***.
3b. Leaves divided to the base into linear segments; and because they are sessile, they resemble whorls of linear leaves:
4a. Stamens exserted beyond the corolla tubes. Flowers open during the day. . . . . ***Leptosiphon***.
4b. Stamens hidden within the corolla tubes. Flowers opening in the evening and closing in the morning. . ***Linanthus***.
2b. Leaves alternate (the basal leaves of some species are produced in rosettes):
5a. Mature inflorescens closely subtended by bracts or bract like leaves:
6a. Inflorescence bracts spiny or at least sharply toothed. Calyx lobes not equal in size. . . . . ***Navarretia***.
6b. Inflorescence bracts not spiny and resemble the leaves. Calyx lobes equal in size. . . . . ***Collomia***.
5b. Mature inflorescens not closely subtended by bracts or bract like leaves:
7a. Larger leaves ranging from pinnately lobed, mostly entire, or divided into three leaflets. . . . . ***Allophyllum***.
7b. Larger leaves bipinnately divided into segments or lobes:
8a. Corollas white to blue or lavender. Upper most leaves mostly divided into segments. . . . . ***Gilia***.
8b. Corollas bright pink. Upper most leaves mostly simple. . . . . ***Saltugilia***.

ALLOPHYLLUM.

1a. Widest leaves, or leaf lobes, no more than 4 mm. wide. Corollas dark blue, purplish blue, violet, or sometimes pale:
2a. Flowers produced in fairly dense clusters of 4 to 8. Plants up to 40 cm. tall; pinnate leaves many. . . . ***gilioides*** subsp. ***gilioides***. p. 243.

2b. Flowers produced singularly or in loose groups of 2 or 3. Plants less than less than 16 cm. tall; pinnate leaves few. . . ***A. gilioides*** subsp. ***violaceum***. p. 243.

1b. Widest leaves or leaflets 3 to 15 mm. wide:

3a. Lower and cauline leaves 3 to 13 lobed. Corollas 8 to 22 mm. long and with dark red or purplish red tubes and pink to bluish lavender lobes. . . . . ***A. divaricatum***. p. 243.

3b. Lower and middle cauline leaves entire, coarsely toothed, or with an irregular lobe here or there. Corollas 6 to 11 mm. long and white to pale blue or pale lavender. . . . . ***A. integrifolium***. p. 243.

COLLOMIA. GLUE SEED.

1a. Leaves sessile and entire. Flowers showy. . . . . ***C. grandiflora***. p. 244.

1b. Leaves petiolate and pinnately divided into leaflets. Flowers inconspicuous. . . . . ***C. heterophylla***. p. 245.

ERIASTRUM. WOOL FLOWER.

Eriastrum is represented in the Tassajara region by one species. . . . . ***Eriastrum densifolium*** subsp. ***elongatum***. p. 246.

GILIA.

1a. Flowers produced in fan shaped to roundish clusters. Corollas 1 to 2 cm. long. . ***G. achilleaefolia*** subsp. ***achilleaefolia***. p. 247.

1b. Flowers produced in loosely flowered groups of seven or fewer flowers. Corollas less than 1 cm. long:

2a. Corollas more or less evenly colored. . . . . ***G. achilleaefolia*** subsp. ***multicaulis***. p. 247.

2b. Corolla tubes with five or five pairs of purple or dark purplish spots. . . . . ***G. clivorum***. p. 247.

LEPTOSIPHON.

1a. Flowers pediceled and not produced in clusters. Corollas broadly funnelform. . . . . ***L. liniflorus***. p. 248.

1b. Flowers sessile and produced in densely bracted clusters. Corollas narrowly salverform:

2a. Corolla tubes less than two and a half times longer than the calyx, the limbs mostly less than 6 mm. wide and rose lavender. Floral bracts conspicuously ciliate. . . . . ***L. ciliatus***. p. 249.

2b. Corolla tubes two to four times longer than the calyx, the limbs about 6 to 12 mm. wide, white or (rarely) yellow, and often tinged rose, lavender, or yellow. Floral bracts inconspicuously ciliate. . . . . ***L. parviflorus***. p. 249.

LINANTHUS.

Linanthus is represented in the Tassajara region by one species. . . . . ***Linanthus dichotomus***. p. 250.

MICROSTERIS. ANNUAL PHLOX.

Microsteris consists of one highly variable species. . . . . ***Microsteris gracilis***. p. 251.

NAVARRETIA.

1a. Plants not glandular. Corollas white. . . . . ***N. intertexta***. p. 250.

1b. Plants glandular. Corollas light blue to dark purplish blue:

2a. Plants sparsely glandular pubescent, the glandular hairs are mostly restricted to the stems and inflorescence. Axis of upper leaves oblong elliptic to oblong linear. . . . . ***N. atractyloides***. p. 250.

2b. Plants densely glandular pubescent throughout. Axis of upper leaves narrowly linear to narrowly lance linear. . . . . ***N. mellita***. p. 250.

SALTUGILIA. WOODLAND GILIA.

Saltugilia is represented in the Tassajara region by one species. . . . . ***Saltugilia splendens***. p. 252.

POLYGALACEAE. MILKWORT FAMILY.

POLYGALA. MILKWORT.

Polygala is represented in the Tassajara region by one species. . . . . ***Polygala californica***. p. 253.

POLYGONACEAE. BUCKWHEAT FAMILY.

1a. Leaves subtended by sheath like stipules:

2a. Calyces four or five parted. . . . . ***Persicaria***.

2b. Calyces six parted. . . . . ***Rumex***.

1b. Leaves not subtended by stipules:

3a. Delicate vine like annual herbs with weak and trailing stems. Leaves opposite, remote, roundish to obovate and frequently obcordate. Flowers inconspicuous; the involucres two winged in maturity and loosely enclosing the achene. ***Pterostegia***.

3b. Erect or ascending herbs, subshrubs or shrubs. Leaves opposite, alternate, whorled or produced in basal rosettes, narrowly linear to roundish, but never obcordate. Flowers readily evident; involucres cylindric to campanulate or funnelform:

4a. Involucres many flowered, the ribs not spine tipped. Annual and perennial herbs, subshrubs and shrubs. . . . . ***Eriogonum***.

4b. Involucres one or two flowered, the ribs terminating in more or less stiff and often hooked spine like teeth. Annual herbs:

5a. Involucres cylindrical to urn shaped or top shaped, 3 lobed, 3, 5 or 6 awned, and 1 or rarely 2 flowered. . . . . ***Chorizanthe***.

5b. Involucres 4 angled, 4 lobed, 4 awned and 2 flowered. . . . . ***Systenotheca***.

CHORIZANTHE. SPINE FLOWER.

1a. Leaves narrowly linear to very narrowly oblanceolate, mostly alternate, and produced along most of the length of the stems. Membranes between involucre spines white translucent. . . . . ***C. membranacea***. p. 254.

1b. Leaves oblong-ovate to oblanceolate or narrowly oblanceolate, and produced in basal rosettes or in whorls at the nodes. Membranes between involucre spines, if present, are rose to purplish pink:

2a. Involucre with membranous margins between the spines. . . . . ***C. douglasii***. p. 253.

2b. Involucre without membranous margins between the spines:

3a. Leaves strictly basal. Involucre spines nearly the same length. . . . . ***C. staticoides***. p. 254.

3b. Leaves basal and cauline. Involucre spines unequal, the longest one twice as long as the others. ***C. clevelandii***. p. 253.

ERIOGONUM. NORTH AMERICAN BUCKWHEAT, FALSE BUCKWHEAT.

1a. Woody branched shrubs or subshrubs. Leaves narrowly linear, sessile, and densely foliating the branches. . . . . ***A. fasciculatum*** var. ***foliolosum***. p. 254.

1b. Plants herbaceous or woody only at the base. Leaves not narrowly linear:

2a. Annual herbs:

3a. Involucres pedunculate, campanulate to broadly turbinate, and not angled or ribbed. Calyces covered with hooked hairs. . . . . ***E. inerme***. p. 255.

3b. Involucres sessile, cylindric to cylindric-turbinate, and angled and/or ribbed. Calyces glabrous or nearly so:

4a. Leaves basal and usually cauline, the blades oblong obovate to oblanceolate or elliptic. . . . . ***E. gracile***. p. 255.

4b. Leaves strictly basal, the blades roundish to deltoid. . . . . ***E. davidsonii***. p. 254.

2b. Evergreen perennial herbs or sometimes subshrubs:

5a. Stems glabrous and commonly fistulous (hollow):

6a. Leaves strictly produced in basal rosettes. The blades are mostly 1 to 5 cm. long, and the margins are flat or slightly crisped. . . . . ***E. nudum*** var. ***nudum***. p. 255.

6b. Leaves not or not strictly produced in basal rosettes, for some are usually scattered along the woody caudex. The blades are mostly about 3 to 7 cm. long, and the margins strongly crisped. . . ***E. nudum*** var. ***auriculatum***. p. 255.

5b. Stems densely to sparsely woolly and not fistulous:

7a. Plants with often lanky stems up to 18 dm. (6') long. Widely scattered and locally common, especially at lower to intermediate elevations. . . . . ***E. elongatum***. p. 254.

7b. Plants less than 6 dm. (24") tall. Restricted to rock outcrops, cliffs and talus at intermediate to higher elevations:

8a. Leaves strictly basal (the small bracts of the inflorescence scarcely leaf like), the blades roundish to broadly obovate or elliptic. Inflorescence paniculate, with the flowers produced in terminal, lateral and axillary clusters. . ***E. saxatile***. p. 255.

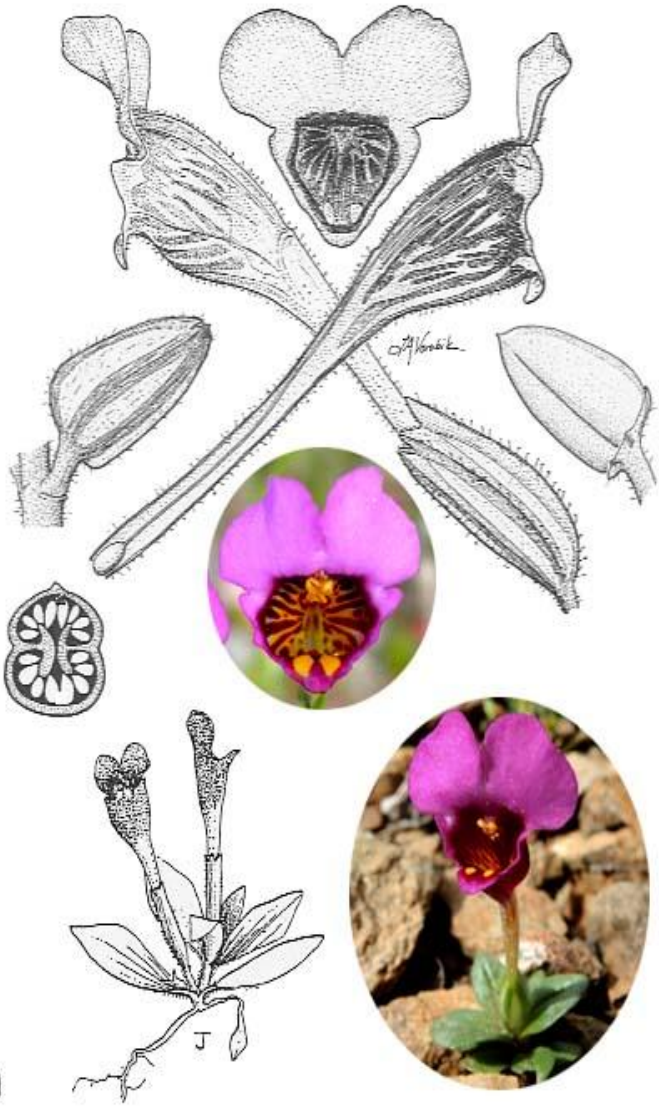
8b. Leaves basal as well as in whorls at the nodes, the blades obovate-spatulate to elliptic. Inflorescence umbellate, with the flowers produced in terminal clusters. . . . . ***E. umbellatum***. var. ***bahiiforme***. p. 255.

PERSICARIA. SMARTWEED.

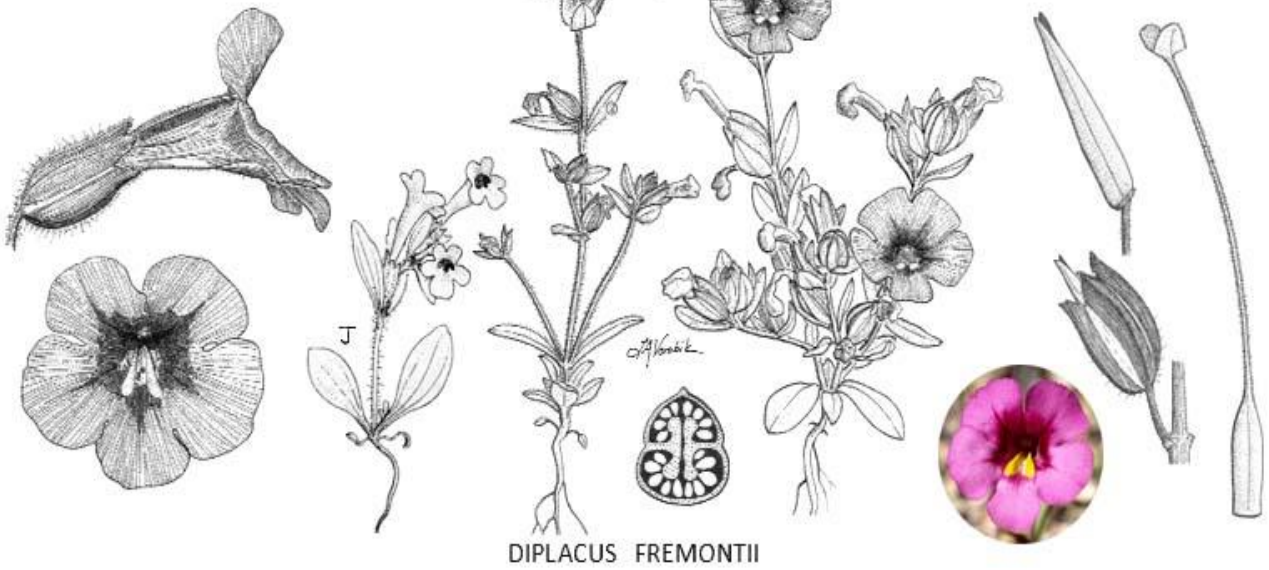
Persicaria is represented in the Tassajara region by one species. . . . . ***P. lapathifolia***. p. 256.

Continued on page 258.

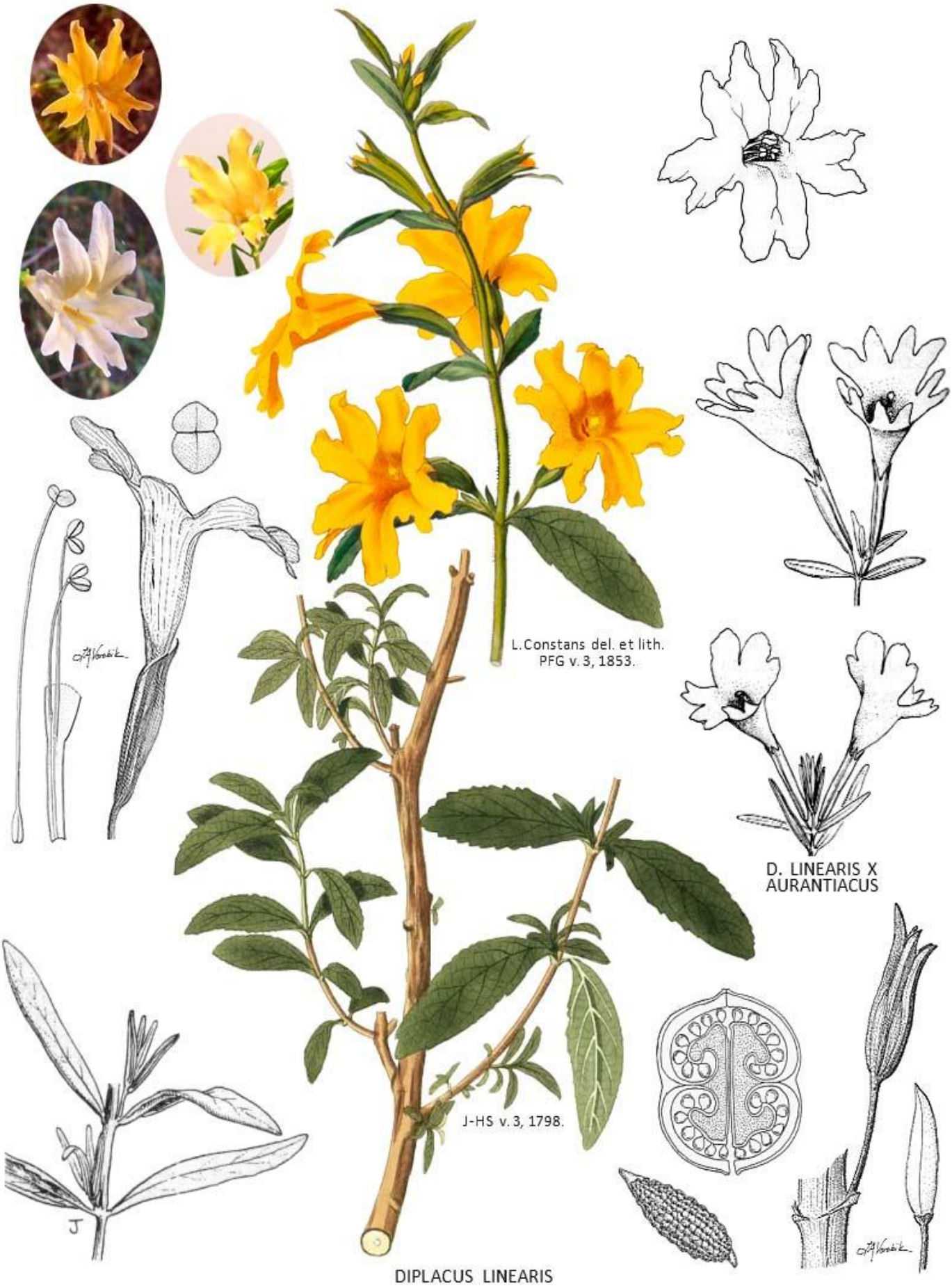
DIPLACUS BOLANDERII



DIPLACUS DOUGLASII



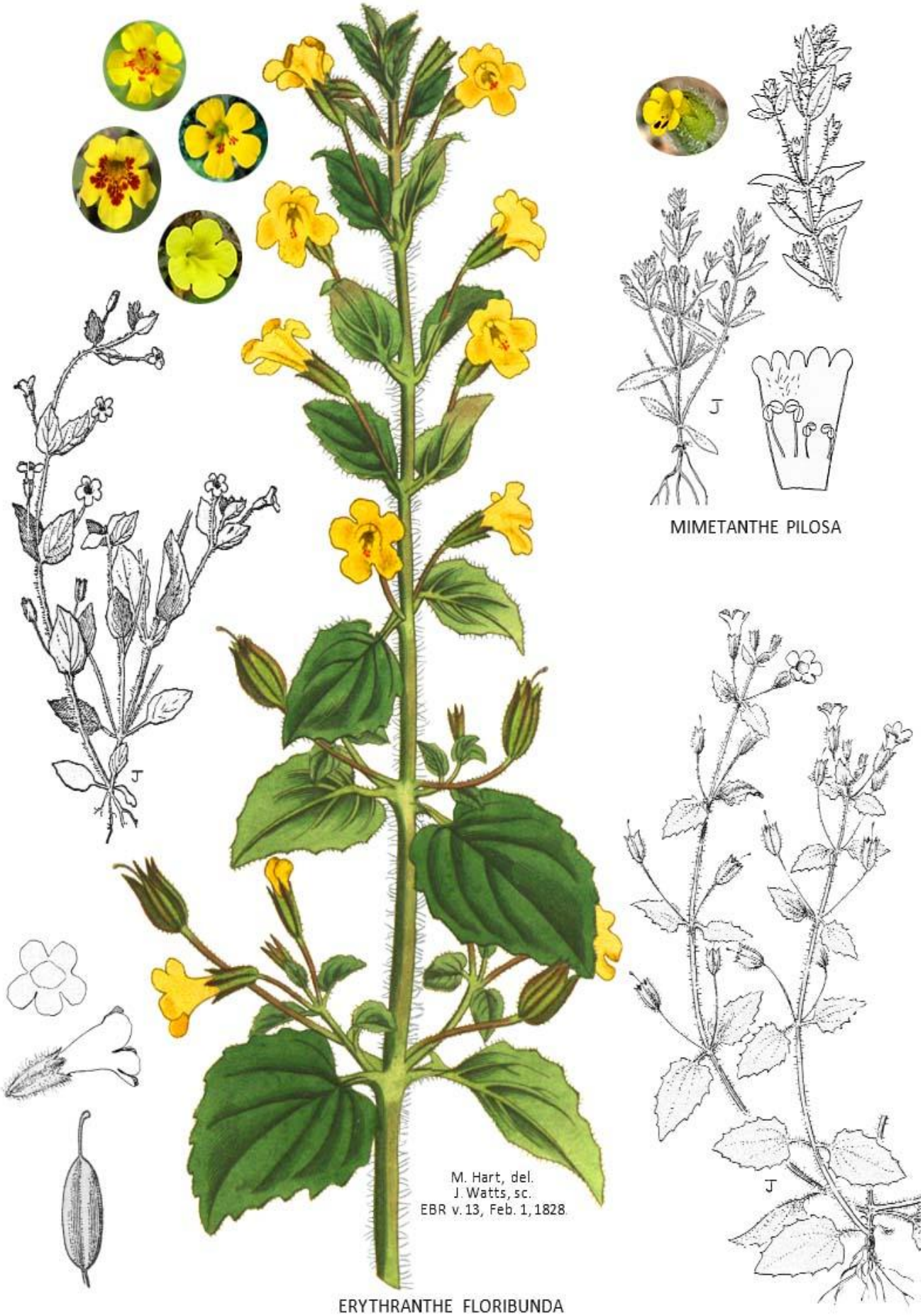
DIPLACUS FREMONTII



DIPLACUS LINEARIS

ERYTHRANTHE CARDINALIS

ERYTHRANTHE CARDINALIS

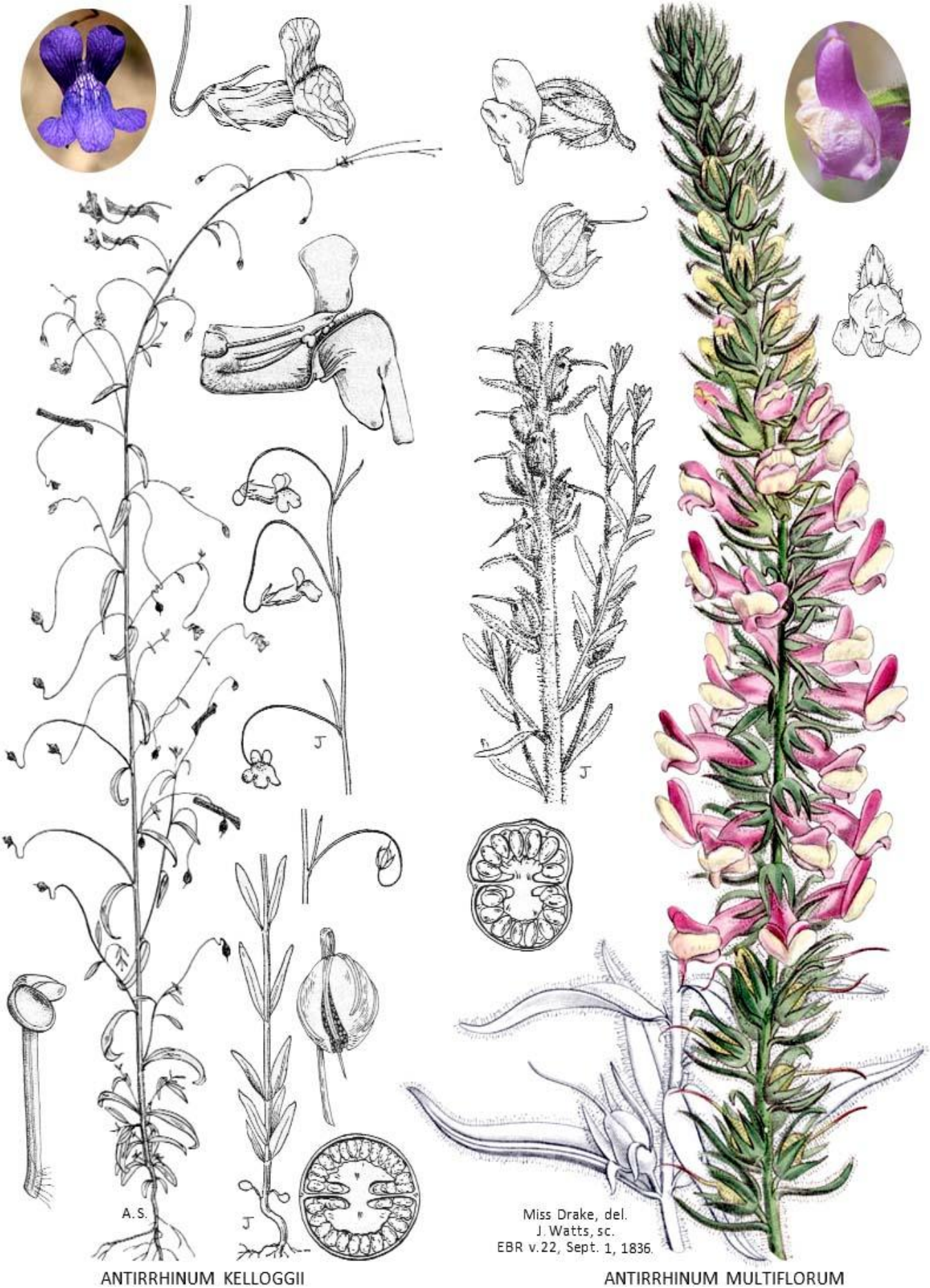


MIMETANTHE PILOSA

ERYTHRANTHE FLORIBUNDA

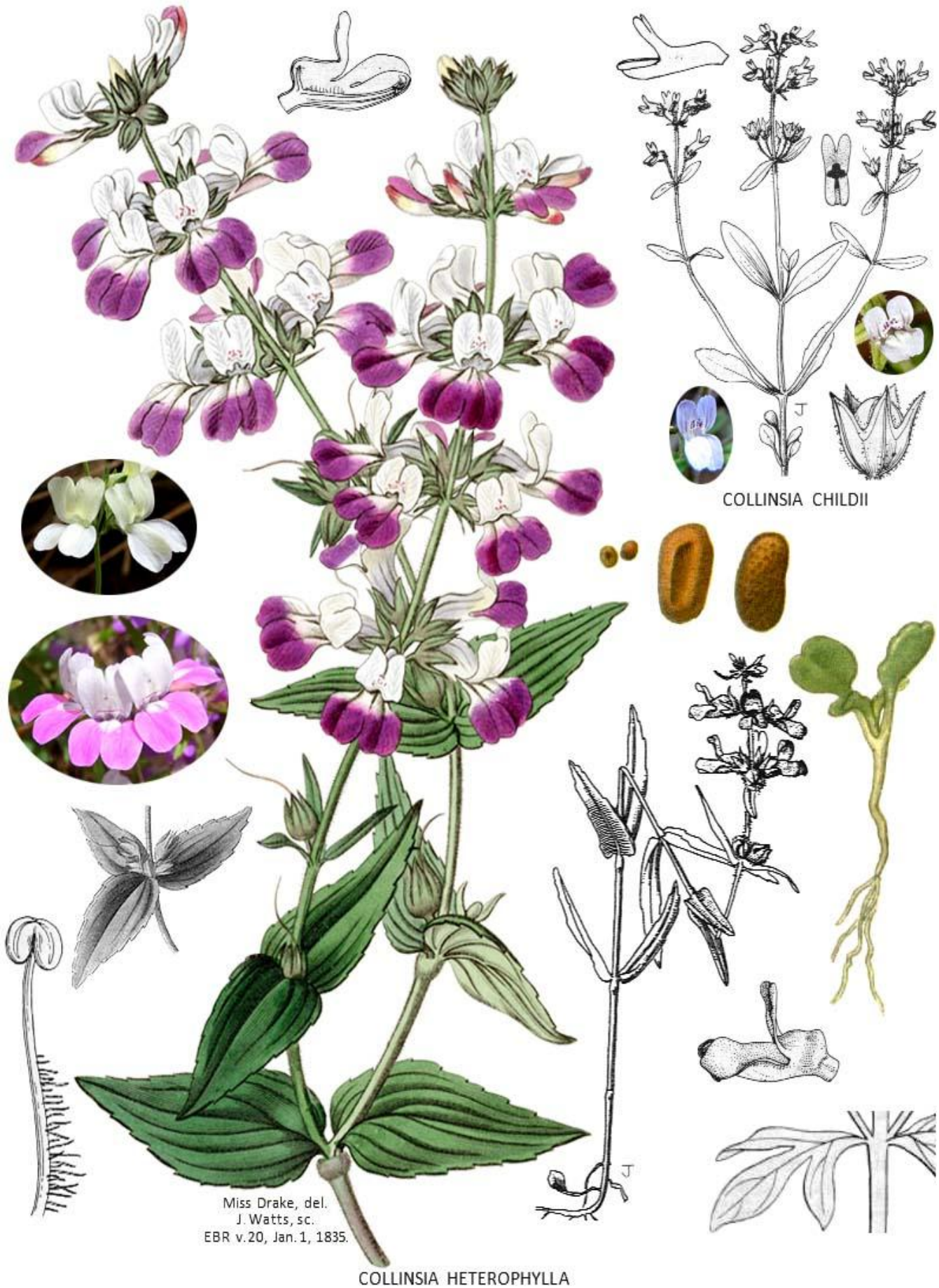

P. Bessa pinx.
Le Jeune sculp.
D-HAF v. 5, 1831.
Mimulus
guttatus
ERYTHRANTHE GUTTATA
ERYTHRANTHE
NASUTA

ERYTHRANTHE GUTTATA

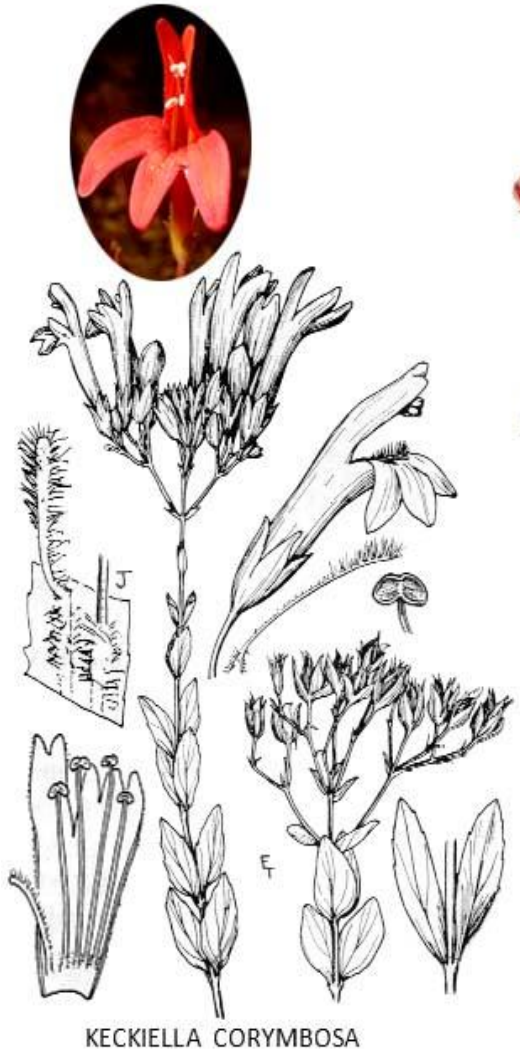


ANTIRRHINUM KELLOGGII

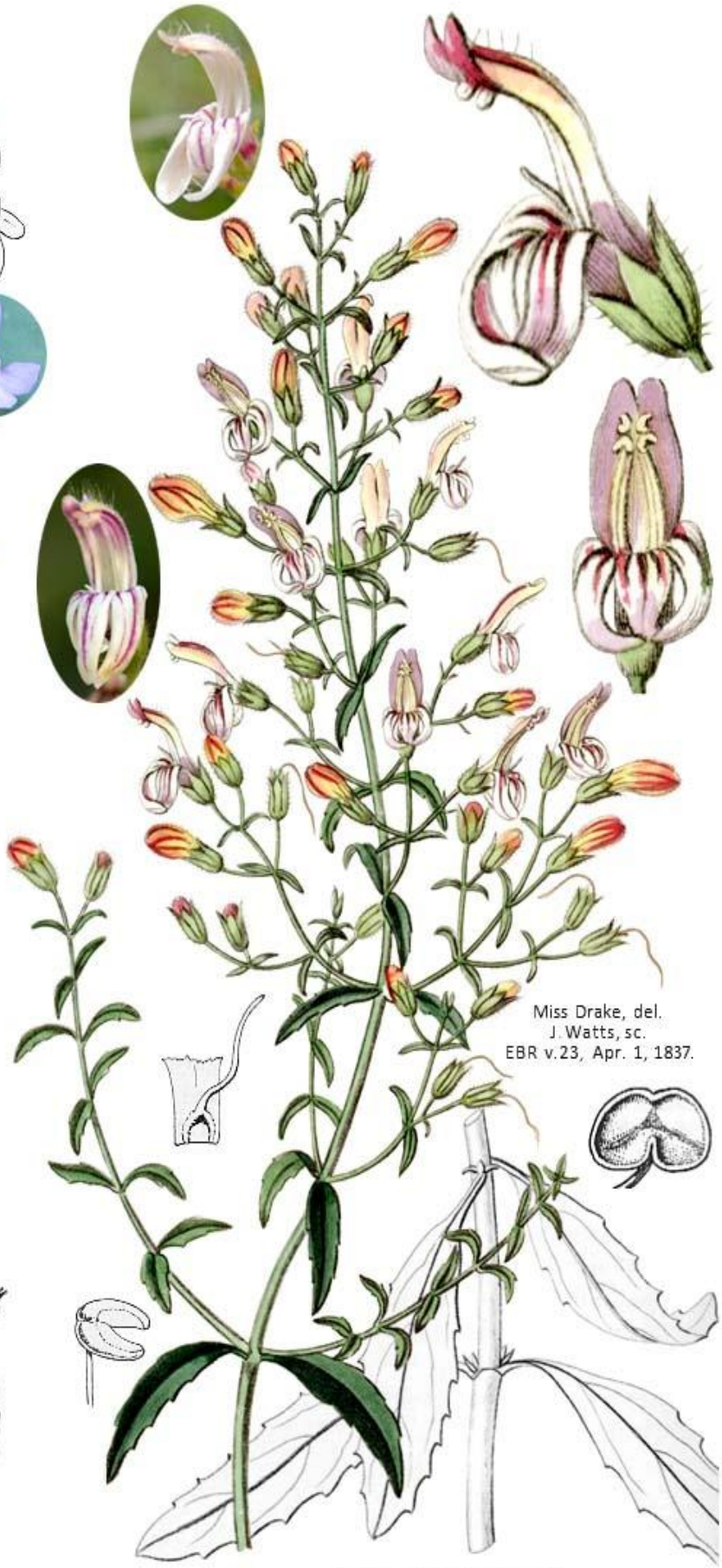
ANTIRRHINUM MULTIFLORUM


COLLINSIA CHILDII
Miss Drake, del.
J. Watts, sc.
EBR v.20, Jan. 1, 1835.
COLLINSIA HETEROPHYLLA

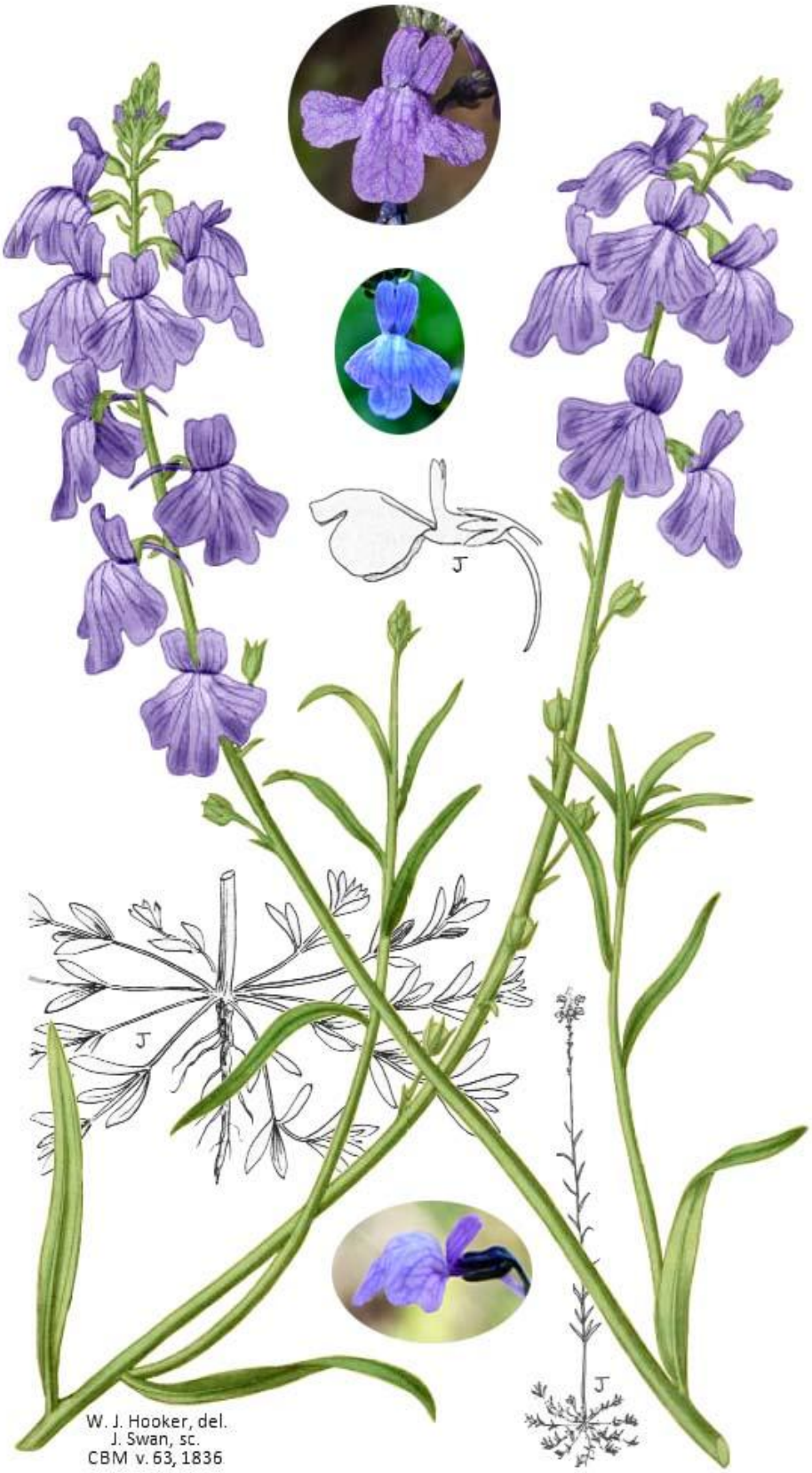
CYMBALARIA MURALIS



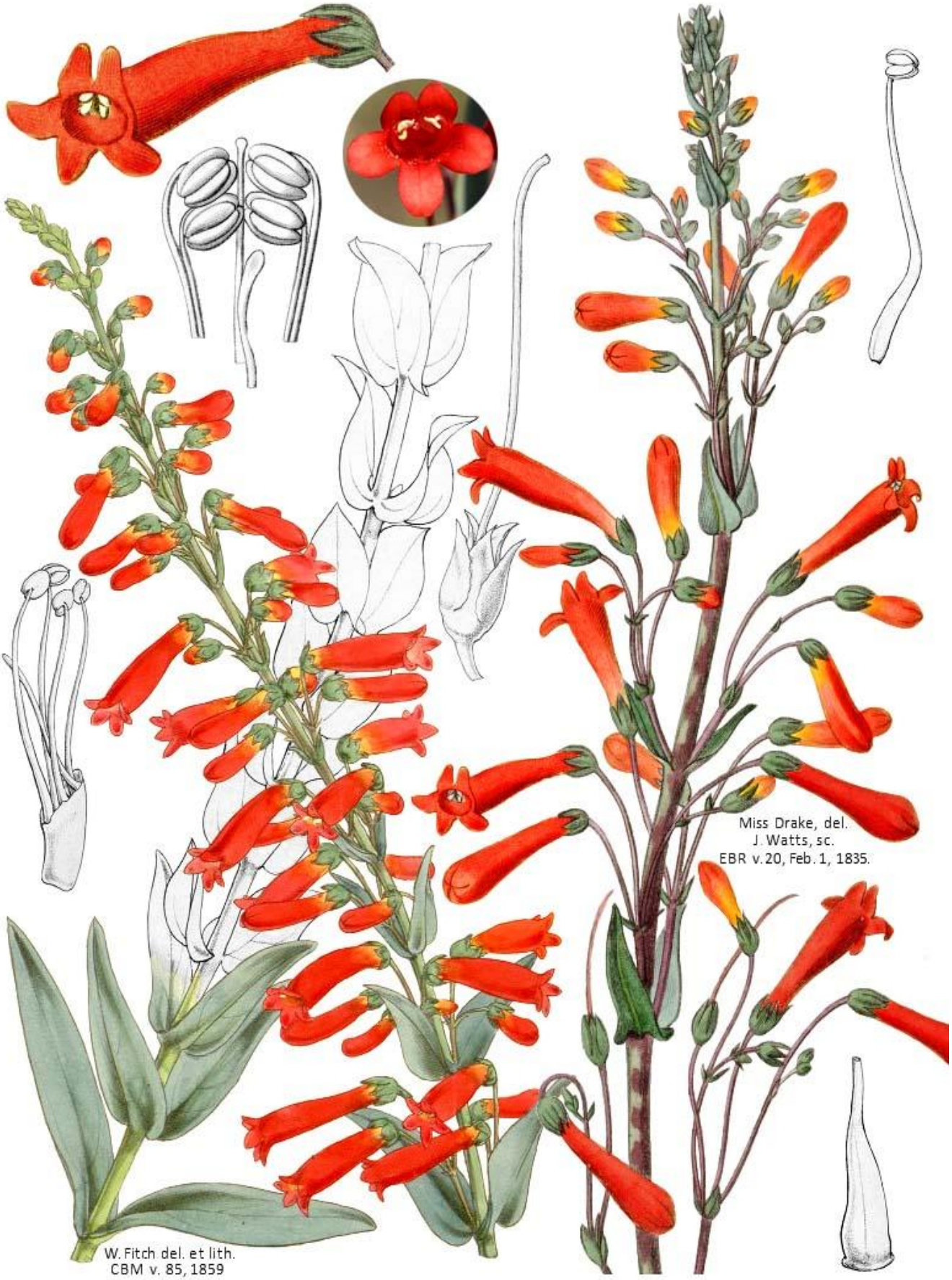
KECKIELLA CORYMBOSA



KECKIELLA BREVIFLORA

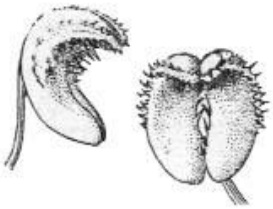


NUTTALLANTHUS TEXANUS



PENSTEMON CENTRANTHIFOLIUS

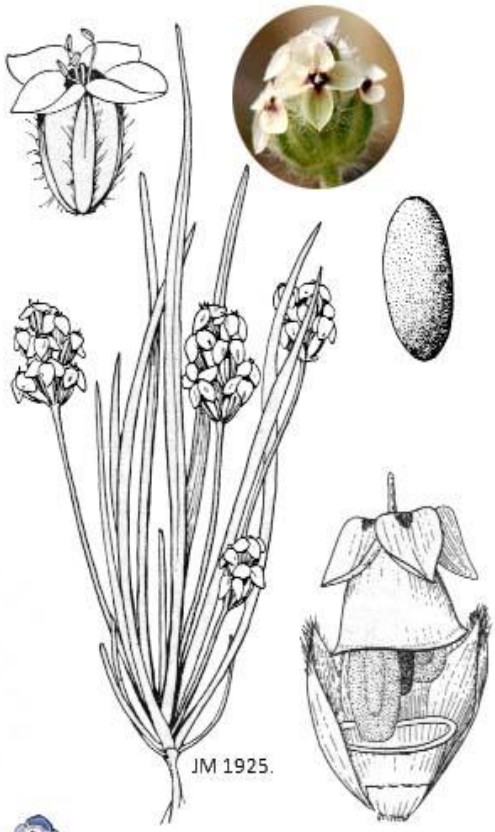
P. HETEROPHYLLUS
var. AUSTRALIS



J.R.Guillot del.
J.H.Goffart sc.
RH v. 1901 (y. 1901).

PENSTEMON HETEROPHYLLUS var. HETEROPHYLLUS

PENSTEMON GRINELLII var. SCROPHULARIODES



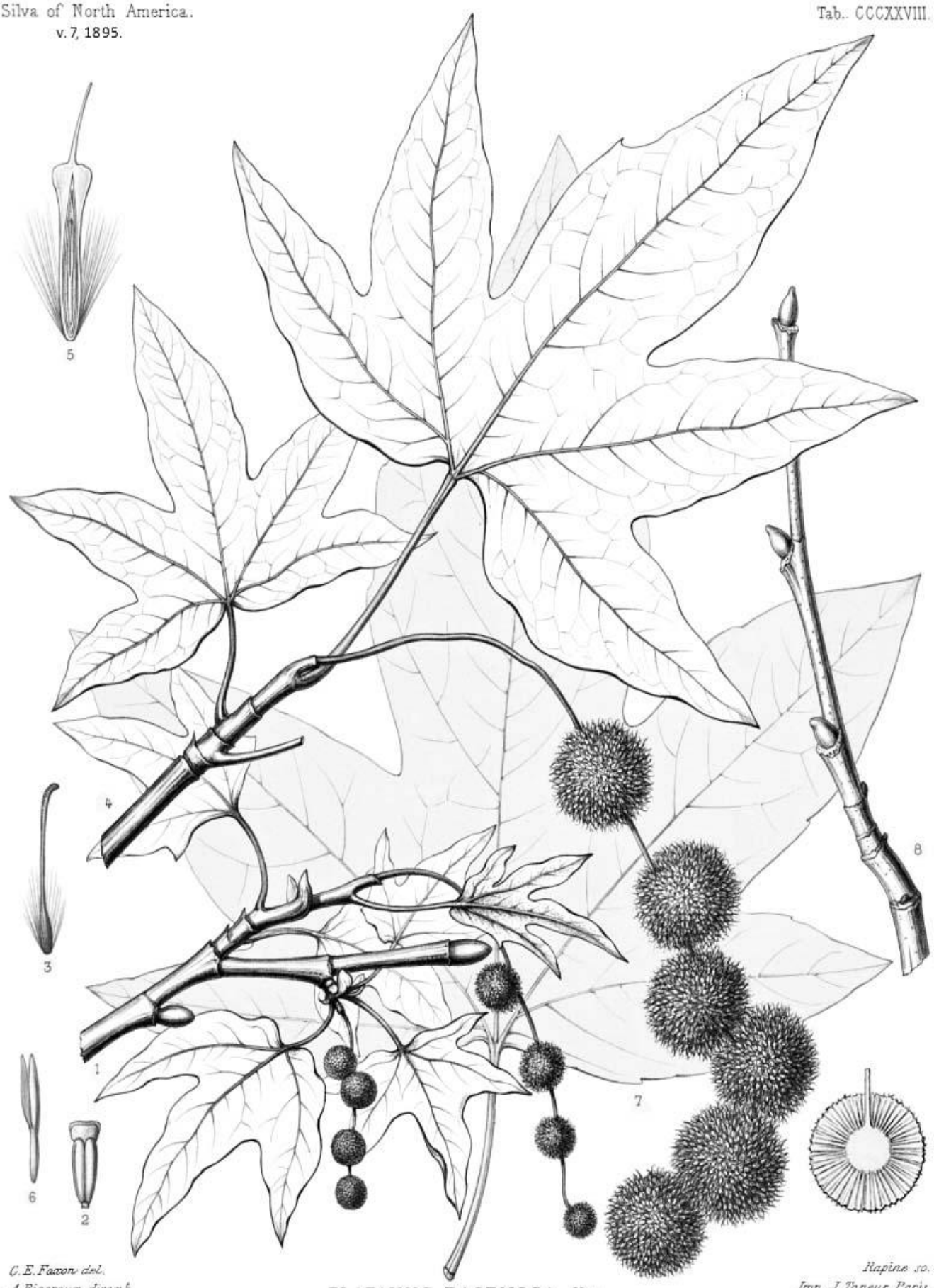
PLANTAGO ERECTA

PLANTAGO LANCEOLATA

VERONICA PERSICA

Silva of North America.
v. 7, 1895.

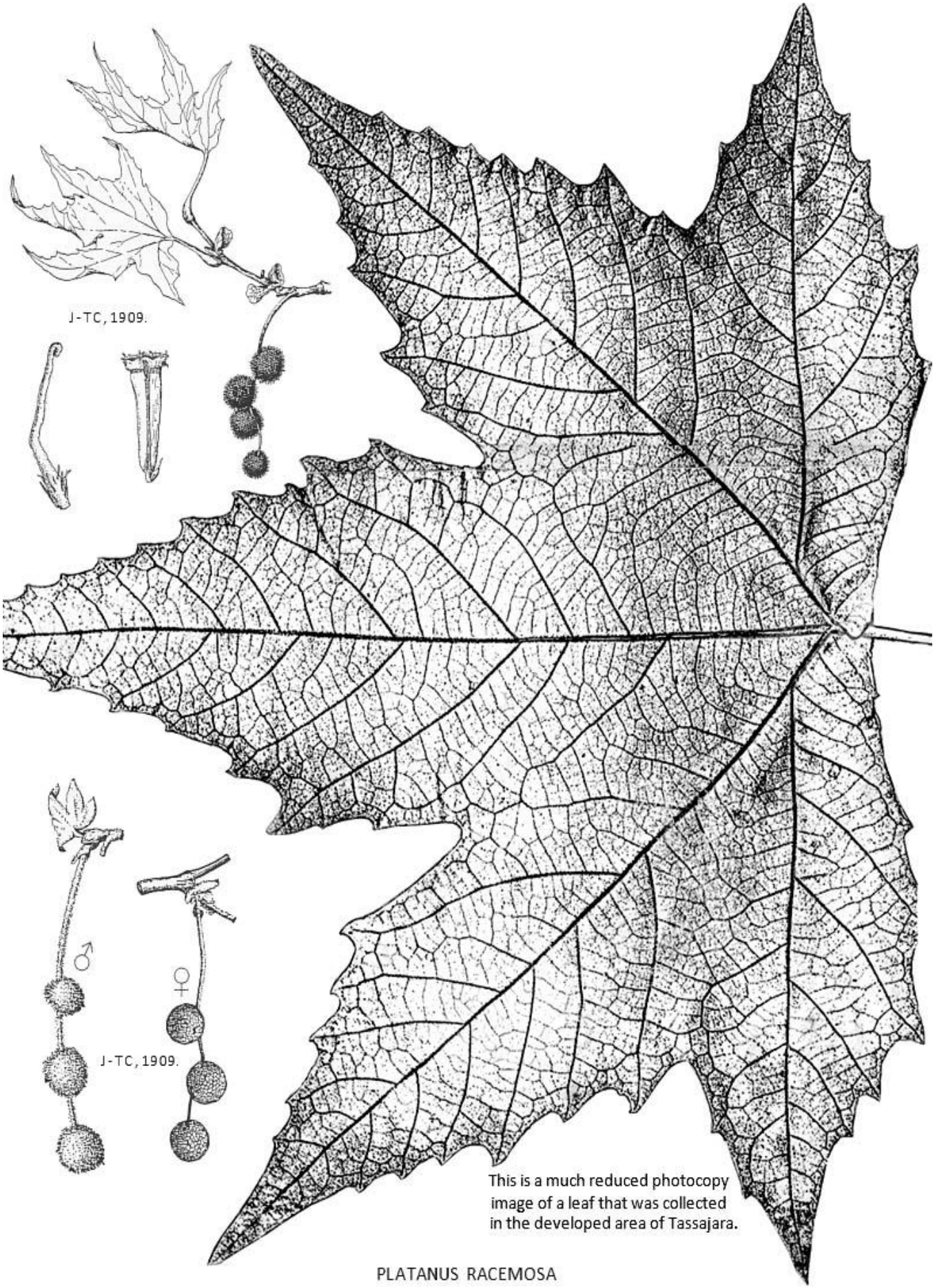
Tab.. CCCXXVIII.



C. E. Faxon del.
A. Riocreux direx.t

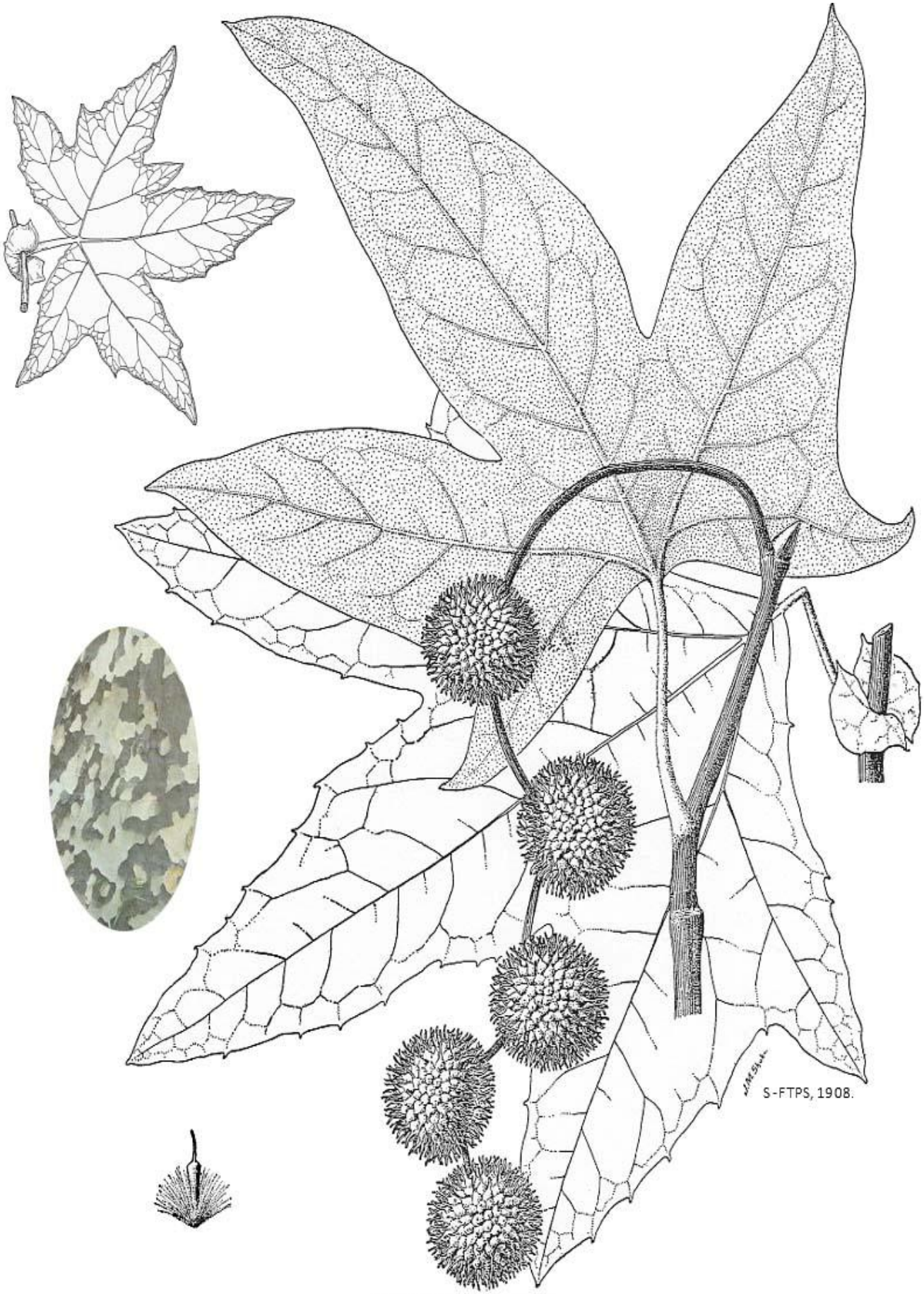
PLATANUS RACEMOSA, Nutt.

Rapine sc.
Imp. J. Taneur, Paris.

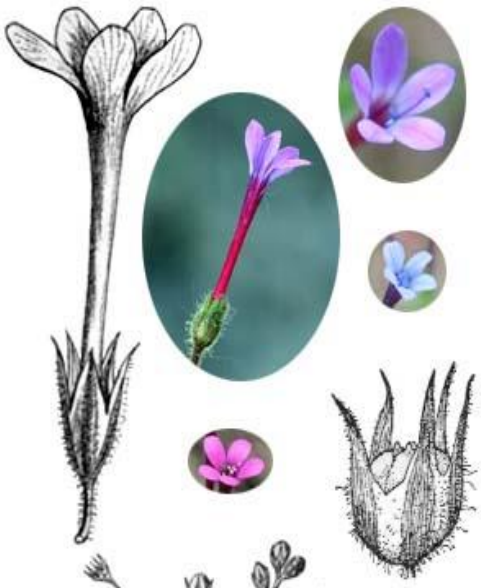


This is a much reduced photocopy image of a leaf that was collected in the developed area of Tassajara.

PLATANUS RACEMOSA



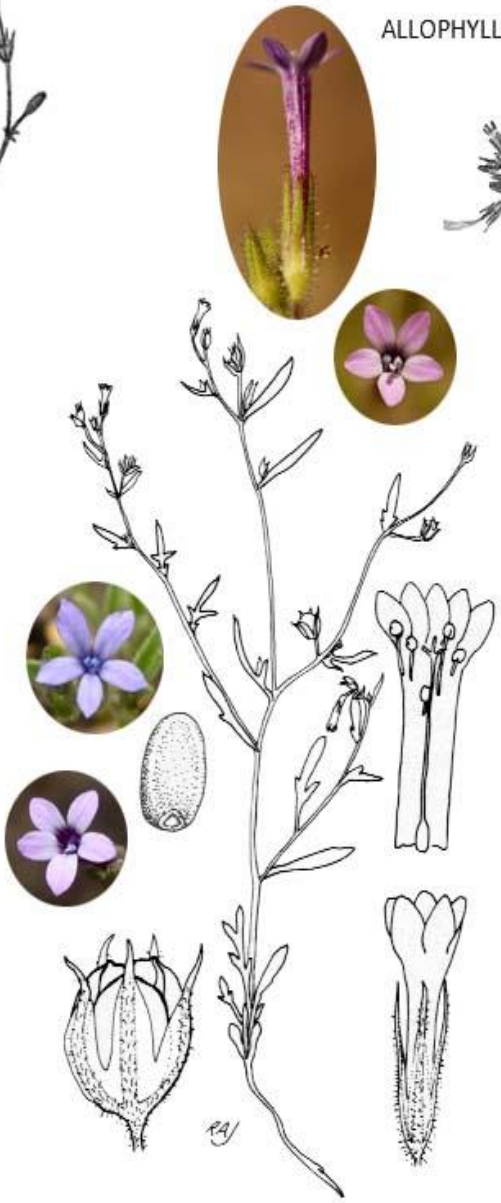
PLATANUS RACEMOSA



ALLOPHYLLUM GILIODES subsp. GILIODES

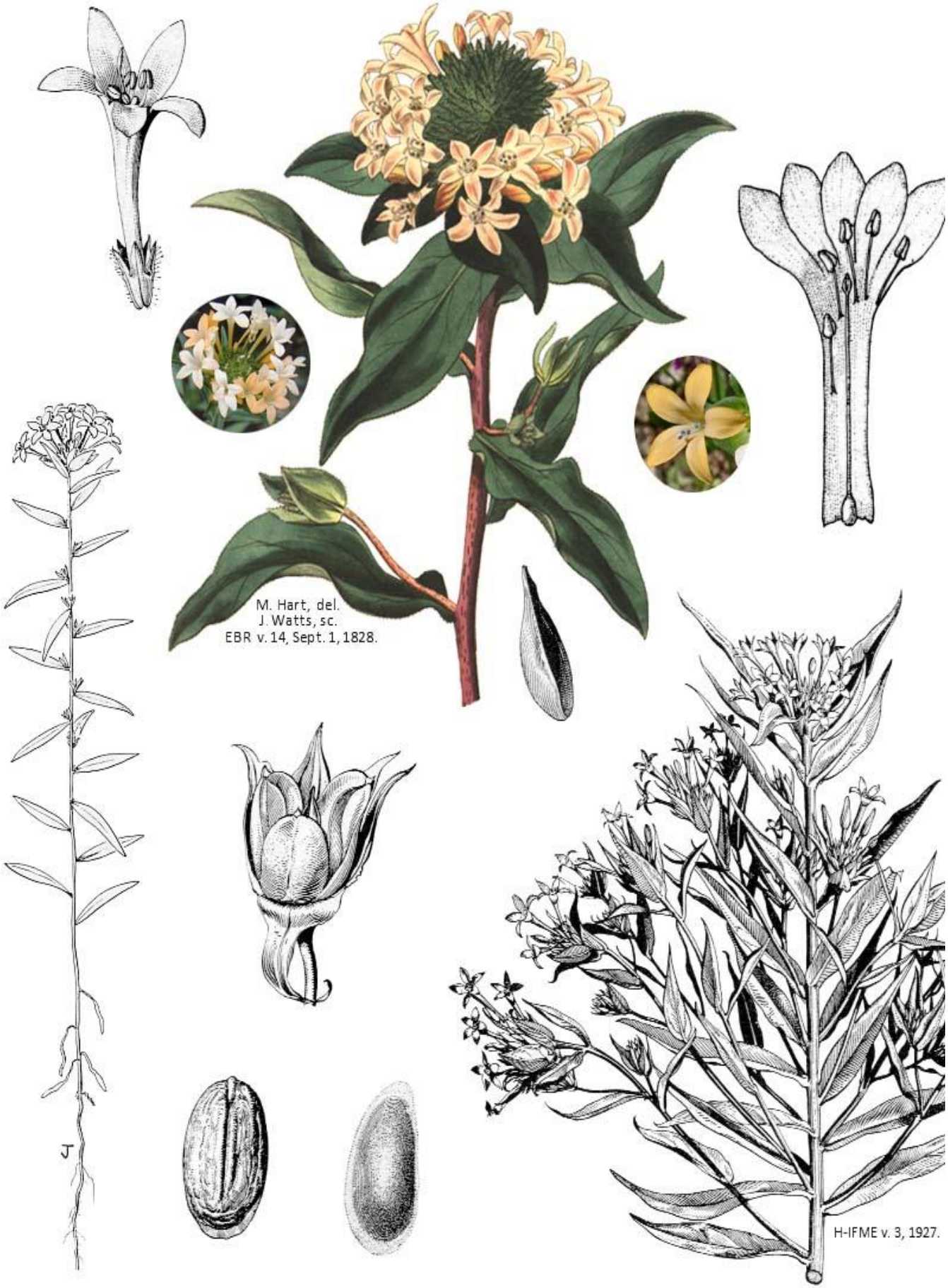
Pz 4(250)H 27, 1907.

ALLOPHYLLUM DIVARICATUM

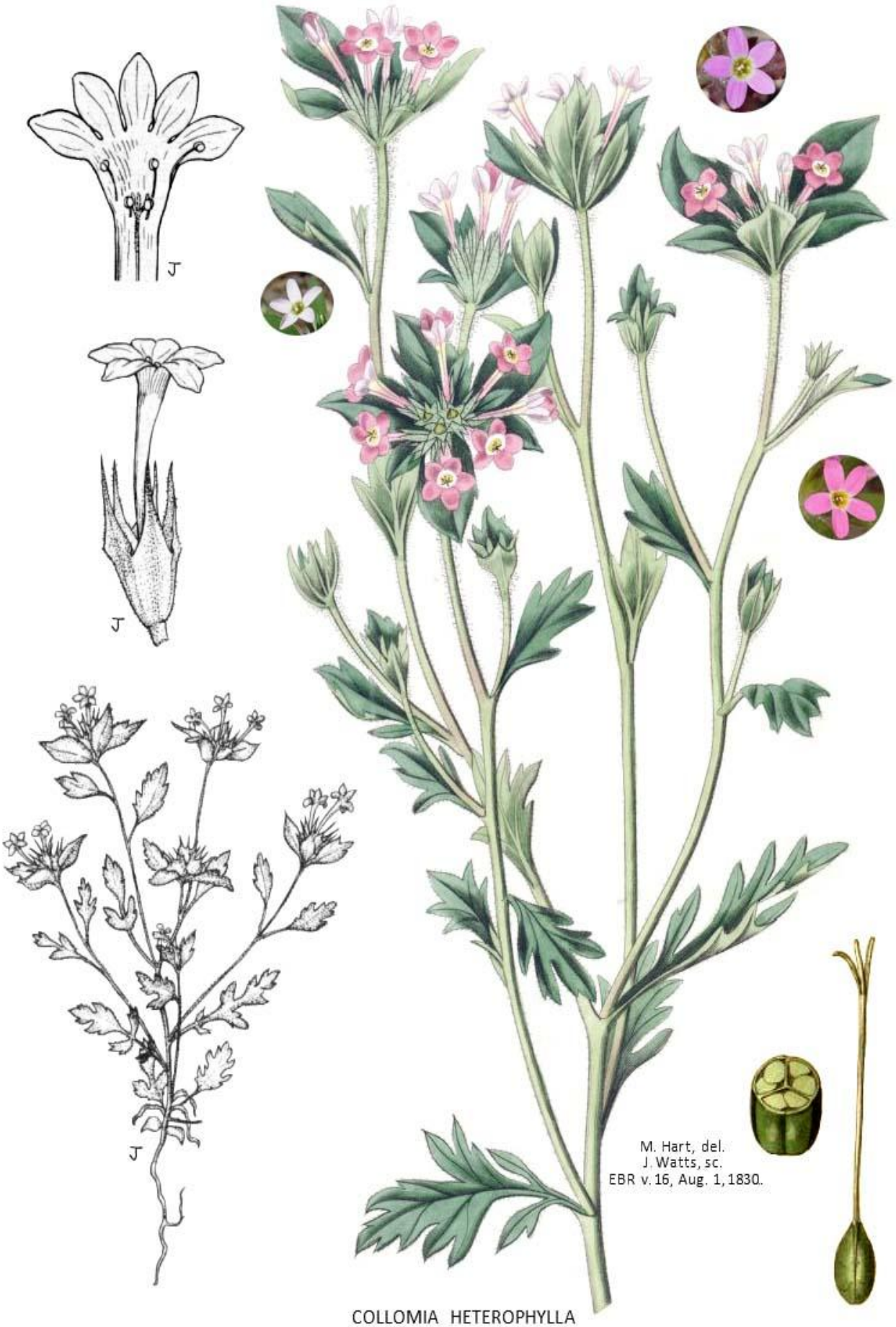


ALLOPHYLLUM GILIODES subsp. VIOLACEUM

ALLOPHYLLUM INTEGRIFOLIUM

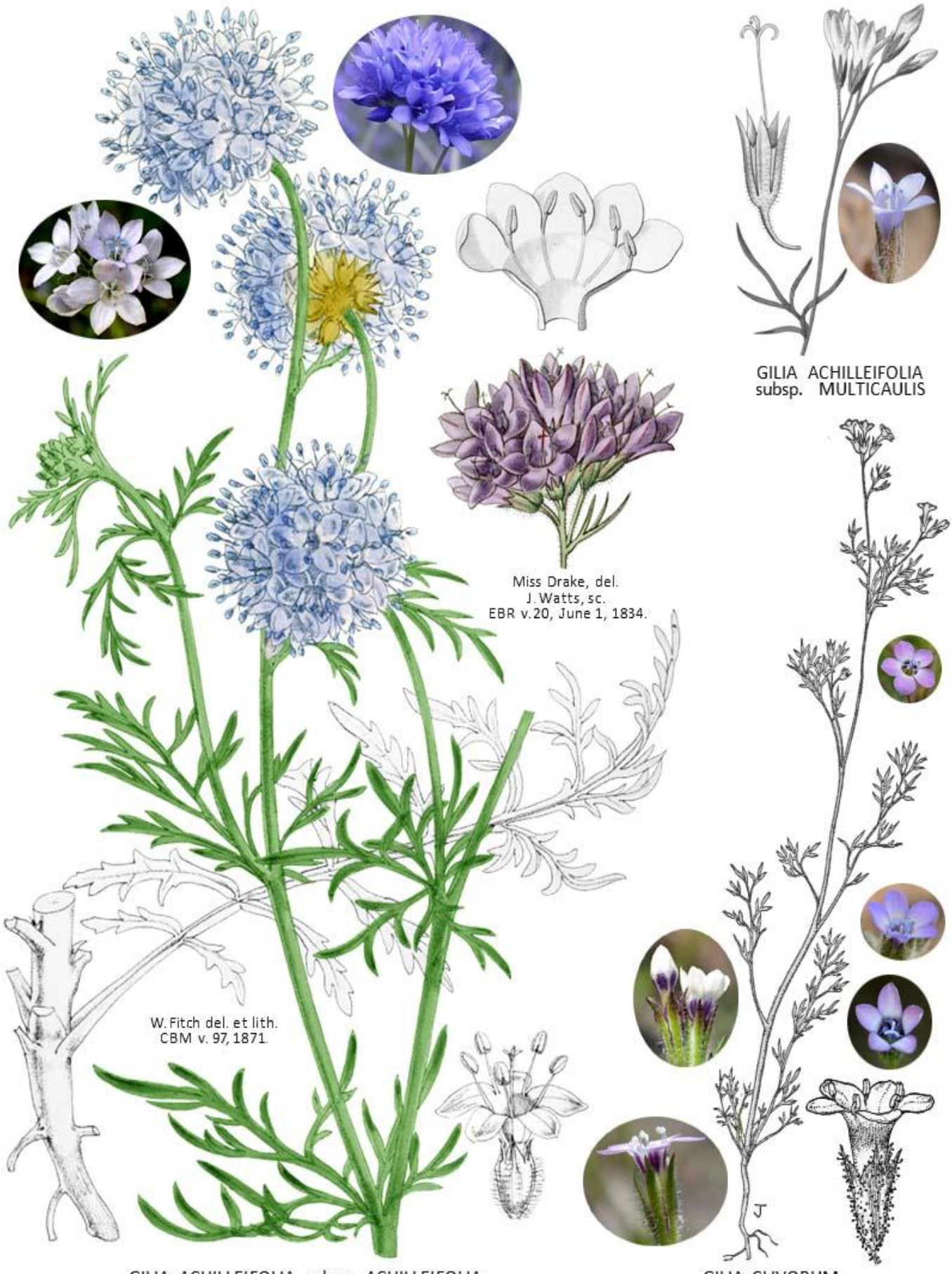


COLLOMIA GRANDIFLORA

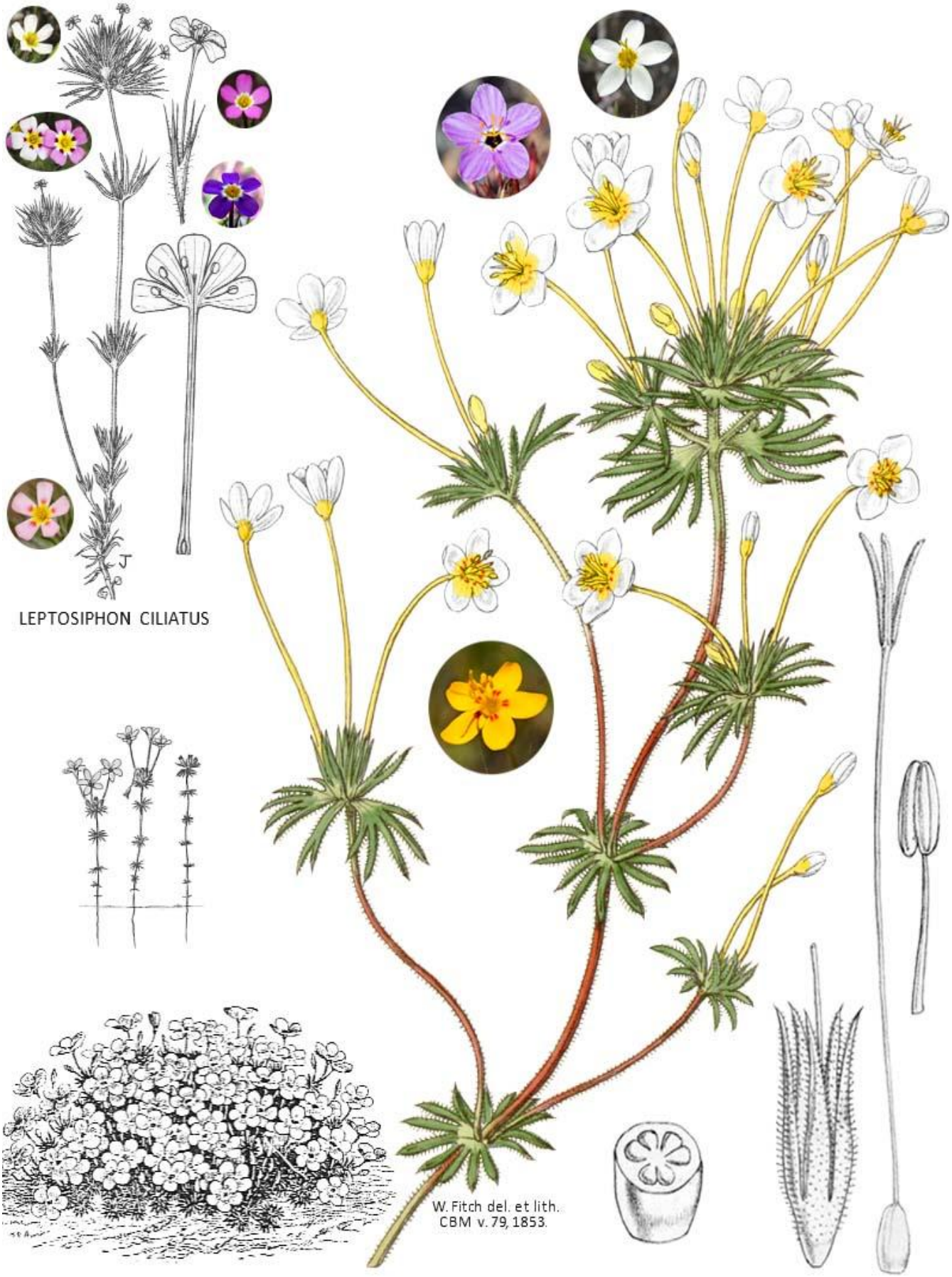


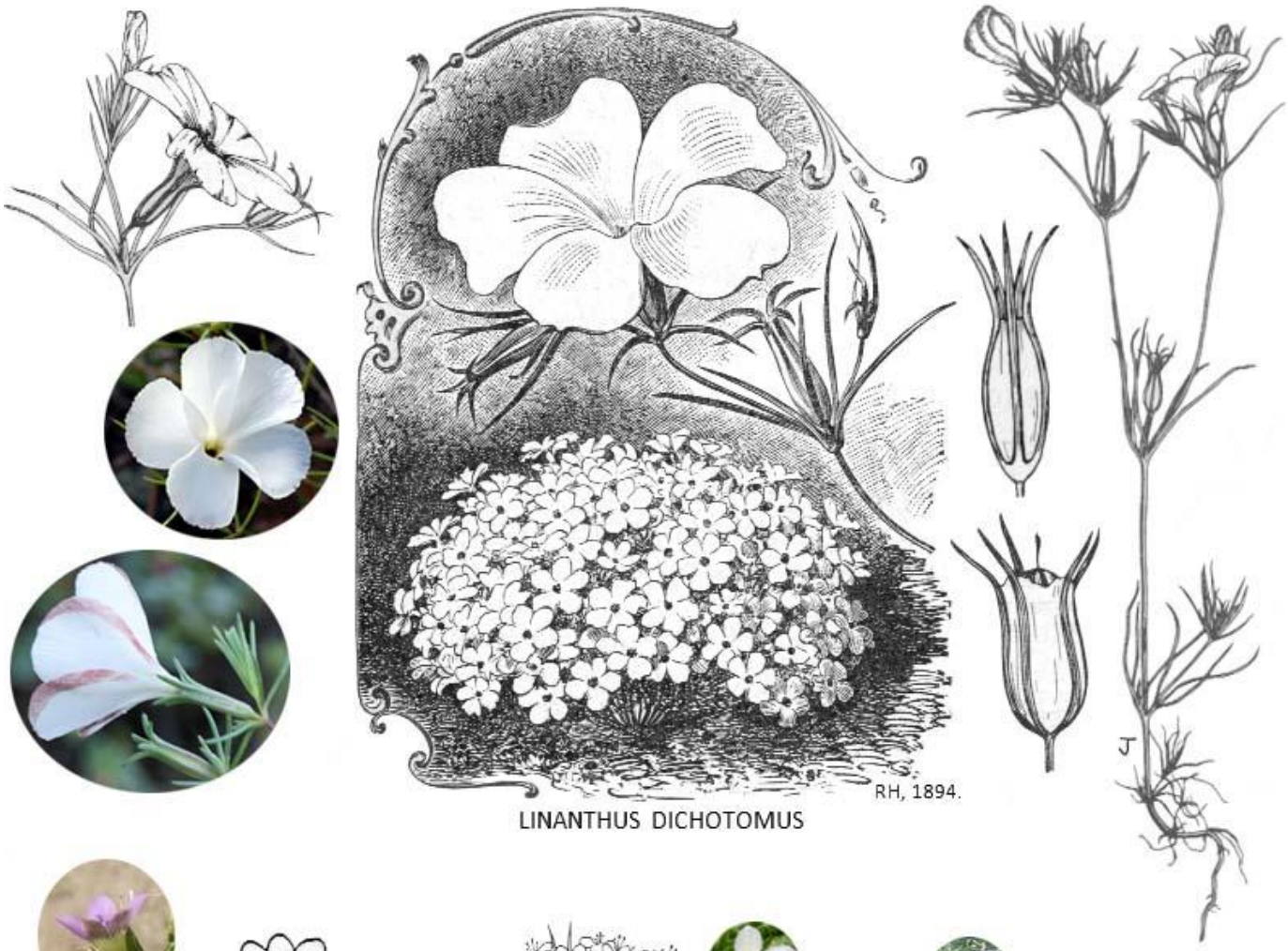
COLLOMIA HETEROPHYLLA

ERIASTRUM DENSIFOLIUM


GILIA ACHILLEIFOLIA
subsp. MULTICAULIS
Miss Drake, del.
J. Watts, sc.
EBR v.20, June 1, 1834.
W. Fitch del. et lith.
CBM v. 97, 1871.
GILIA ACHILLEIFOLIA subsp. ACHILLEIFOLIA
GILIA CLIVORUM

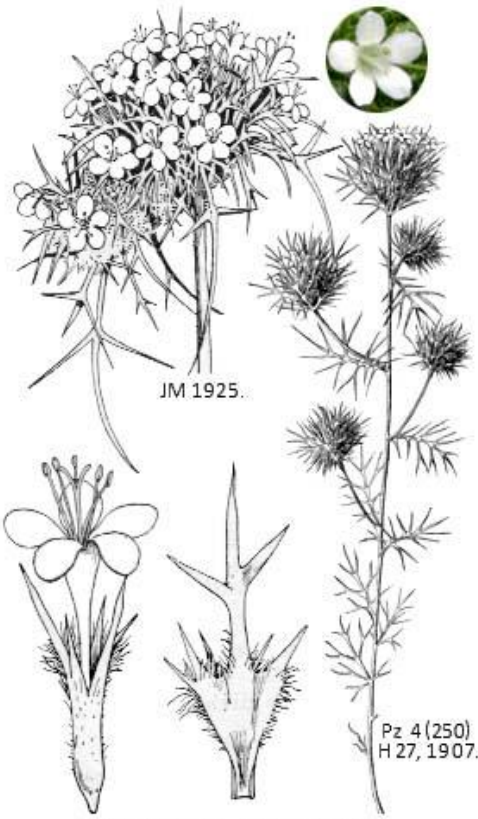
LEPTOSIPHON LINIFLORUS


LEPTOSIPHON CILIATUS
W. Fitch del. et lith.
CBM v. 79, 1853.
LEPTOSIPHON PARVIFLORUS



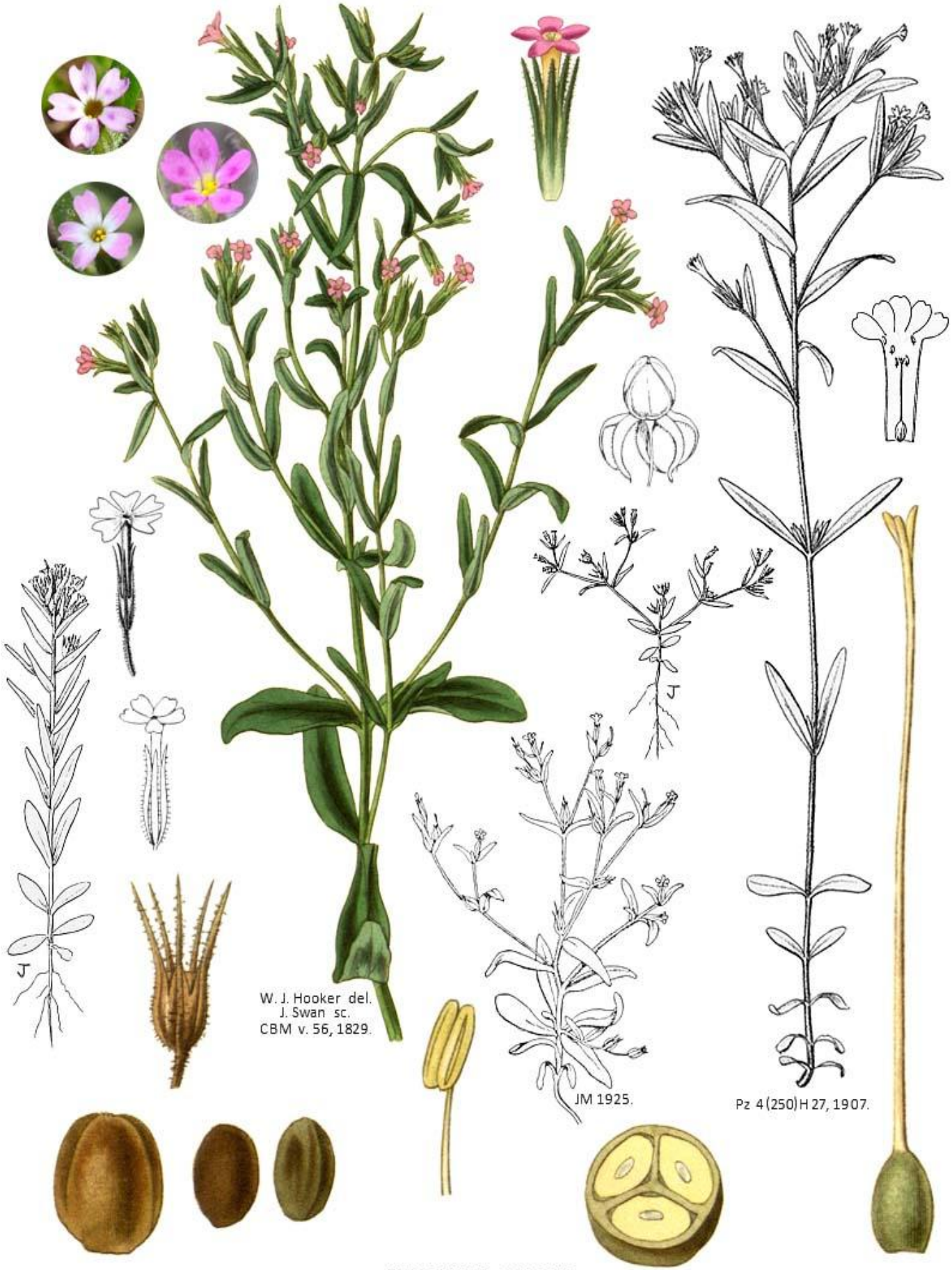
LINANTHUS DICHOTOMUS

NAVARRETIA ATRACTYLOIDES

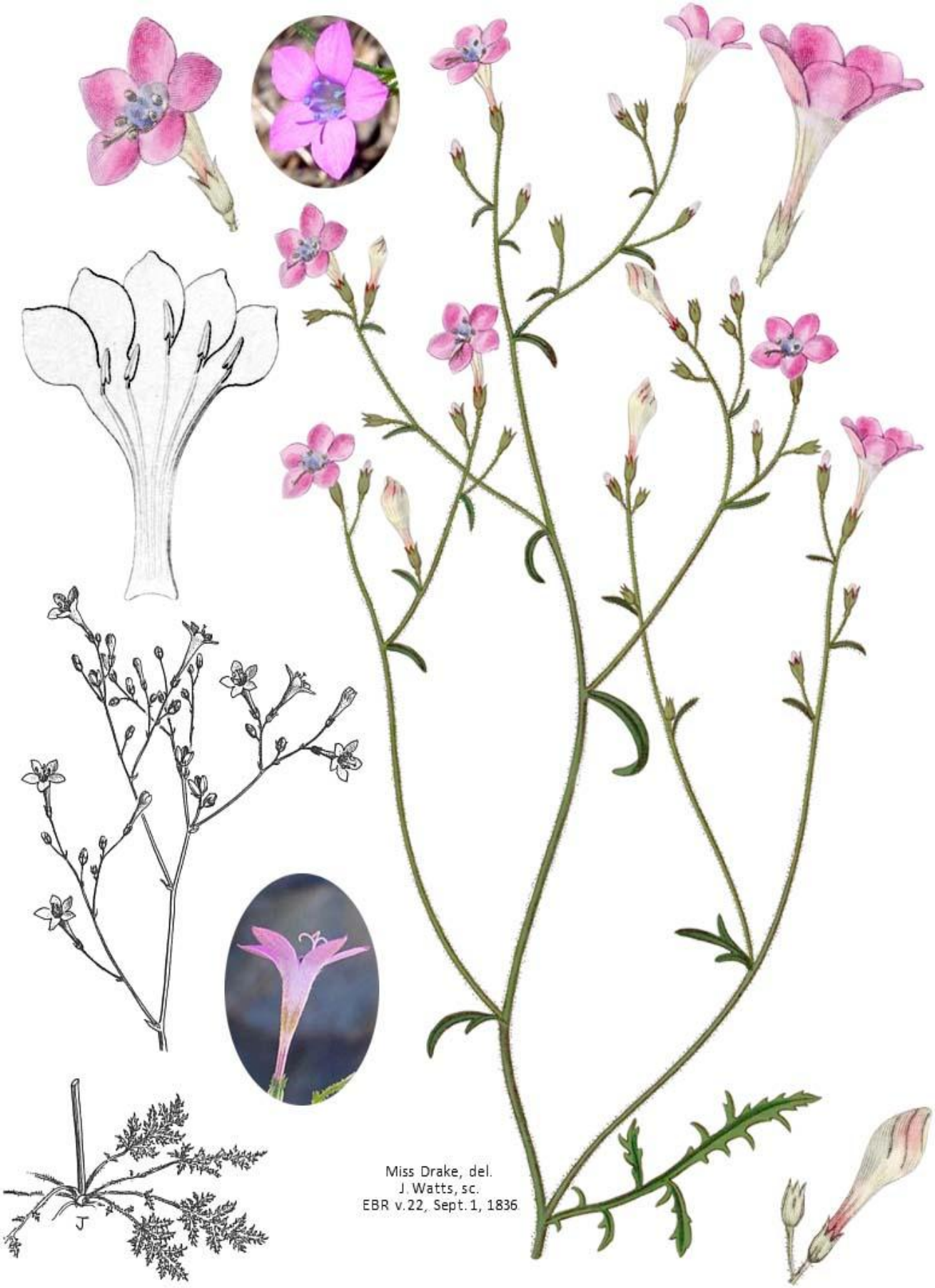


NAVARRETIA INTERTEXTA

NAVARRETIA MELITA



MICROSTERIS GRACILIS

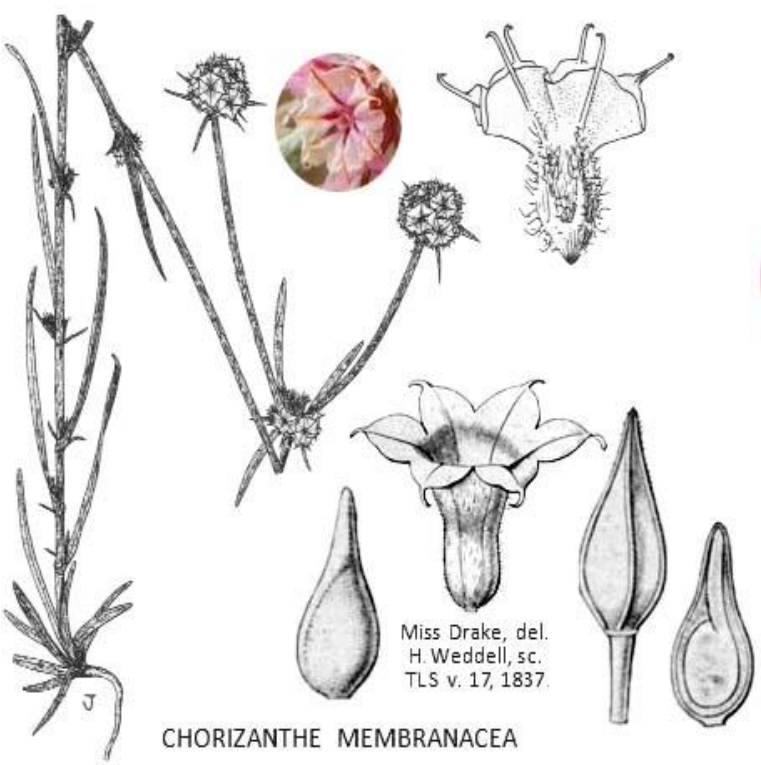


SALTUGILIA SPLENDENS

POLYGALA CALIFORNICA

CHORIZANTHE CLEVELANDII

CHORIZANTHE DOUGLASII



CHORIZANTHE MEMBRANACEA

CHORIZANTHE STATICOIDES

ERIOGONUM DAVIDSONII

ERIOGONUM ELONGATUM

ERIOGONUM FASCICULATUM var. FOLIOLOSUM

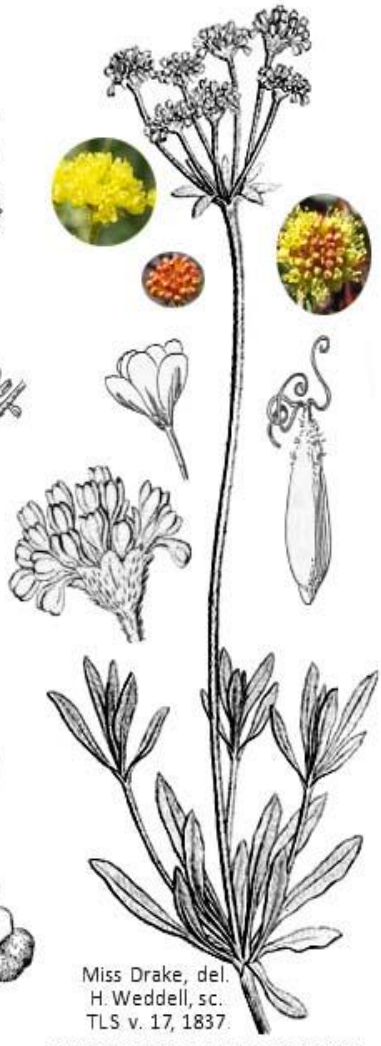
ERIOGONUM GRACILE

ERIOGONUM INERME

E. NUDUM var.
AURICULATUM

ERIOGONUM NUDUM var. NUDUM

ERIOGONUM SAXATILE

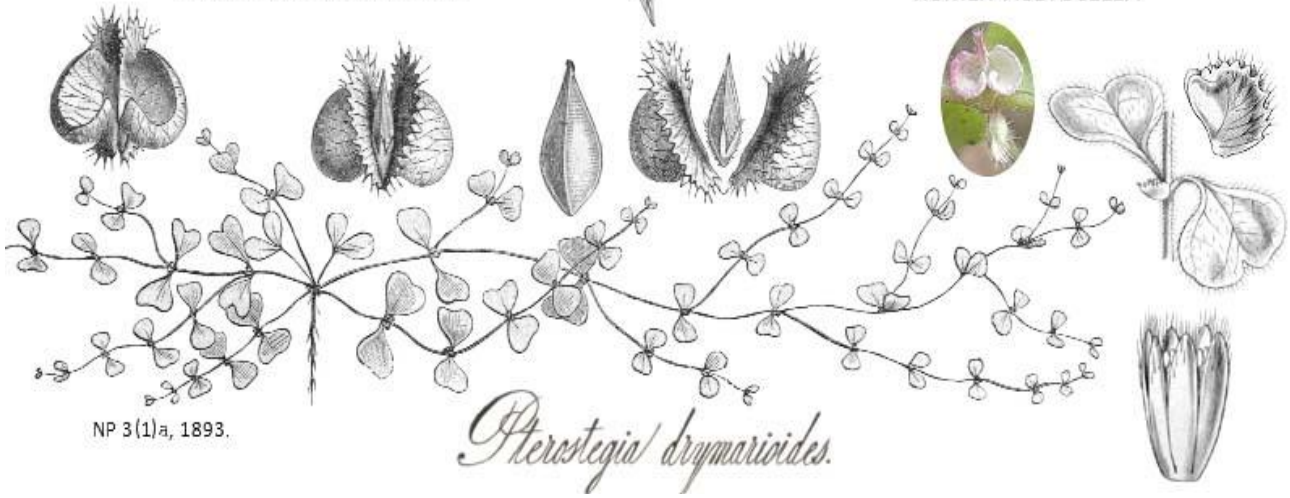


Miss Drake, del.
H. Weddell, sc.
TLS v. 17, 1837.

ERIOGONUM UMBELLATUM

PERSICARIA LAPATHIFOLIA

RUMEX ACETOSELLA



RUMEX COMGLOMERATUS

RUMEX CRISPUS

RUMEX SALICIFOLIUS

SYSTENOTHECA VORTRIEDEI

PTEROSTEGIA.

Pterostegia consists of one species. . . . . ***Pterostegia drymarioides***. p. 256.

RUMEX. SORREL, DOCK.

1a. Rhizomatic (and thus outwardly spreading) plants. Lower leaves mostly hastate. Flowers mostly dioecious (with either stamens or pistils, but not both) . . . . . ***R. acetosella***. p. 256.

1b. Taprooted (and thus not outwardly spreading) plants. Lower leaves never hastate. Flowers mostly perfect:

2a. Leaves all cauline and linear to linear-lanceolate. Stems decumbent to ascending. . . . . ***R. salicifolius***. p. 257.

2b. Leaves basal and cauline, the lower oblong, oblong-lanceolate, lance-ovate or elliptic. Stems generally erect:

3a. Lower leaves upwardly v shaped, the blades gradually narrowing to the base, and with margins that are strongly crisped and undulating. . . . . ***R. crispus***. p. 257.

3b. Lower leaves flattish, the blades rather abruptly narrowing to the base, and with margins that are entire to slightly undulating. . . . . ***R. conglomeratus***. p. 257.

SYSTENOTHECA. SANTA LUCIA SPINE FLOWER.

The genus *Systenotheca* consists of one species. . . . . ***Systenotheca vortriedei***. p. 257.

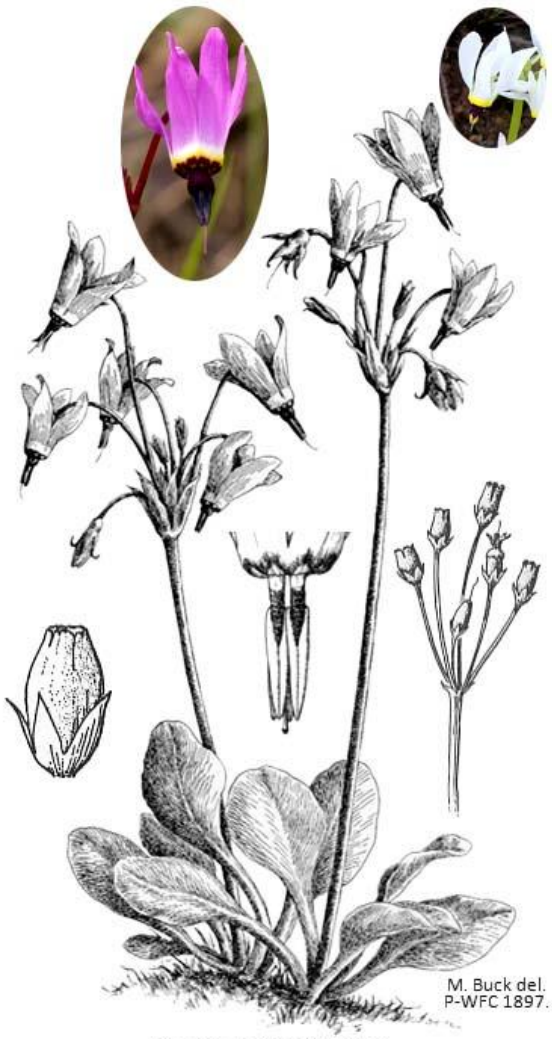
PRIMULACEAE. PRIMROSE FAMILY.

PRIMULA. PRIMROSES, SHOOTING STARS.

1a. Leaf blades generally more than two times longer than wide. Filament tubes generally 3 to 4 mm. wide. Root bulbs absent. . . . . ***P. clevelandii***. var. ***gracilis***. p. 258.

1b. Leaf blades generally less than two times longer than wide. Filaments tubes less than 3 mm. wide. Root bulbs present. . ***P. hendersonii***. p. 258.

PRIMULA CLEVELANDII var. GRACILIS



PRIMULA HENDERSONII

RANUNCULACEAE. BUTTERCUP FAMILY.

1a. Climbing or trailing vines, sometimes semi woody. Petals absent, but the sepals are white, and are petal like in texture. . ***Clematis***.

1b. Plants not vine like and never woody. Petals present or absent:
- **2a**. Petals absent; the sepals are greenish white to purplish. . . . . ***Thalictrum***.
- **2b**. Petals present (or often absent in *Ranunculus hebecarpus*):
  - **3a**. Flowers yellow; the nectar glands are exposed. Achenes exposed. . . . . ***Ranunculus***.
  - **3b**. Flowers not yellow or only partially yellow (in *Aquilegia*); the nectar glands are concealed in spur like formations. Achenes enclosed in follicles:
    - **4a**. Leaves lobed or deeply cleft into linear segments, but not divided into distinct (petioled) leaflets. Flowers asymmetrical; the sepals are more conspicuous than the petals. Flowers with one exposed spur. . . . . ***Delphinium***.
    - **4b**. Leaves divided into distinct petioled leaflets. Flowers symmetrical; the petals are more conspicuous than the sepals. Flowers with five exposed spurs. . . . . ***Aquilegia***.

AQUILEGIA. COLUMBINE.

Aquilegia is represented in the Tassajara region by one species. . . . . ***Aquilegia formosa***. p. 265.

CLEMATIS. VIRGIN'S BOWER.

1a. Leaves divided into 3 (or rarely 5) leaflets. Flowers usually singular on long axillary peduncles. Sepals 1.5-2.5 cm. long. Plants mostly of chaparral habitats. . . . . ***C. lasiantha***. p. 266.

1b. Leaves divided into 5 to 7 leaflets. Flowers several to many in cymose axillary panicles. Sepals no more than 1 cm. long. Plants of riparian (streamside) habitats. . . . . ***C. ligusticifolia***. p. 267.

DELPHINIUM. LARKSPURS, DOLPHIN FLOWERS.

1a. Sepals and petals red, scarlet or orangish. . . . . ***D. nudicaule***. p. 268.

1b. Sepals blue or purplish blue, petals blue, or white with blue or purplish blue veins or markings:
- **2a**. Basal and lower cauline leaves divided into curving linear segments, rarely more than 4 mm. wide, and often less than 1 mm. wide. Primary stem not narrowed at the base, and strongly attached to the root. . . . . ***D. parryi***. p. 267.
- **2b**. Basal and lower cauline leaves divided into broader and comparatively straight segments, mostly about 5 to 20 mm. wide. Primary stem narrowed at the base and weakly attached to the root:
  - **3a**. Lobes of basal and lower cauline leaves divided more than 80% to petiole; the lobes are generally less than 15 mm. wide. . . . . ***D. patens*** subsp. ***patens***. p. 267.
  - **3b**. Lobes of basal and lower cauline leaves divided less than 80% to petiole; the lobes are generally more than 15 mm. wide. . . . . ***D. patens*** subsp. ***hepaticoideum***. p. 267.

RANUNCULUS. BUTTERCUP.

1a. Showy flowered perennial herbs; the flowers have 7 to 22 petals that range from 5 to 15 mm. long and from 2 to 6 mm. wide. . . . . ***R. californicus***. p. 269.

1b. Minutely flowered annual herbs; the flowers often lack petals, but if they have petals, they number from 3 to 5 and they are only 1 to 2 mm. long and less than 1 mm. wide. . . . . ***R. hebecarpus***. p. 269.

THALICTRUM. MEADOW RUE.

Thalictrum is represented in the Tassajara region by one species. . . . . ***Thalictrum fendleri*** var. ***polycarpum***. p. 269.

RHAMNACEAE. BUCKTHORN FAMILY.

1a. Flowers produced in showy terminal and axillary clusters. The petals are small, slender clawed, and longer than the sepals. The fruits are dry capsules. . . . . ***Ceanothus***.

1b. Flowers produced in inconspicuous clusters that are axillary or scattered along the stems. Petals are present or absent, and if present, they are not clawed, and they are shorter than the sepals. The fruits are juicy berries:
- **2a**. Petals absent. Leaves broadly ovate to roundish, less than 4 cm. long, and with spiny toothed margins. Winter bud scales present. The fruits are red. . . . . ***Rhamnus***.
- **2b**. Petals present. Leaves oblong-elliptic to lance-oblong, up to 10 cm. long, and with finely serrate or entire margins. Winter bud scales absent. The fruits are purplish black. . . . . ***Frangula***.

CEANOTHUS. CALIFORNIA LILAC, BLUE BLOSSOM.

1a. Leaves opposite, the blades cuneate-obovate to oblong, entire, and obtuse to truncate or emarginate at the apex. Stipules thick, corky, and persistent. Capsule lobes crested with prominent horn like appendages. . . . . ***C. cuneatus***. p. 269.

1b. Leaves alternate, the blades variously shaped, the margins ranging from entire to serrate, toothed, revolute and/or crisped,

and acute to obtuse at the apex (if apparently truncate or emarginate at the apex, it is due to the revolute margins). Stipules thin and readily deciduous. Capsule lobes rounded or with low ridges or crests at the apex:

2a. Leaves with three prominent veins from (or near to) the base:

3a. Leaf margins finely serrate. Flowers are usually light blue, but are sometimes darker blue or purely white. Calyx lobes are spreading in mature flowers. . . . . ***C. oliganthus*** var. ***sorediatus***. p. 272.

3b. Leaf margins almost always entire. Flowers are usually white, but are sometimes light blue. Calyx lobes are inwardly curving in mature flowers. . . . . ***C. integerrimus*** var. ***macrothrysus***. p. 271.

2b. Leaves with one prominent central vein, or sometimes obscurely three veined from the base:

4a. Leaves narrowly lanceolate to elliptic, acute to rounded at the apex, and with flat or only slightly revolute margins:

5a. Flowers blue. Leaf margins generally gland toothed, the glands generally dark and persistent. . . . ***C. foliosus*** var. ***medius***. p. 271.

5b. Flowers white. Leaf margins entire or sometimes toothed. . . . . ***C. integerrimus*** var. ***integerrimus***. p. 271.

4b. Leaves narrowly oblong-linear to oblong elliptic, mostly obtuse to truncate at the apex, and with strongly revolute and/or crisped margins:

6a. Largest leaves usually more than 1.5 cm. long, mostly oblong to elliptic, the upper surface very glandular and with prominent wart like formations. . . . . ***C. papillosus***. p. 272.

6b. Largest leaves usually less than 1.5 cm. long, mostly oblong to linear, the upper surface commonly not glandular, and if with wart like formations, they are small and fairly inconspicuous. . . . . ***C. dentatus***. p. 270.

FRANGULA. COFFEE BERRY.

1a. Lower leaf surface glabrous and shiny (or puberulent when young), and about the same color as the upper surface. . . . . ***F. californica*** subsp. ***californica***. p. 273.

1b. Lower leaf surface a dull pale gray green due a dense layer of minute woolly hair (magnification is necessary to see the individual hairs) . . . . . ***F. californica*** subsp. ***tomentella***. p. 273.

RHAMNUS. BUCKTHORN.

Rhamnus is represented in the Tassajara region by one species. . . . . ***R. ilicifolia***. p. 274.

ROSACEAE. ROSE FAMILY.

1a. Plants with thorns and/or sharp bristles on the branches or stems:

2a. Most leaves palmately divided into 3 or 5 leaflets. The fruits are coalescent drupelets (blackberries). Petals white. . . . ***Rubus***.

2b. Leaves pinnately divided into 5 to 7 leaflets. The fruits are fleshy floral tubes (rose hips). Petals rose pink or darker. . . ***Rosa***.

1b. Plants without thorns or sharp bristles on the branches or stems:

3a. Non woody perennial herbs less than 8 dm. (32") tall:

4a. Leaves palmately divided into 3 leaflets. The fruits are small strawberries. . . . . ***Fragaria***.

4b. Leaves pinnately divided into 5 to 32 leaflets. The fruits are dry achenes:

5a. Basal leaves narrowly oblong in outline and divided into 7 to 16 pairs of leaflets that are about .4 to 1.5 cm. long. . ***Horkelia***.

5b. Basal leaves oblanceolate in outline and divided into 3 to 4 pairs of leaflets that are 1 to 4 cm. long. . ***Drymocallis***.

3b. Shrubs or subshrubs usually much more than 8 dm. tall:

6a. Leaves narrowly linear to linear-oblanceolate and rarely more than 1 cm. long. . . . . ***Adenostoma***.

6b. Leaves not narrowly linear and more than 1 cm. long:

7a. Leaves 10 to 15 cm. wide, roundish in outline, and palmately cleft into five major lobes. . . . . ***Rubus parviflorus***.

7b. Leaves usually less than 5 cm. wide, of various shapes, entire or toothed, and if lobed, then the lobes pinnate:

8a. Ovaries inferior, the fruit is a pome (i.e., an apple like in structure):

9a. Leaves evergreen, elliptic to oblong-lanceolate, and the margins sharply toothed throughout. Pome red, rather dry, and waxy. Common in this region. . . . . ***Heteromeles***.

9b. Leaves deciduous, elliptic or oval to roundish or broadly obovate, and entire or toothed in the outer half. Pome purplish black and moist. Rare in this region. . . . . ***Amelanchier***.

8b. Ovaries superior, the fruit is not a pome:

10a. Fruit a fleshy drupe with one stone like seed:

11a. Plants monoecious. Fruits round or roundish and red. . . . . ***Prunus***.

11b. Plants dioecious. Fruits more or less bean shaped and nearly black (appearing to be dark blue due to a glaucus coating) . . . . . ***Oemleria***.

10b. Fruit not a drupe:

12a. Flowers produced singularly or in small groups. Petals absent. Styles very long, plume like, and very conspicuous. . . . . ***Cercocarpus***.

12b. Flowers produced in abundance in terminal panicles. Petals present. Styles small and inconspicuous. . . . . ***Holodiscus***.

ADENOSTOMA. CHAMISE.

Adenostoma is represented in the Tassajara region by one species. . . . . ***Adenostoma fasciculatum***. p. 275.

AMELANCHIER. SERVICE BERRY.

Amelanchier is represented in the Tassajara region by one species. . . . . ***Amelanchier utahensis***. p. 275.

CERCOCARPUS. MOUNTAIN MAHOGANY, HARD TACK.

Cercocarpus is represented in the Tassajara region by one species. . . . . ***Cercocarpus betuloides***. p. 276.

DRYMOCALLIS

Drymocallis is represented in the Tassajara region by one species. . . . . ***Drymocallis glandulosa***. p. 277.

FRAGARIA. STRAWBERRY.

Fragaria is represented in the Tassajara region by one species. . . . . ***Fragaria vesca***. p. 278.

HETEROMELES. TOYON, CALIFORNIA CHRISTMAS BERRY.

Heteromeles is represented in the Tassajara region by one species. . . . . ***Heteromeles arbutifolia***. p. 279.

HOLODISCUS. OCEAN SPRAY, CREAM BUSH.

Holodiscus is represented in the Tassajara region by one species. . . . . ***Holodiscus discolor***. p. 280.

HORKELIA.

Horkelia is represented in the Tassajara region by one species. . . . . ***Horkelia yadonii***. p. 281.

OEMLERIA. OSO BERRY, INDIAN PLUM.

Oemleria consists of one species. . . . . ***Oemleria cerasiformis***. p. 281.

PRUNUS. STONE FRUITS.

1a. Plants evergreen. Leaves roundish to ovate, the margins sharply toothed. . . . . ***P. ilicifolia***. p. 283.
1b. Plants deciduous. Leaves oblong to oblanceolate, the margins finely serrate:
  2a. Leaves alternate, the tips sharply acute. Flowers 12 or more in elongated racemes. ***P. virginiana*** var. ***demissa***. p. 284.
  2b. Leaves mostly clustered on short lateral stems, the tips slightly acute to rounded. Flowers 3 to 10 in short racemes. . . ***P. emarginata***. p. 282.

ROSA. ROSE.

1a. Leaflets puberulent to pubescent, the terminal one usually 2 to 6 cm. long. Thorns stout and hooked at the tip. Hypanthium 3 to 5 mm. wide in flower, and 8 to 20 mm. wide in fruit. Sepal tips usually about as long or longer than sepals; the sepals are persistent in fruit. Pistils more than 10. Petals 1 to 2 cm. long. . . . . ***R. californica***. p. 285.
1b. Leaflets glabrous, the terminal one usually 1 to 3 cm. long. Thorns slender and straight. Hypanthium 1.5 to 2.5 mm. wide in flower, and 5 to 12 mm. wide in fruit. Sepal tips usually much shorter than sepals; the sepals are deciduous in fruit. Pistils fewer than 10. Petals about 1 cm. long. . . . . ***R. gymnocarpa***. p. 286.

RUBUS. BLACKBERRIES AND RASPBERRIES.

1a. Plants with erect and thornless branches. Leaves deciduous, not divided into leaflets, more or less roundish in outline, and palmately five lobed. . . . . ***R. parviflorus***. p. 288, 289.
1b. Plants with sprawling and thorny or bristly branches. Leaves evergreen and mostly divided into 3 to 5 leaflets:
  2a. Primary stems roundish and with slender bristles. The majority of the leaves are divided into 3 leaflets. . . ***R. ursinus***. p. 290.
  2b. Primary stems five angled and with stout thorns. The majority of the leaves are divided into 5 leaflets. ***R. armeniacus***. p. 287.

RUBIACEAE. MADDER FAMILY.

GALIUM. BEDSTRAWS, CLEAVERS.

1a. Leaves 6 to 8 per whorl. Annual herbs with weak and trailing stems. . . . . ***G. aparine***. p. 291.
1b. Leaves 4 per whorl. Evergreen perennial herbs or subshrubs with and erect, spreading or climbing stems:
2a. Fruits densely bristly. Broom like subshrubs with numerous erect or ascending woody stems. ***G. angustifolium***. p. 292.
2b. Fruits glabrous or hairy. Plants with mat forming, trailing or climbing herbaceous or woody stems. The *Galium californicum* complex:
3a. Plant low, generally cushion-like, and not woody above ground in some taxa:
4a. Leaves linear due to the margins being strongly rolled under. . . . . ***G. clementis***. p. 292.
4b. Leaves generally ovate (obovate) to elliptic, the margins not or only slightly rolled under:
5a. Flowers and fruits glabrous. Plants woody at the base and congested (cushion like). . . . . ***G. californicum*** subsp. ***miguelense***. p. 292.
5b. Flowers and fruits hairy to glabrous. Plants not woody and more open:
6a. Plants low, stems less than 16 cm. long. Leaves generally less than 6 mm. long and generally fleshy. . . . . ***G. californicum*** subsp. ***luciense***. p. 292.
6b. Plants generally not low, stem generally more than 16 cm. long. Leaves generally more than 6 mm. long:
7a. Hairs generally coarse, sparse. . . . . ***G. californicum*** subsp. ***californicum***. p. 292.
7b. Hairs generally fine, dense. . . . . ***G. californicum*** subsp. ***flaccidum***. p. 292.
3b. Plant often climbing, and more or less woody above ground:
8a. Plants generally with recurved prickles. Woody stem generally long, slender, climbing or sprawling:
9a. Leaf tip acute to obtuse to rounded, generally short-pointed, generally not sharp to touch, terminal hair generally not persistent:
10a. Leaves widely oblong to ovate. . . . . ***G. porrigens*** var. ***porrigens***. p. 292.
10b. Leaves more or less linear. . . . . ***G. porrigens*** var. ***tenue***. p. 292.
9b. Leaf tip generally tapered, generally sharp to touch, terminal hair persistent:
11a. Plants not shiny. Stems wiry. Leaf surfaces hairy. . . . . ***G. californicum*** subsp. ***maritimum***. p. 292.
11b. Plants shiny. Stems stout. Leaf surfaces more or less glabrous. . . . . ***G. cliftonsmithii***. p. 292.
8b. Plant prickles generally absent. Woody stem generally short, climbing or not:
12a. Flowers and fruits glabrous. Plants woody at the base and congested (cushion-like) . . . . . ***G. californicum*** subsp. ***miguelense***. p. 292.
12b. Flowers and fruits hairy to glabrous. Plants not woody and generally more open:
13a. Hairs generally coarse, sparse. . . . . ***G. californicum*** subsp. ***californicum***. p. 292.
13b. Hairs generally fine, dense. . . . . ***G. californicum*** subsp. ***flaccidum***. p. 292.

SALICACEAE. WILLOW OR COTTONWOOD FAMILY.

1a. Leaves ovate to deltate or reniform, and about as long as wide to no more than twice as long as wide. Catkin scales divided into narrow segments. Staminate flowers with many stamens and surrounded by a cup like disk. Buds with many scales. . . . . ***Populus***.
1b. Leaves narrowly linear to lanceolate or oblanceolate, and at least three times longer than wide. Catkin scales entire. Staminate flowers with 1 or 2 stamens and not surrounded by a cup like disk. Buds with a single scale. . . . . ***Salix***.

POPULUS. POPLAR, ASPEN AND COTTONWOOD TREES.

1a. Leaves broadly to narrowly ovate, longer than wide, and with finely serrate or crenate margins. . . . . ***P. trichocarpa***. p. 295, 296.
1b. Leaves broadly deltate, about as long as wide, and with coarsely crenate to serrate or irregularly lobed margins. . . . . ***P. fremontii***. p. 293, 294.

SALIX. WILLOW.

1a. Bark smooth. Leaves mostly oblanceolate and obtuse or broadly acute at the apex. . . . . ***S. lasiolepis***. p. 297, 299.
1b. Bark rough. Leaves lanceolate to narrowly linear (or sometimes narrowly oblanceolate), and narrowly acute at the apex:
2a. Leaves lanceolate to oblong-lanceolate, about 1.5 to 3 cm. wide, and with finely serrate margins. . . . . ***S. laevigata***. p. 297, 298.
2b. Leaves narrowly linear to narrowly elliptic or oblanceolate, usually less than 1 cm. wide, and with remotely toothed or entire margins:
3a. Leaves narrowly linear and more than 10 times longer than wide. Stigma lobes about 1 mm. long, the style about .5 mm. long. . . . . ***S. exigua***. p. 297.
3b. Leaves linear to narrowly elliptic or narrowly oblanceolate, and less than 10 times longer than wide. Stigma lobes less than 1 mm. long, the stigma sessile. . . . . ***S. melanopsis***. p. 300.

SAPINDACEAE. SOAPBERRY FAMILY.

1a. Leaves deeply lobed, but not divided into leaflets. The fruits are 2 weakly united samaras (winged nutlets). . . . . ***Acer***.
1b. Leaves divided into 5 to 7 leaflets. The fruits are large pear shaped capsules containing one very large roundish seed. . . ***Aesculus***.

ACER. MAPLE AND BOX ELDERS.

Acer is represented in the Tassajara region by one species. . . . . ***Acer macrophyllum***. p. 301, 302.

AESCULUS. BUCKEYE.

Aesculus is represented in the Tassajara region by one species. . . . . ***Aesculus californica***. p. 303, 304, 305.

SAXIFRAGACEAE. SAXIFRAGE FAMILY.

1a. Plants generally of shady or partly shady woodland habitats, and dying back to the root during the dry season. Fertile (pollen producing) stamens 10 per flower:
  2a. Leaves primarily but not strictly basal. Petals mostly three lobed and 5 to 15 mm. long. Styles 3. . . . ***Lithophragma***.
  2b. Leaves strictly basal. Petals entire and 2.5 to 4.5 mm. long. Styles 2. . . . . ***Micranthes***.
1b. Plants of wet habitats and remaining green throughout the dry season. Fertile stamens 5 per flower:
  3a. Leaves basal and cauline, the blades generally round to reniform in outline. Ovaries 2 celled. . . . . ***Boykinia***.
  3b. Leaves strictly basal, the blades generally ovate in outline. Ovaries 1 celled. . . . . ***Heuchera***.

BOYKINIA.

Boykinia is represented in the Tassajara region by one species. . . . . ***Boykinia occidentalis***. p. 307.

HEUCHERA. ALUM ROOT.

Heuchera is represented in the Tassajara region by one species. . . . . ***Heuchera micrantha***. p. 306.

LITHOPHRAGMA. WOODLAND STAR.

1a. Base of calyx abruptly constricting to the pedicel. Pedicels less than 2 mm. long. . . . . ***L. heterophyllum***. p. 307.
1b. Base of calyx tapering to the pedicel. Pedicels 2 to 8 mm. long. . . . . ***L. affine***. p. 307.

MICRANTHES. SMALL FLOWERED SAXIFRAGE.

Micranthes is represented in the Tassajara region by one species. . . . . ***Micranthes californica***. p. 307.

SCROPHULARIACEAE. FIGWORT FAMILY.

SCROPHULARIA. FIGWORT.

Scrophularia is represented in the Tassajara region by one species. . . . . ***Scrophularia californica***. p. 308.

SOLANACEAE. NIGHTSHADE FAMILY.

SOLANUM. NIGHTSHADE.

1a. Leaves green and about 2 to 15 cm. long. Corollas white, 3 to 6 mm. wide, and deeply lobed. . . . . ***S. americanum***. p. 309.
1b. Leaves gray green and about 1 to 4 cm. long. Corollas pale violet, 15 to 25 mm. wide, and disk like. . ***S. umbelliferum***. p. 308.

URTICACEAE. NETTLE FAMILY.

URTICA. NETTLE.

1a. Perennial herbs usually much more than 6 dm. tall. Leaves broadly lanceolate. Flowers produced in elongated and generally dangling raceme or panicle like formations. . . . . ***U. dioica***. p. 310.
1b. Annual herbs less than 6 dm. tall. Leaves roundish to ovate. Flowers produced in generally roundish clusters. ***U. urens***. p. 310.

VALERIANACEAE. VALERIAN FAMILY.

PLECTRITIS. SPUR FLOWER.

1a. Corolla spurs, if present, less than 1/3 as long as the tubes. Lengthwise spine of the convex side of achenes not grooved, and the wings, if developed, are thin, inwardly curling at the base, and spreading above. . . . . ***P. congesta*** subsp. ***brachystemon***. p. 311.

1b. Corolla spurs about 1/3 as long to longer than the tubes. Lengthwise spine of the convex side of the achene with a dark grove, at least in the lower half, and the wings have thickened margins:

2a. Corollas strongly bilabiate, pale to dark pink, usually with 2 red spots at the base of the lower lip, and with slender spurs that are often longer than the tubes. Convex side of fruits with a distinct row of coarse hairs on each side of the spine. . . . . ***P. ciliosa***. p. 311.

2b. Corollas weakly bilabiate, white to pale pink, usually without red spots, and with broad spurs that are about 1/3 to 1/2 as long as the tubes. Convex side of achenes without distinct rows of hairs. . . . . ***P. macrocera***. p. 311.

VERBENACEAE. VERVAIN FAMILY.

VERBENA. VERVAIN.

Verbena is represented in the Tassajara region by one species. . . . . ***Verbena lasiostachys***. p. 312.

VIOLACEAE. VIOLET FAMILY.

VIOLA. VIOLET, PANSY.

1a. Petals mostly white adaxially (on the front side). The lateral petals have dark purple spots or markings near the base, which are above a small yellow area. Leaf bases generally cordate to truncate. . . . . ***V. ocellata***. p. 313.

1b. Petals mostly yellow or orangish yellow adaxially:

2a. Leaves all cauline. Petals golden yellow adaxially, the lowest 10 to 20 mm long. Cleistogamous flowers absent. . . . . ***V. pedunculata***. p. 314.

2b. Leaves basal and cauline. Petals deep to medium yellow adaxially, the lowest 6 to 16 mm long. Cleistogamous flowers often present. The *Viola purpurea* complex:

3a. Basal leaf blade bases strongly to weakly truncate (or sometimes cordate):

4a. Basal leaves generally gray-green, or occasionally purple-tinted abaxially (on the underside).

5a. Basal leaf blades with 3 to 5 (-6) prominent lobes per side. . . . . ***V. purpurea*** subsp. ***mohavensis***. p. 315.

5b. Basal leaf blades without prominent lobes. . . . . ***V. purpurea*** subsp. ***quercetorum***. p. 315.

4b. Basal leaves generally purple-tinted, occasionally gray-green abaxially. Cauline leaves with 3 to 4 (-5) prominent lobes per side. . . . . ***V. purpurea*** subsp. ***mohavensis***. p. 315.

3b. Basal leaf blade bases strongly to slightly tapered:

7a. Basal leaves generally gray-green, occasionally purple-tinted abaxially. . . ***V. purpurea*** subsp. ***mohavensis***. p. 315.

7b. Basal leaves generally purple-tinted abaxially:

8a. Basal leaves with 4–5(6) prominent lobes per side, not shiny adaxially (on the upper side). . . ***V. purpurea*** subsp. ***mohavensis***. p. 315.

8b. Basal leaves without prominent lobes, occasionally shiny adaxially. . . . . ***V. purpurea*** subsp. ***purpurea***. p. 315.

VISCACEAE. MISTLETOE FAMILY.

1a. Plants woody and parasitic on broadleaf trees (particularly oaks). Leaves present. . . . . ***Phoradendron***.

1b. Plants herbaceous and parasitic on pine trees. Leaves absent. . . . . ***Arceuthobium***.

ARCEUTHOBIUM. CONIFER MISTLETOE.

Arceuthobium is represented in the Tassajara region by one species. . . . . ***Arceuthobium campylopodum***. p. 316.

PHORADENDRON. AMERICAN MISTLETOE.

Phoradendron is represented in the Tassajara region by one species. ***Phoradendron leucarpum*** subsp. ***tomentosum***. p. 316.

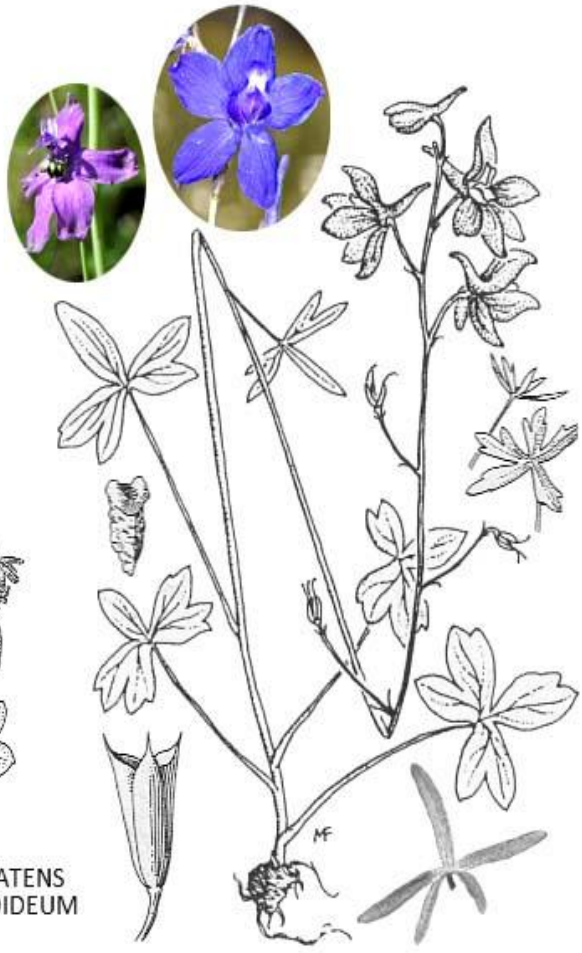
AQUILEGIA FORMOSA

CLEMATIS LASIANTHA

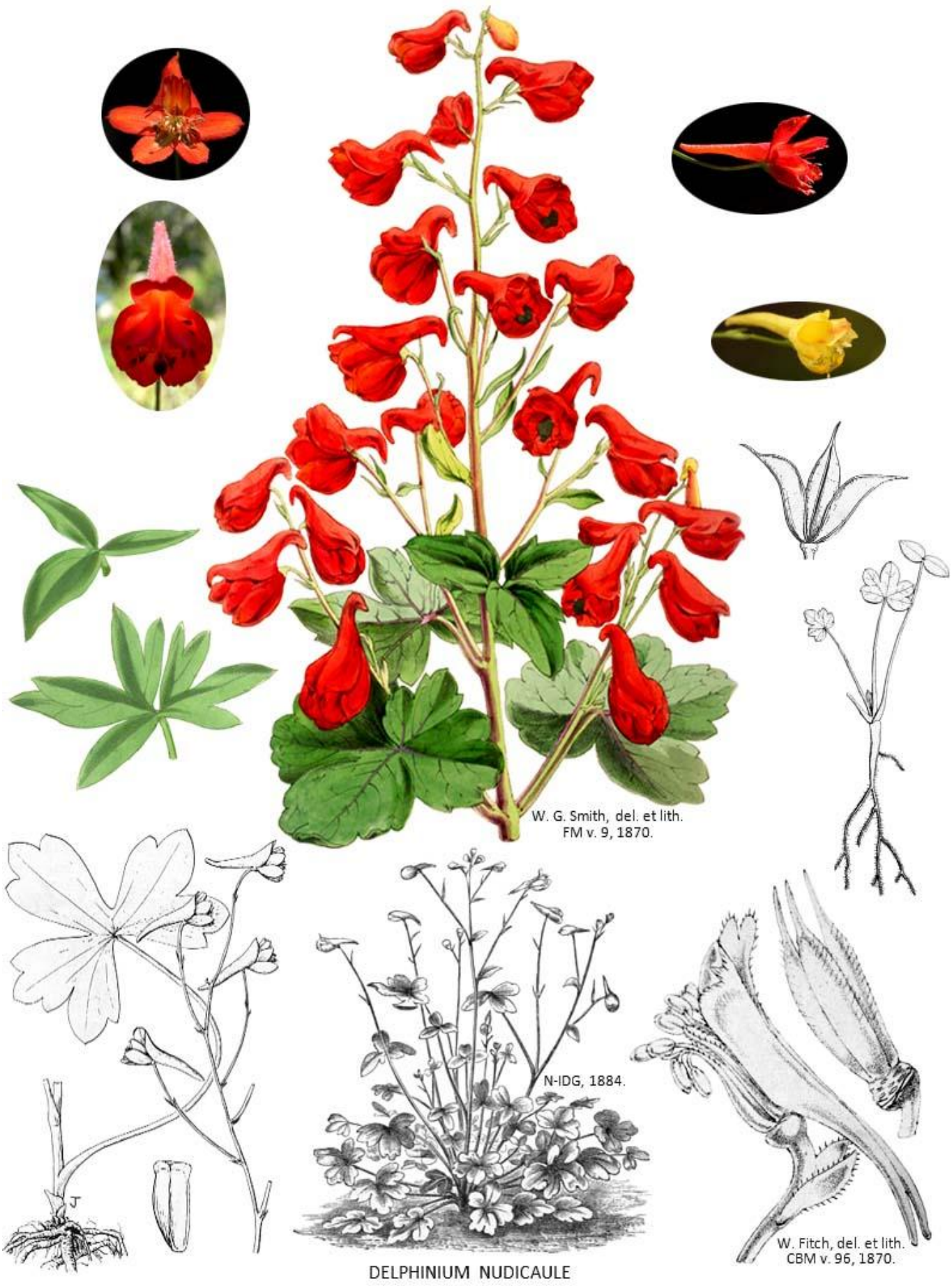
CLEMATIS LIGUSTICIFOLIA

DELPHINIUM PARRYI

DELPHINIUM PATENS
subsp. HEPATICOIDEUM



DELPHINIUM PATENS subsp. PATENS

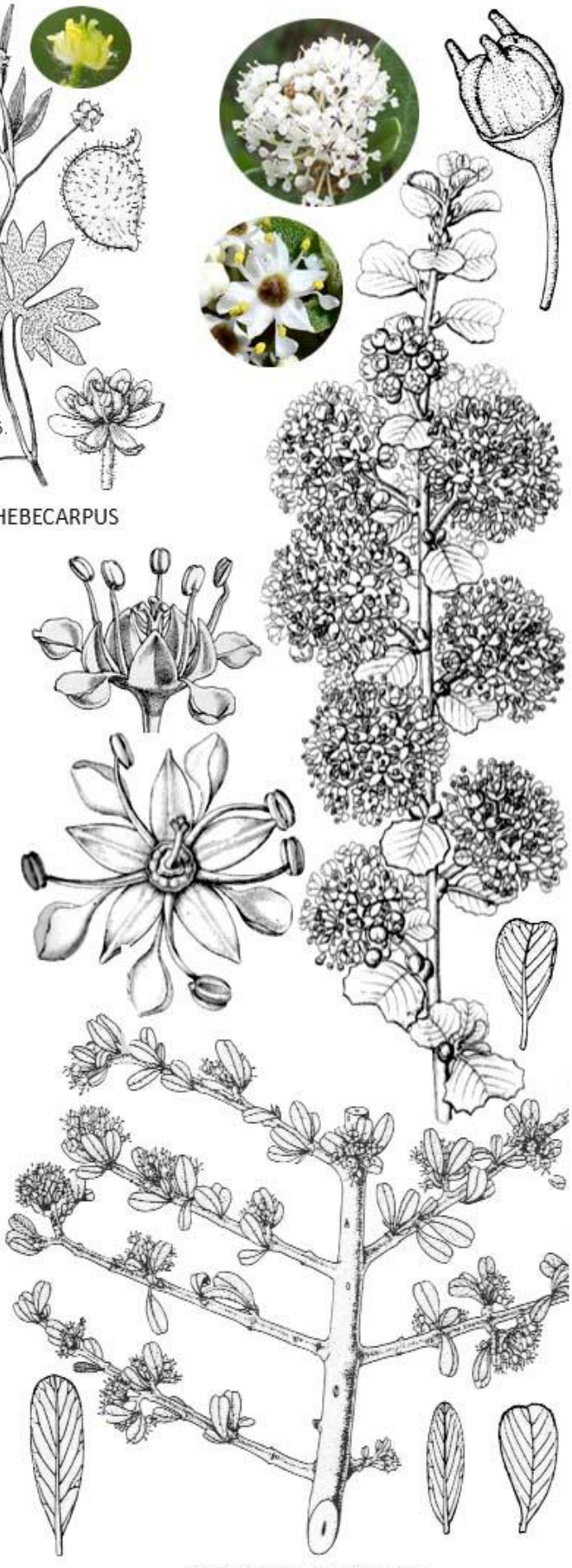


DELPHINIUM NUDICAULE

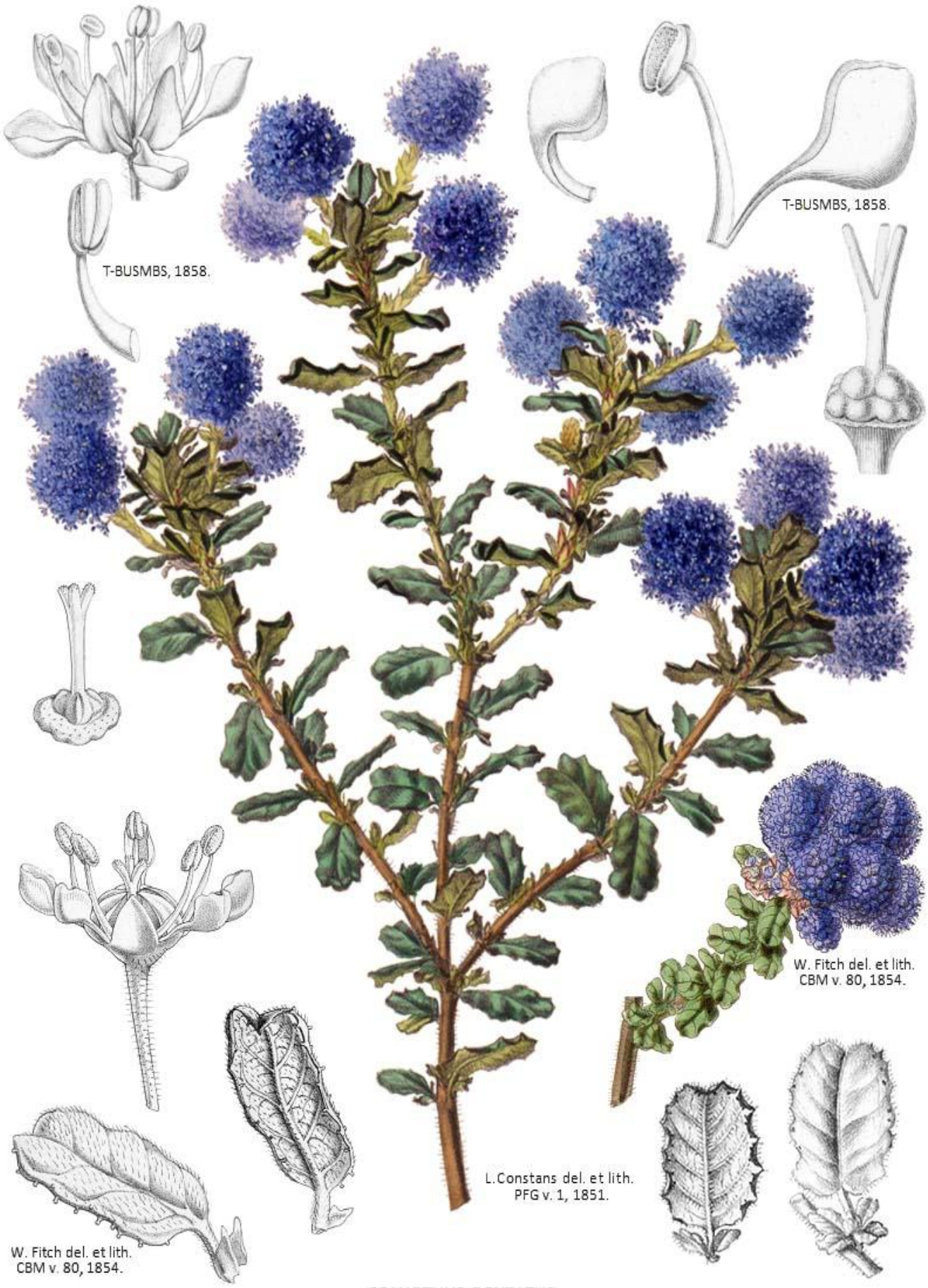
RANUNCULUS CALIFORNICUS

RANUNCULUS HEBECARPUS

THALICTRUM FENDLERI var. POLYCARPUM

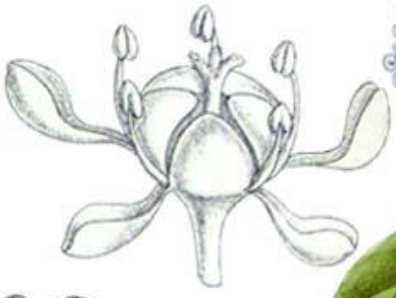


CEANOTHUS CUNEATUS



CEANOTHUS DENTATUS

CEANOTHUS FOLIOSUS

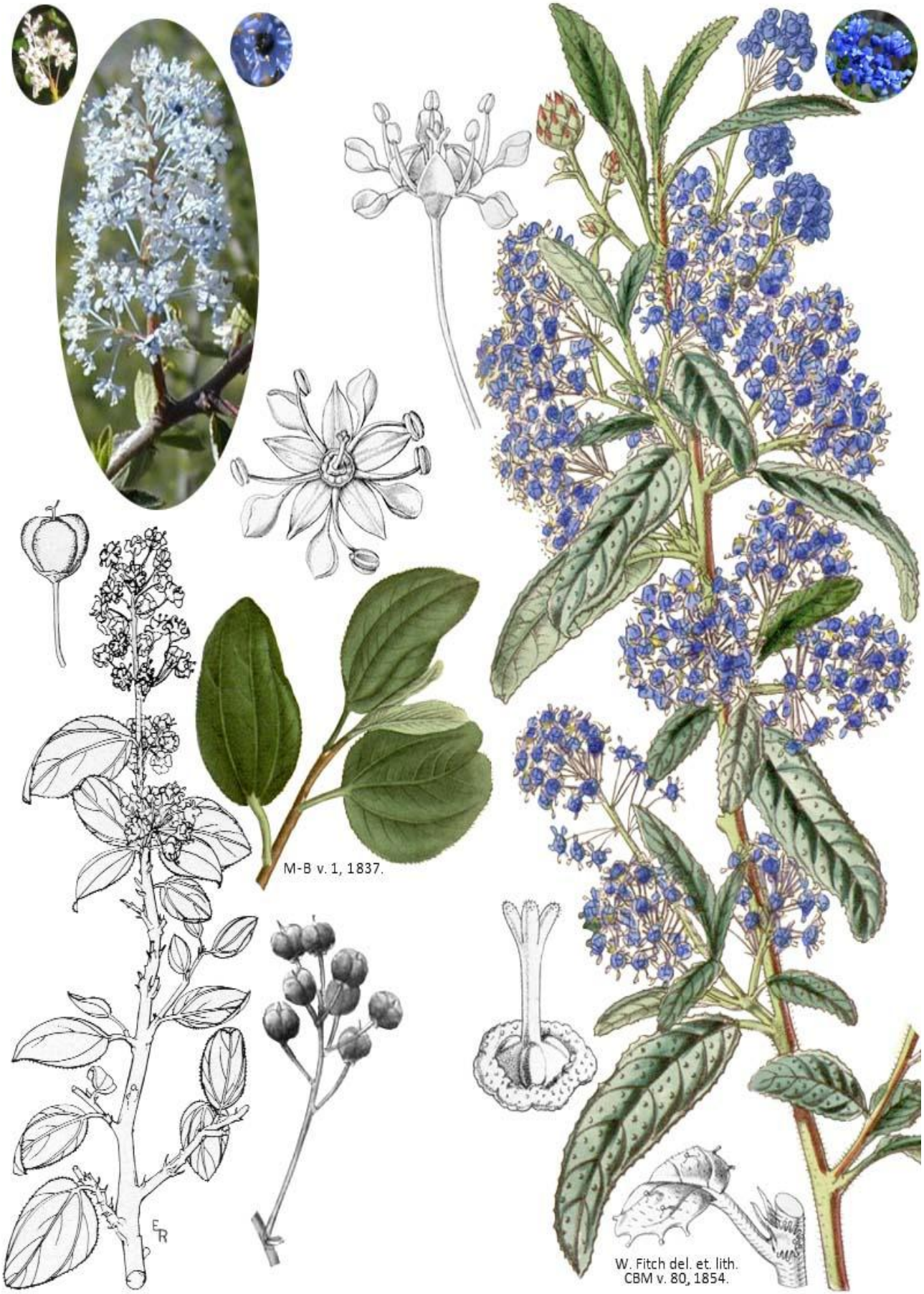


This is an illustration of a plant from the Sierra Nevada; the plants of this region have white flowers.

C. INTEGERRIMUS
var. INTEGERRIMUS

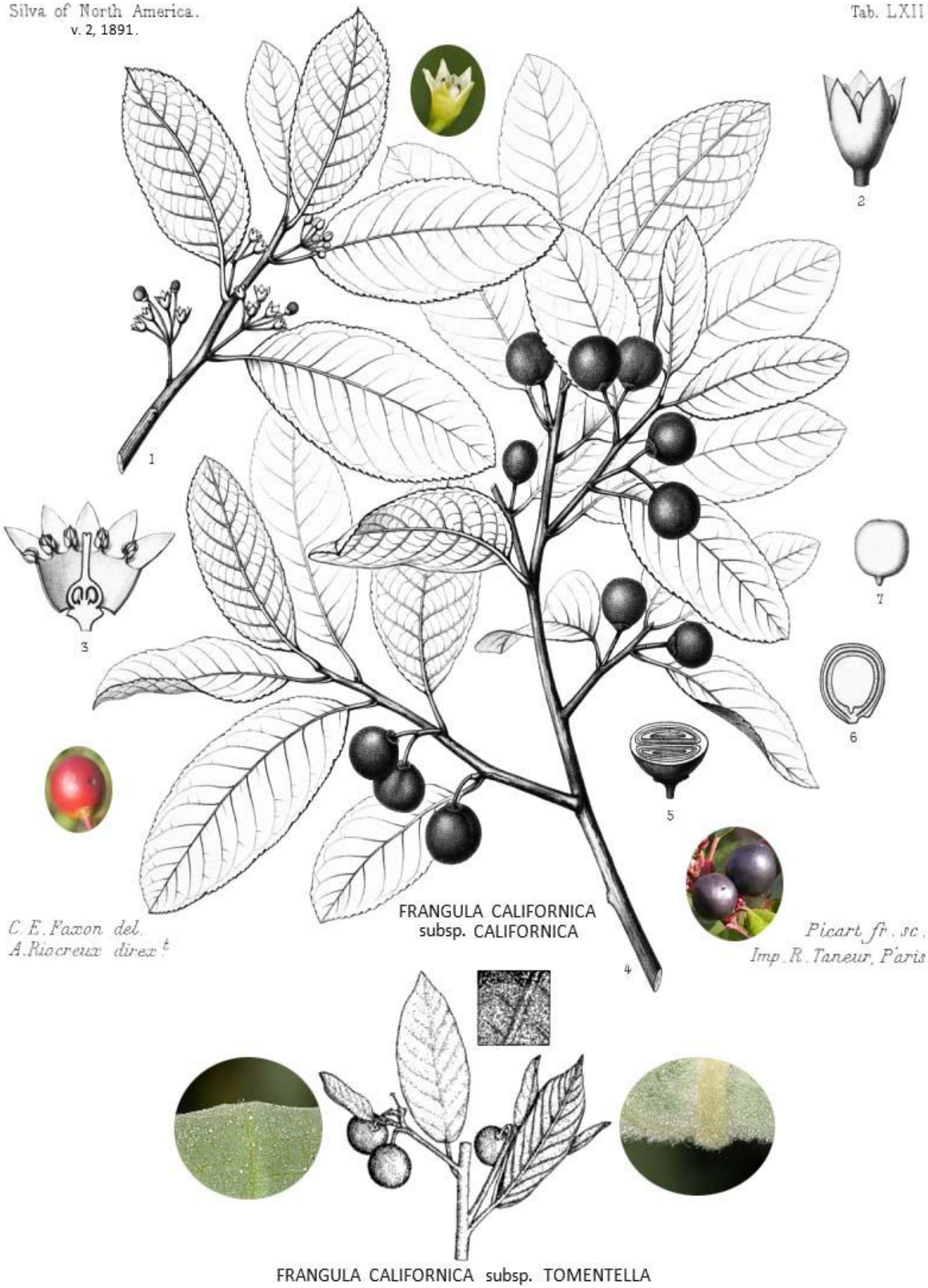
M. S. del.
J. N. Fitch lith.
CBM v. 125, 1899.

CEANOTHUS INTEGERRIMUS var. MACROTHRYSUS



CEANOTHUS OLIGANTHUS var. SOREDIATUS

CEANOTHUS PAPILLOSUS


Silva of North America.
v. 2, 1891.
Tab. LXII
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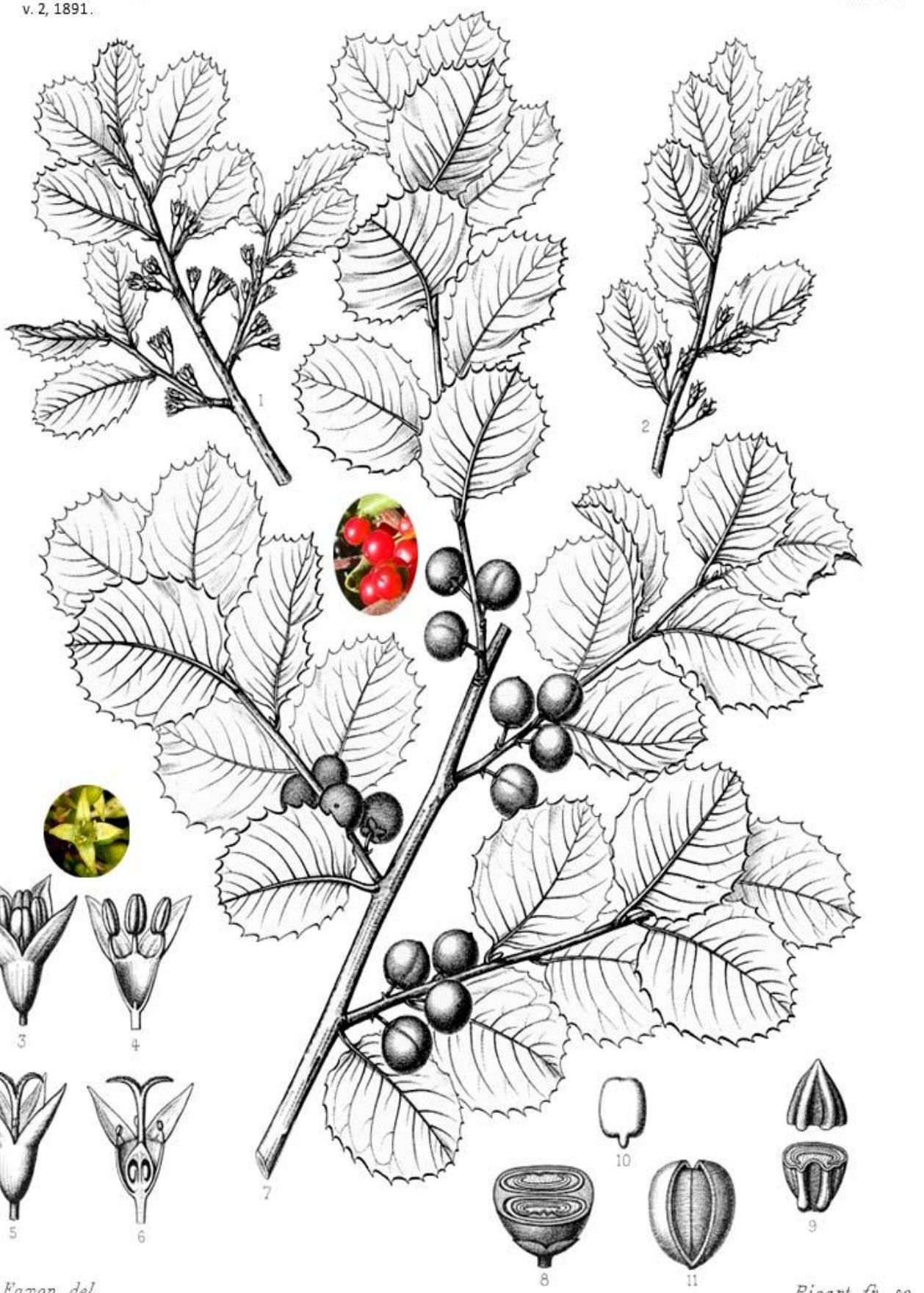
C. E. Faxon del.
A. Riocreux direx.t
FRANGULA CALIFORNICA
subsp. CALIFORNICA
Picart fr. sc.
Imp. R. Taneur, Paris
FRANGULA CALIFORNICA subsp. TOMENTELLA

Silva of North America.
v. 2, 1891.

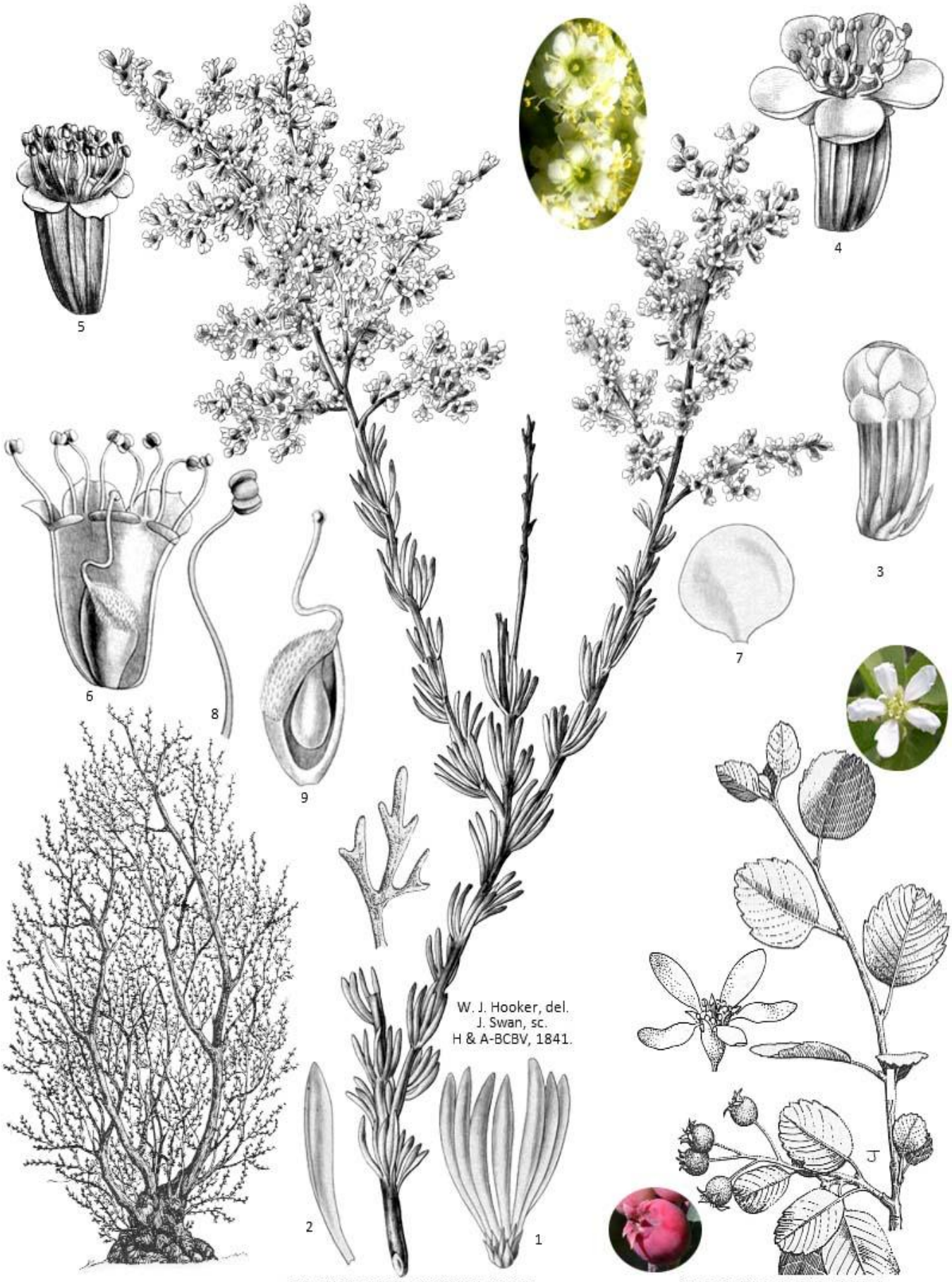
Tab. LIX



C. E. Faxon del.
A. Riocreux direx.t

Picart fr. sc.
Imp. R. Taneur, Paris

RHAMNUS ILICIFOLIA



ADENOSTOMA FASCICULATUM

AMELANCHIER UTAHENSIS

Silva of North America.
v. 4, 1892.

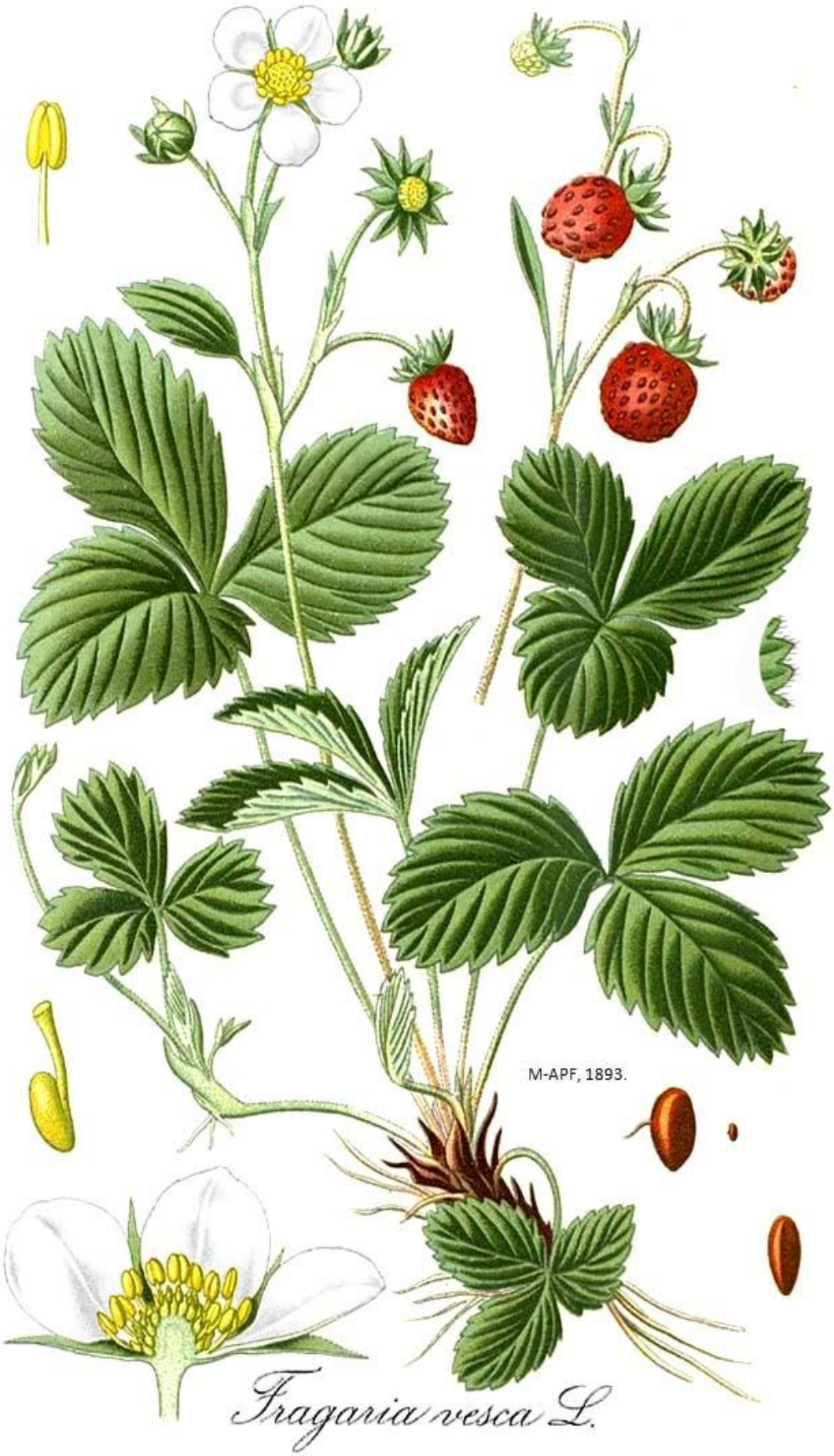
Tab. CLXVI.

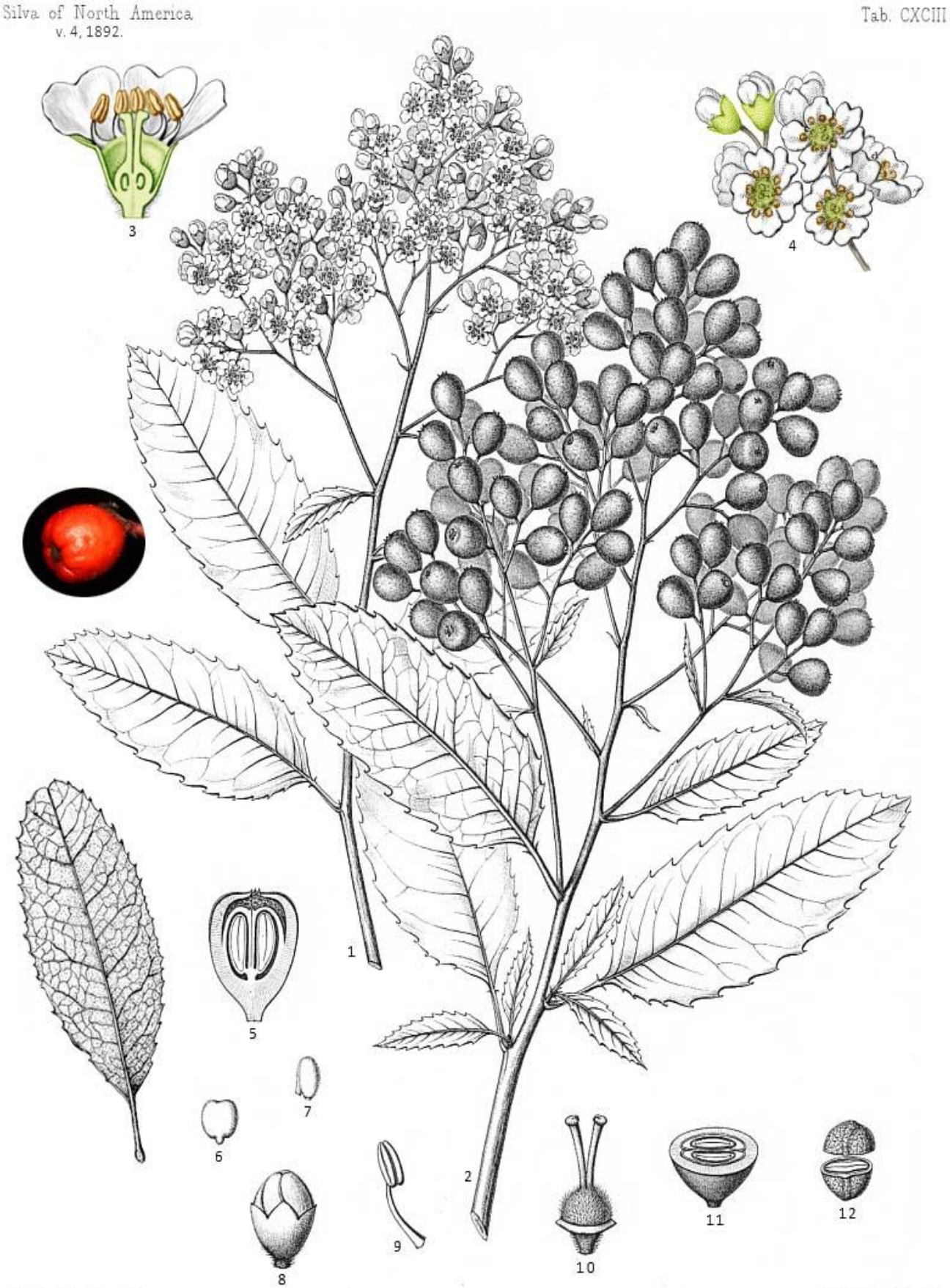
C. E. Faxon del.
A. Riocreux direx.t

Picart fr. sc.
Imp. R. Taneur, Paris

CERCOCARPUS BETULOIDES


NAANC v. 23, 1856.
DRYMOCALLIS GLANDULOSA


M-APF, 1893.
Fragaria vesca L.


Silva of North America
v. 4, 1892.
Tab. CXCIII
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C. E. Faxon del.
A. Riocreux direx.t
Picart fr. sc.
Imp. R. Taneur, Paris
HETEROMELES ARBUTIFOLIA, Roem.

HOLODISCUS DISCOLOR

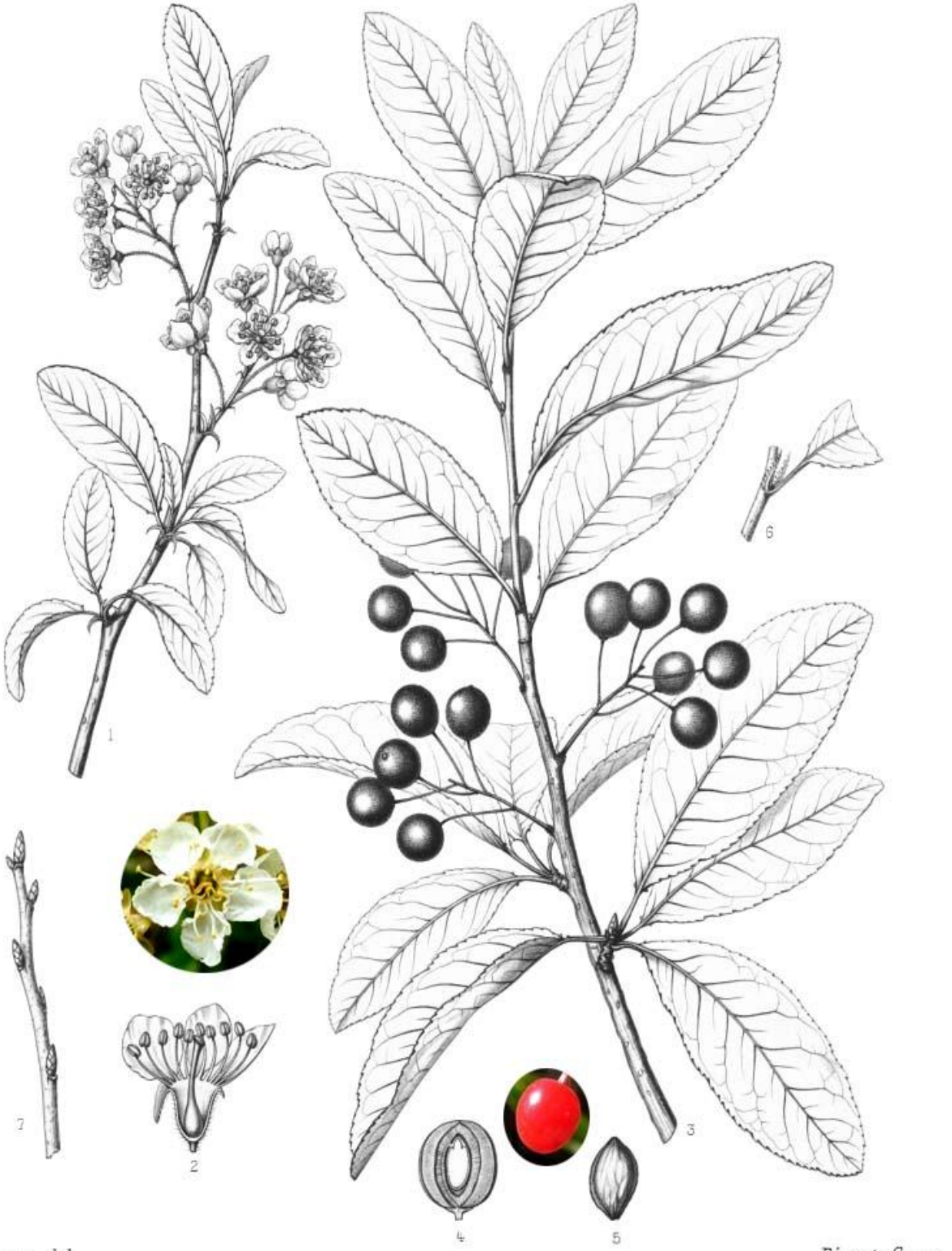
Drawn from a specimen that A. D. E. Elmer collected in Pine Valley in June of 1901 (Elmer 3328 MIN).

HORKELIA YADONII

OEMLERIA CERASIFORMIS

Silva of North America
v. 4, 1892.

Tab. CLVII



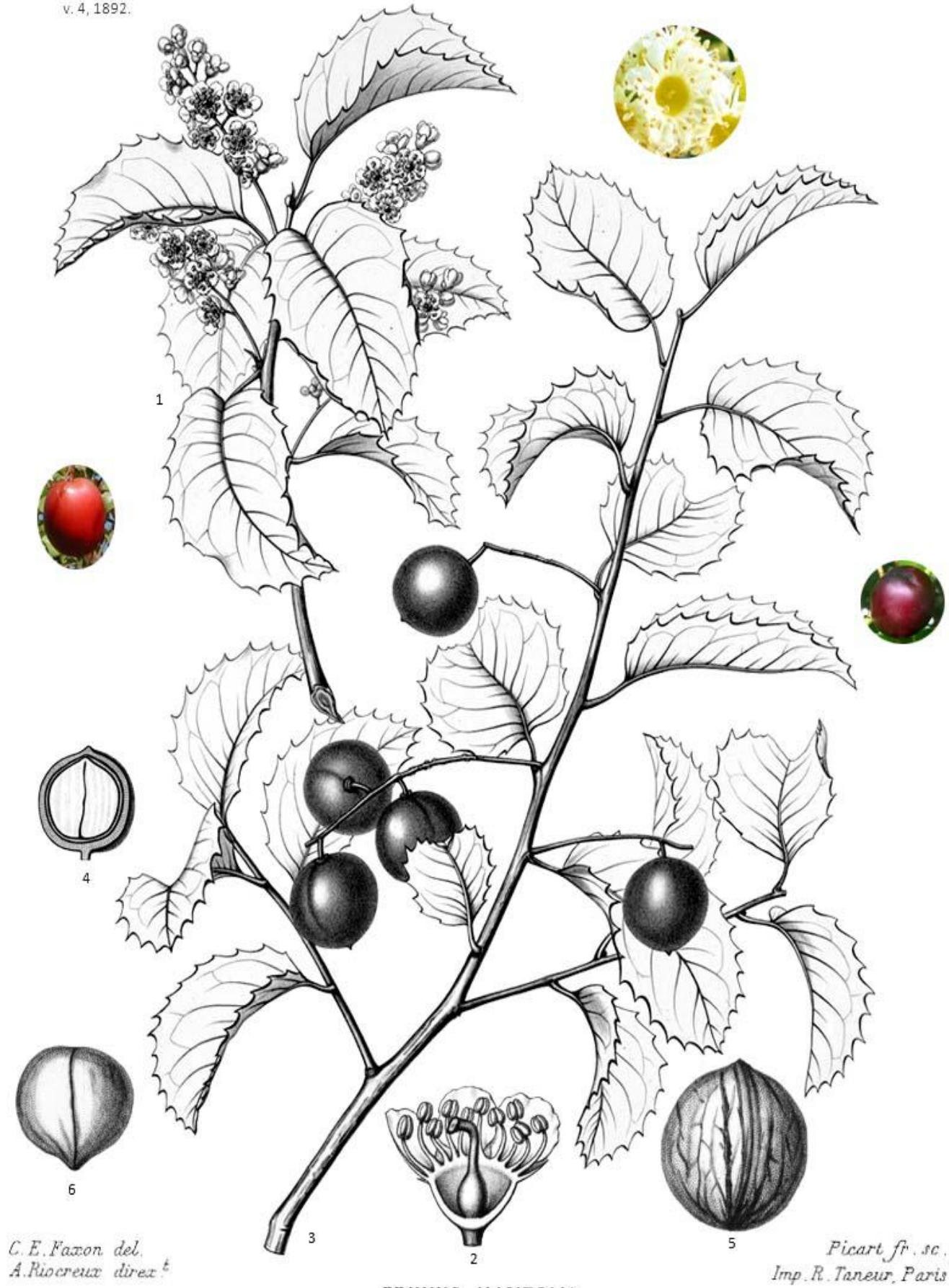
C. E. Faxon del.
A. Riocreux direx.t

Picart fr. sc.
Imp. R. Taneur, Paris

PRUNUS EMARGINATA. Walp.

Silva of North America
v. 4, 1892.

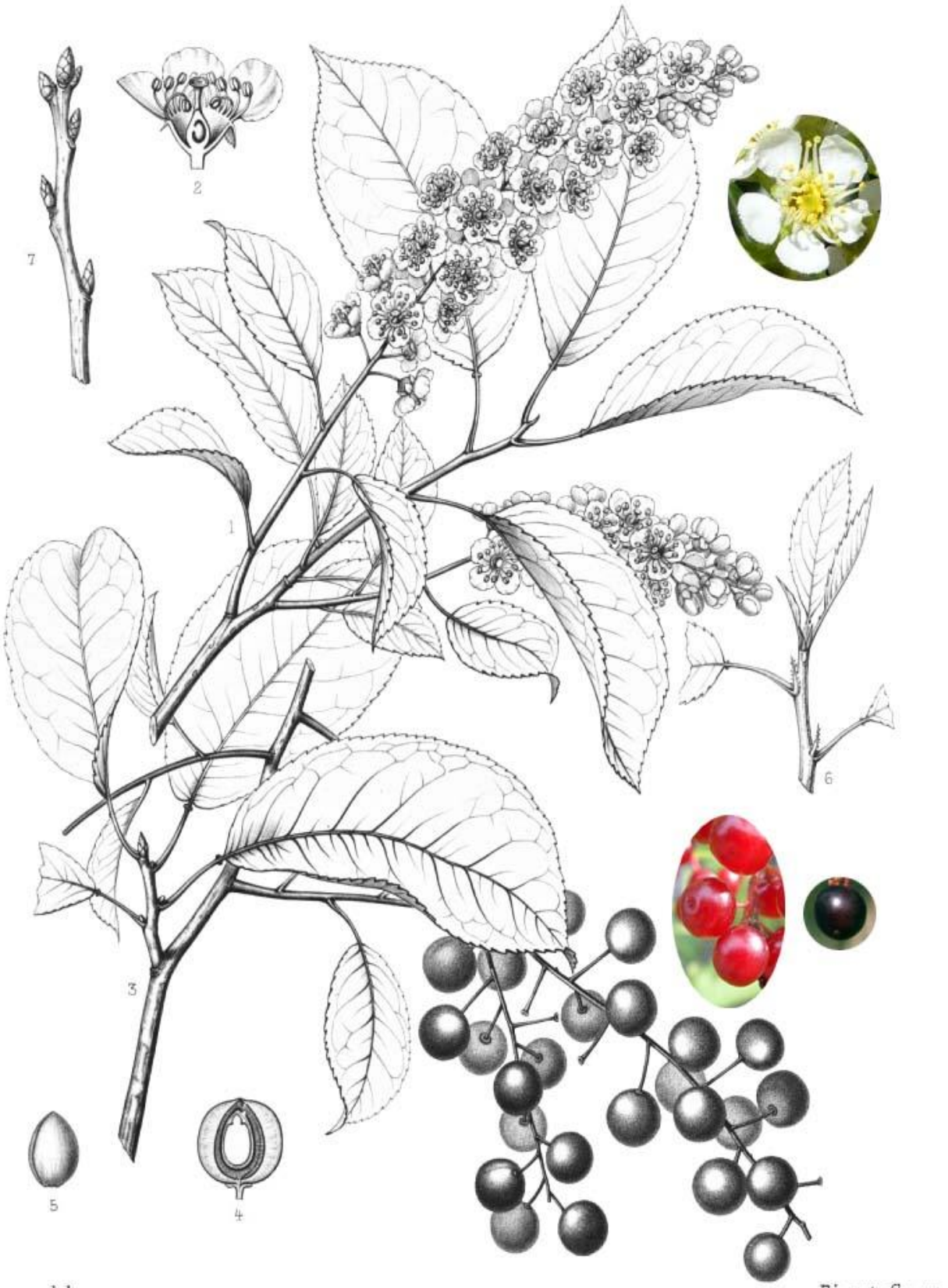
Tab. CLXII



PRUNUS ILICIFOLIA

Silva of North America.
v. 4, 1892.

Tab. CLVIII

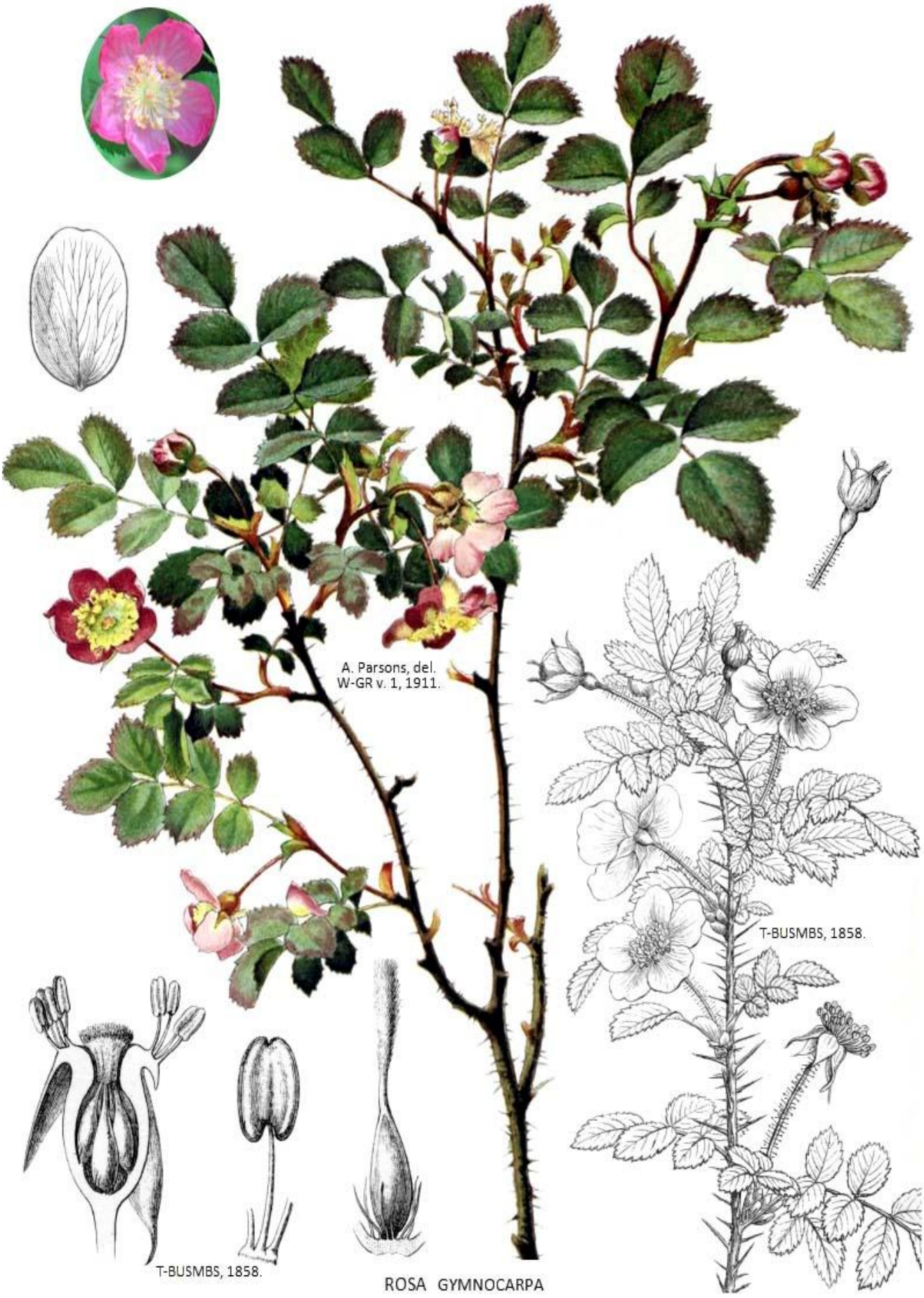


C. E. Faxon del.
A. Riocreux direx.t

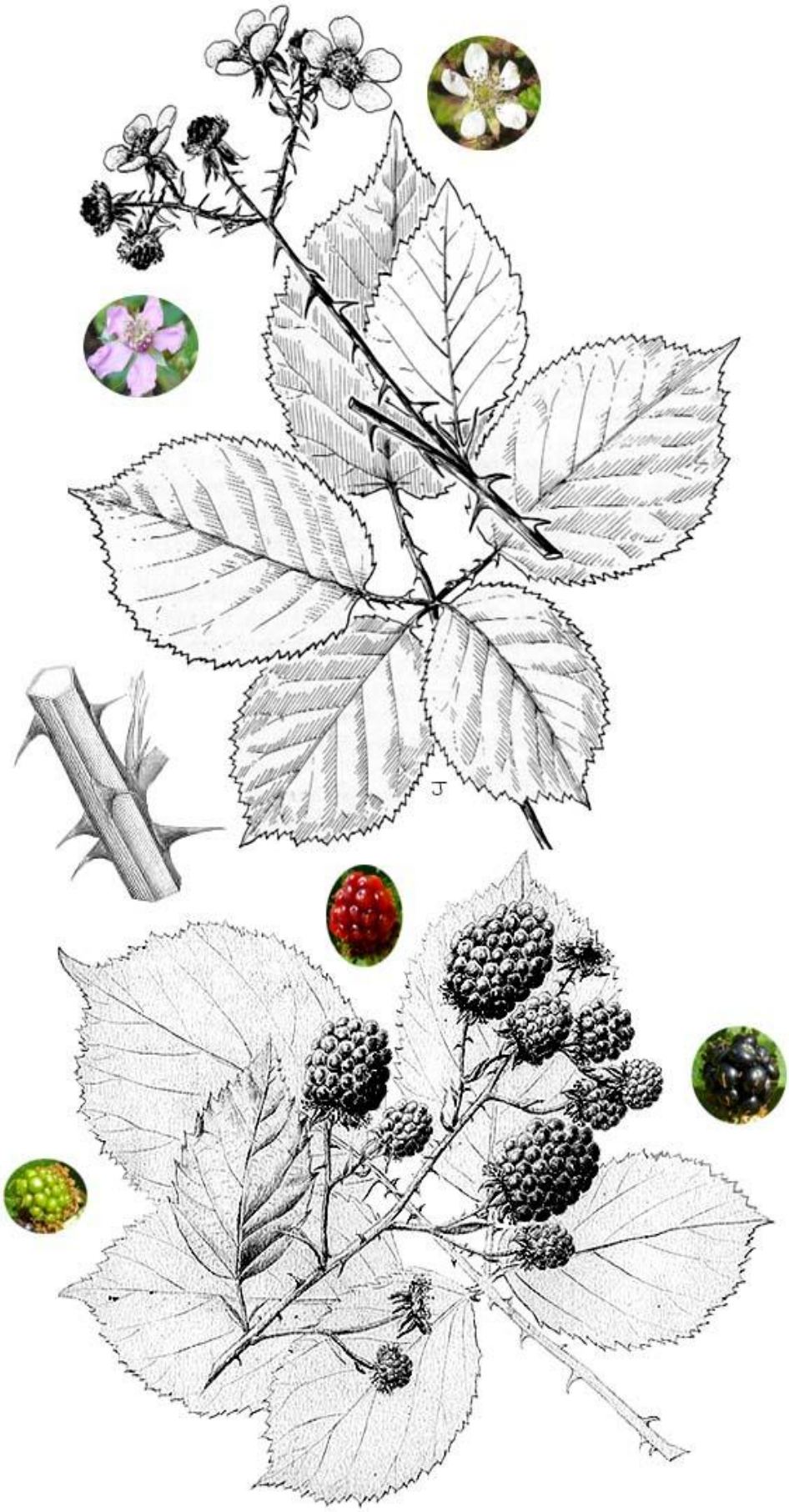
Picart fr. sc.
Imp. R. Taneur, Paris

PRUNUS VIRGINIANA var. DEMISSA

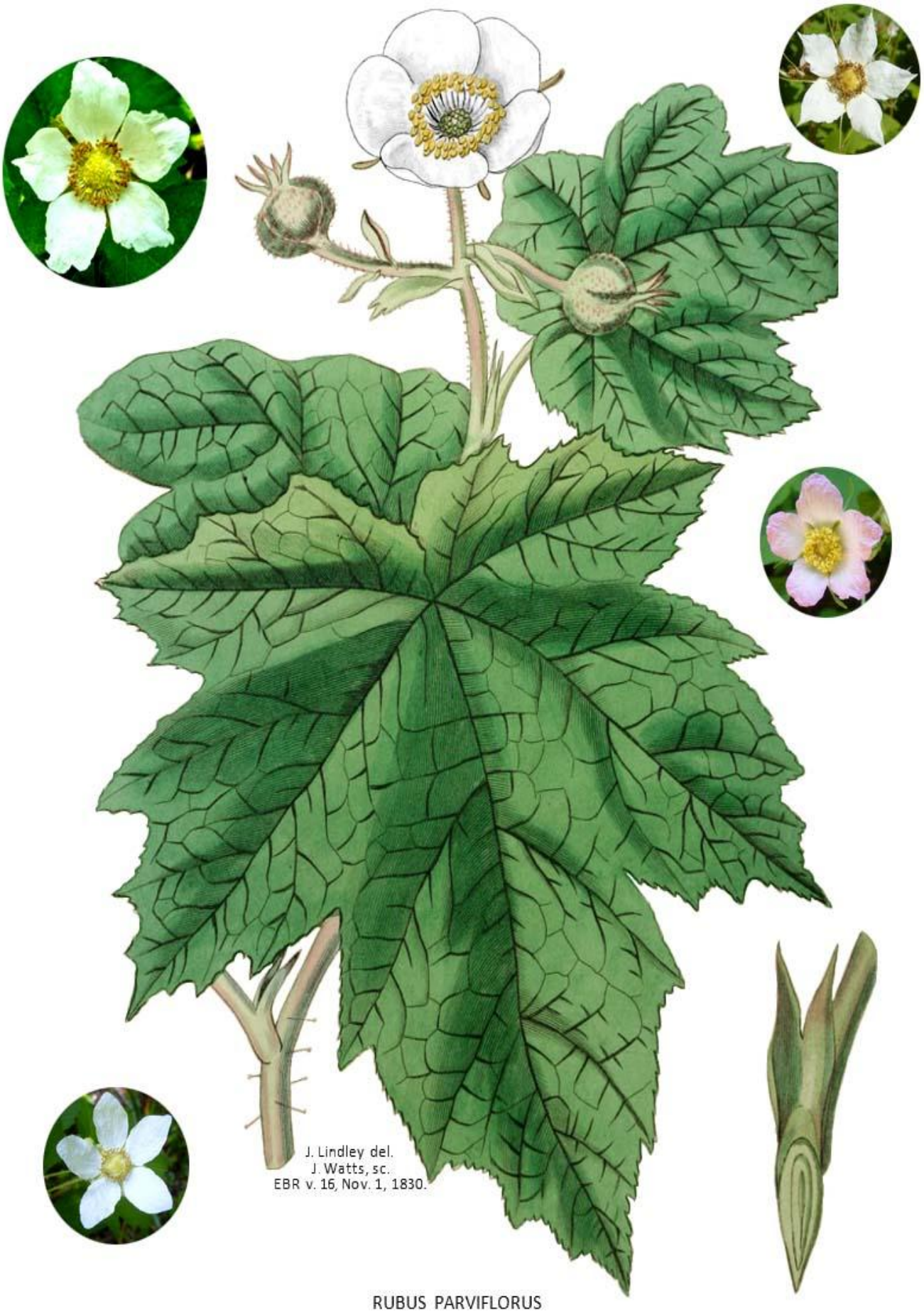
ROSA CALIFORNICA



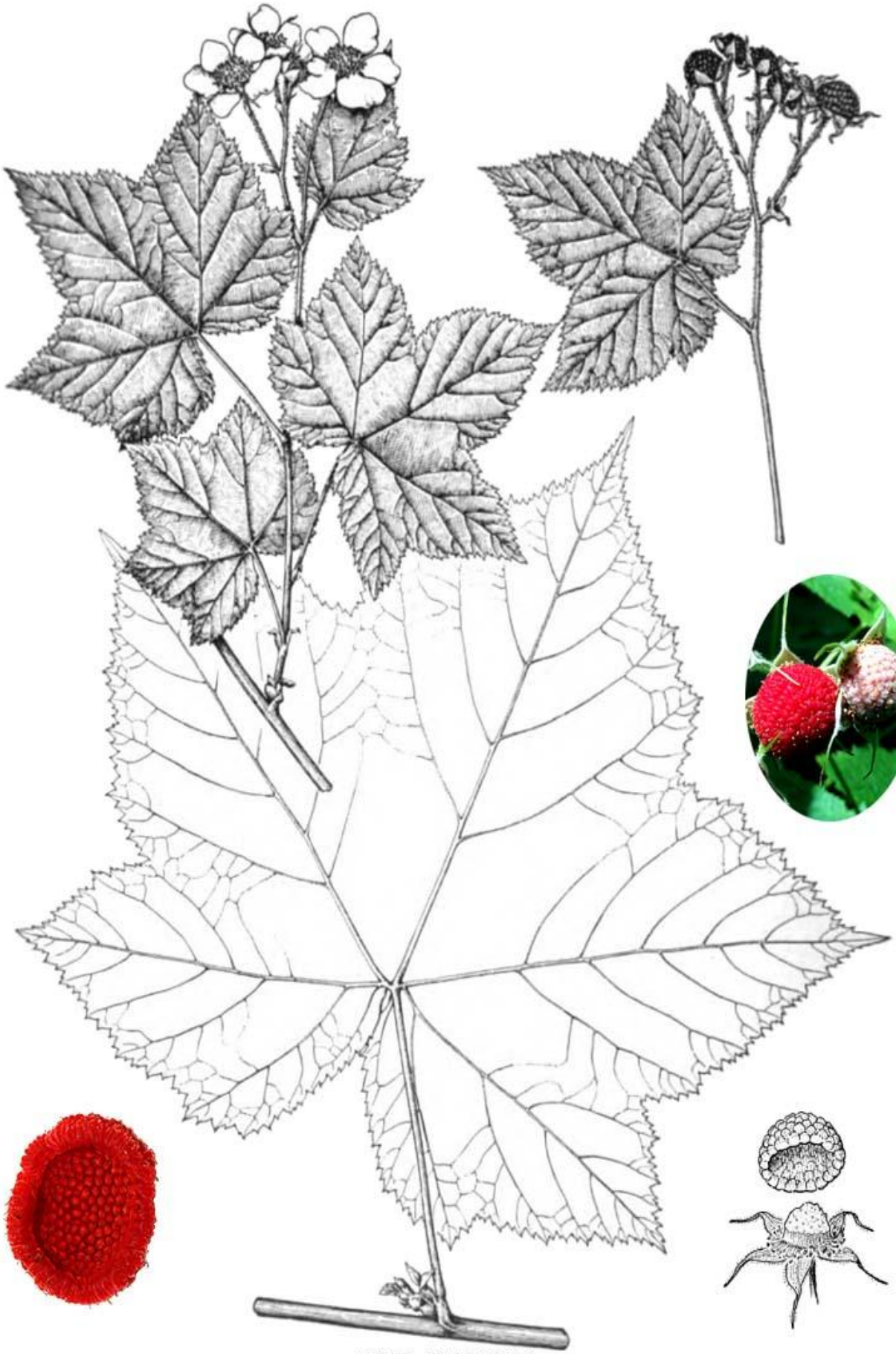
ROSA GYMNOCARPA



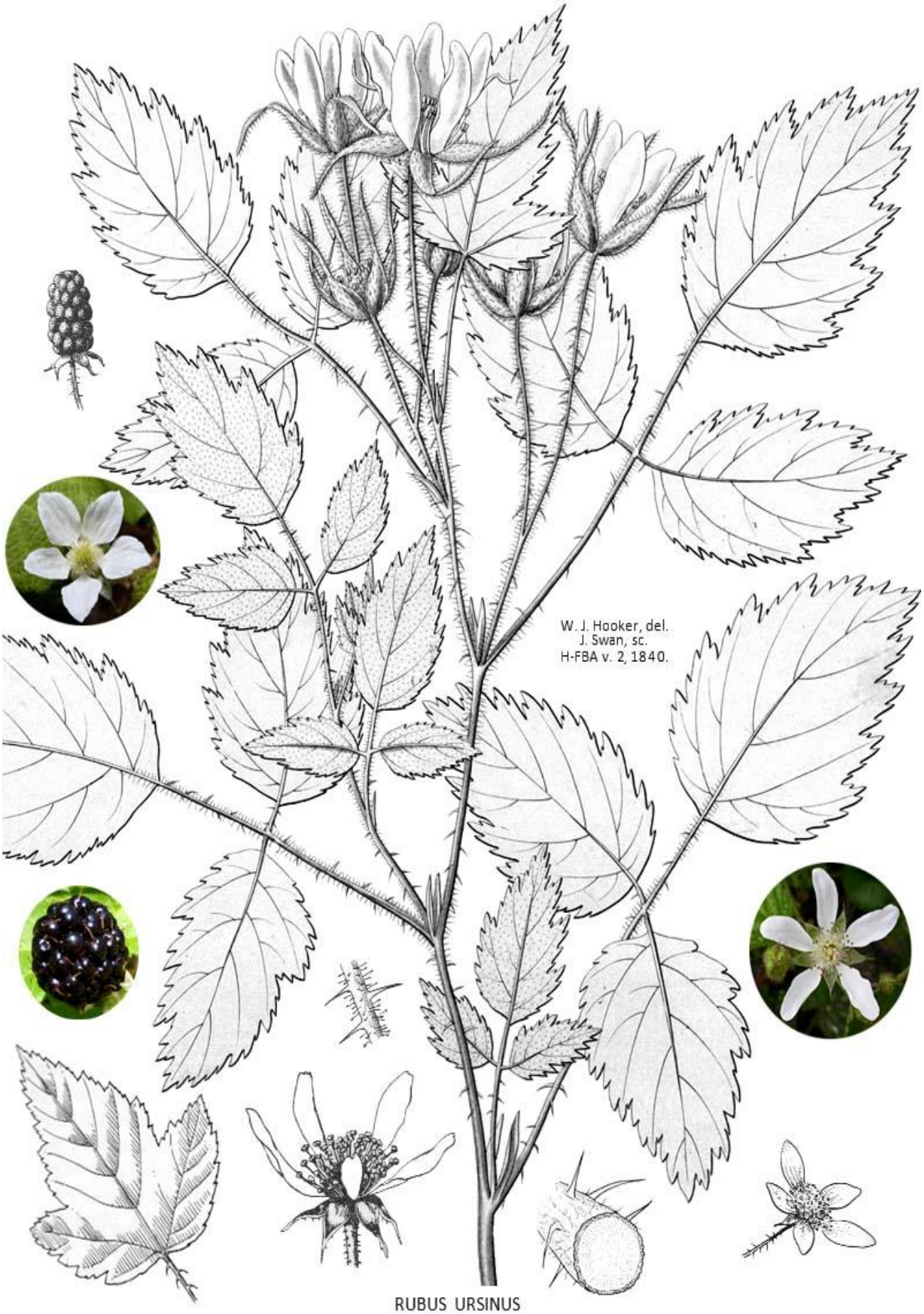
RUBUS ARMENIACUS



RUBUS PARVIFLORUS

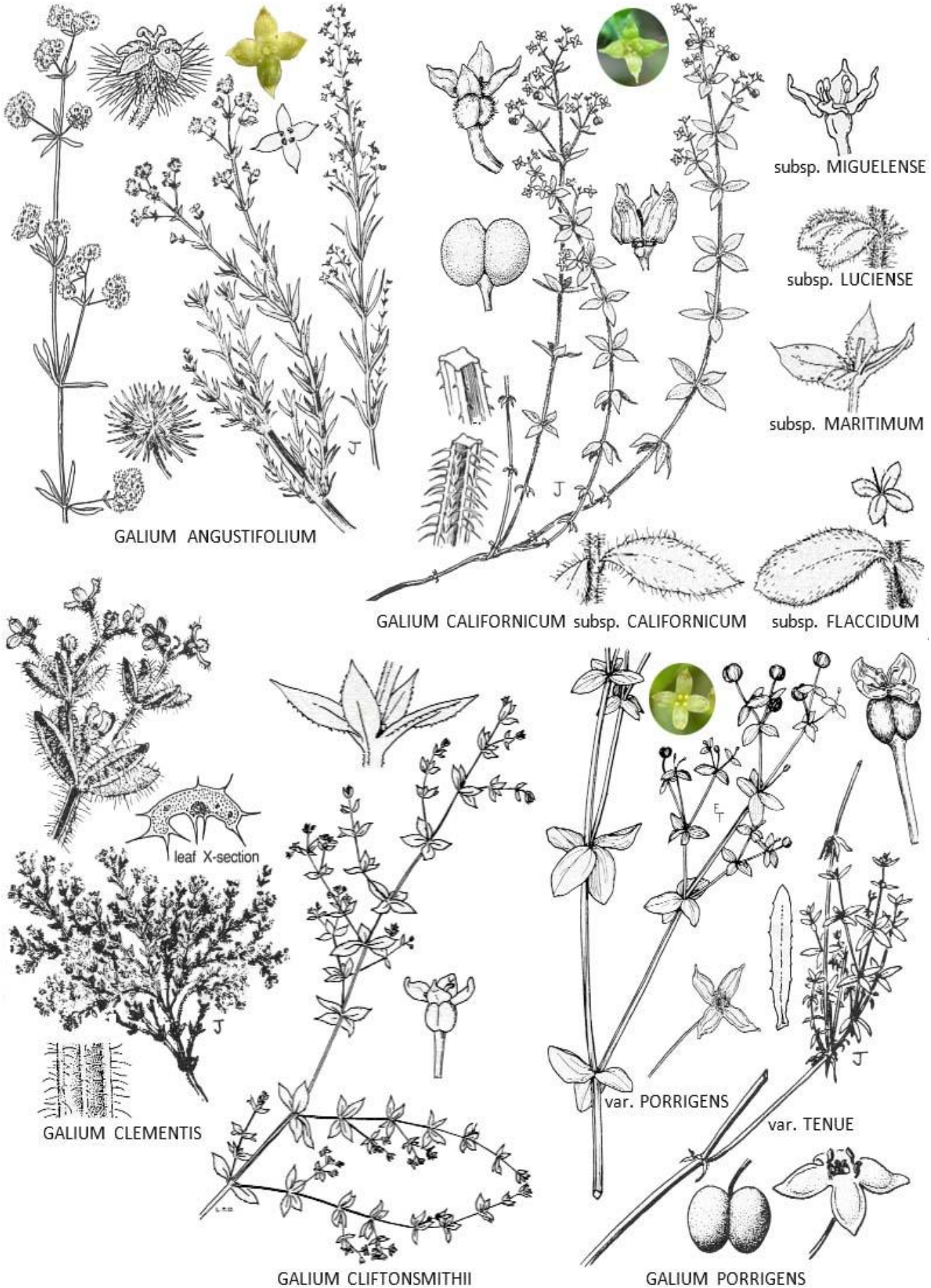


RUBUS PARVIFLORUS

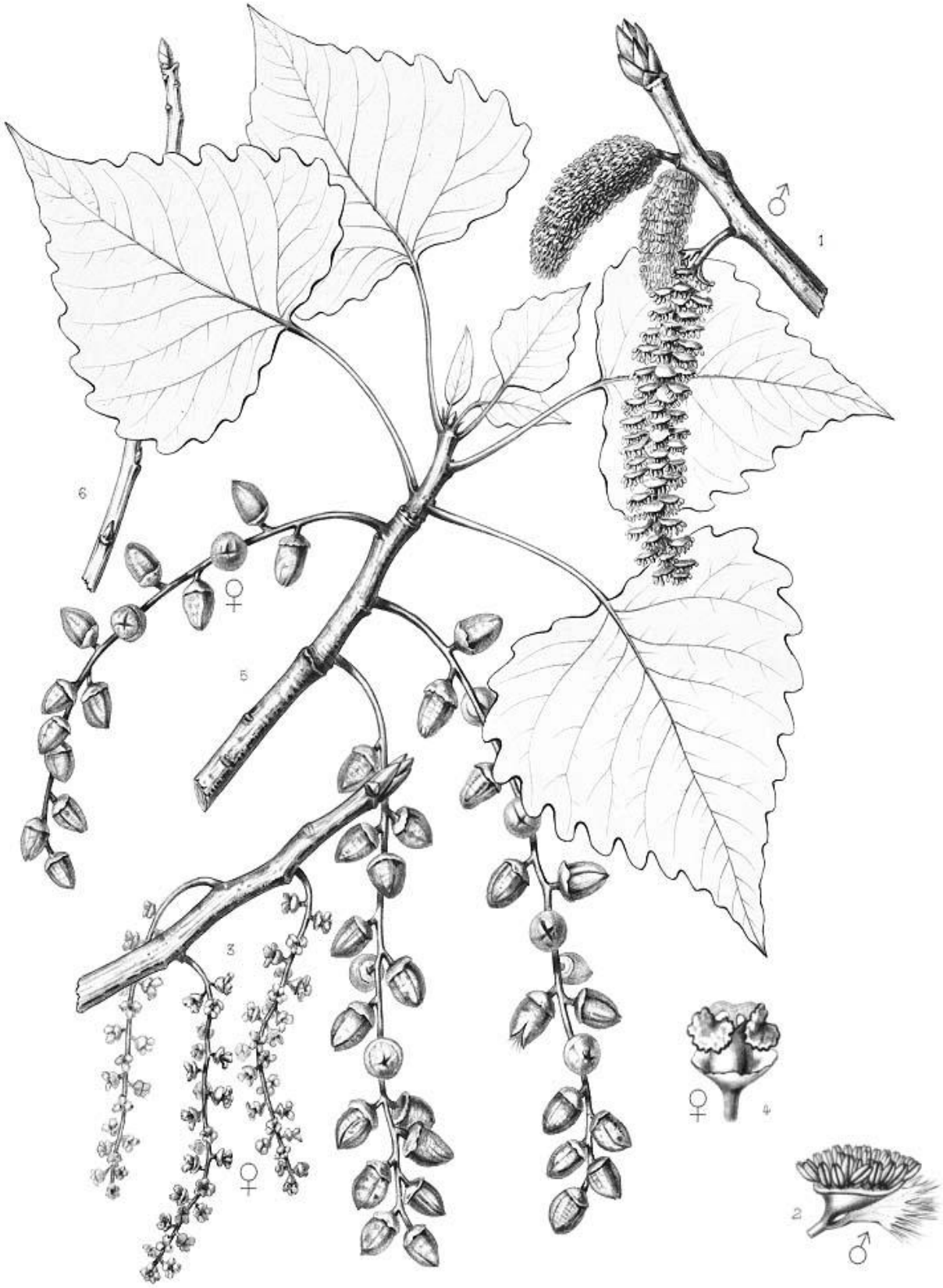


RUBUS URSINUS


Galium Aparine L.
O. Thome del.
T – FDOS v. 4, 1889.


GALIUM ANGUSTIFOLIUM
GALIUM CALIFORNICUM subsp. CALIFORNICUM
subsp. MIGUELENSE
subsp. LUCIENSE
subsp. MARITIMUM
subsp. FLACCIDUM
leaf X-section
GALIUM CLEMENTIS
GALIUM CLIFTONSMITHII
var. PORRIGENS
var. TENUE
GALIUM PORRIGENS

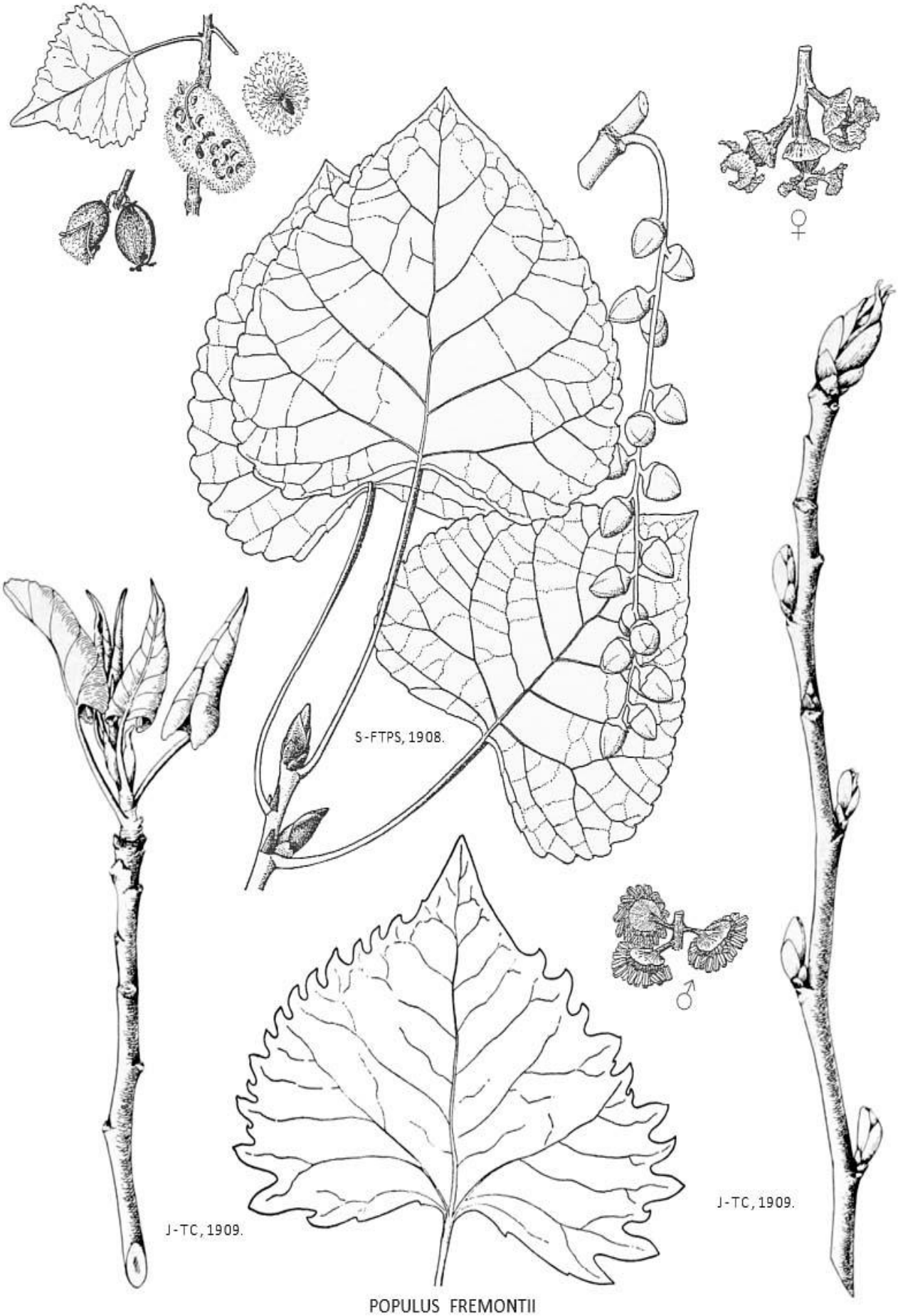
Silva of North America.
v. 9, 1896.



C. E. Faxon del.
A. Riocreux direx.

Migneaux sc.
Imp. J. Taneur, Paris.

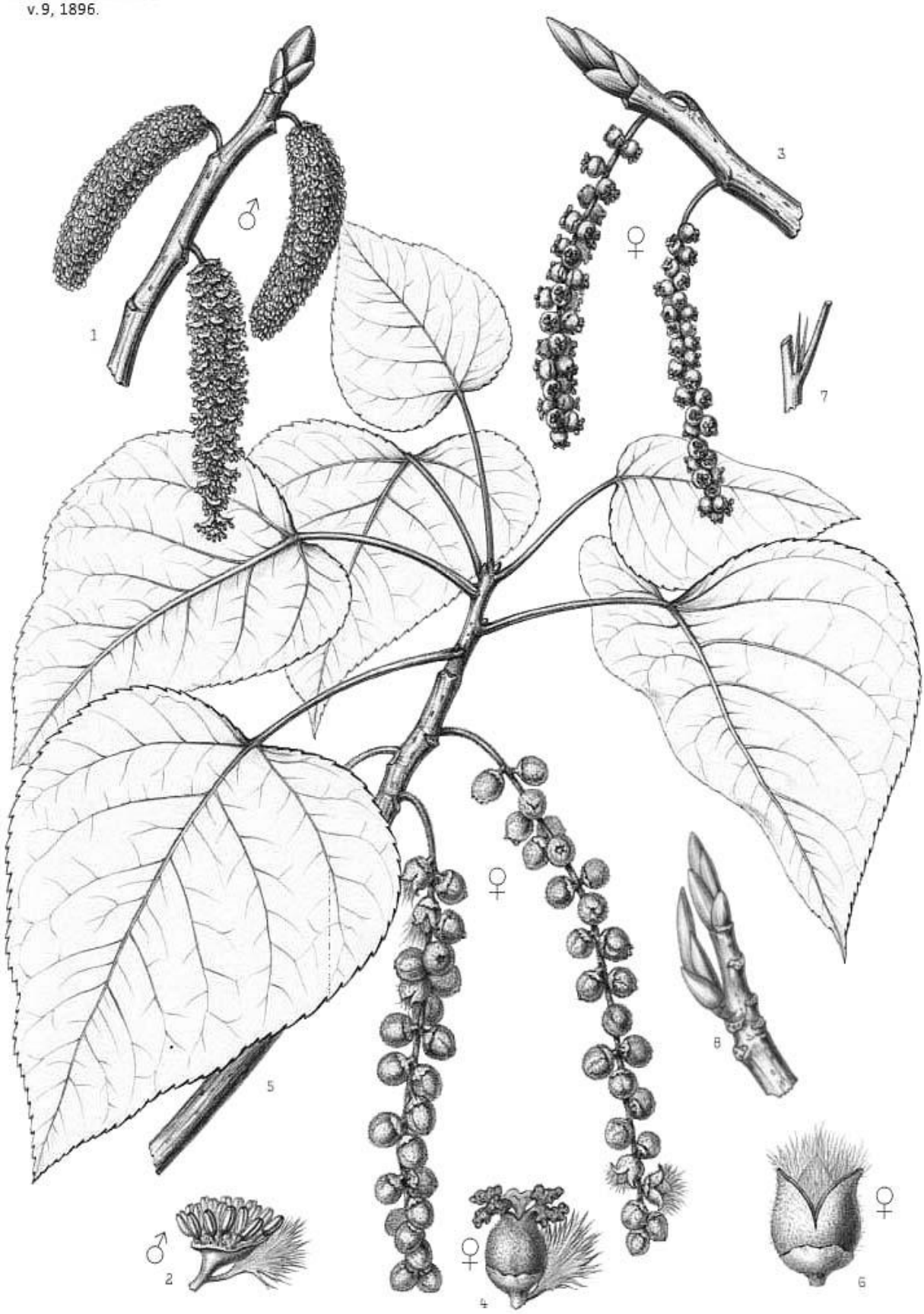
POPULUS FREMONTII, Wats.



POPULUS FREMONTII

Silva of North America.
v. 9, 1896.

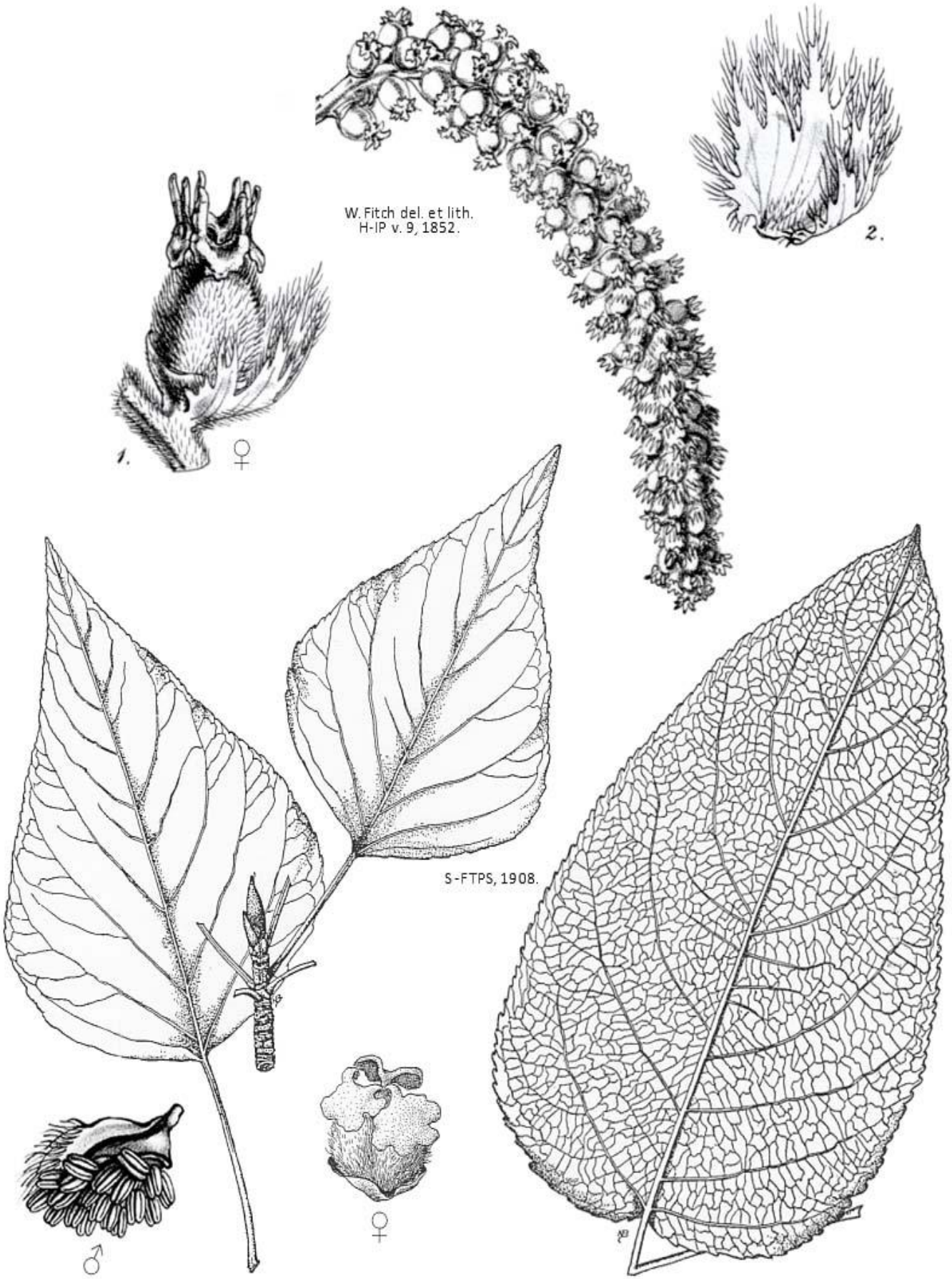
Tab. CCCCXCIII.



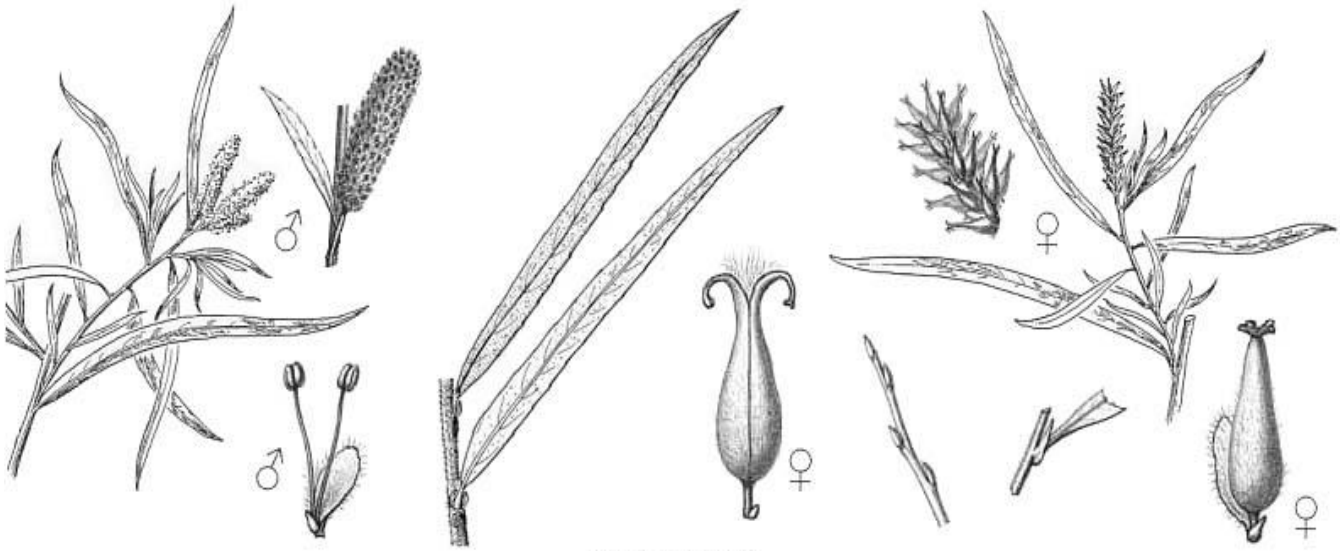
C. E. Faxon del.
A. Riocreux direxit

POPULUS TRICHOCARPA, Hook.

Rapine sc.
Imp. J. Taneur, Paris.



POPULUS TRICHOCARPA



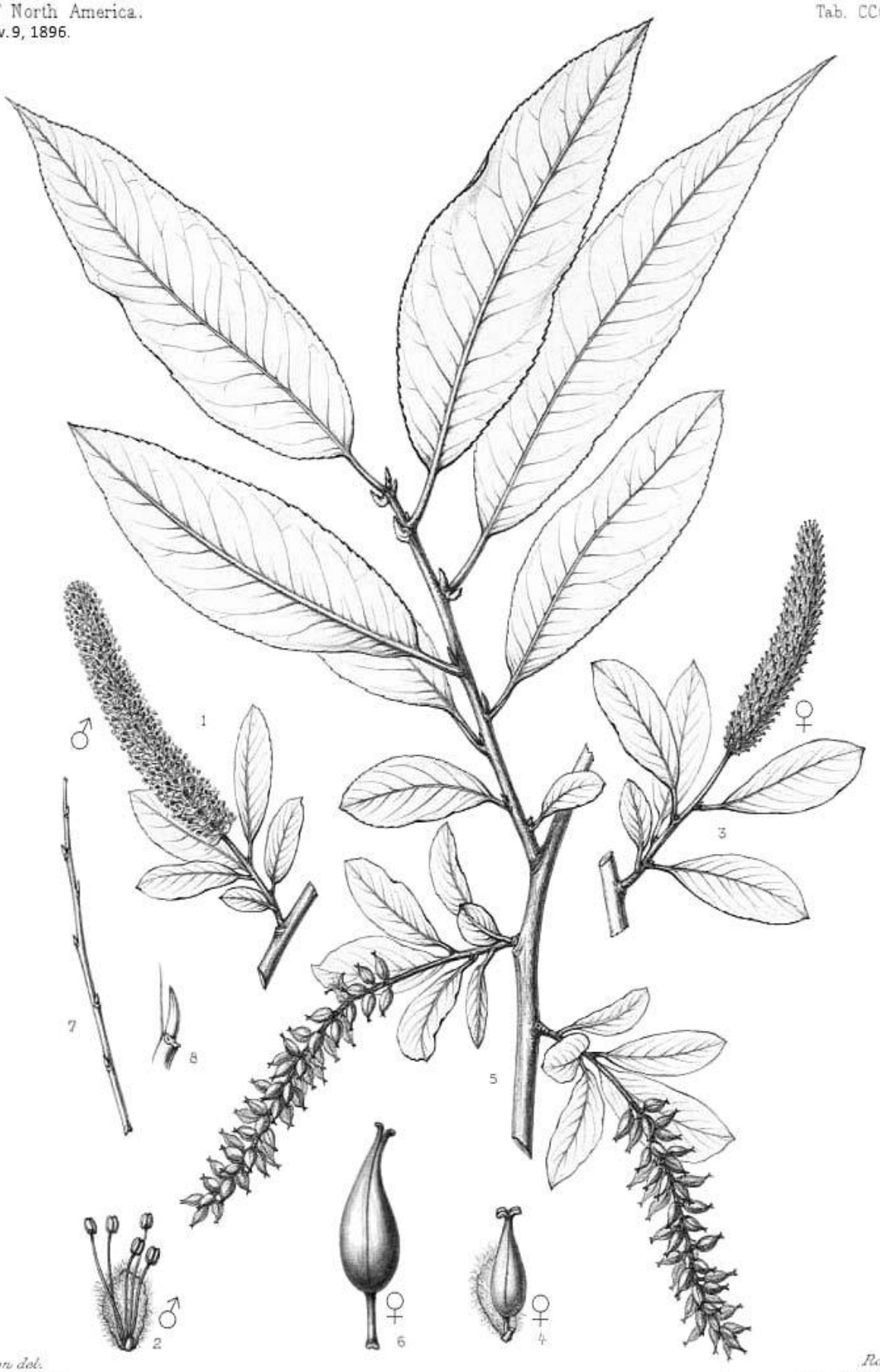
SALIX EXIGUA

SALIX LAEVIGATA

SALIX LASIOLEPIS

Silva of North America.
v. 9, 1896.

Tab. CCCCLXVIII



C. E. Faxon del.
A. Riocreux dirext

SALIX LAEVIGATA, Bebb.

Rapine sc.
Imp. J. Taneur, Paris.

Silva of North America.
v. 9, 1896.

Tab. CCCCLXXXI.

C. E. Faxon del.
A. Riocreux direxit

Himely sc.
Imp. J. Taneur, Paris.

SALIX LASIOLEPIS, Benth.

Silva of North America.
v. 9, 1896.

Tab. CCCCLXXV.

C. E. Faxon del.
A. Riocreux direxit

SALIX MELANOPSIS, Nutt.

Migneaux sc.
Imp. J. Taneur, Paris.

Silva of North America.
v. 2, 1892.

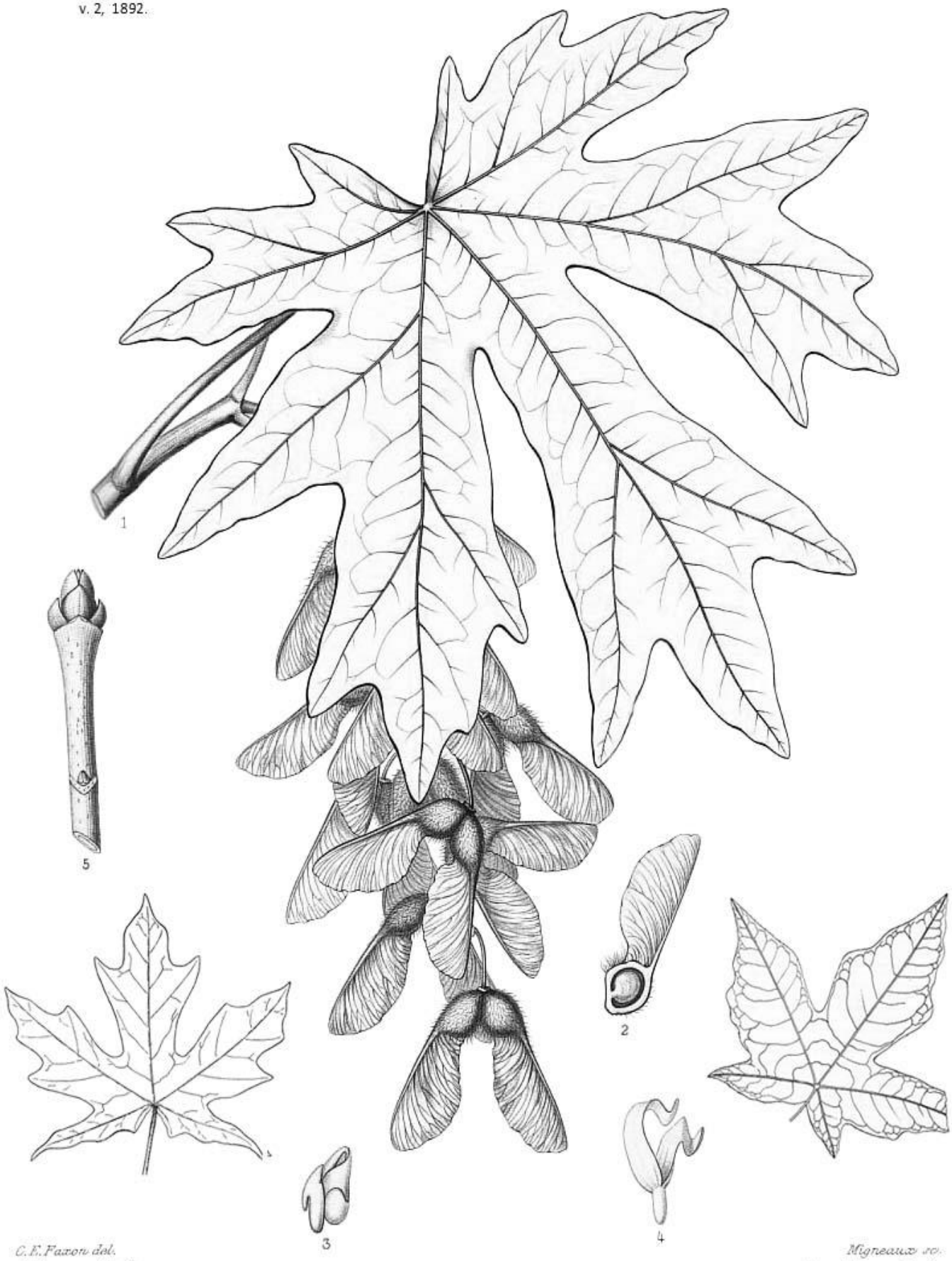
C. E. Faxon del.
A. Riocreux dirext.

Migneaux sc.
Imp. J. Taneur, Paris.

ACER MACROPHYLLUM, Pursh.

Silva of North America.
v. 2, 1892.

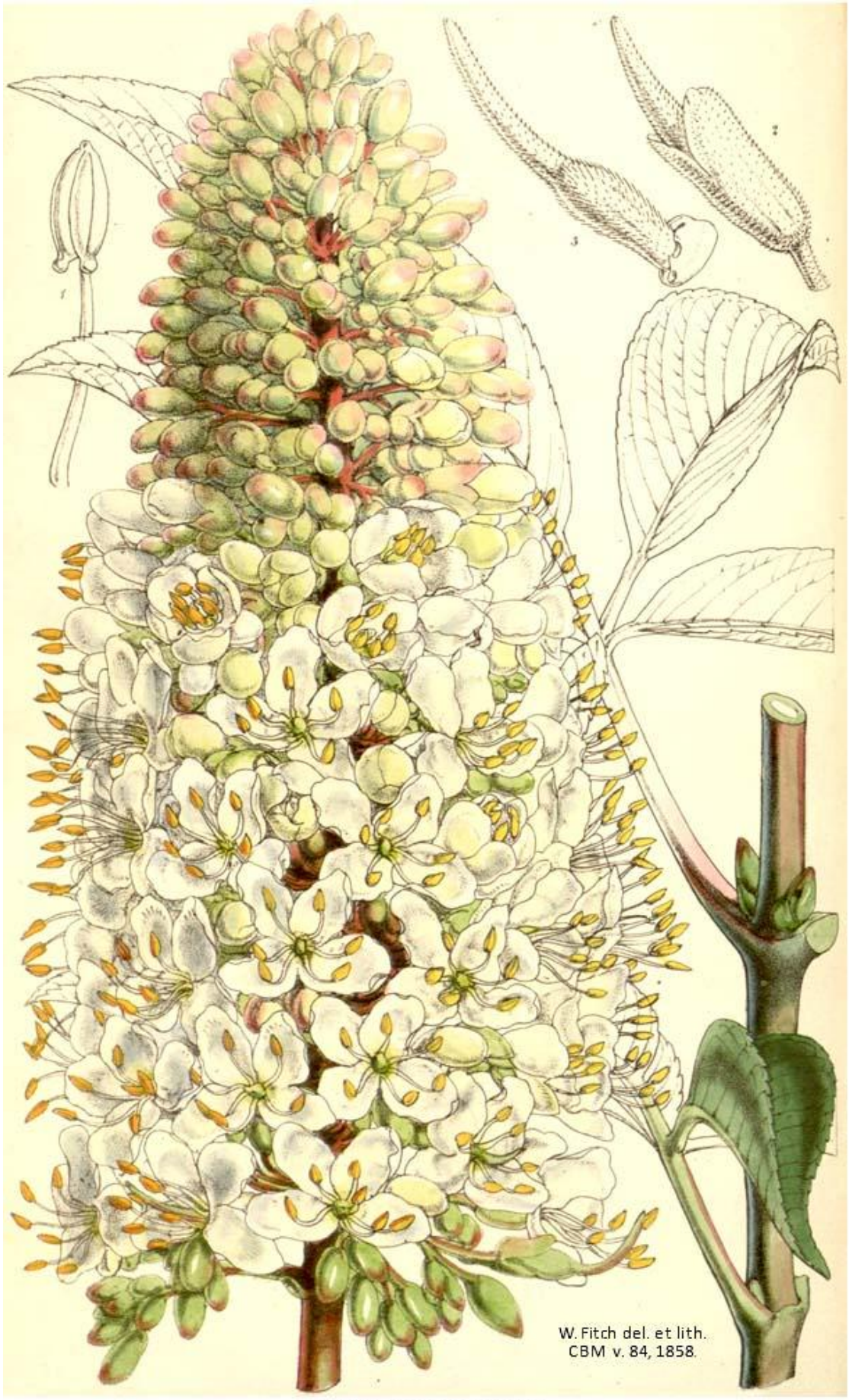
Tab. LXXXVII



C. E. Faxon del.
A. Riocreux direx.

ACER MACROPHYLLUM, Pursh.

Migneaux sc.
Imp. J. Tanoux, Paris.



AESCULUS CALIFORNICA

Silva of North America.
v. 2, 1892.

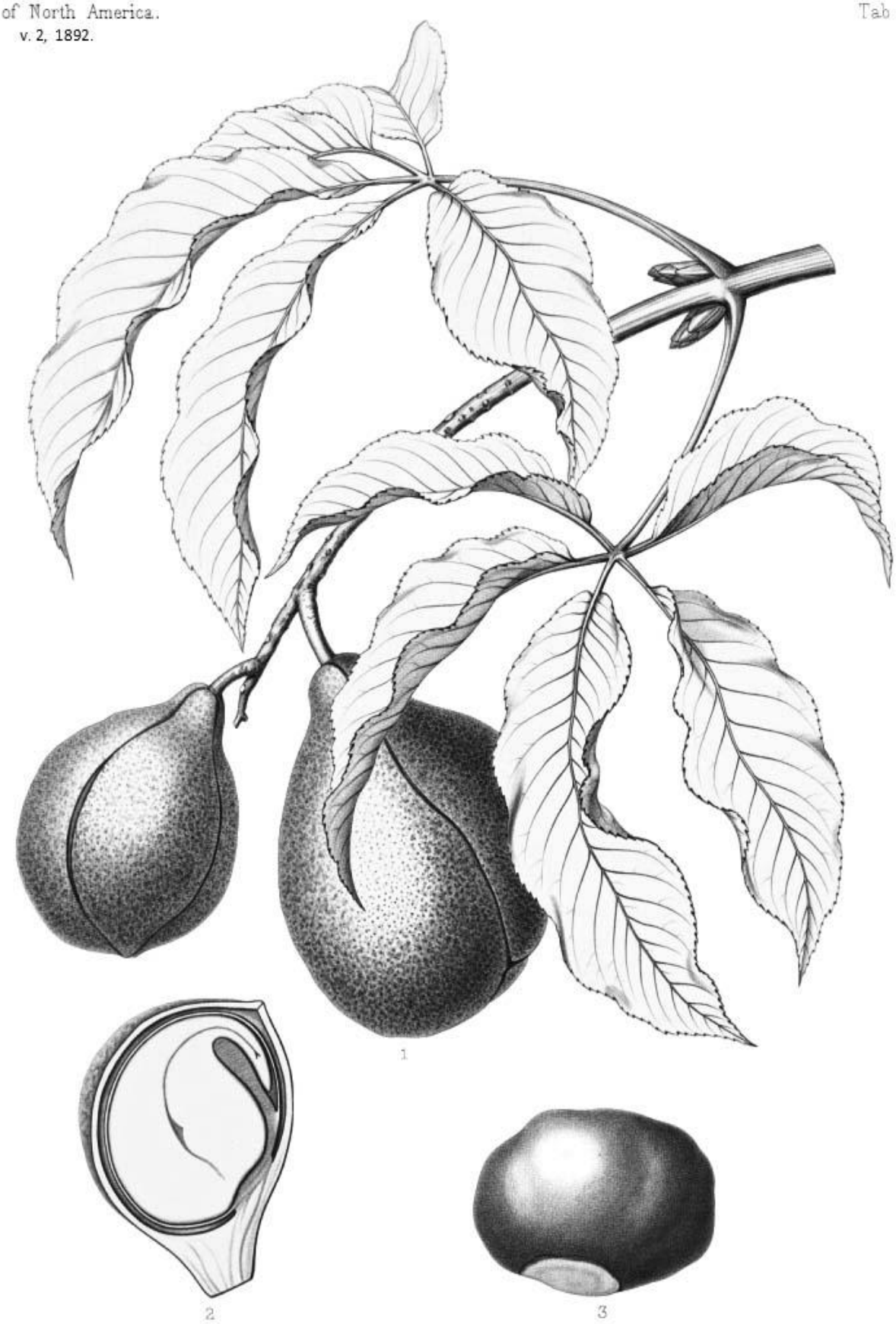
Tab. LXXI

C. E. Faxon del.
A. Riocreux direx.r

Picart fr. sc.
Imp. R. Taneur. Paris.

ÆSCULUS CALIFORNICA, Nutt.

Silva of North America.
v. 2, 1892.



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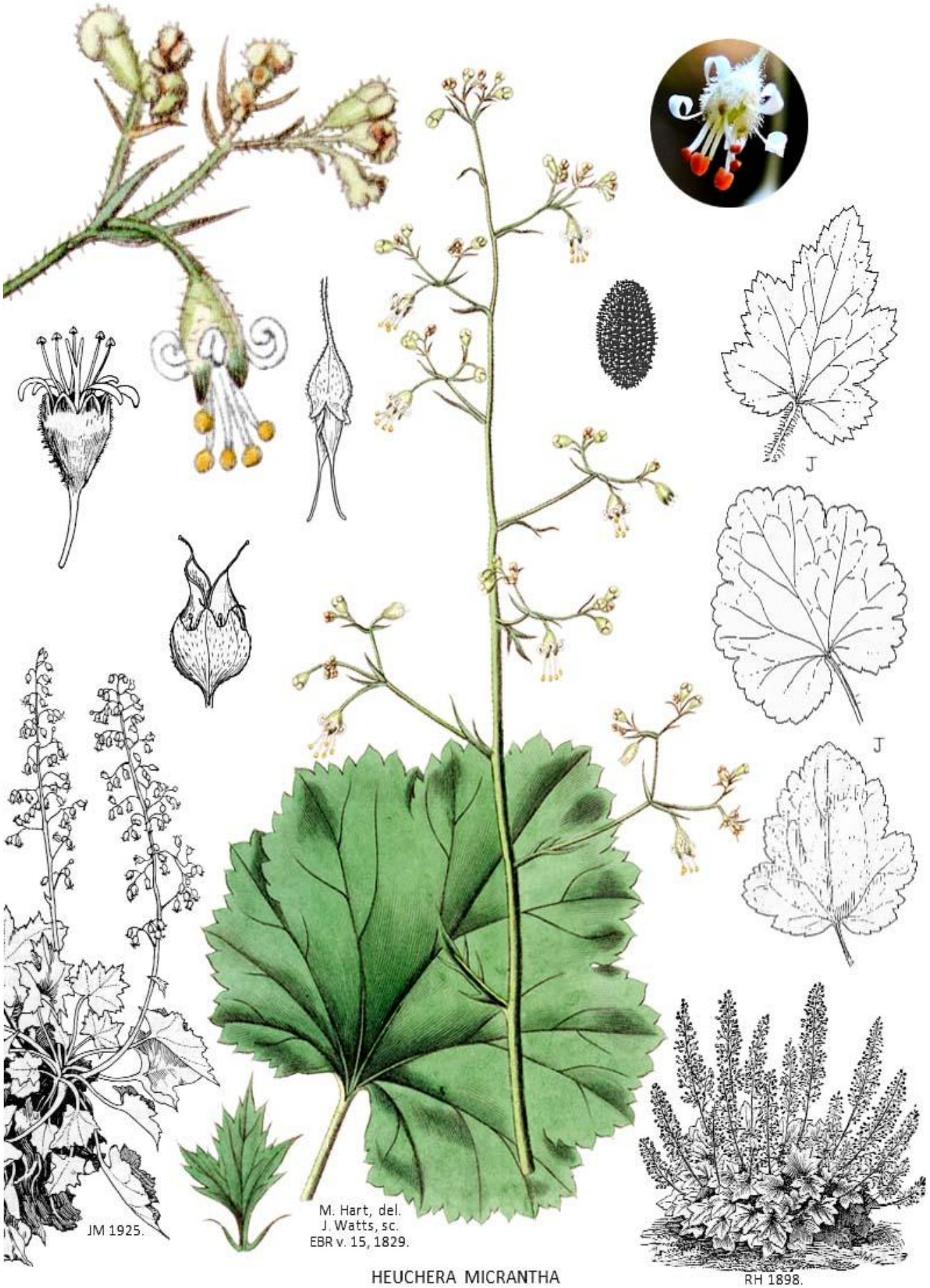
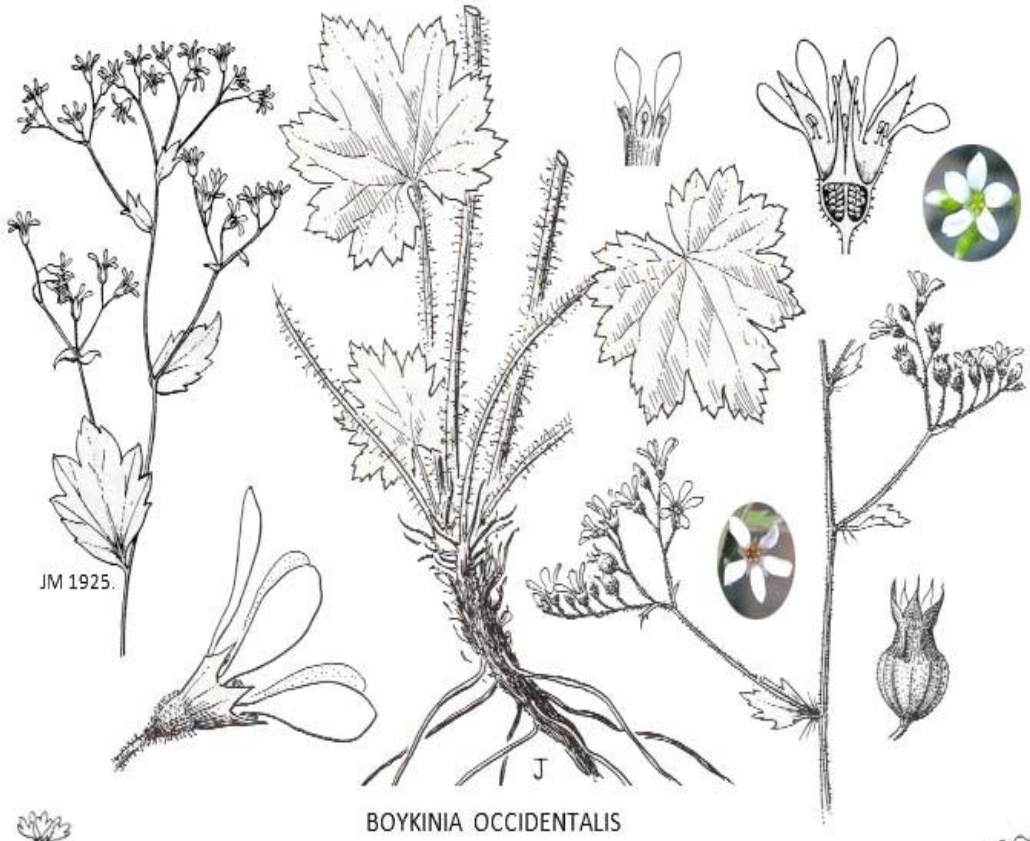
A. Riocreux direx.t

Picart fr. sc.
Imp. R. Taneur, Paris

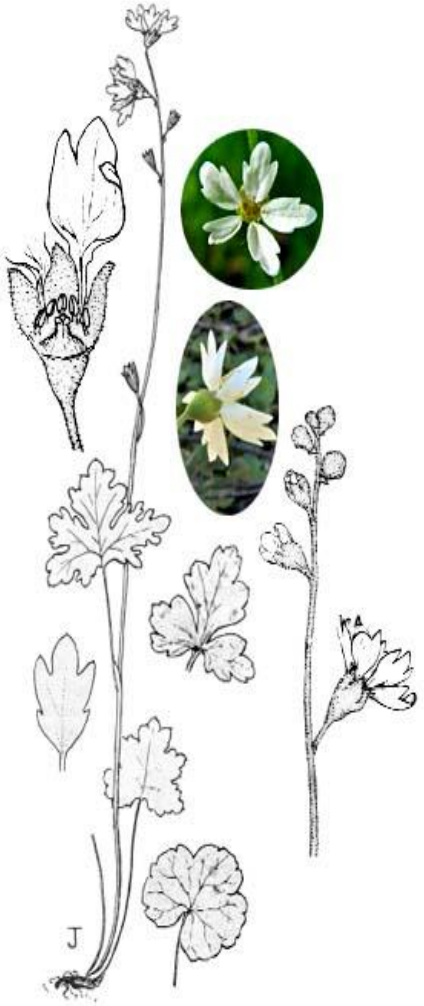
ÆSCULUS CALIFORNICA, Nutt.



HEUCHERA MICRANTHA

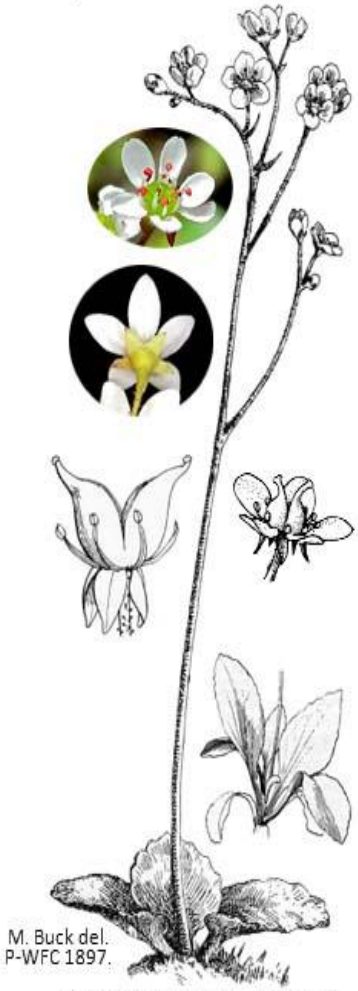


BOYKINIA OCCIDENTALIS



LITHOPHRAGMA AFFINE

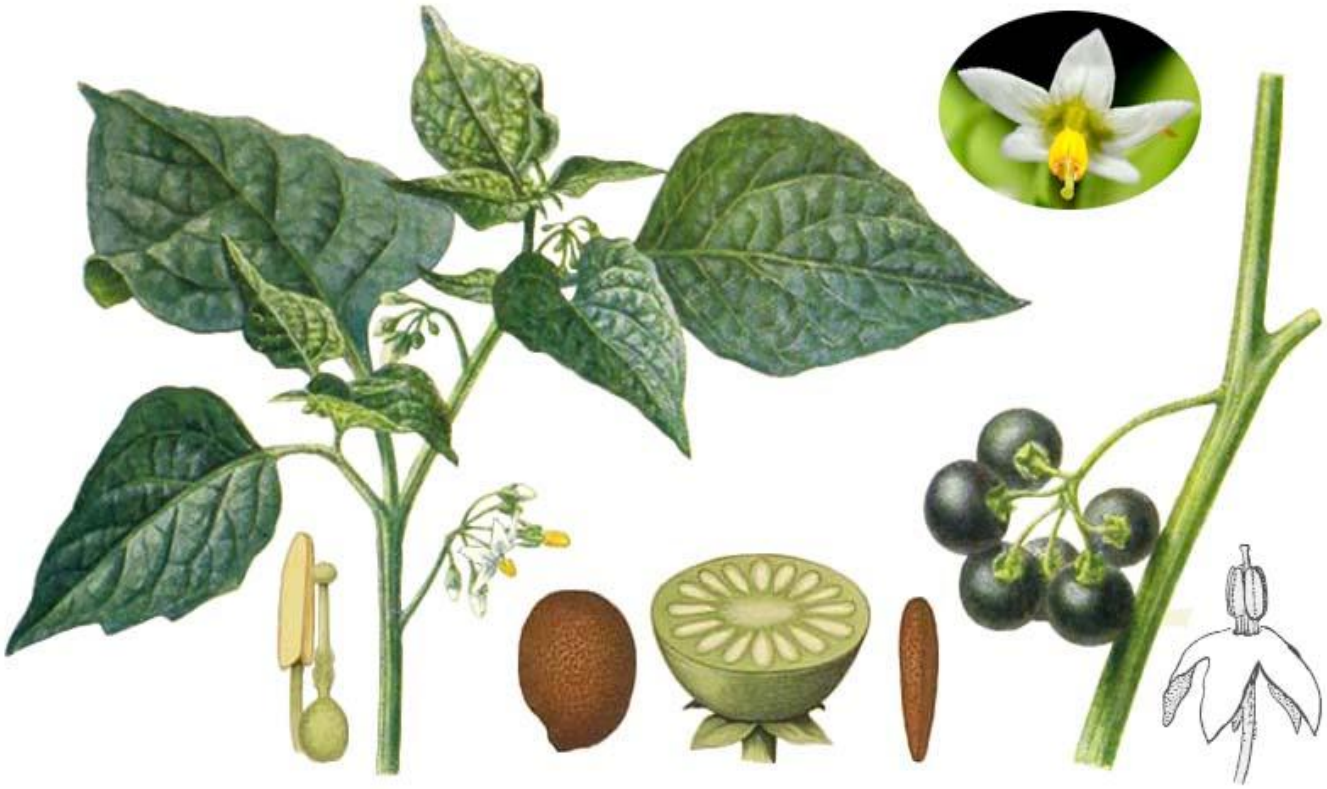
LITHOPHRAGMA HETEROPHYLLUM



MICRANTHES CALIFORNICA

SCROPHULARIA CALIFORNICA

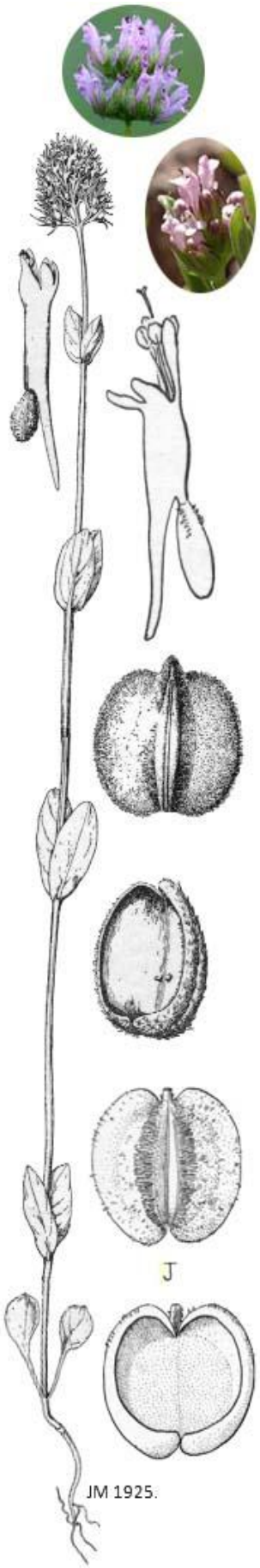
SOLANUM UMBELLIFERUM



SOLANUM AMERICANUM

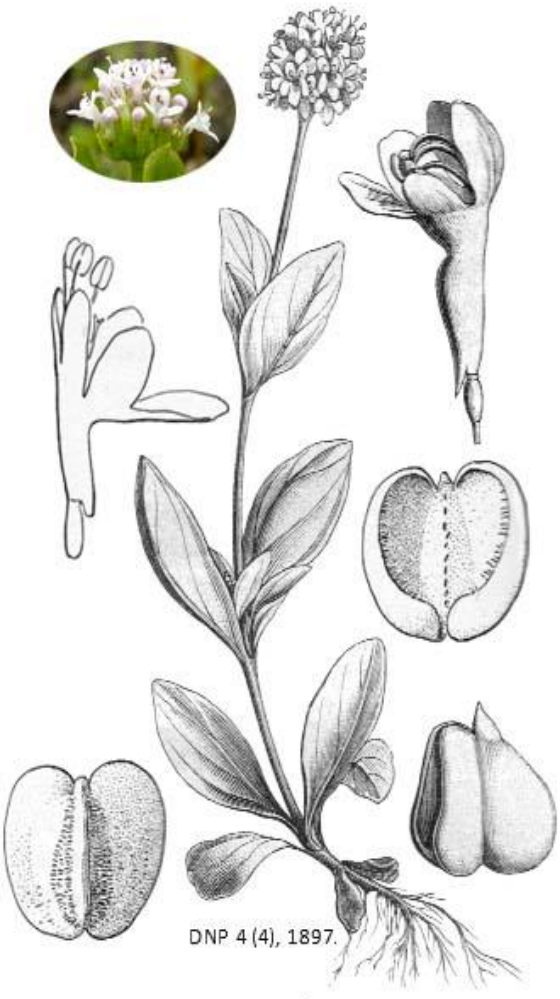
RH v. 1910 (1910).

Urtica dioica L.

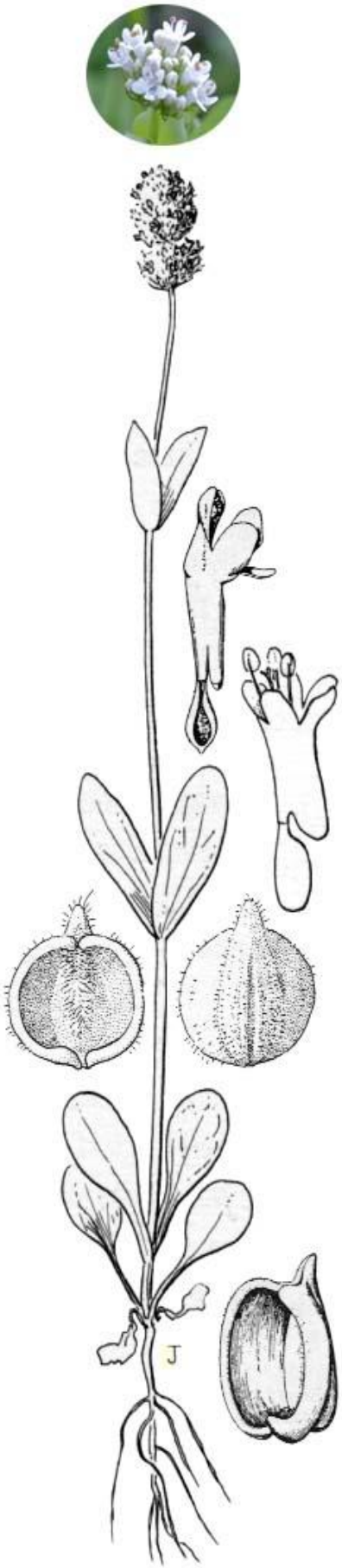


PLECTRITIS CILIOSA

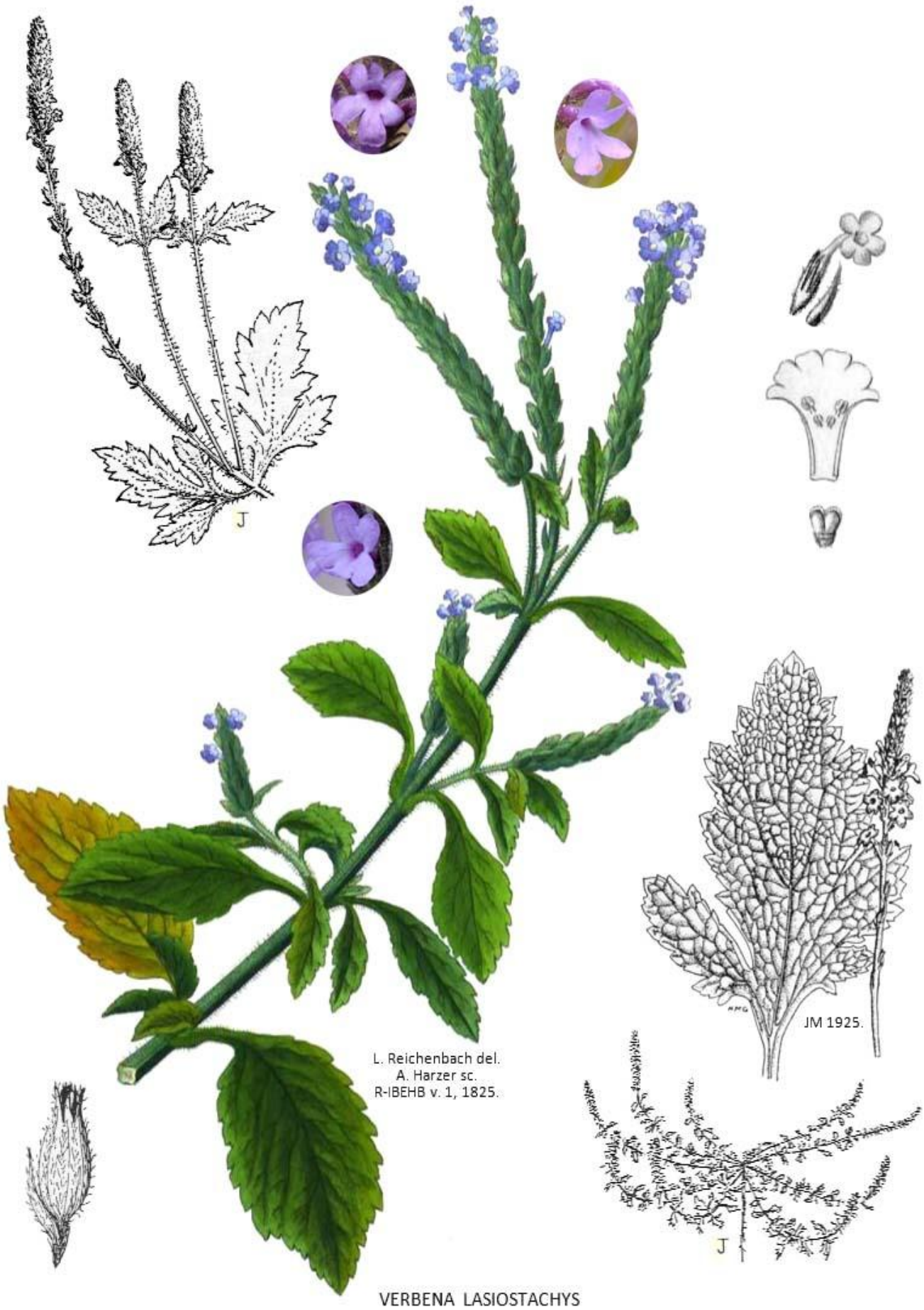
M-BG v. 11, 1849.



PLECTRITIS CONGESTA subsp. BRACHYSTEMON

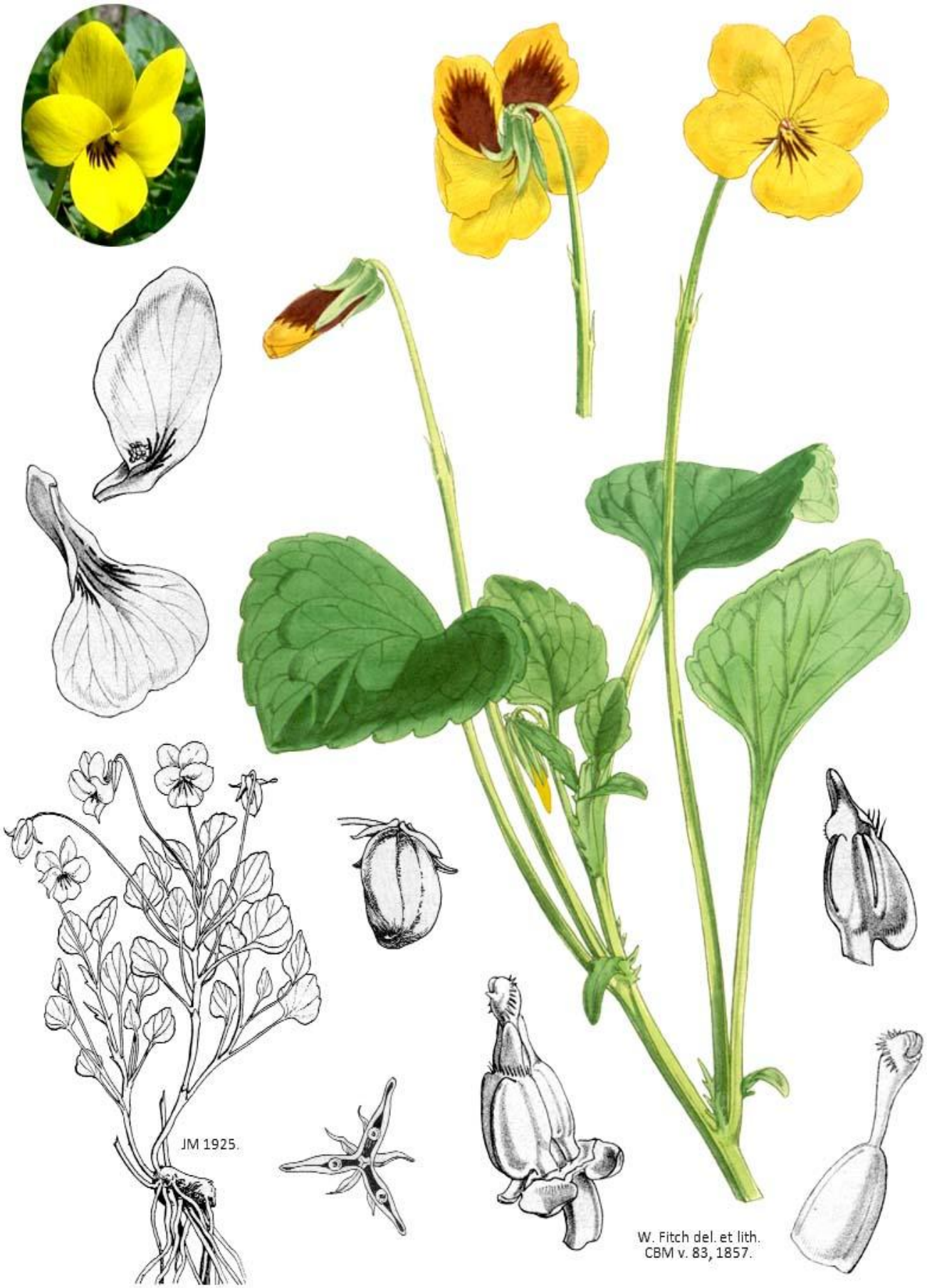


PLECTRITIS MACROCERA

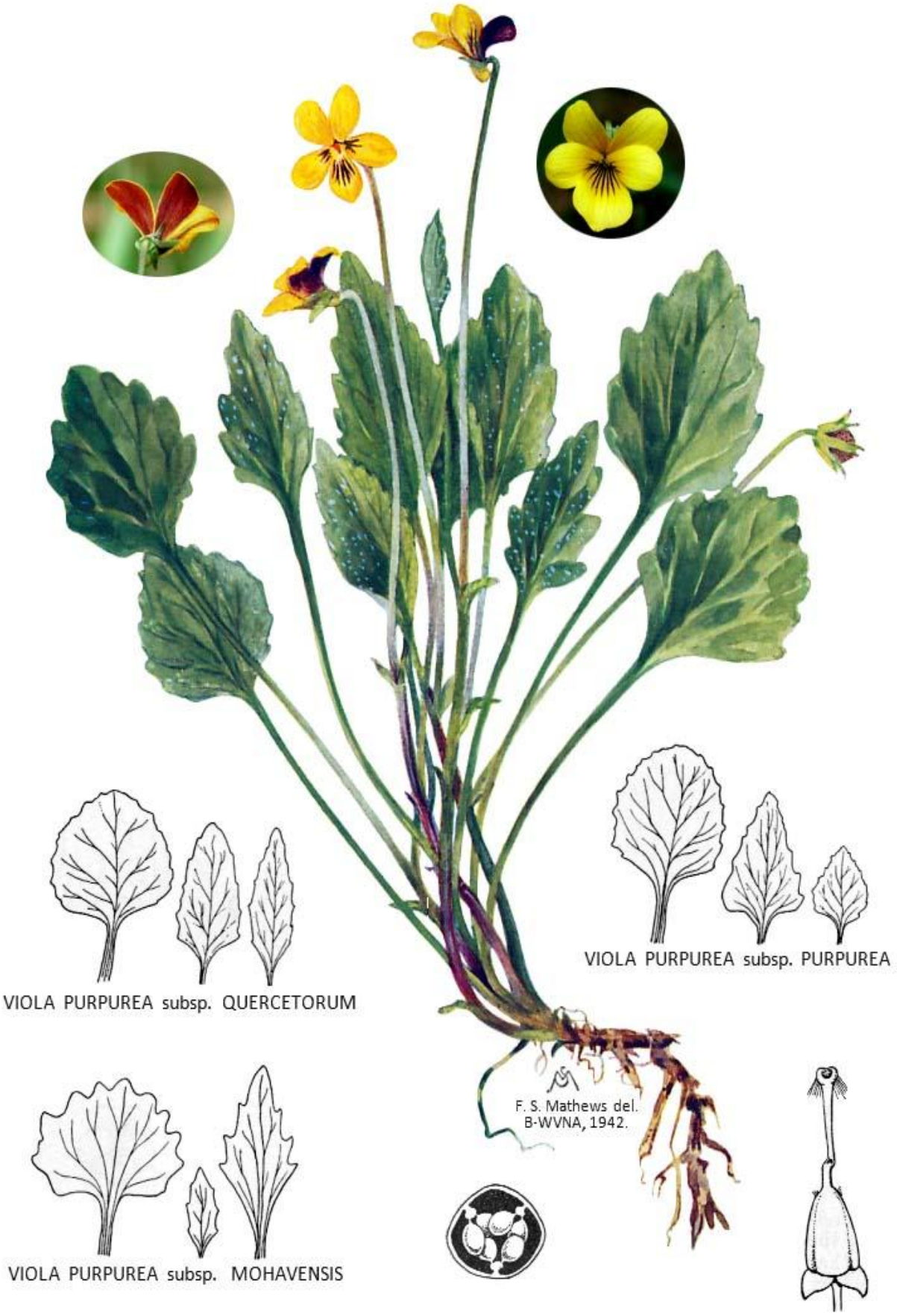


VERBENA LASIOSTACHYS

VIOLA OCELLATA



VIOLA PEDUNCULATA



VIOLA PURPUREA

ARCEUTHOBIUM CAMPYLOPODUM

PHORADENDRON LEUCARPUM
subsp. TOMENTOSUM

ANTHOPHYTA (*Angiospermae*). Flowering Plants. p. 317.
Class ***MONOCOTYLEDONEAE***. MONOCOTYLEDONS (MONOCOTS).

AGAVACEAE. AGAVE FAMILY.

1a. Shrub like plants with dense basal tufts of stiff and sword like leaves that terminate with dangerously sharp spines. Flowers are produced on massive flowering spikes that are up to 4 m. (13') tall. . . . . ***Hesperoyucca***.
1b. Herbaceous plants from large bulbs and loose basal rosettes of limber leaves. Flowers are produced broad panicles. . . . ***Chlorogalum***.

CHLOROGALUM. SOAP PLANT, AMOLE.

Chlorogalum is represented in the Tassajara region by one species. . . . . ***Chlorogalum pomeridianum***. p. 318.

HESPEROYUCCA. QUIXOTE PLANT, CHAPARRAL YUCCA.

Hesperoyucca is represented in the Tassajara region by one species. . . . . ***Hesperoyucca whipplei***. p. 319.

ALLIACEAE. ONION OR GARLIC FAMILY.

ALLIUM. ONION, GARLIC, LEEK, ETC.

1a. Scapes (flowering stems) 1 to 3 dm (4-12") tall. Leaves two to three. Perianth segments pale rose. . ***A. campanulatum***. p. 320.
1b. Scapes less than 1 dm. (4") tall. Leaves singular. Perianth segments pinkish purple with dark mid veins. . . ***A. burlewii***. p. 320.

CYPERACEAE. SEDGE FAMILY.

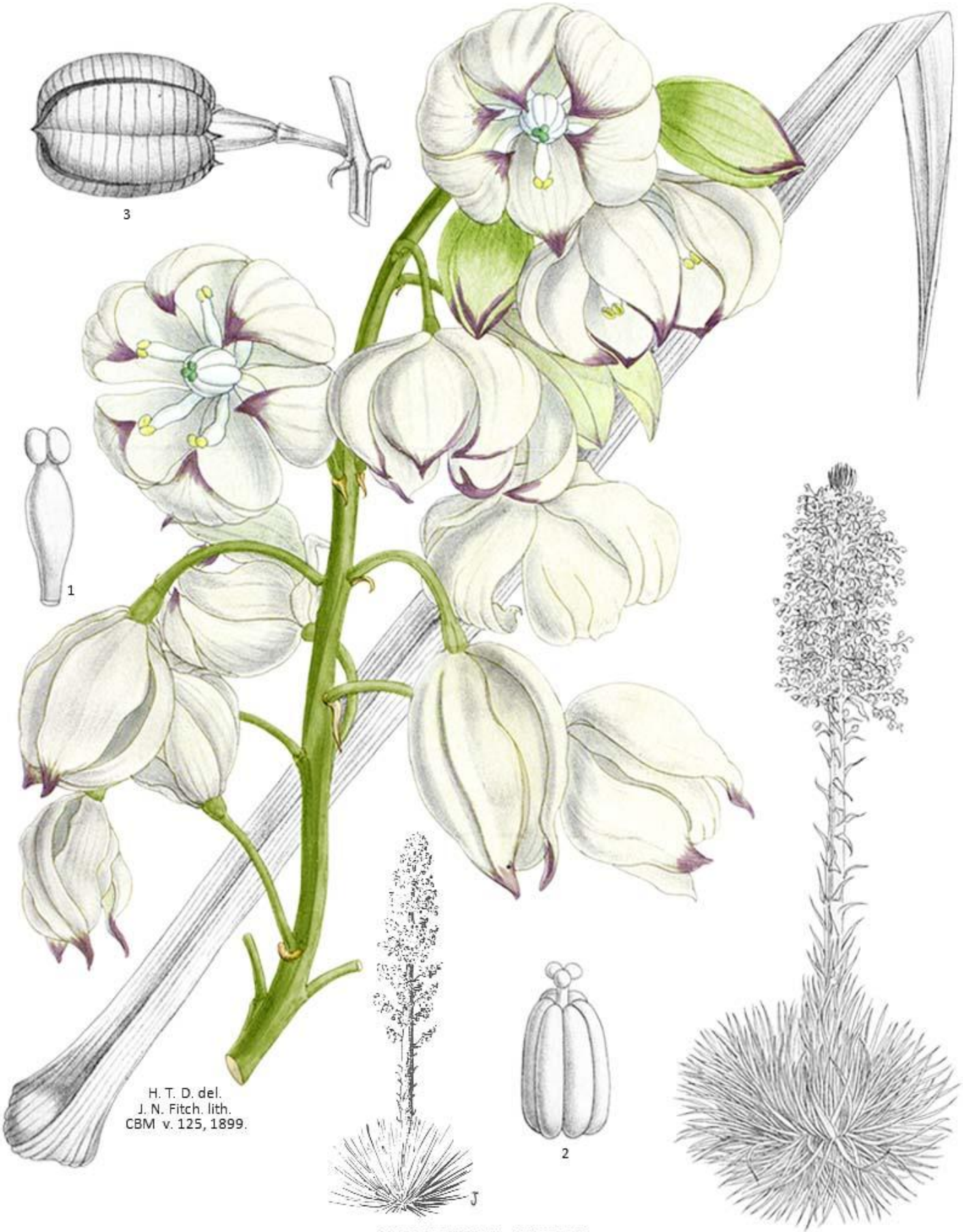
1a. Spikelets closely adhering to the axis of the inflorescence. Flowers imperfect (with pollen producing stamens or fruit producing pistils, but never with both). Achenes enclosed in a perigynium (a womb like structure) . . . . . ***Carex***.
1b. Spikelets borne on the branches of spreading umbellate panicles. Flowers perfect. Achenes fully exposed:
2a. Spikelets two ranked (achenes alternate on opposing sides of the axis), and are thus relatively flattened in cross section. Main body of achenes of the local plants are triangular in cross section. . . . . ***Cyperus***.
2b. Spikelets imbricated (achenes layered in an upwardly spiraling pattern), and are thus relatively round in cross section. Main body of achenes of the local plants are elliptical in cross section. . . . . ***Scirpus***.

CAREX. SEDGE.

1a. Perigynia (fruits) puberulent, the main body is round in cross section. . . . . ***C. globosa***. p. 327.
1b. Perigynia glabrous, the main body is not round in cross section:
2a. Inflorescence comprised of one spikelet (the lowest perigynium often appears to be separate from the spikelet). Main body of perigynia strongly 3 lobed in cross section. . . . . ***C. multicaulis***. p. 328.
2b. Inflorescence with two of more spikelets: Main body of perigynia not three lobed in cross section (they are generally flat on one side and rounded or angled on the other—the later are thus broadly triangular in cross section):
3a. Stigmas three, perigynia three angled (broadly triangular in cross section). Terminal spikelet narrowly linear, in sharp contrast to the short and broad lower spikelets, which are usually less than three times as long as wide. . . . . ***C. serratodens***. p. 331.
3b. Stigmas two, perigynia lenticular or planoconvex in cross section. Terminal spikelet not or not extremely narrower than the lower spikelets, which are usually much more than three times longer than wide:
4a. Pistillate and staminate flowers on different stems (unisexual stems). In other words, they are dioecious—all of the flowers of an inflorescence are staminate or pistillate, but never both. In our species, the plants are only sometimes dioecious. . . . . ***C. alma***. p. 323.
4b. Pistillate and staminate flowers on same stem (bisexual stems). In other words, the plants are monoecious—staminate flowers are present in at least one spikelet of an inflorescence:
5a. Terminal spikelet generally staminate; lateral spikelets pistillate (tips of lateral spikelets rarely staminate):
6a. Plants strictly and densely cespitose (clumped). They form large tufts in rocky stream beds and banks of major perennial streams, usually at and below the mean water level. Lowest bract subtending inflorescence not very blade like, and shorter to not much longer than the first spikelet. Perigynia slightly obovate and about two times longer than wide. . . . . ***C. nudata***. p. 329.
6b. Plants rhizomatic and thus spreading (the individual above ground manifestations are often cespitose). They form colonies on shady stream banks (above the mean water level) or on moist woodland slopes. Lowest bract subtending inflorescence blade like and usually about as long to much longer than the entire inflorescence. Perigynia generally roundish and not much longer than wide:

Continued on page 320.

CHLOROGALUM POMERIDIANUM



HESPEROYUCCA WHIPPLEI

ALLIUM BURLEWII

ALLIUM CAMPANULATUM

7a. Perigynia comparatively soft and thin, and strongly 3 to 7-veined. . . . . ***C. senta***. p. 330.
7b. Perigynia comparatively tough and thick, and faintly veined. . . . . ***C. barbarae***. p. 324.
5b. Terminal and lateral spikelets a mix of staminate and pistillate flowers:
8a. Spikelets each with pistillate flowers above staminate flowers
9a. Perigynia with winged margins. Perigynia scales pale brown to reddish. . . . . ***C. subfusca***. p. 332.
9b. Perigynia without winged margins. Perigynia scales green to golden brown. . . . . ***C. bolanderi***. p. 325.
8b. Spikelets each with staminate flowers above pistillate flowers (often easiest to see in terminal spikelet; look for remnants of stamens):
10a. Inflorescence mostly 3 to 15 cm. long, and sometimes up to 20 cm. long. Perigynia dark brown to black, 3.5 to 4 mm. long, and generally widest towards the base. . . . . ***C. alma***. p. 323
10b. Inflorescence mostly 1.5 to 5 cm. long, and not more than 7 cm. long. Perigynia pale to medium brown, 2 to 3.7 mm. long, and generally widest in the middle. . . . . ***C. densa***. p. 326.

CYPERUS. UMBRELLA SEDGE, NUT SEDGE, GALINGALE.

Cyperus is represented in the Tassajara region by one species. . . . . ***Cyperus eragrostis***. p. 333.

SCIRPUS. BULRUSH.

Scirpus is represented in the Tassajara region by one species. . . . . ***Scirpus microcarpus***. p. 334.

IRIDACEAE. IRIS FAMILY.

SISYRINCHIUM.

Sisyrinchium is represented in the Tassajara region by one species. . . . . ***Sisyrinchium bellum***. p. 335.

JUNCACEAE. RUSH FAMILY.

1a. Leaves, if present, relatively stiff, usually round in cross section, and glabrous. Sheaths split. Capsules many seeded and three celled. . . . . ***Juncus***.
1b. Leaves lax, flat or V shaped in cross section, and the margins have long, soft, wavy hairs. Sheaths not split. Capsules three seeded and one celled. . . . . ***Luzula***.

JUNCUS. RUSH.

1a. Annual herbs usually less than 3 dm. (1') tall. . . . . ***J. bufonius***. p. 335.
1b. Evergreen perennial herbs usually more to much more than 5 dm. (20") tall:
2a. Bracts subtending the panicles short and inconspicuous. Cauline leaves with well developed blades.
3a. Stems roughened by minute transverse ridges. . . . . ***J. rugulosus***. p. 335.
3b. Stems not roughened. . . . . ***J. dubius***. p. 335.
2b. Bracts subtending the panicles conspicuous and resembling a continuation of the stem that exceeds the length of the panicles (the panicles thus appear to be lateral). Blades absent or just small rudiments:
4a. Stamens 6. Capsules rounded at the apex. . . . . ***J. patens***. p. 336.
4b. Stamens 3. Capsules three lobed at the apex. . . . . ***J. effusus*** subsp. ***pacificus***. p. 336.

LUZULA. WOODLAND RUSHES.

Luzula is represented in the Tassajara region by one species. . . . . ***Luzula comosa***. p. 336.

LILIACEAE. LILY FAMILY.

1a. Stems rising from creeping root stalks. Perianth (corolla) 8 to 15 mm. long. The fruit is a moist berry. . . . . ***Prosartes***.
1b. Stems rising from bulbs. Perianth 15 to 50 mm. long. The fruit is a dry capsule:
2a. Inner perianth segments larger than the outer segments. . . . . ***Calochortus***.
2b. Inner and outer perianth segments about the same size:
3a. Perianth segments reflexed backward (ours). Plants of wet habitats. . . . . ***Lilium***.
3b. Perianth segments not reflexed backward. Plants of dry or mostly dry habitats. . . . . ***Fritillaria***.

CALOCHORTUS. MARIPOSA LILY, GLOBE LILY, STAR TULIP.

1a. Flowers facing downward or at a downward angle. The inner perianth segments (petals) converge at the apex, thus the flowers are globe like in shape. Perianth segments white to red or reddish. . . . . ***C. albus***. p. 337.
1b. Flowers facing upward or at an upward angle. The inner perianth segments are ascending, thus the flowers are bowl or bell like in shape. Perianth segments white to bluish, purplish or lilac:
2a. Glands of inner perianth segments not or just slightly depressed, not surrounded by a membrane, but usually covered by long fungus like hairs. . . . . ***C. splendens***. p. 338.
2b. Glands of inner perianth segments depressed, surrounded by a membrane, and with only short and sparse hairs. . . . . ***C. invenustus***. p. 338.

FRITILLARIA. FRITILLARY.

1a. Plants about 2 dm. to 12 dm. (8-48") tall. Middle cauline leaves produced in whorls. Flowers nodding. ***F. affinis***. p. 339.
1b. Plants about .7 to 2 dm. (3-8") tall. Cauline leaves alternate. Flowers positioned upward or outward. ***F. falcata***. p. 339.

LILIUM. LILY.

Lilium is represented in the Tassajara region by one species. . . . . ***Lilium pardalinum***. p. 340, 341.

PROSARTES. FAIRY BELLS.

Prosartes is represented in the Tassajara region by one species. . . . . ***Prosartes hookeri***. p. 339.

MELANTHIACEAE. FALSE HELLEBORE FAMILY.

TOXICOSCORDION. DEATH CAMAS.

1a. Perianth segments 4 to 6 mm. long, stamens longer than the segments. Plants of wet or moist habitats. . . ***T. venenosum***. p. 342.
1b. Perianth segments 5 to 15 mm. long, the stamens shorter than the segments. Plants of dry habitats. ***T. fremontii***. p. 342.

ORCHIDACEAE. ORCHID FAMILY.

1a. Plants saprophytic (without chlorophyll and thus not green, and living off of decaying organic material). Leaves comprised of bladeless sheaths:
  2a. Plants white. Sepals 12 to 20 mm. long. . . . . ***Cephalanthera***.
  2b. Plants yellowish green to purplish. Sepals less than 10 mm. long. . . . . ***Corallorhiza***.
1b. Plants not saprophytic and thus green. Leaves well developed, at least at the base:
  3a. Plants with two broad and strictly basal leaves (upper leaves small bract like structures). Flowers spurred on lower side. Plants of dry habitats. . . . . .***Piperia***.
  3b. Plants leafy throughout. Flowers not spurred. Plants of stream banks, springs, seeps, etc. . . . . ***Epipactis***.

CEPHALANTHERA. PHANTOM ORCHID.

Cephalanthera is represented in the Tassajara region by one species. . . . . ***Cephalanthera austiniae***. p. 343.

CORALLORHIZA. CORAL ROOT.

Corallorhiza is represented in the Tassajara region by one species. . . . . ***Corallorhiza maculata***. p. 343.

EPIPACTIS. HELLEBORINE, STREAM ORCHID.

Epipactis is represented in the Tassajara region by one species. . . . . ***Epipactis gigantea***. p. 344.

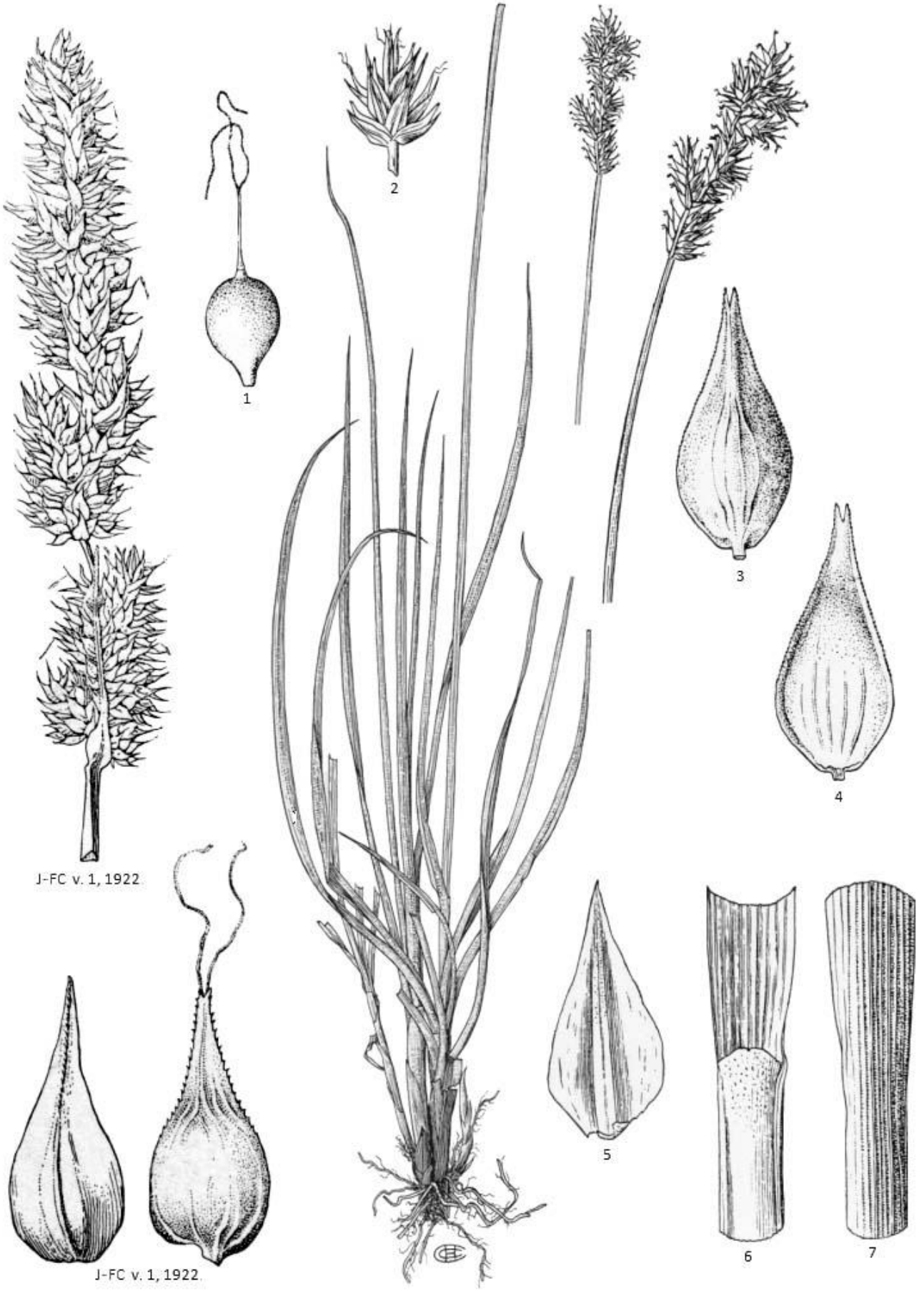
PIPERIA. REIN ORCHID.

1a. Flower spurs 6 to 18 mm. long:
  2a. Spur generally straight and perpendicular to inflorescence axis. Upper sepal pointed forward. Stem generally less than 3 mm. in diameter. . . . . ***P. transversa***. p. 345.
  2b. Spur generally curved and parallel to inflorescence axis. Upper sepal ascending to erect to curved back. Stem generally more than 3 mm. in diameter:
    3a. Lateral petals generally sickle-shaped, 2 mm. wide at base, and 2 to 3 times as long. . . . . ***P. elongata***. p. 345.
    3b. Lateral petals linear, 1 mm. wide at base, and 4 to 5 times as long. . . . . ***P. leptopetala***. p. 345.
1b. Flower spurs 1 to 6 (-9) mm. long:
  4a. Lateral petals linear, and 4 to 5 times longer than wide. Spur tapered. . . . . ***P. leptopetala***. p. 345.
  4b. Lateral petals lanceolate to deltate-ovate, and 3.5 times longer than wide. Spur cylindric. . . . ***P. unalascensis***. p. 345.

POACEAE (*Gramineae*). GRASS FAMILY.

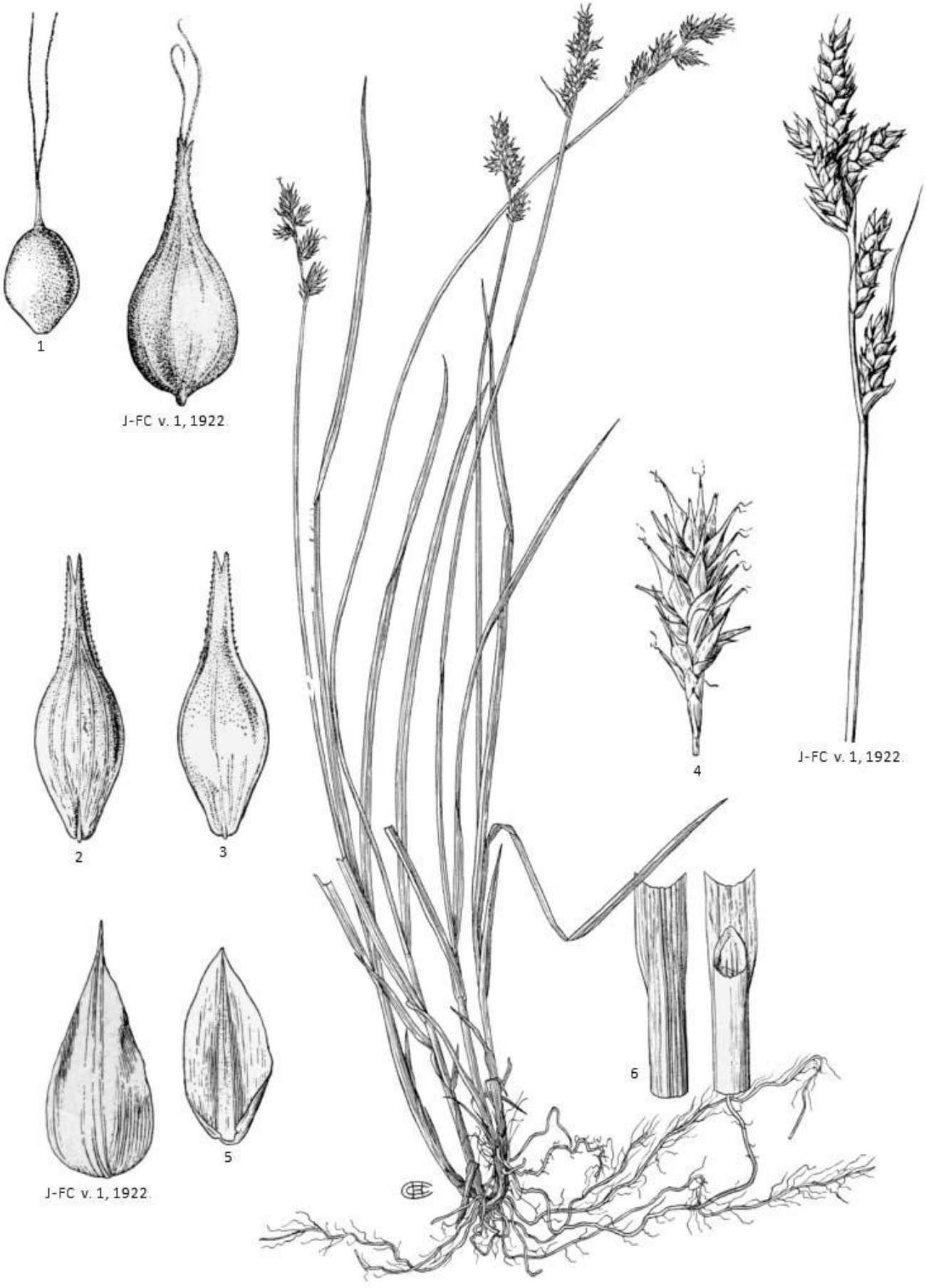
1a. Lemmas (grains) without awns:
  2a. Spikelets with one lemma (or rarely with 2), or with one fertile (grain producing) lemma and one small infertile lemma:
    3a. Inflorescence comprised of palmately (digitally) divided panicles (the branches diverging from a common point). Spikelets borne in two overlapping rows on the upper side of the rachis (axis) . . . . . ***Cynodon***.
    3b. Inflorescence a branching panicle:
      4a. Glumes covered with upwardly curving barbs. . . . . ***Echinochloa***.
      4b. Glumes without barbs:
        5a. Lemmas round or roundish. . . . . ***Panicum***.
        5b. Lemmas not round or roundish:
          6a. Glumes paper like; the lower 3 to 5 veined, the upper 1 to 3 veined. . . . . ***Melica imperfecta***.
          6b. Glumes not paper like and 1 veined. . . . . ***Agrostis***
  2b. Spikelets with two or more fertile (grain producing) lemmas:
    7a. Upper glume wider (when flattened) than the lower glume. . . . . ***Koeleria***.
    7b. Glumes more or less alike in shape:
      8a. Lemmas with tufts of cobwebby hairs at the outside base. . . . . ***Poa***.
      8b. Lemmas without tufts of hairs at the base:
        9a. Lemmas five veined (two of these may be faint). . . . . ***Poa secunda***.
        9b. Lemmas seven to nine veined. . . . . ***Melica***.
1b. Lemmas with long to very short awns:
  10a. Lemmas rarely with an awn. . . . . ***Agrostis***.
  10b. Lemmas always with awns (they can be very short and stubby):
    11a. Inflorescence a spike, i. e., the spikelets are sessile along the axis of an unbranched inflorescence:
      12a. Spikelets produced in groups of three's, each spikelet with one fertile floret. Glumes awn like. . . . . ***Hordeum***.
      12b. Spikelets produced singularly or in groups of two's to four's, each spikelet with two or more fertile florets. Glumes awn like only in *Elymus multisetus*:

Continued on page 342.

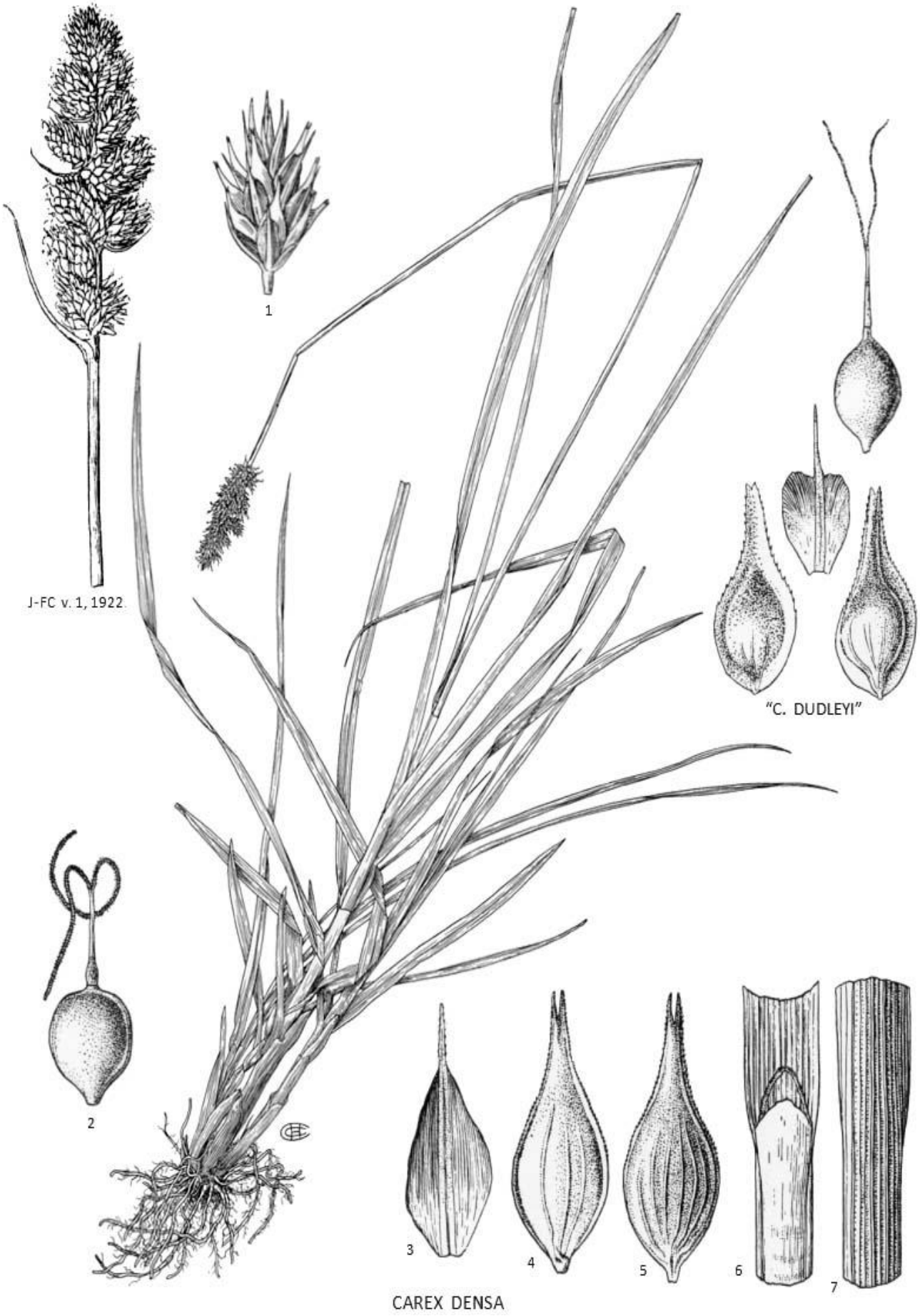


CAREX ALMA

CAREX BARBARAE



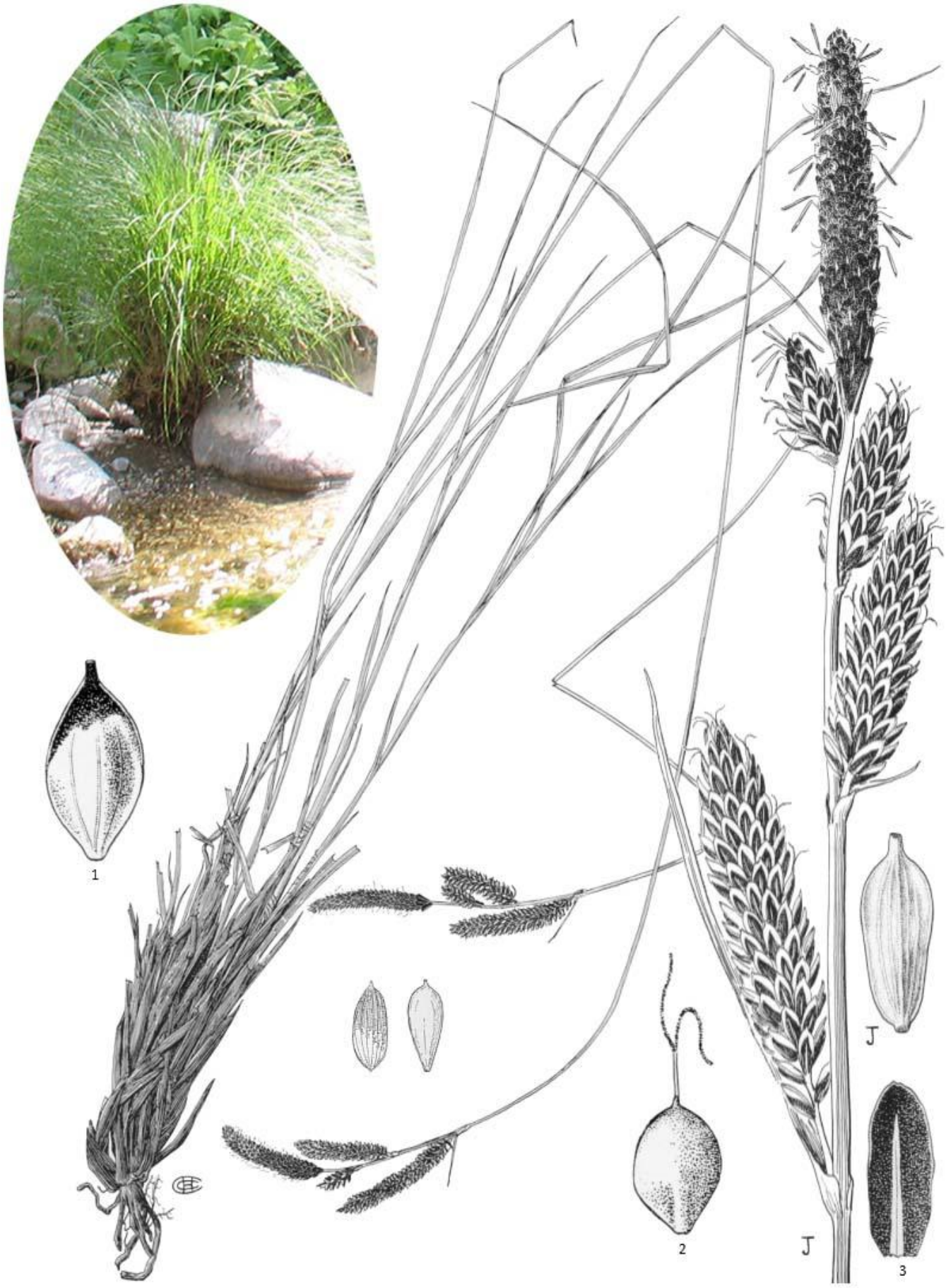
CAREX BOLANDERII



CAREX DENSA

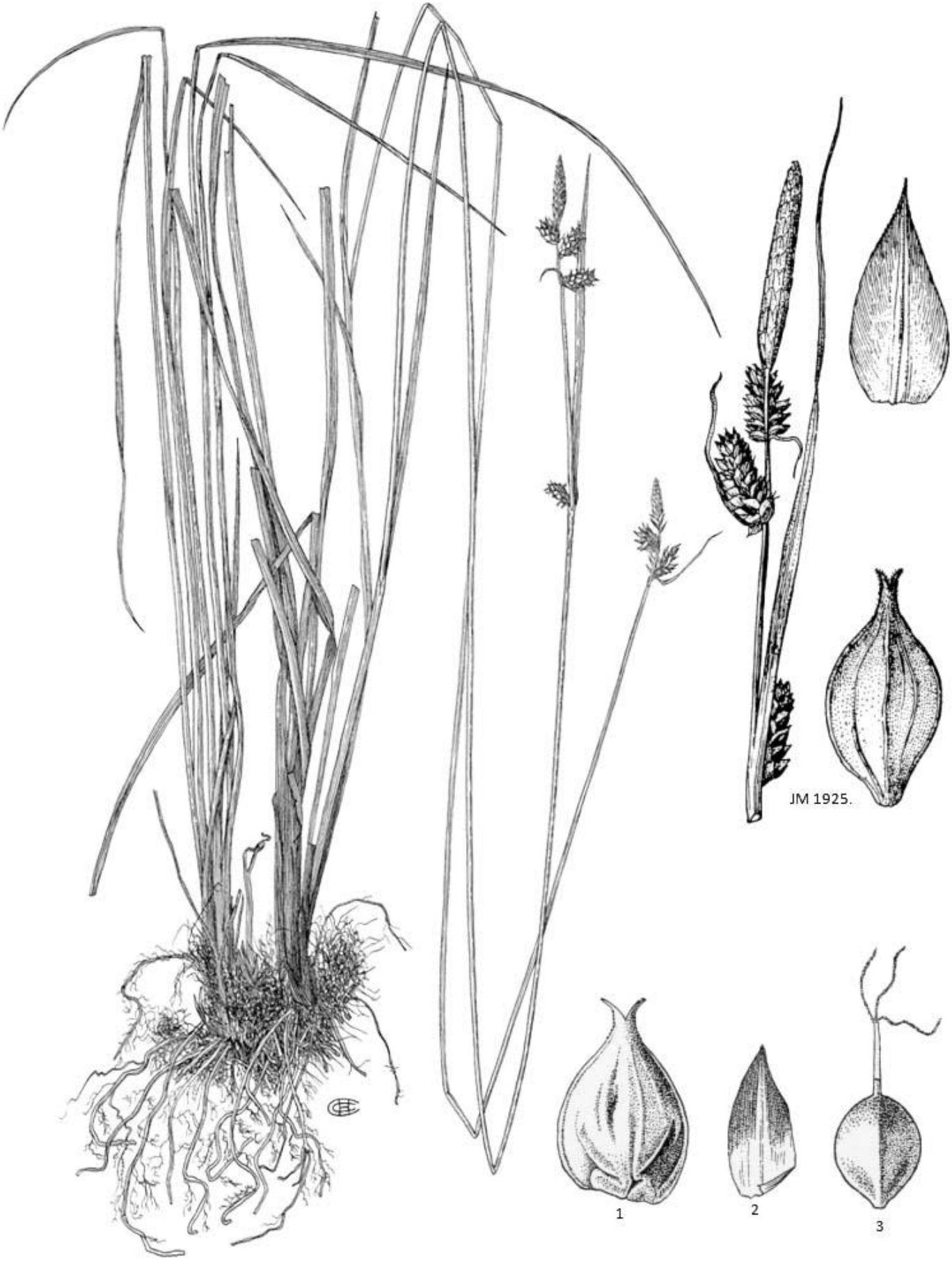
CAREX GLOBOSA

CAREX MULTICAULIS

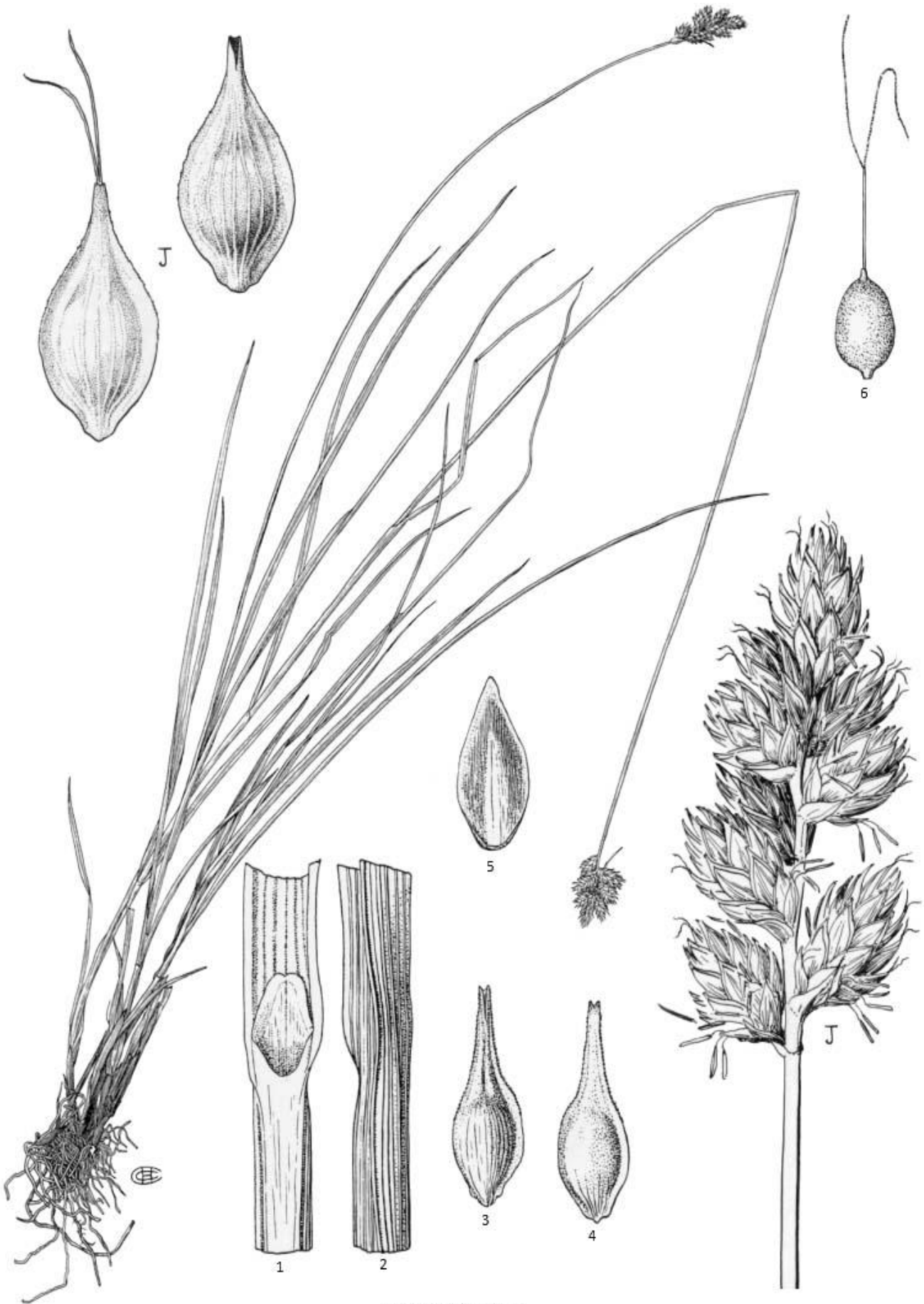


CAREX NUDATA

CAREX SENTA



CAREX SERRATODENS



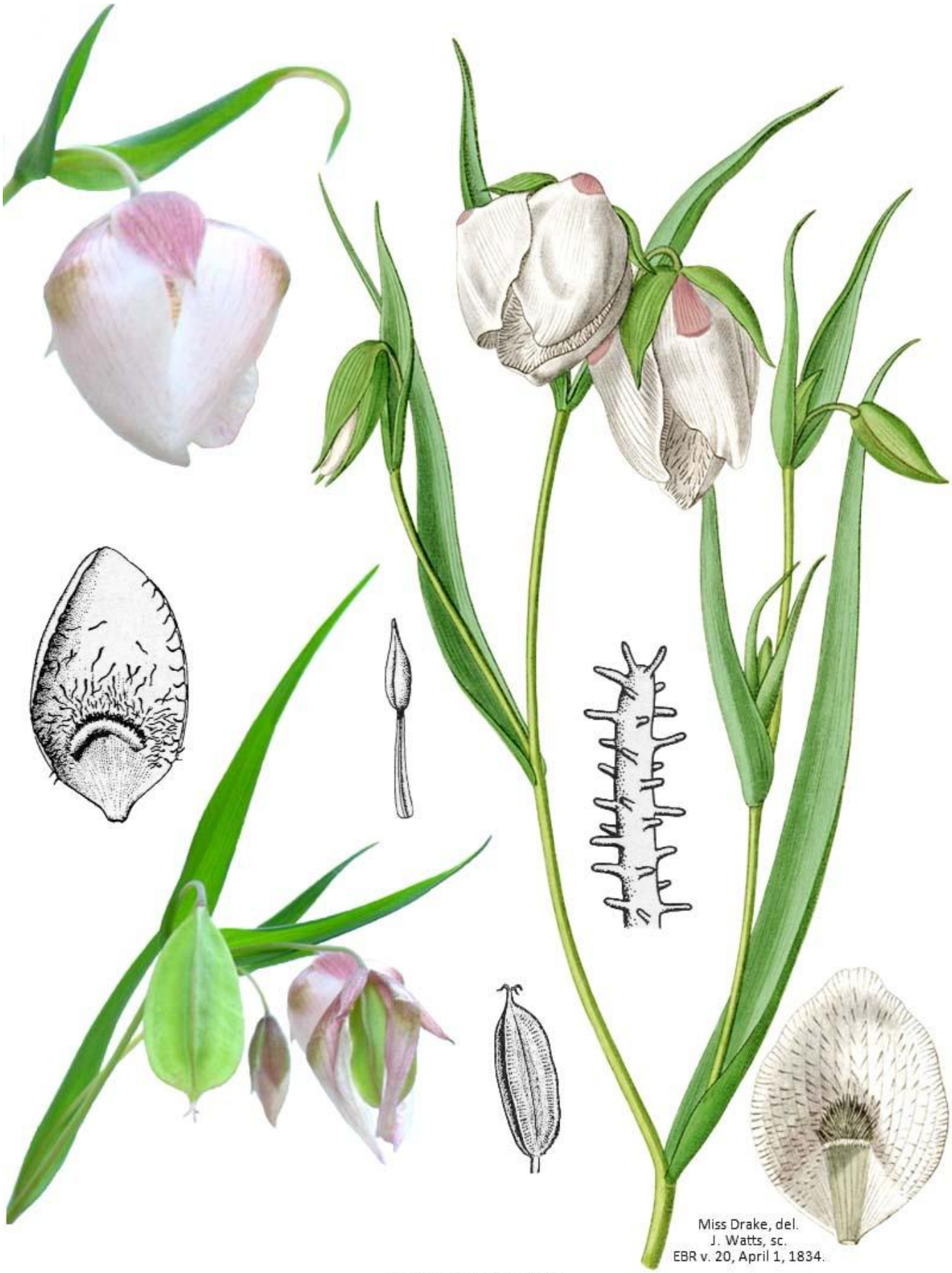
CAREX SUBFUSCA

CYPERUS ERAGROSTIS

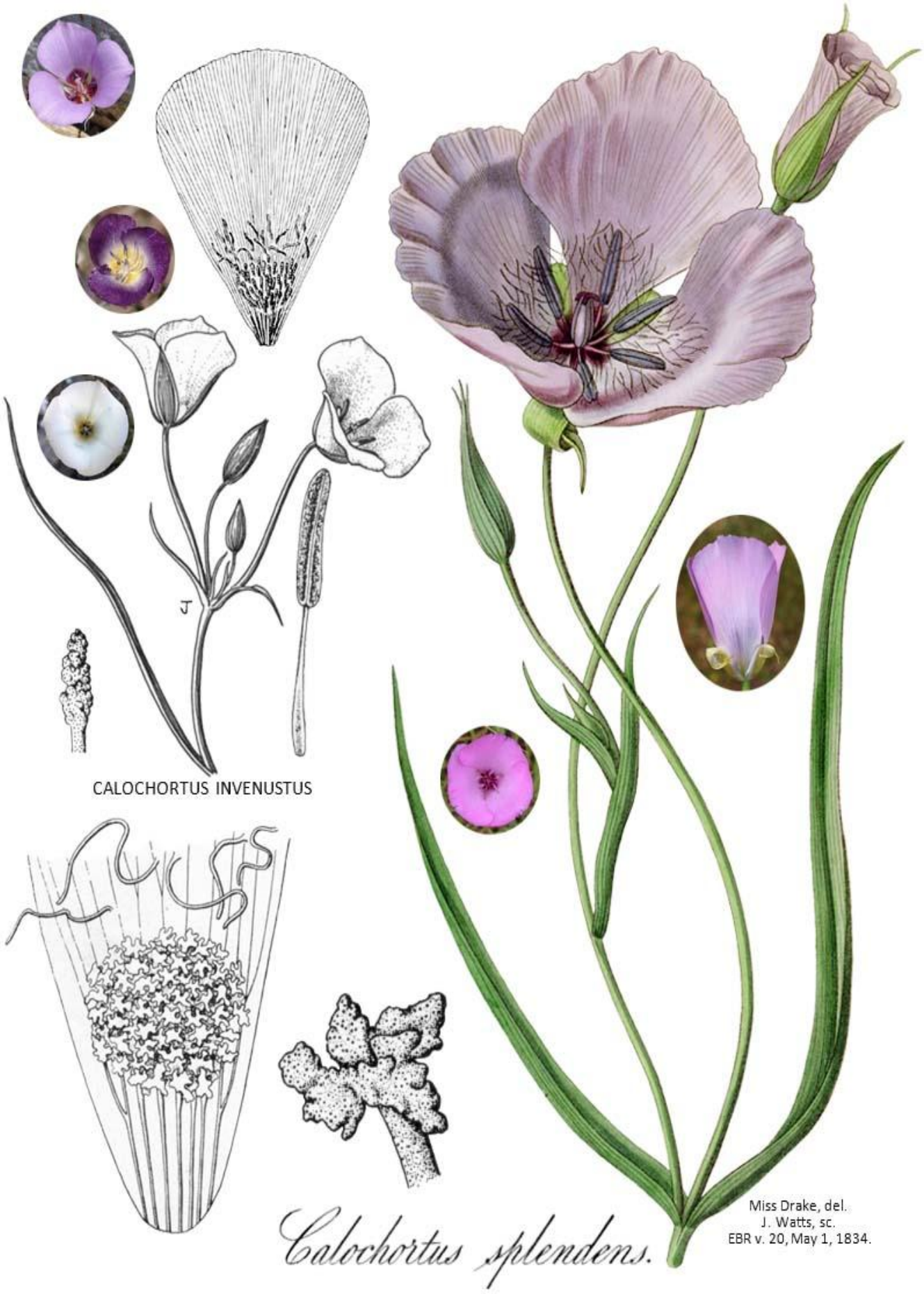
SCIRPUS MICROCARPUS

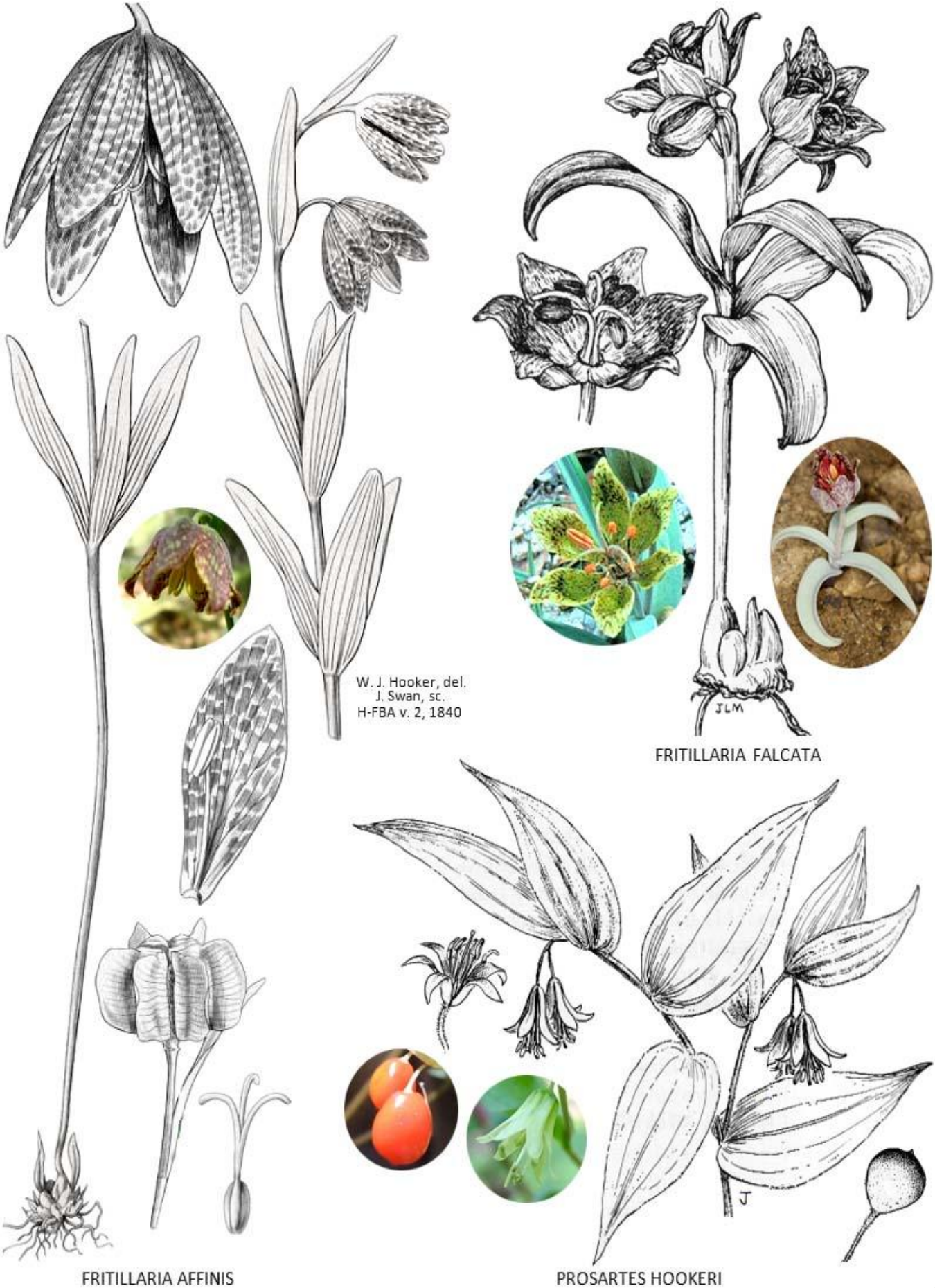

R-LL v. 3, 1807.
J
SISYRINCHIUM BELLUM
O. Thome del.
T – FDOS v. 1, 1886.
JUNCUS BUFONIUS
JUNCUS DUBIUS
JUNCUS RUGULOSUS

JUNCUS EFFUSUS JUNCUS PATENS LUZULA COMOSA



CALOCHORTUS ALBUS

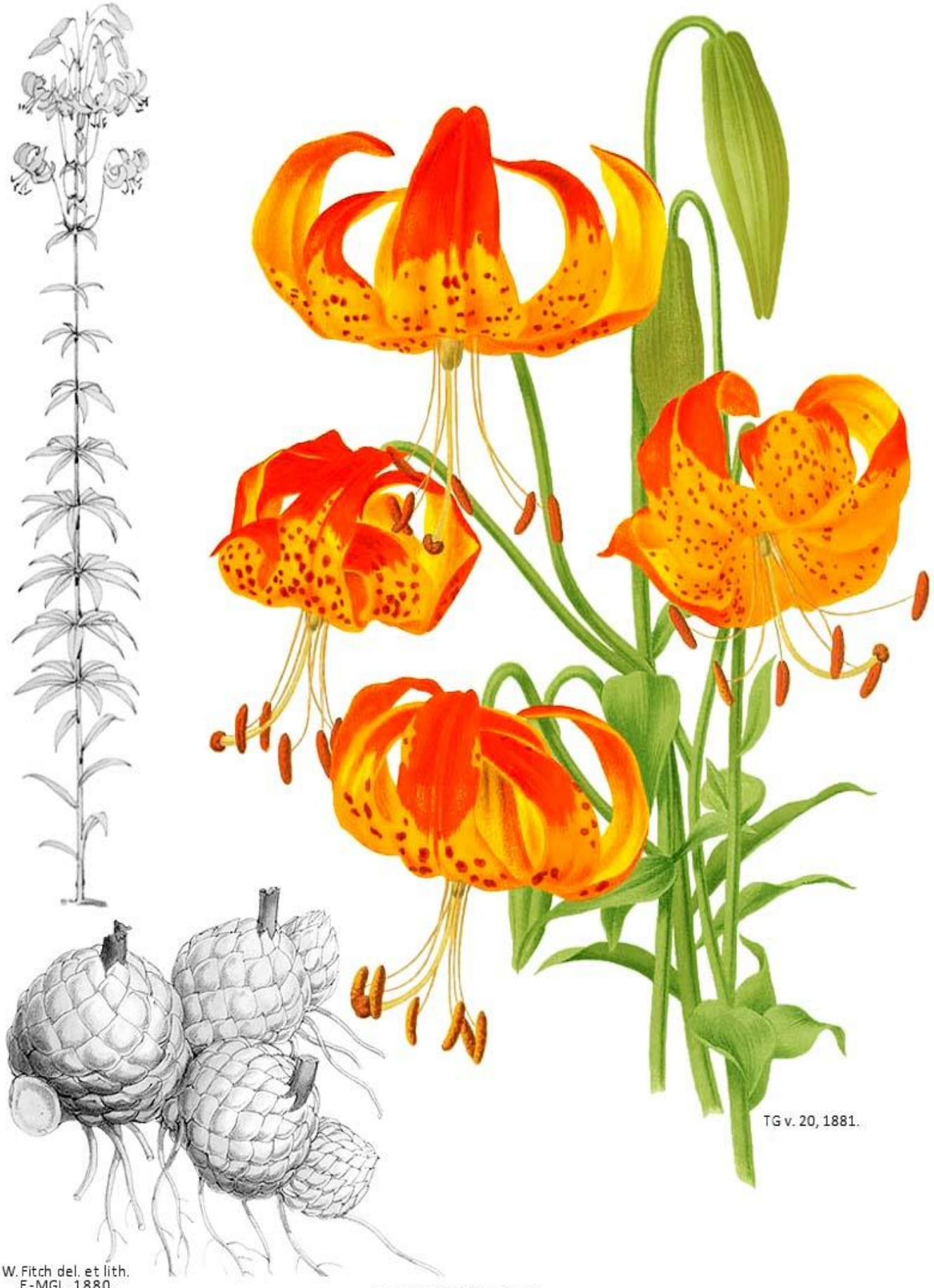

CALOCHORTUS INVENUSTUS
Calochortus splendens.
Miss Drake, del.
J. Watts, sc.
EBR v. 20, May 1, 1834.



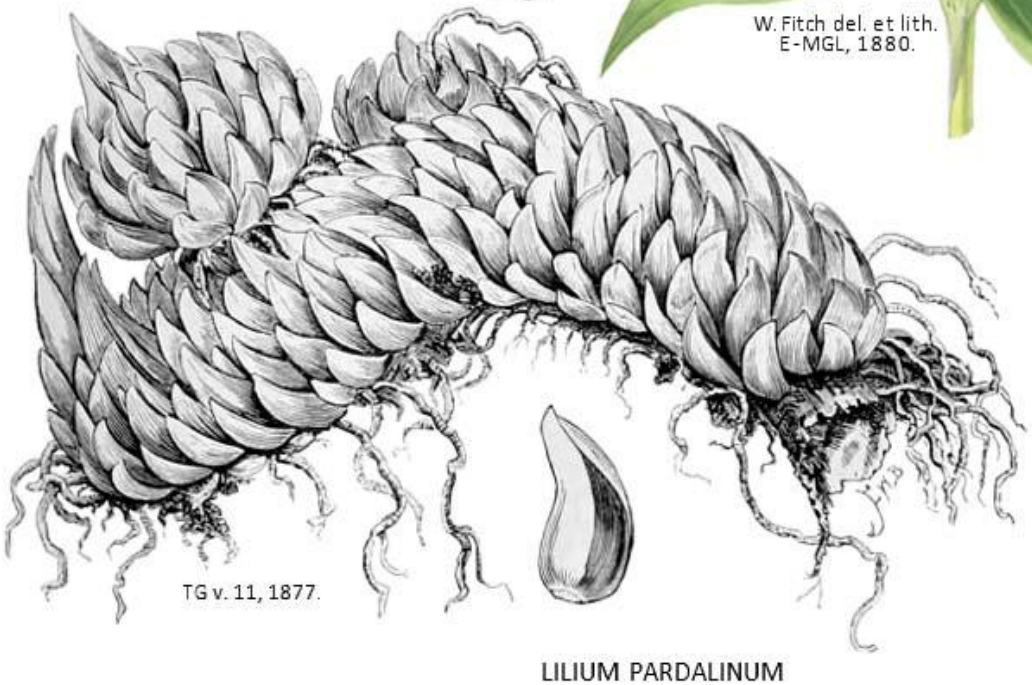
FRITILLARIA AFFINIS

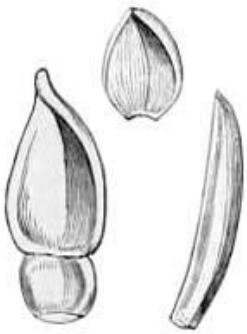
FRITILLARIA FALCATA

PROSARTES HOOKERI



LILIUM PARDALINUM





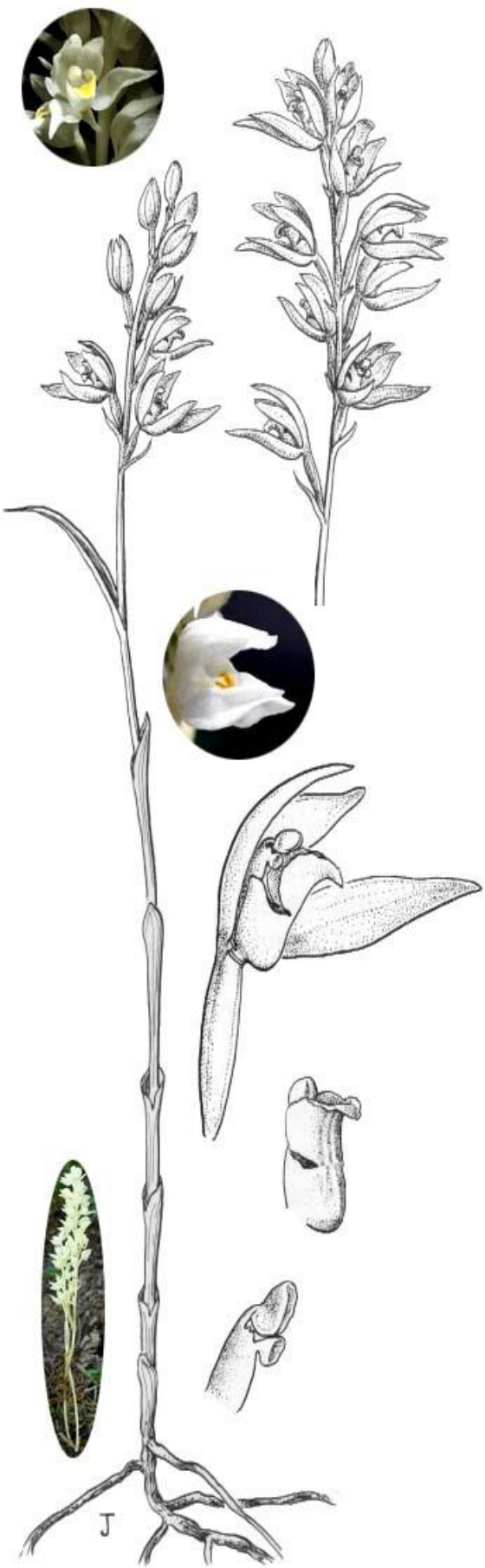
LILIUM PARDALINUM

TOXICOSCORDION FREMONTII

TOXICOSCORDION VENENOSUM

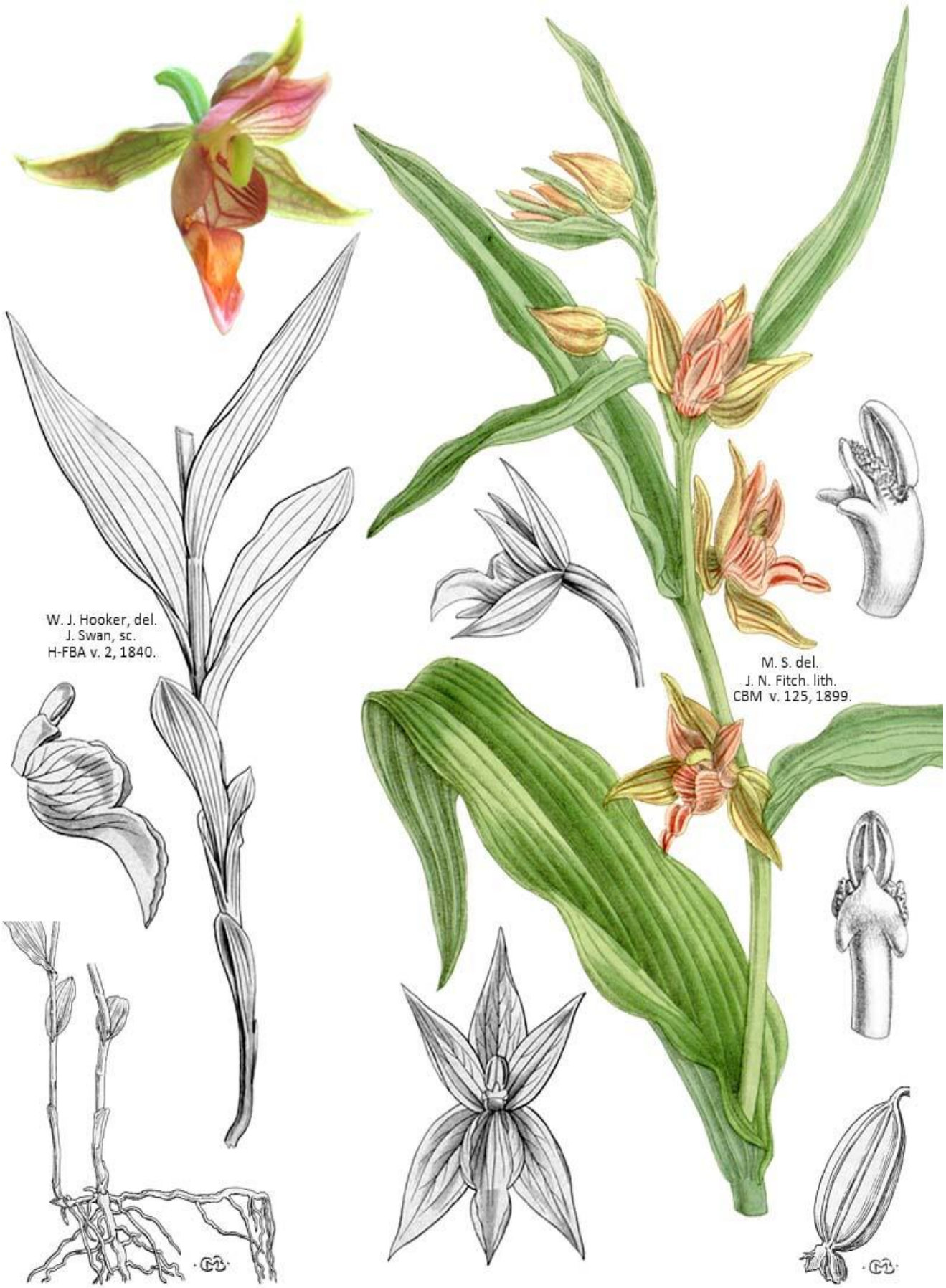
13a. Spikelets two to four at most nodes. . . . . ***Elymus***.
13b. Spikelets singular at each node:
14a. Spikelets appressed to the side of the rachis. . . . . ***Elymus stebbinsii***.
14b. Spikelets turned edgewise to the rachis. . . . . ***Festuca perennis***.
11b. Inflorescence a branching panicle (panicles with short and upwardly appressed branches may at first appear to be spikes- bend the inflorescence if not sure):
15a. Lemma awns originating on the back side of the lemmas:
16a. Spikelets with two or more lemmas:
17a. Glumes 12 to 30 mm. long and 5 to 7 veined. . . . . ***Avena***.
17b. Glumes not more than 10 mm. long and no more than 5 veined:
18a. Delicate annual herbs. Panicle branches spreading. Not restricted to wet habitats. . . . . ***Aira***.
18b. Perennial bunch grasses. Panicle branches upwardly contracted. Restricted to wet habitats. . ***Deschampsia***.
16b. Spikelets with one lemma:
19a. Annual herbs of dry habitats. Glumes and lemma awns three or more times longer than the lemma. . . . . ***Gastridium***.

Continued on page 350.



CEPHALANTHERA AUSTINIAE

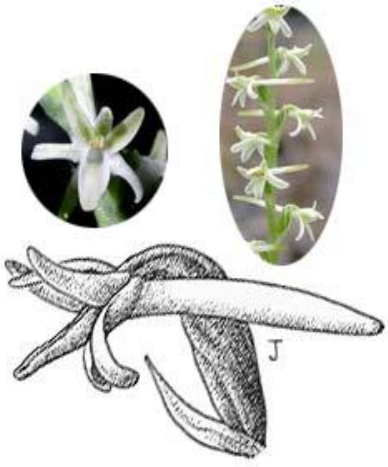
CORALLORHIZA MACULATA



EPIPACTIS GIGANTEA

PIPERIA ELONGATA

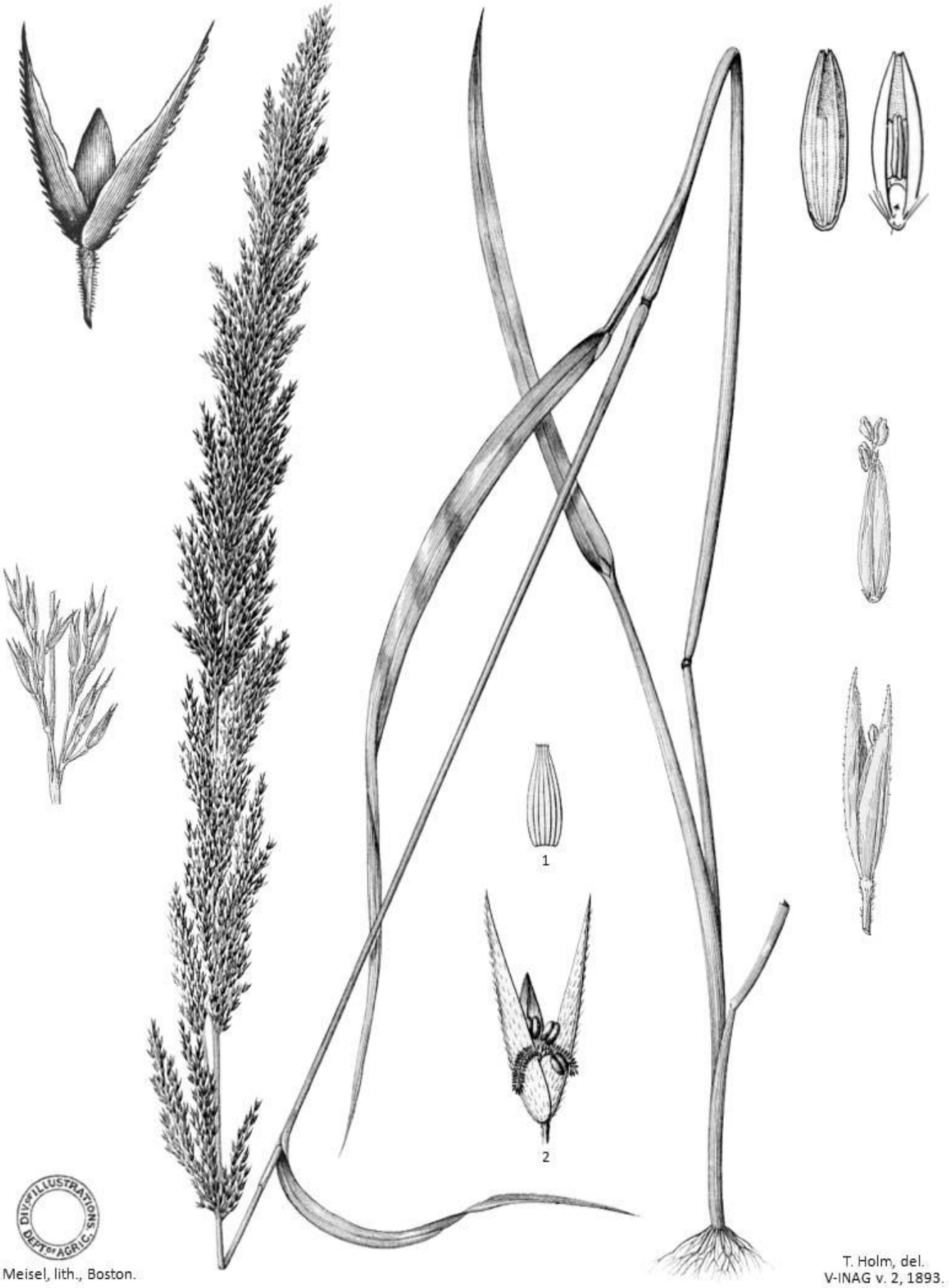
PIPERIA LEPTOPETALA



PIPERIA TRANSVERSA

L. Reichenbach del.
R-IFGH v. 13-14, 1851.

PIPERIA UNALASCENSIS

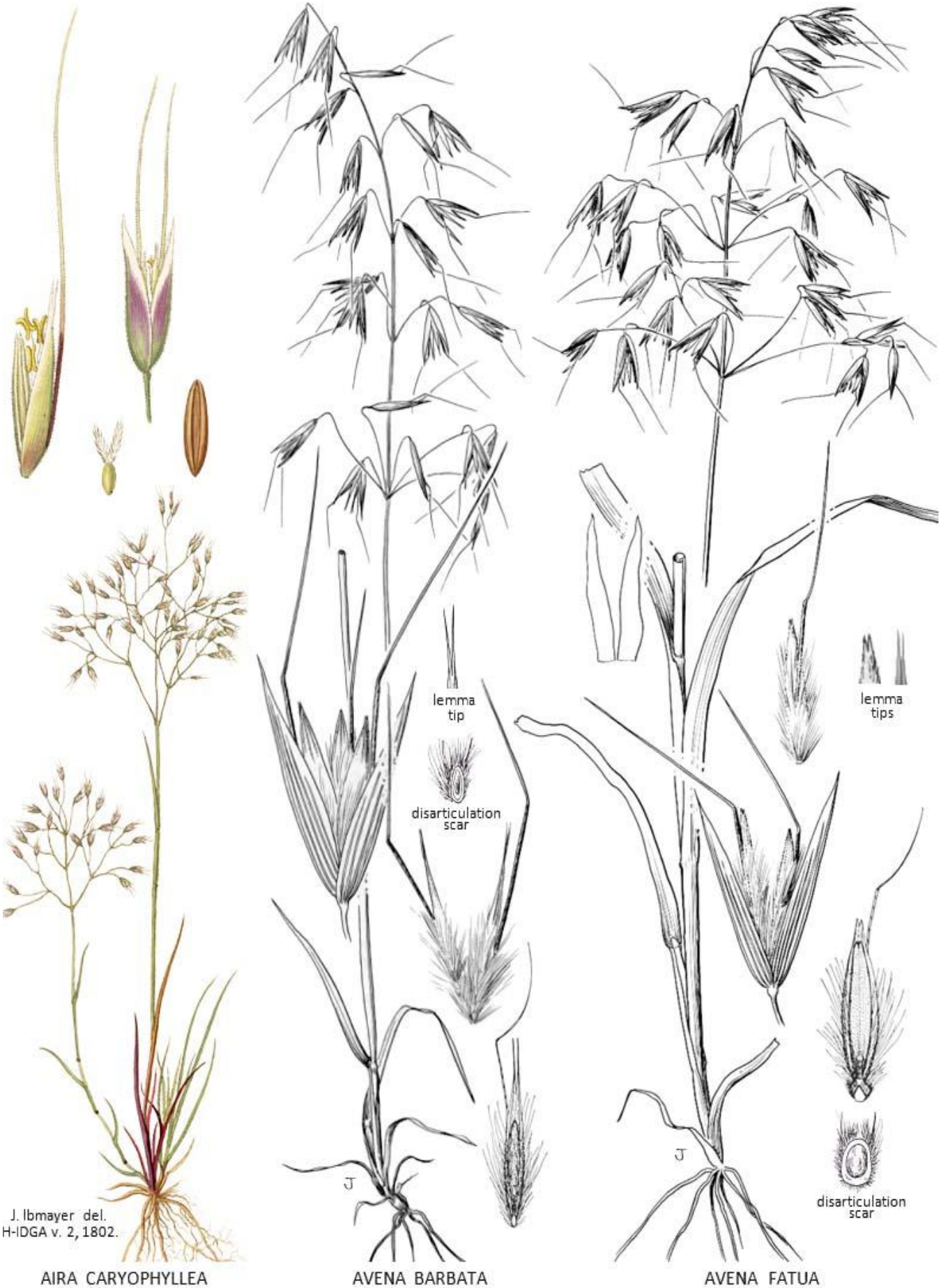


B. Meisel, lith., Boston.

T. Holm, del.
V-INAG v. 2, 1893.

AGROSTIS EXARATA

AGROSTIS PALLENS


J. Ibmayer del.
H-IDGA v. 2, 1802.
lemma tip
disarticulation scar
lemma tips
disarticulation scar
AIRA CARYOPHYLLEA
AVENA BARBATA
AVENA FATUA

AVENA FATUA

BROMUS ARENARIUS

19b. Perennial herbs of wet habitats. Glumes and lemma awns less than twice as long as the lemma. . . . . ***Calamagrostis***.

15b. Lemma awns terminal (they may protrude from a deep bifid apex and thus appear at first not to be terminal):

20a. Spikelets with one lemma:

21a. Lemma awn much more than three times longer than the lemmas. Glumes persistent, the lemmas fall individually. . . . . ***Stipa***.

21b. Lemma awns less than three times longer than lemmas. Spikelets disarticulating below glumes and falling as a unit. . . . . ***Polypogon***.

20b. Spikelets with two or more lemmas:

22a. Lower glumes longer than the lowest lemmas. Awns twisted near the base. . . . . ***Danthonia***.

22b. Lower glumes shorter than the lower lemmas (except in *Elymus glaucus* & *multisetus*). Awns not twisted near the base (except in *Trisetum*):

23a. Glumes (and lemmas) papery. Lemmas clearly 5 to 7 veined, the upper margins usually translucent. ***Melica***.

23b. Glumes not papery. Lemmas obscurely veined, the margins usually opaque:

24a. Lemmas with two teeth at the apex (on opposite sides of the base of the lemma awns):

25a. Lemmas body 7 to 17 mm. long. . . . . ***Bromus***.

25b. Lemma body 4 to 7 mm. long. . . . . ***Festuca elmeri***.

24b. Lemmas without two teeth at the apex (the apex is bifid in *Trisetum*):

26a. Spikelets strongly compressed and borne in dense one sided clumps at the ends of relatively stiff panicle branches. Lemma awns stubby and about .5 to 2 mm. long. . . . . ***Dactylis***.

26b. Spikelets not strongly compressed and not borne in dense one sided clumps. Lemma awns 2 to 15 mm. long:

27a. Lemma awns wavy and protruding from a deep bifid apex. . . . . ***Trisetum***.

27b. Lemma awns straight and not protruding from a bifid apex. . . . . ***Festuca***.

AGROSTIS. BENT GRASS.

1a. Panicle densely floriferous, the branches erect to ascending. Sheaths glabrous. . . . . ***A. exarata***. p. 346.

1b. Panicle sparsely floriferous, the branches ascending to spreading. Sheaths pubescent. . . . . ***A. pallens***. p. 347.

AIRA. HAIR GRASS.

Aira is represented in the Tassajara region by one introduced species. . . . . ***Aira caryophyllea***. p. 348.

AVENA. OATS.

1a. Glumes 20 to 30 mm. long. Lemmas with two bristles at the apex that are about 3 to 4 mm. long. Foliage generally glabrous. . . . . ***A. barbata***. p. 348.
1b. Glumes 12 to 18 mm. long. Lemmas with a minutely bifid apex, the segments less than 1 mm. long. Foliage sparsely pubescent. . . . . ***A. fatua***. p. 348, 349.

BROMUS. BROME, CHESS.

1a. Spikelets strongly flattened, the lemmas and glumes sharply creased on the back side:
  2a. Most lemma awns 7 to 15 mm. long. . . . . ***B. carinatus***. p. 354.
  2b. Most lemma awns 4 to 7 mm. long. . . . . ***B. carinatus*** var. ***marginatus***. p. 354.
1b. Spikelets not strongly flattened, the lemmas (and sometimes glumes) rounded over mid rib and not sharply creased on the back side:
  3a. Panicles dense and upwardly contracted. All spikelets short stalked or nearly sessile, and erect or ascending:
    4a. Lemmas narrowly lanceolate, the awns 10 to 25 mm. long. . . . . ***B. madritensis*** var. ***rubens***. p. 357.
    4b. Lemmas oblong and rounded at each end, the awns 4 to 10 mm. long. . . . . ***B. hordeaceus***. p. 357.
  3b. Panicles open, the lower branches ascending-spreading to drooping. Spikelets long stalked:
    5a. Lemma awns (8) 10 to 55 mm. long:
      6a. Lemma body 18 to 30 mm. long, the awns are 30 to 65 mm. long. . . . . ***B. diandrus***. p. 354.
      6b. Lemma body 9 to 15 mm. long, the awns are 8 to 30 mm. long:
        7a. Lemma awns 18 to 30 mm. long. . . . . ***B. sterilis***. p. 358.
        7b. Lemma awns 8 to 18 mm. long:
          8a. Lower glume one veined. Lemmas narrow and tapering to an acute apex. . . . . ***B. tectorum***. p. 358.
          8b. Lower glume three veined. Lemmas relatively broad and rounded at the apex. . . . . ***B. arenarius***. p. 350.
    5b. Lemma awns less than 9 mm. long:
      9a. Upper glume five veined. Lemma unevenly hairy. Sheaths glabrous or rarely with outwardly spreading hairs
        10a. Ligules (1.5) 2 to 4 mm. long. Blades and sheaths glabrous. Glumes glabrous, the upper 7 to 11 mm. long. . . ***B. laevipes***. p. 356.
        10b. Ligules .4 to 1 (2) mm. long. Blades and sheaths hairy or glabrous. Glumes scabrous or hairy, the upper 6 to 9 mm. long. . . . . ***B. pseudolaevipes***. p. 356.
      9b. Upper glume three veined. Lemma evenly pubescent or glabrous. Sheaths with downwardly angled hairs:
        11a. Panicles 14 to 21 cm. long, the lower branches spreading to drooping, the spikelets typically hanging in a more or less pendulous manner. Longest leaf blades (13) 18 to 38 cm. long. Nodes 3 to 7 per stem. . . . . ***B. grandis***. p. 355.
        11b. Panicles 5 to 16 cm. long, the lower branches ascending to spreading, the spikelets not pendulous. Longest leaf blades 7.5 to 16.5 mm. long. Nodes 1 to 2 (3) per stem. . . . . ***B. hallii***. p. 355.

CALAMAGROSTIS. REED GRASS.

Calamagrostis is represented in the Tassajara region by one species. . . . . ***Calamagrosits rubescens***. p. 359.

CYNODON.

Cynodon is represented in the Tassajara region by one introduced species. . . . . ***Cynodon dactylon***. p. 360.

DACTYLIS. ORCHARD GRASS.

Dactylis consists of one species. . . . . ***Dactylis glomerata***. p. 360.

DANTHONIA. OATGRASS.

Danthonia is represented in the Tassajara region by one species. . . . . ***Danthonia californica***. p. 361.

DESCHAMPSIA. HAIR GRASS.

Deschampsia is represented in the Tassajara region by one species. . . . . ***Deschampsia elongata***. p. 362.

ECHINOCHLOA. HEDGEHOG GRASS.

Echinochloa is represented in the Tassajara region by one species. . . . . ***Echinochloa crus-galli***. p. 360.

ELYMUS. WILD RYE.

1a. Glumes divided at the base into 3 to 5 narrowly linear formations that are awn like. Rachis readily disarticulating (falling apart) at the nodes in maturity. . . . . ***E. multisetus***. p. 363.
1b. Glumes normal (they are awl like in *E. triticoides*). Rachis not disarticulating in maturity, except in *E.* x *hansenii*:
2a. Spikelets singular at each node. . . . . ***E. stebbinsii***. p. 363.
2b. Spikelets two or more at some or all of the nodes:
3a. Rachis readily disarticulating (falling apart) at the nodes in maturity. . . . . ***E.*** x ***hansenii***. p. 363.
3b. Rachis not readily disarticulating in maturity:
4a. Glumes awl like. Lemmas acute or with an awn less than 5 mm. long. . . . . ***E. triticoides***. p. 364.
4b. Glumes narrowly elliptic to lanceolate. Lemmas awned, the awns up to 3 cm. long. . . . . ***E. glaucus***. p. 363.

FESTUCA. FESCUE.

1a. Inflorescence a spike—the spikelets are sessile at the nodes (subgenus *Lolium*) . . . . . ***F. perennis***. p. 367.
1b. Inflorescence a panicle—the branches range from upwardly appressed to spreading:
2a. Perennial herbs that are mostly 4 to 10 dm. (12-40") tall. Stamens usually 3 (subgenus *Festuca*):
3a. Leaf sheath closed. Panicle with upwardly ascending branches. Lemma awn terminal. . . . . ***F. rubra***. p. 367.
3b. Leaf sheath open. Panicle with ascending to spreading and often drooping branches. Lemma awn sub terminal from between two short teeth. . . . . ***F. elmeri***. p. 365.
2b. Very slender stemmed annual herbs that are mostly 2 to 6 dm. (4-24") tall. Stamens usually 1 (subgenus *Vulpia*):
4a. First glume less than half the length of the second glume. . . . . ***F. myuros***. p. 365.
4b. First glume more than half the length of the second glume:
5a. Panicle branches upwardly contracted; the lower branches without callus like formations in the axils. . . . . ***F. bromoides***. p. 365
5b. At least the lower panicle branches spreading to reflexed downward; the lower branches with small callus like formations in the axils. . . . . ***F. microstachys***. p. 366.
6a. Lemmas glabrous:
7a. Glumes glabrous. . . . . ***F. microstachys*** var. ***pauciflora***. p. 366.
7b. Glumes pubescent. . . . . ***F. microstachys*** var. ***confusa***. p. 366.
6b. Lemmas pubescent:
8a. Glumes glabrous. . . . . ***F. microstachys*** var. ***microstachys***. p. 366.
8b. Glumes pubescent. . . . . ***F. microstachys*** var. ***ciliata***. p. 366.

GASTRIDIUM. NITGRASS.

Gastridium is represented in the Tassajara region by one species. . . . . ***Gastridium phleoides***. p. 367.

HORDEUM. BARLEY.

1a. Auricles at the inner top of the leaf sheaths well developed. Annual herbs of dry habitats. . . . . ***H. murinum***. p. 368.
1b. Auricles absent:
2a. Perennial herbs of wet or seasonally wet habitats. . . . . ***H. brachyantherum*** subsp. ***californicum***. p. 368.
2b. Annual herbs of dry habitats. . . . . ***H. marinum***. p. 368.

KOELERIA. JUNE GRASS.

Koeleria is represented in the Tassajara region by one species. . . . . ***Koeleria macrantha***. p. 369.

MELICA. MELIC, ONION GRASS.

1a. Lemmas awned:
2a. Awns 5 to 12 mm. long, lemma surface glabrous or hairy on the lower margins. . . . . ***M. aristata***. p. 369.
2b. Awns less than 5 mm. long, lemma surface hairy towards the base. . . . . ***M. harfordii***. p. 371.
1b. Lemmas not awned:
3a. Spikelets with one 1 (or 2) fertile (grain producing) lemmas, and a small imperfect (staminate) lemma. . . . . ***M. imperfecta***. p. 372.
3b. Spikelets with 2 to 5 fertile lemmas:
4a. Sterile floret at tip of spikelet axis widest above middle, the tip truncate. . . . . ***M. californica***. p. 369.
4b. Sterile floret at tip of spikelet axis widest below middle, the tip acute to acuminate. . . . . ***M. geyeri***. p. 370.

PANICUM. MILLET.

Panicum is represented in the Tassajara region by one species. . . . . ***Panicum acuminatum*** var. ***fasciculatum***. p. 373.

POA. BLUEGRASS.

1a. Annual grasses. Panicle branches mostly spreading. Back side of lemmas sharply creased:
2a. Culms mostly 2 to 9 dm. tall. Outside base of lemmas with cotton or cobweb like tufts of hairs. . . ***P. howellii***. p. 374.
2b. Culms mostly .5 to 3 dm. tall. Outside base of lemmas without tufts of hairs. . . . . ***P. annua***. p. 373.
1b. Perennial grasses. Panicle branches erect or loosely ascending. Back side of lemmas rounded (except for the mid rib):
3a. Bases of culms bulbous. Most spikelets replaced by leafy bulblets or not. . . . . ***P. bulbosa***. p. 373.
3b. Bases of culms not bulbous. Spikelets not replaced by bulblets. . . . . ***P. secunda***. p. 375.

POLYPOGON. BEARD GRASS.

1a. Glumes and lemmas awnless. . . . . ***P. viridis***. p. 376.
1b. Glumes and lemmas awed:
2a. Plants perennial. Inflorescence interrupted. Glume awns 1.5 to 4.5 mm. long. . . . . ***P. interruptus***. p. 376.
2b. Plants annual. Inflorescence head like. Glume awns 2 to 10 mm. long. . . . . ***P. monspeliensis***. p. 376.

STIPA. NEEDLE GRASS, FEATHER GRASS.

1a. Culms mostly 1 to 2 m. (40-78") tall. Panicle branches upwardly contracted. Blades flat and mostly about 4 to 10 mm. wide. . . . . ***S. coronatum***. p. 378.
1b. Culms generally less than 1 m. (40") tall. Panicle branches upwardly ascending to spreading. Blades mostly involute and less than 4 mm. wide:
2a. . Lemmas about 6 mm. long. Lemma awns very slender and flexuous, and less than 5 cm. long. . . . ***S. lepida***. p. 379.
2b. . Lemmas about 5 to 12 mm. long. Lemma awns relatively stout and stiff, and usually more to much more than 5 cm. long
3a. Lemma body in age hairy throughout. . . . . ***S. pulchra***. p. 380.
3b. Lemma body in age glabrous in distal three quarters except on veins. . . . . ***S. cernua***. p. 377.

TRISETUM. FALSE OAT, THREE BRISTLE GRASS.

Trisetum is represented in the Tassajara region by one species. . . . . ***Trisetum canescens***. p. 381.

THEMIDACEAE. BRODIAEA FAMILY.

1a. Perianth segments (corolla lobes) divided nearly to the base. Flowers yellow. . . . . ***Bloomeria***.
1b. Perianth segments united for at least ¼ of the length of the perianth. Flowers yellow to light or dark blue or purple:
2a. Perianth segments yellow. . . . . ***Triteleia***.
2b. Perianth segments ranging from pale magenta to blue, dark purplish blue or bluish purple:
3a. Plants less than 2 dm. (8") tall (and usually much shorter). Umbels open, the pedicels 1 to 4 cm. long. Known to occur in this region only in Pine Valley. . . . . ***Brodiaea***.
3b. Plants generally 3 to 10 dm. (1 to 3') tall (and much taller after fires). Umbels dense and head like, the pedicels .2 to 1.5 cm. long. Widespread and common in the Tassajara region. . . . ***Dipterostemon*** (formerly in *Dichelostemma*).

BLOOMERIA. GOLDEN STARS.

Bloomeria is represented in the Tassajara region by one species. . . . . ***Bloomeria crocea***. p. 382.

BRODIAEA.

Brodiaea is represented in the Tassajara region by one species. . . . . ***Brodiaea jolonensis***. p. 382.

DIPTEROSTEMON (formerly in *DICHELOSTEMMA).

Dipterostemon is represented in the Tassajara region by one species. . . . . ***Dipterostemon capitatus***. p. 383.

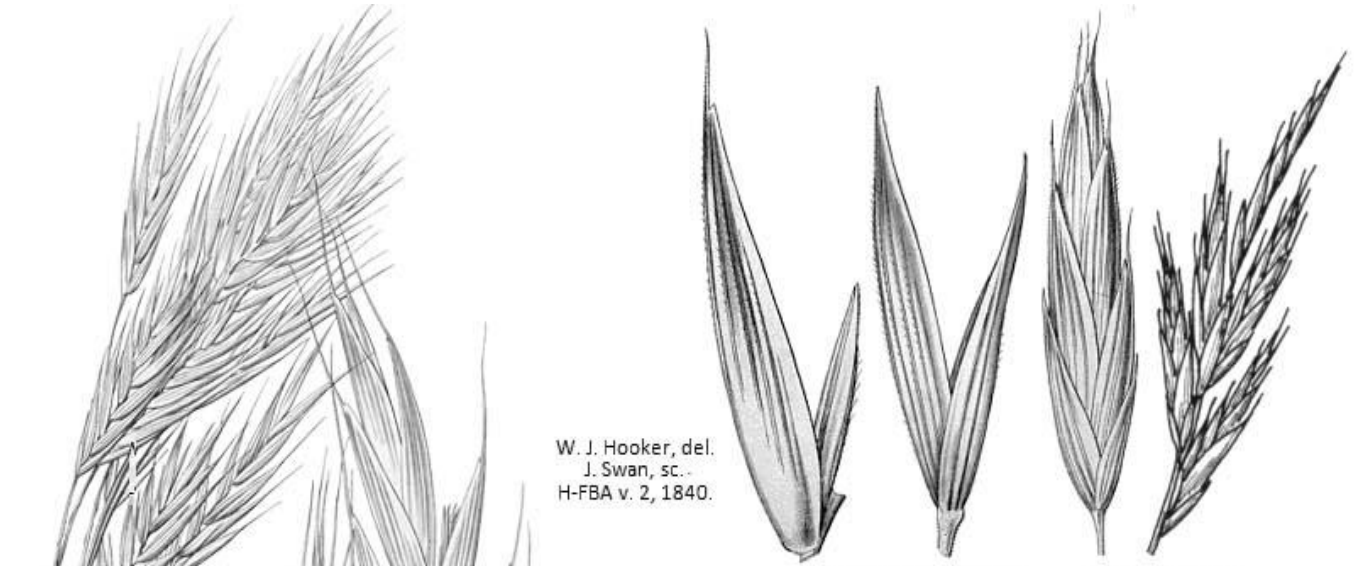
TRITELEIA.

Triteleia is represented in the Tassajara region by one species. . . . . ***Triteleia ixioides***. p. 384.

TYPHACEAE. CAT TAIL FAMILY.

TYPHA. CAT TAILS.

Typha is represented in the Tassajara region by one species. . . . . ***Typha angustifolia***. p. 385.



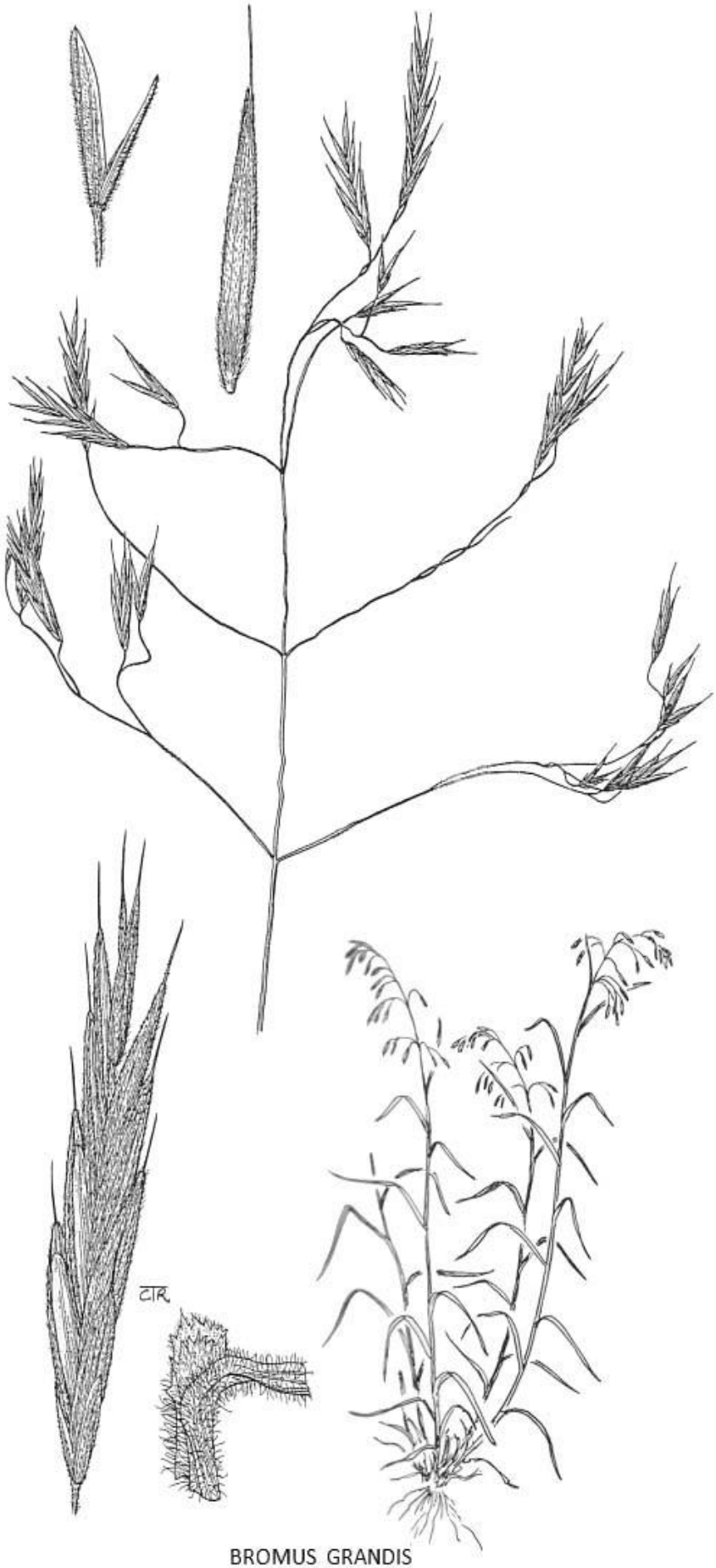
W. J. Hooker, del.
J. Swan, sc.
H-FBA v. 2, 1840.

BROMUS CARINATUS var. MARGINATUS

BROMUS CARINATUS var. CARINATUS

J. Poinsot del.
B-FCFSB v. 12, 1934.

BROMUS DIANDRUS



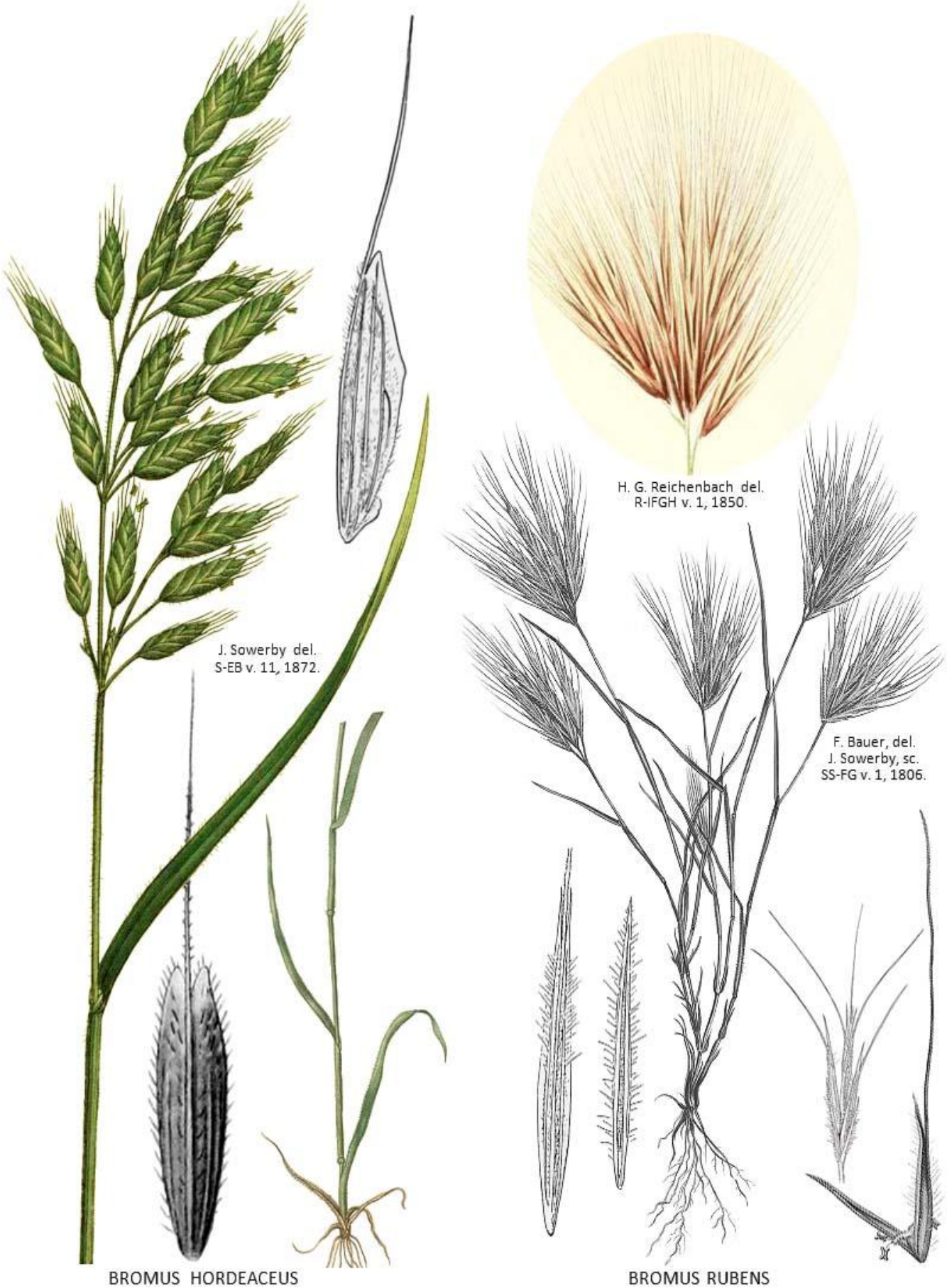
BROMUS GRANDIS

BROMUS HALLII

BROMUS LAEVIPES

BROMUS PSEUDOLAEVIPES

ANTHOPHYTA: MONOCOTYLEDONEAE. POACEAE: BROMUS.



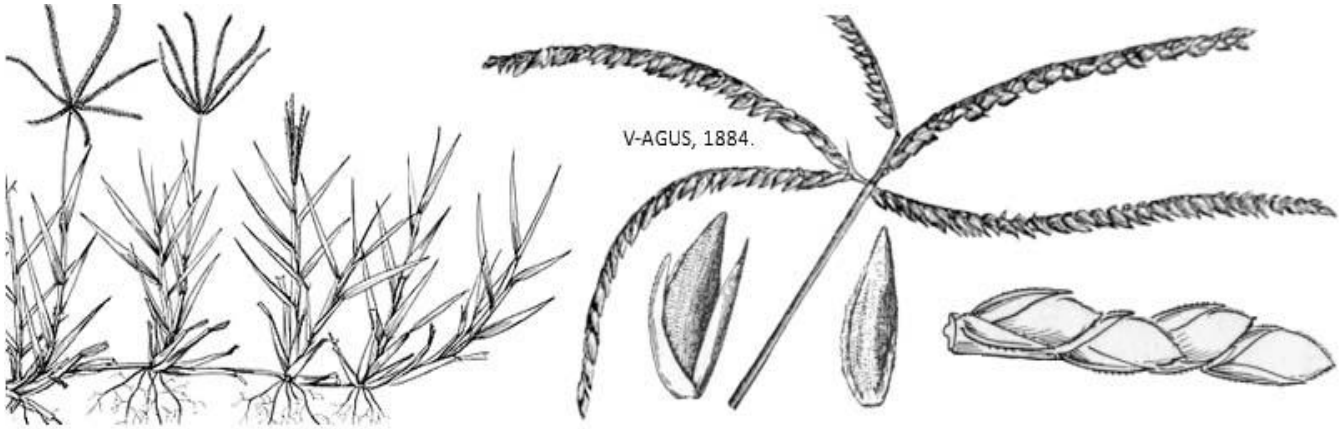
BROMUS HORDEACEUS

BROMUS RUBENS

BROMUS STERILIS

BROMUS TECTORUM

CALAMAGROSTIS RUBESCENS



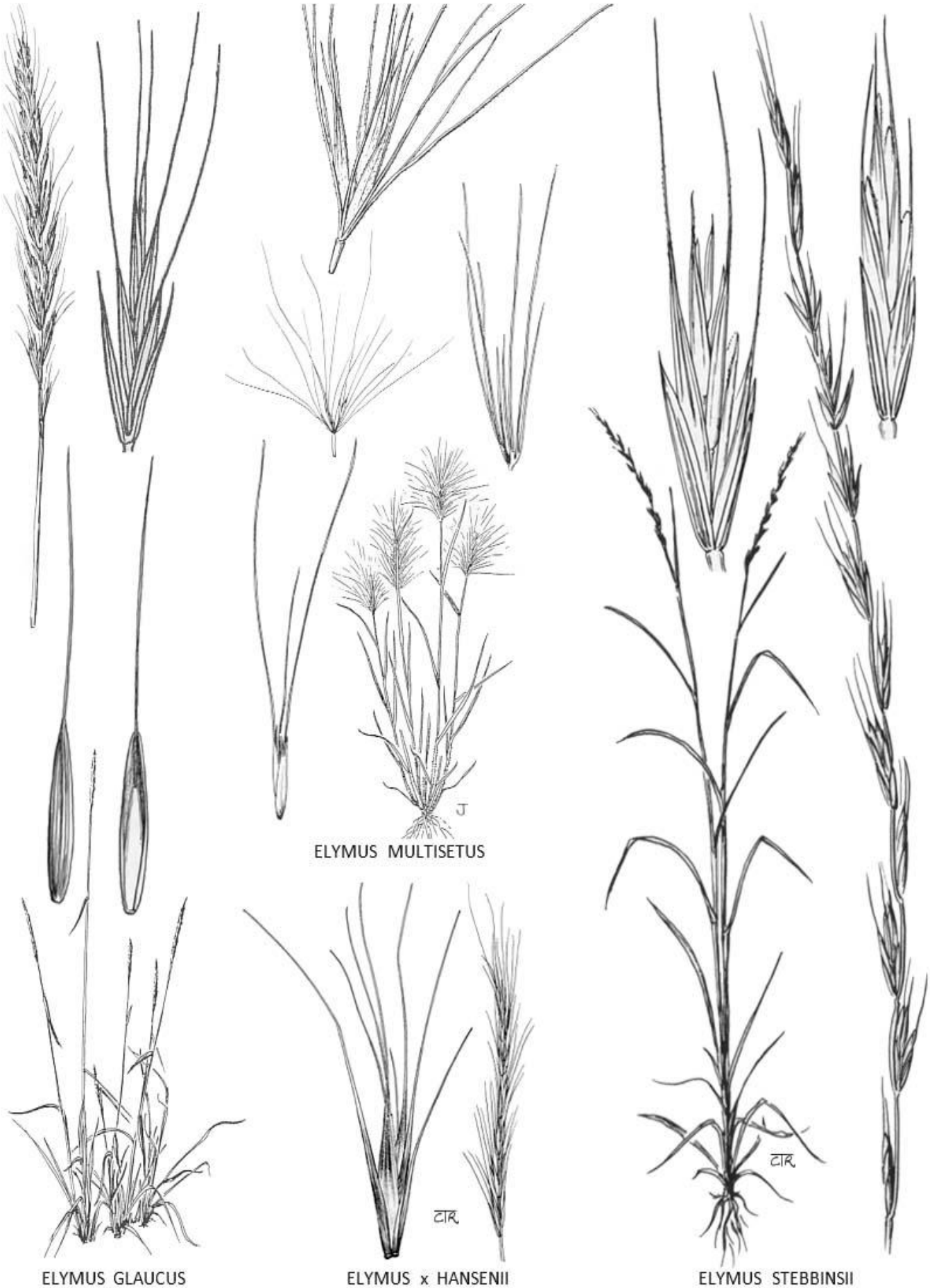
CYNODON DACTYLON

DACTYLIS GLOMERATA

ECHINOCHLOA CRUZ-GALLI

DANTHONIA CALIFORNICA

DESCHAMPSIA ELONGATA

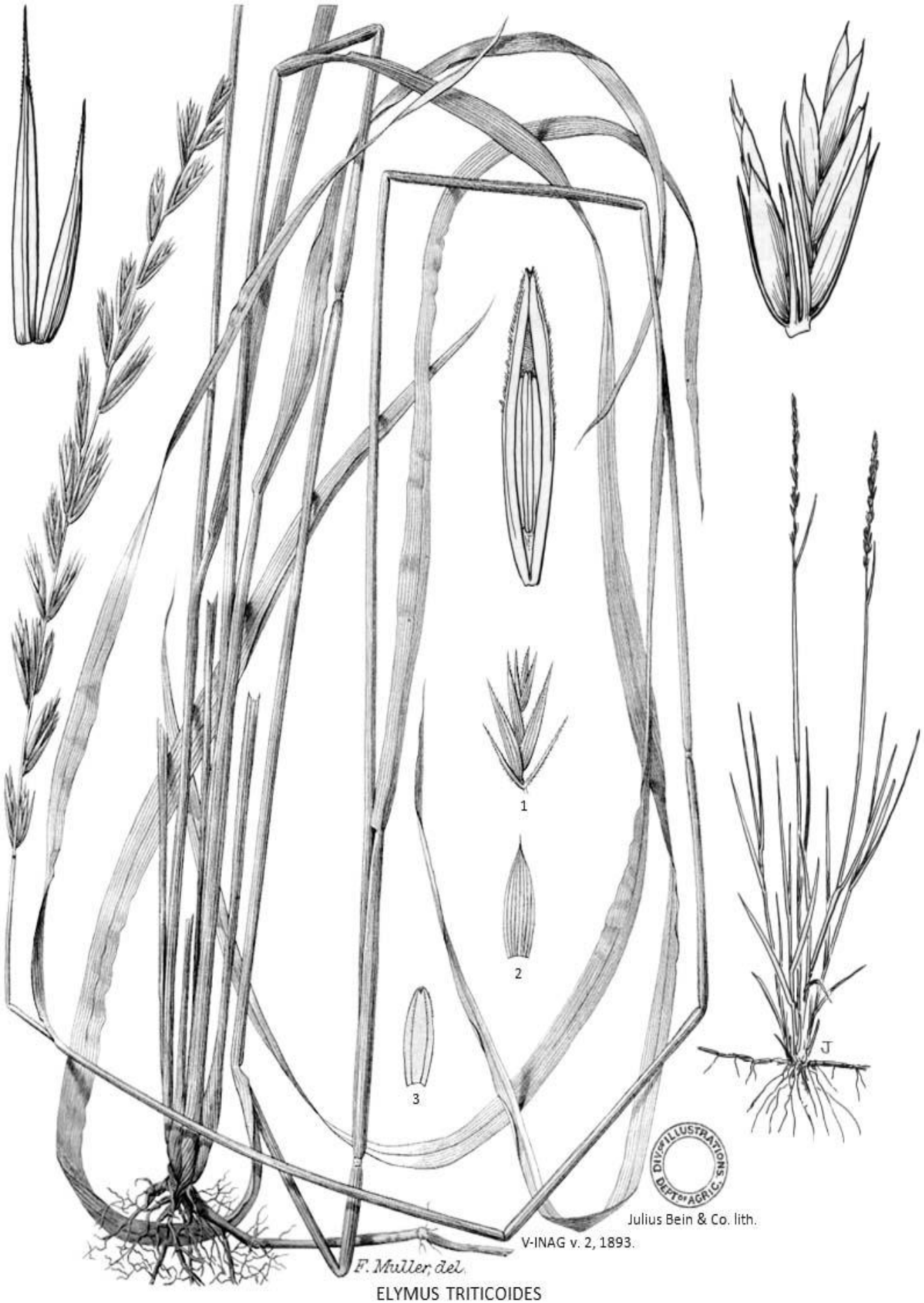


ELYMUS GLAUCUS

ELYMUS MULTISETUS

ELYMUS x HANSENII

ELYMUS STEBBINSII



ELYMUS TRITICOIDES

FESTUCA BROMOIDES

FESTUCA ELMERII

FESTUCA MYUROS

FESTUCA MICROSTACHYS

FESTUCA PERENNIS FESTUCA RUBRA GASTRIDIUM PHLEOIDES

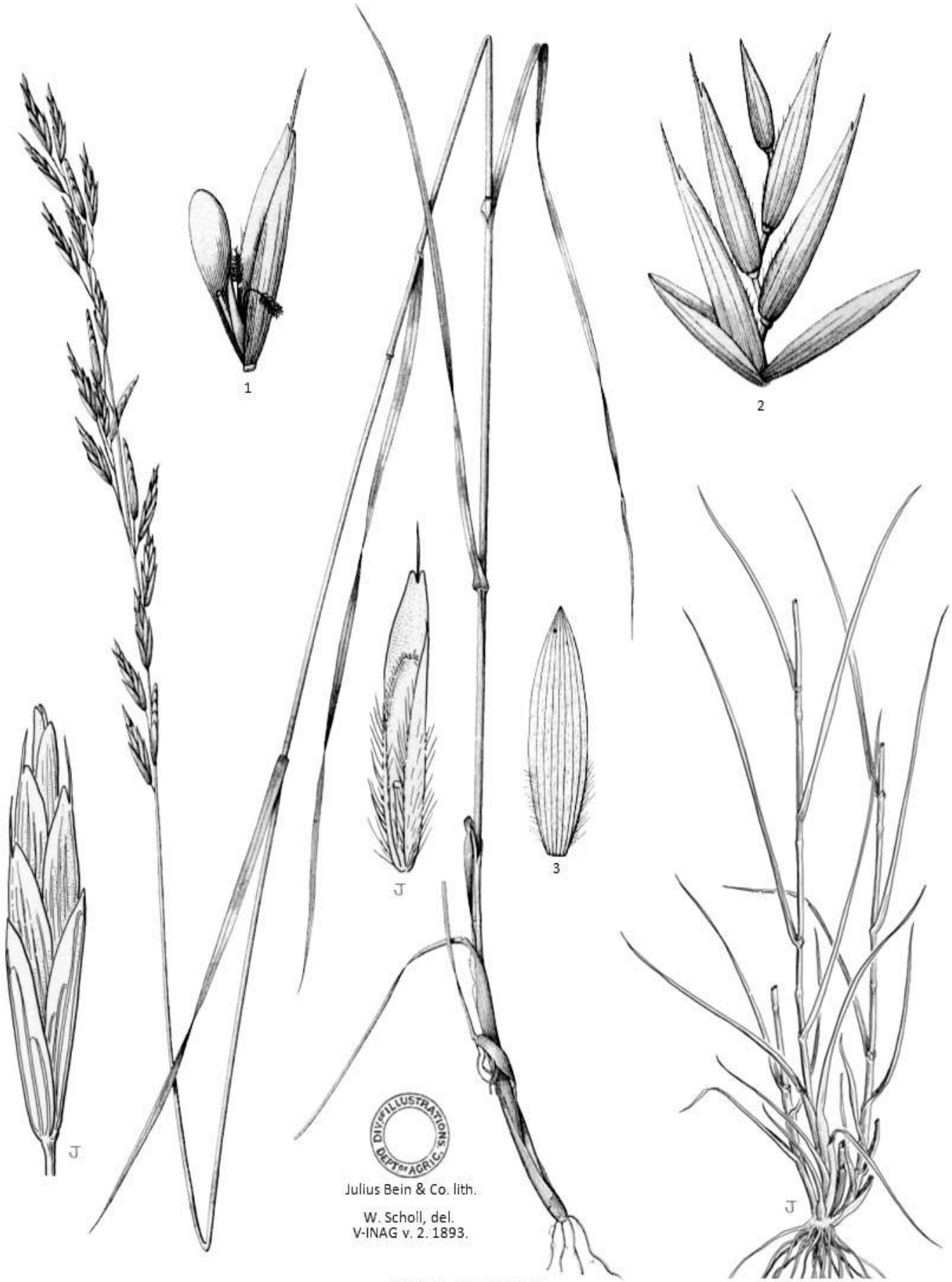
HORDEUM BRACHYANTHERUM HORDEUM MARINUM HORDEUM MURINUM

KOELERIA MACRANTHA

MELICA ARISTATA

MELICA CALIFORNICA

MELICA GEYERII



MELICA HARFORDII


Marx, del.
V-AGUS, 1884.
T–SG v. 3, 1836.
Melica imperfecta.

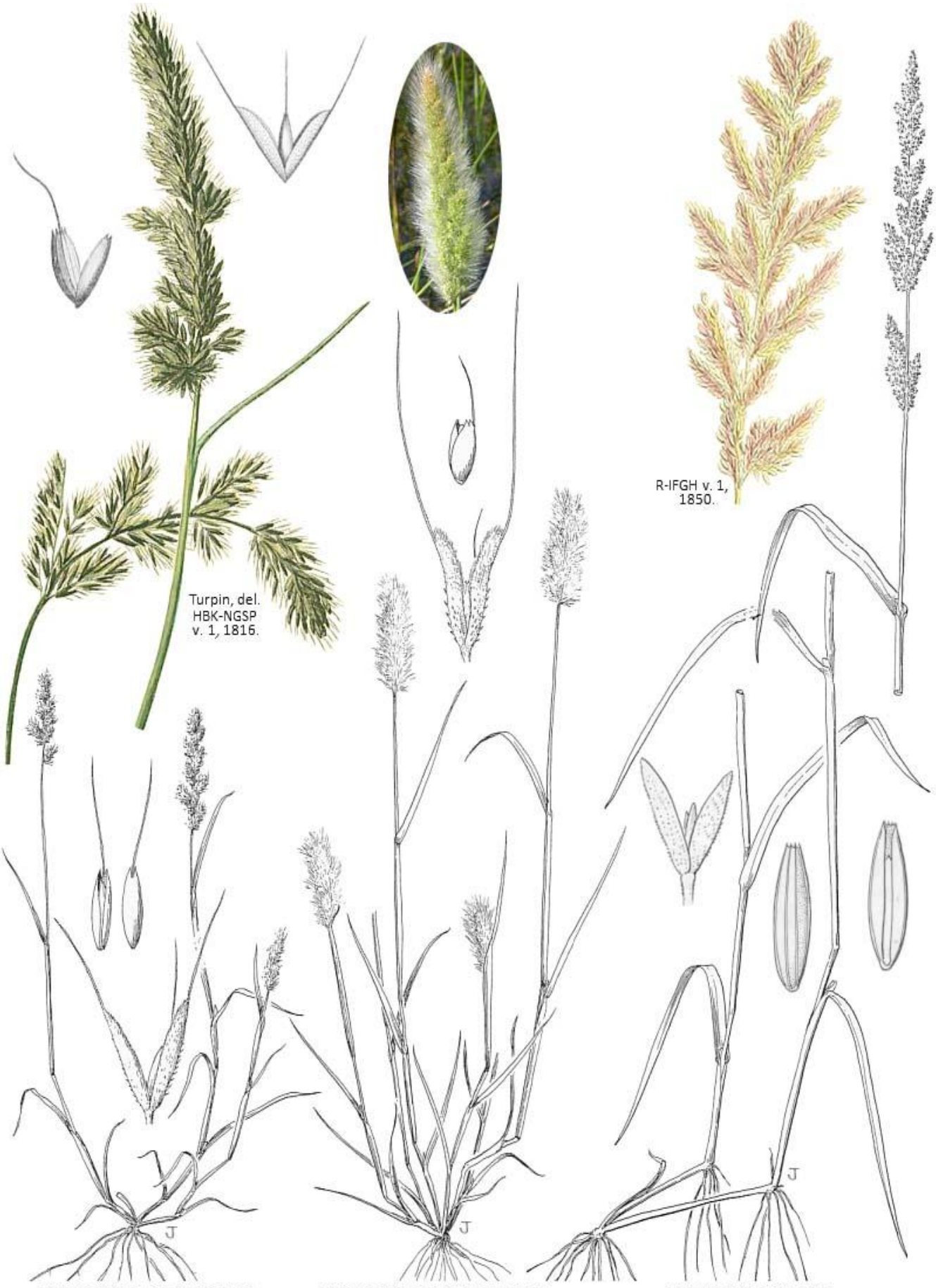
PANICUM ACUMINATUM

POA ANNUA

POA BULBOSA

POA HOWELLII

POA SECUNDA


Turpin, del.
HBK-NGSP
v. 1, 1816.
R-IFGH v. 1,
1850.
J
J
J
POLYPOGON INTERRUPTUS
POLYPOGON MONSPELIENSIS
POLYPOGON VIRIDIS

B. Meisel, lith., Boston.
V-INAG v. 2, 1893.

STIPA CERNUA

STIPA CORONATA

Julius Bein & Co. lith.
V-INAG v. 2, 1893.

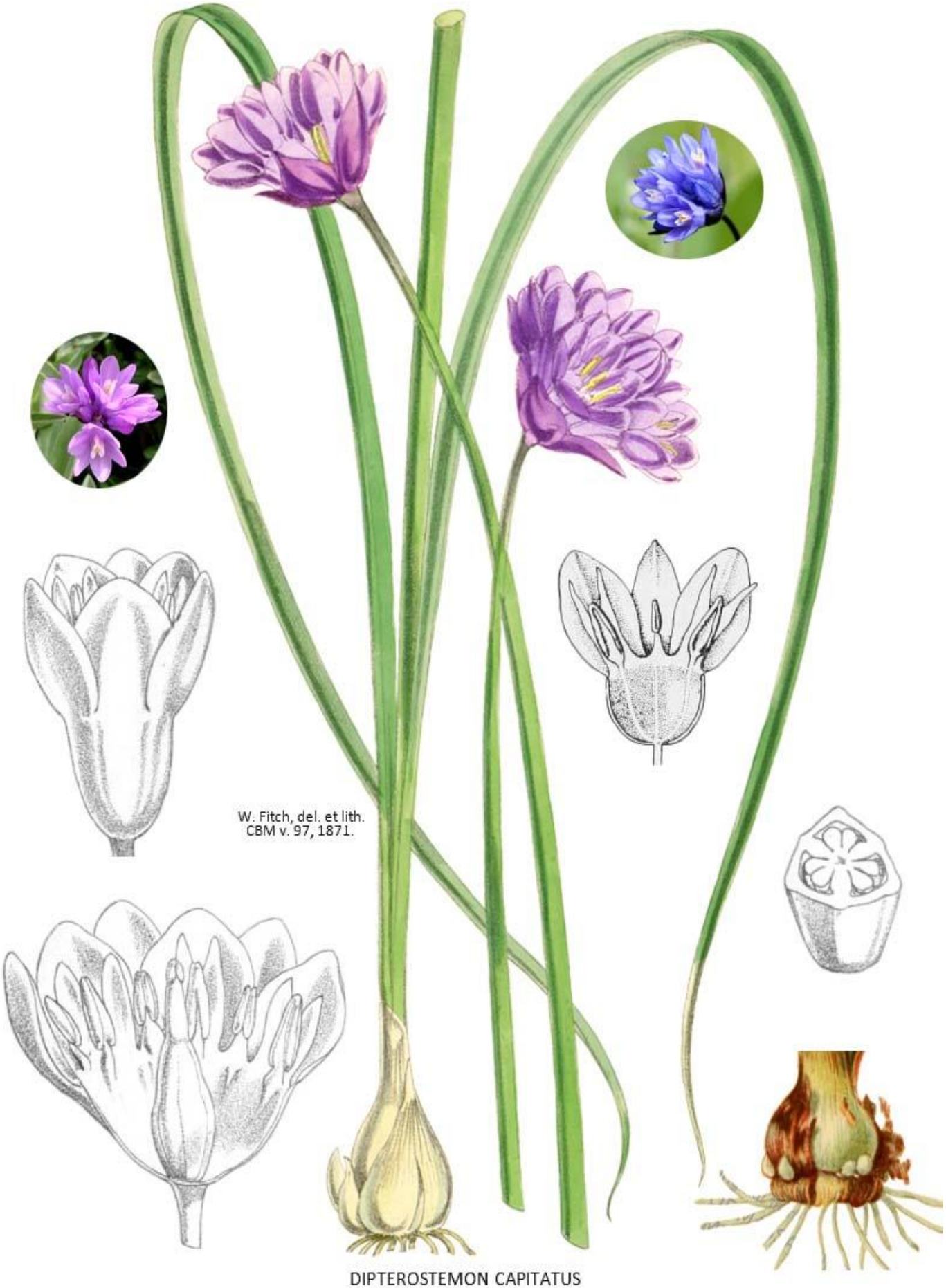
STIPA LEPIDA

STIPA PULCHRA

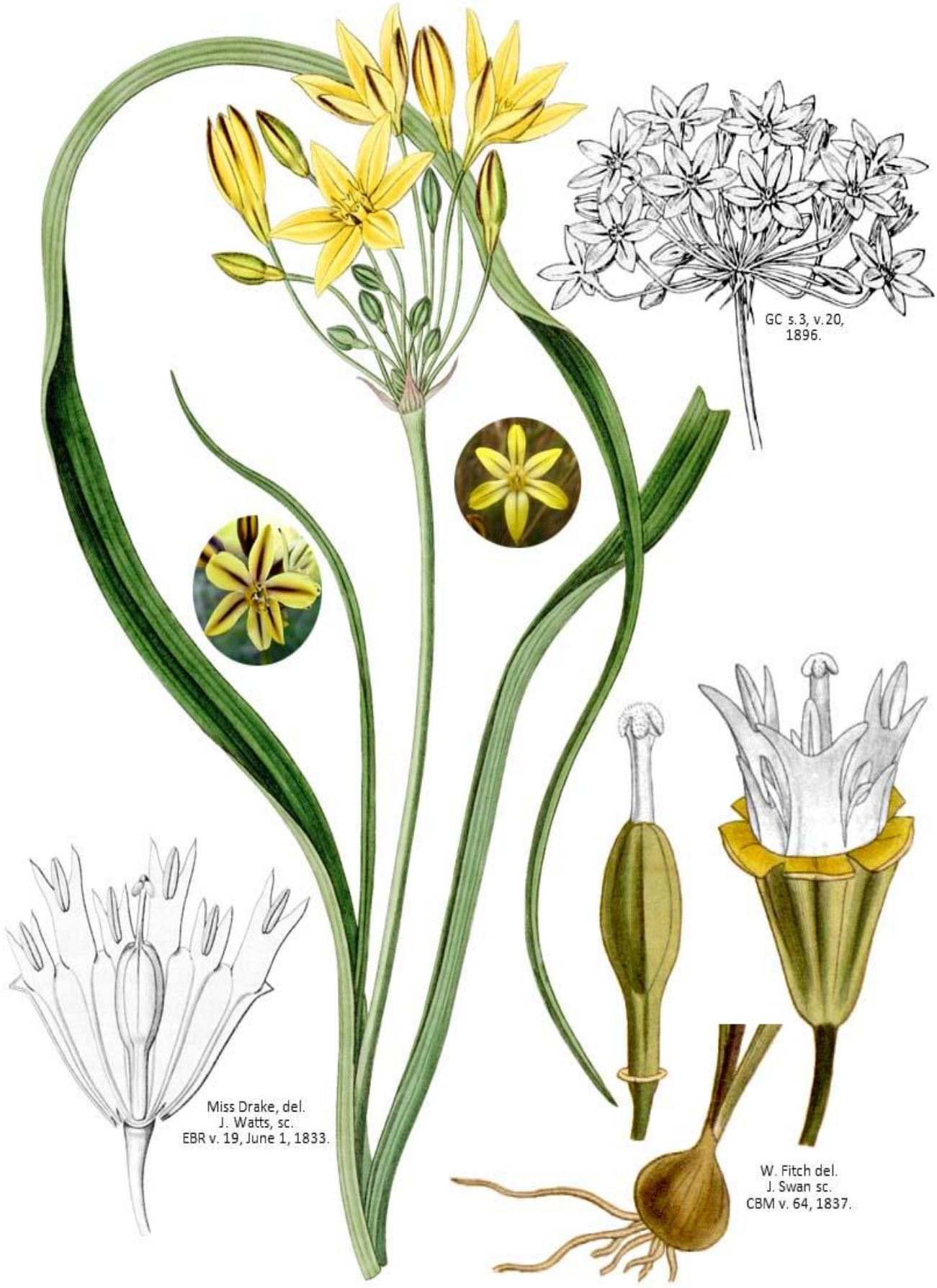
TRISETUM CANESCENS

BLOOMERIA CROCEA

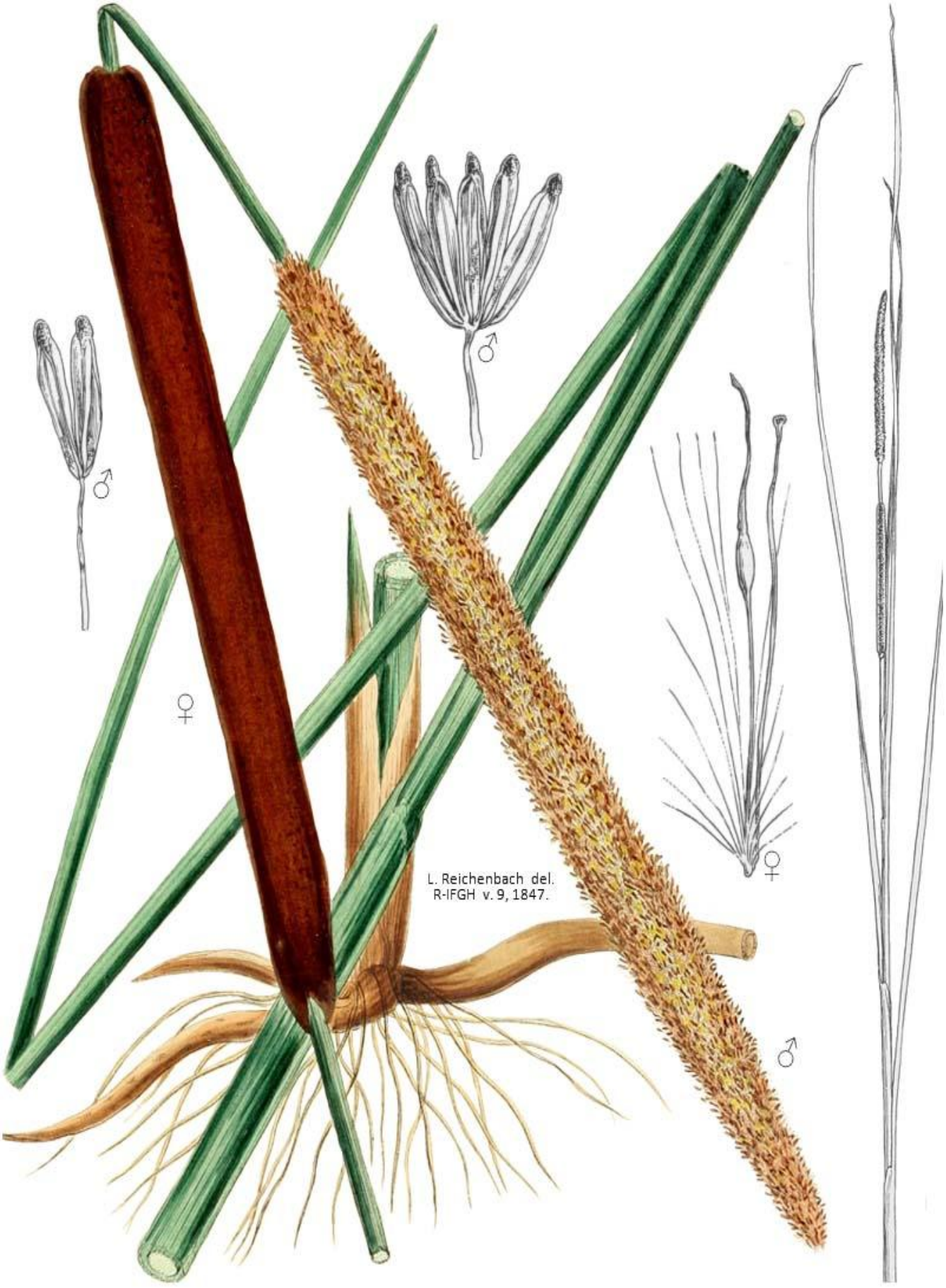
BRODIAEA JOLONENSIS



DIPTEROSTEMON CAPITATUS



TRITELEIA IXIOIDES



TYPHA ANGUSTIFOLIA

GLOSSARY. p. 386.

Acaulescent. Plants without stems or true stems. Flowers are basal or on leafless scapes (stem-like peduncles) (see caulescent).

Achene. An alternate spelling of akene.

Acuminate. More or less abruptly tapering to a somewhat extended and sharply acute apex.

Acute. Tapered to a more or less sharp apex (at less than a 45 degree angle).

Akene. A dry, indehiscent, and one-seeded fruit. Also spelled as achene.

Alternate. Arranged singularly along an axis, such as leaves on a stem.

Annual. A plant that lives for less than one year.

Anther. The pollen-bearing and usually terminal part of a stamen.

Anthesis. The time of expansion of a flower; often used to describe the entire period in which the stamens are pollen emitting and/or the pistils are receptive to pollen.

Apetalous. Without petals.

Appendage. Any secondary or supplementary part attached to another formation.

Appressed. Pressed flat or nearly so against a structure (and usually parallel to the axis of the structure), such as the hairs on a leaf, or the flowers of a raceme.

Arborescent. Tree-like in size and/or habit of growth.

Articulate. Here used to describe a point where natural separation occurs (see disarticulating).

Ascending. Curving or angled upward, not strictly erect.

Asymmetric. Irregular in shape, the various parts unequal in size, shape or arrangement.

Auricle. An appendage, most commonly ear-shaped.

Awn. A terminal or sometimes lateral bristle, such as on the lemmas and/or glumes of many grasses.

Axes. The plural of axis.

Axil. The upper angle of a juncture, such as stem and branch, or a leaf and stem, branch or branchlet.

Axillary: pertaining to an axil, or to formations occurring at or from an axil.

Axis. A real or imaginary line passing along the length and direction of a stem or branch, or through the center of a formation, such as a leaf.

Banner. The upper (and usually largest) petal of most members of *Fabaceae* (Pea Family).

Basal. Produced from or pertaining to the base (of either an entire plant or a part of a plant). In this text, the term almost exclusively pertains to the lower-most leaves of a plant.

Beak. In this text used only to describe a narrowed and usually elongated appendage terminating akenes, or other types of fruits or seeds.

Berry. A juicy or fleshy and indehiscent fruit, usually with two or more seeds that are not stone-like (see drupe & pome).

Biennial. A plant that lives through two growing seasons, often flowering only in the second season.

Bifid. Two-cleft to about the middle.

Bilabiate. A tubular corolla with two lips that are unequal in size or shape, such as in the flowers of *Scrophulariaceae* or *Lamiaceae.*

Bipinnate. Twice pinnate, such as a leaf that is pinnately parted into leaflets or segments that are again pinnately parted or lobed (see pinnate).

Bipinnatifid. Twice pinnately cleft (see pinnate).

Biternate. Divided into three divisions which are again divided into three divisions (see ternate).

Blade. The expanded part of a leaf or petal; in grasses, the free part of a leaf, above the sheath.

Bract. A much reduced or rudimentary leaf or scale, often subtending flowers or flower clusters.

Bractlet. A secondary bract produced on rather than subtending a pedicel. Often sepal-like.

Bud. An immature and unopened flower, or an immature leaf or stem.

Bulb. An underground stem surrounded by fleshy leaf bases, such as an onion.

Bunch-grass. A grass producing a tuft of basal leaves.

Caducous. Falling off early or prematurely, such as sepals that fall before the anthesis of the flower.

Calyx. The outer and usually green part of flower, comprised of a whorl of segments or lobes (sepals), or united and entire, or lobed only at the apex.

Calyces: the plural.

Campanulate. More or less bell-shaped.

Canescent. Covered with fine grayish-white hair.

Capillary. Exceedingly slender or hair-like.

Capitate. Head-like, usually pertaining to a dense, terminal, and more or less roundish flower cluster.

Capsule. A dry and usually many-seeded fruit comprised of more than one carpel, and irregularly dehiscent or dehiscent by slits or pores.

Carpel. A simple or compound pistil.

Caryopsis. The fruit (grain) of grasses.

Catkin. A scaly, deciduous, and unisexual floral spike, such as in *Quercus* or *Salix.*

Caudex. A sometimes woody, more or less vertical, and underground or exposed base of an herbaceous perennial.

Caulescent. Pertaining to plants with true and usually leafy stems (see acaulescent).

Cauline. Pertaining to or produced on a stem, such as cauline leaves (as opposed to basal leaves).

Cell. In this text pertaining to a cavity in an ovary.

Cespitose. Having a densely tufted or cushion-like habit of growth.

Chaff. Thin and dry scales or bracts. In *Asteraceae* pertaining to the inner bracts of a receptacle.

Chamber. In this text pertaining to a cavity in an ovary.

Chaparral. A more or less dense plant community comprised of evergreen and sclerophyllous shrubs that are adapted to a Mediterranean climate. The original Spanish name, *chaparro,* means a thicket of shrub oaks.

Chartaceous. Paper-like in texture.

Ciliate. Having fringe-like hairs on a margin.

Cismontane. West of the crest of the Sierra Nevada and the axis of the higher mountains of southern California. Roughly the same as the California Floristic Province.

Clavate. Narrow at the base and gradually widening upwards, like the shape of a club.

Claw. A narrow and petiole-like base of a petal.

Cleistogamous. Applied to small and bud-like flowers that do not open and are self pollinated.

Coma. A tuft of hair or fibers, particularly on seeds (see pappus).

Comose: having a coma.

Cone. A reproductive structure comprised of an axis and scales, the scales woody (as in alder and coniferous trees) or not (as in horsetails).

Connate. A union of like structures.

Cordate. Shaped like an upside-down valentine heart, the cleft at the point of attachment.

Corm. A thick, generally roundish and bulb-like fleshy tuber.

Corolla. The usually colorful and delicately textured inner perianth of a flower, which may be partly to completely united or divided into distinct petals (see petal).

Corymb. A racemose inflorescence with a more or less flat-topped or convex crown, with the outer (lower) pedicels longer and with flowers that typically open earlier.

Corymbose: produced in corymbs.

Cotyledon. The one or two leaf-like and often food supplying structures of a germinating seed.

Crenate. A margin with rounded or scalloped teeth.

Crenulate: the diminutive of crenate.

Crisped. A margin that is irregularly wavy or curled (contorted) perpendicular to the plane of the blade (wavy up and down as opposed to in and out).

Culm. The name applied to the hollow or pithy stems of grasses and similar plants.

Cuneate. Wedge-shaped, gradually widening from the point of attachment.

Cyme. An inflorescence or flower cluster with the terminal or central flowers blooming first.

Cymose: comprised of or pertaining to cymes.

Deciduous. Falling off seasonally or in maturity, such as leaves in autumn, petals after anthesis, ripened fruits, etc.

Decompound. Several times divided.

Decumbent. Lying more or less flat on the ground, but turning upward towards the apex (see ascending).

Decurrent. A sessile leaf in which the base is fused to and extends down the sides of a stem.

Deflexed. Turned downward or backward.

Dehiscent. Opening irregularly or by slits or valves to discharge the contents, such as the manner in which a capsule releases its seeds (see indehiscent).

Deltate, Deltoid. More or less broadly triangular, equilateral, and with the basal corners generally rounded.

Dentate. A margin with sharp teeth directed outward (as opposed to forward or backward). Denticulate: the diminutive.

Depauperate. Stunted or dwarfed in habit of growth, starved.

Dichotomous. Two-forked or branched. Often applied to an inflorescence that is repeatedly two-branched.

Dicot, Dicotyledon= Dicotyledoneae.

Dicotyledoneae. The larger class of flowering plants, in which the seeds are with 2 cotyledons at germination, the leaves are typically with a pinnate or palmate vein structure, the wood of shrubs or trees develops growth rings, and the outer flower parts (calyces & corollas), if present, are generally lobed or divided in 4's, 5's, or more.

Dioecious. Plant species in which individual plants produce either staminate or pistillate flowers, but never both, i.e., a heterosexual plant (see monoecious and perfect).

Diploid. Having a maternal and paternal set of chromosomes; *2n* (see haploid, polyploid and tetraploid).

Disarticulating. Separating at a point of demarcation in maturity, such as at nodes or joints (see articulate).

Discoid. A composite flower head of the *Asteraceae* comprised of only tubular disk flowers.

Disk. In *Asteraceae* the central area or receptacle of a composite flower head.

Disk flower. A tubular flower of the *Asteraceae* (see ray flower & ligulate flower).

Distal, Distally. A way from the base or point of attachment; towards the apex.

Divaricate. Widely diverging.

Dorsal. The outer or back side of a structure, away from the axis (refer to ventral).

Drupe. A moist or fleshy and indehiscent fruit with one hard and usually one-seeded stone, such as a cherry (see berry & pome).

Druplet. A small drupe, often produced in aggregations, such as in a blackberry.

Ellipsoid. A three-dimensional structure in the shape of an ellipse.

Elliptic. A flat structure in the shape of an ellipse.

Emarginate. With a notched or cleft apex.

Endemic. A species in which the natural distribution is restricted to a geographical region.

Entire. Pertaining to margins that are continuous, i.e., not lobed or toothed.

Ephemeral. Of very short duration. In this text often used to describe a species that goes through prolonged periods of being very rare or absent, such as an annual "burn species"

Erect. With a vertical habit of growth, or a formation that is vertical in relationship to an axis.

Evergreen. Pertaining to persistent leaves that remain green and functional throughout the year, or to plants with such leaves.

Exserted. Protruded outward or beyond other formations, such as stamens in relationship to a corolla.

Falcate. Sickle-shaped, curving to one side.

Fascicle. A cluster of flowers, leaves, stems or roots.

Fastigiate. Clustered, parallel, and erect branches.

Fertile. A reproductive part that is functional, or a plant that is reproductively functional (see sterile).

Fibrous. Comprised of or containing fibers.

Filament. The stem-like portion of a stamen which supports the anther.

Filiform. Exceeding slender; thread-like.

Fistulous. A stem or leaf that is hollow.

Flaccid. Weak or limp.

Floccose. With floes or tufts of fine woolly hair.

Floret. The individual flowers of *Poaceae* or *Asteraceae;* a small flower of a dense cluster.

Floriferous. Producing flowers, usually applied to plants that produce many flowers.

Flower head: An inflorescence of *Asteraceae* species, in which the flowers are sessile and clustered on a common receptacle.

Foliaceous. Leaf-like, such as bracts or sepals that resemble leaves.

Follicle. A dry, one-carpeled and usually many-seeded fruit that opens from a suture on the inner (ventral) side.

Frond. The leaf of a fern, inclusive of the petiole.

Fruit. A ripened and one to many seeded pistil, such as a capsule, follicle, drupe, pome, berry, nutlet, akene, etc. A fruit may be simple, such as an acorn, or compound, such as a blackberry.

Funnelform. Funnel-shaped, i.e., tubular but narrowed at the base, and gradually expanding or spreading upward.

Fusiform. Widest at the middle and tapering to each end, like a spindle.

Galea. A hood or helmet-like upper corolla lip, such as in *Castilleja* (the paint brushes) and related genera of *Scrophulariaceae.*

Gibbous. Swollen to one side, such as a gibbous moon.

Glabrous. Without hairs; bald.

Gland. A sunken or raised formation on a surface, or the tip of a hair, that secretes a usually sticky fluid.

Glaucus. Covered with a usually whitish or bluish and waxy or powdery substance, such as the bloom of a fruit that is easily rubbed off.

Globose. Round or roundish, like a globe.

Glomerule. A terminal and compact flower cluster or cyme.

Glumes. The (usually) two outer bracts of a grass floret (see lemma, palea & spikelet).

Glutinous. With a gluey substance.

Granular. Covered with small grains or granules; mealy.

Gregarious. Here pertaining to plants that grow in groups or colonies.

Habit. Here used to describe the general form and manner of growth of a plant, such as being woody, herbaceous, annual, perennial, a vine, a tree, erect, rounded in outline, prostrate, climbing, etc.

Habitat. A distinguishable plant community or environment, or pertaining to the type of plant community or environment that a plant species usually occurs.

Haploid. Having one set of chromosomes (see diploid, polyploid and tetraploid).

Hastate. Generally shaped like an arrowhead, with the basal points or lobes at a downward angle in relationship to the apex.

Head. A dense and often roundish cluster of sessile or nearly sessile flowers (see flower head).

Hemispheric. Shaped like half of a sphere; dome-shaped.

Herb. A non-woody plant, or at least not woody above the ground. Strictly the term applies to annual herbs or to perennial herbs that die back to the root during the dry season or in winter, but in this text it is used to describe all nonwoody plants (i.e., nonwoody evergreen plants).

Herbaceous. Without woody tissue; herb-like.

Herbage. Pertaining to the green parts of a plant.

Heterogamous. Producing flowers with different characteristics.

Hirsute. With rough or coarse and generally erect hairs.

Hispid. With stiff and bristly hairs.

Holotype. A specimen on which the description of a species or other taxon is based (see type and isotype).

Hyaline. Colorless to translucent or nearly transparent.

Hybrid. A cross between two taxa.

Hypanthium. A generally disk, cup or tube-like floral structure comprised of the fused bases of the calyx, corolla, and sometimes the stamens. Inferior ovaries are partly to entirely fused into a hypanthium.

Hypogynous. Produced on a receptacle below and free from the pistil, such as petals or stamens.

Imbricate. Layered in an overlapping pattern, such as shingles on a roof.

Imperfect. In botany the term is applied to a flower that has either stamens or pistils, but not both (see perfect).

Incised. Deeply cut or divided.

Incurved. Bending or curving inwards.

Indehiscent. Pertaining to a nonopening fruit, such as an akene (see dehiscent).

Indusium. A tissue or scale-like formation that partly or entirely covers the sori of many fem species.

Inferior ovary. An ovary that is partly or entirely positioned below the hypanthium (and thus the calyx, corolla and stamens), and is partly to entirely fused to the hypanthium.

Inflorescence. The flowering portion or portions of a plant, inclusive of its associated parts.

Inserted. Attached to or growing upon.

Internode. A portion of a stem that is situated between nodes.

Involucel. A secondary involucre, such as the bracts subtending a secondary umbel of a compound umbel.

Involucre. A fused or divided group of bracts subtending a flower or flower cluster, such as the phyllaries in *Asteraceae* or the disk-like formations in many *Trifolium* (clover) species.

Involute. Pertaining to margins that are turned inward (upward).

Isotype. A specimen of the type collection, but not the holotype (see type and holotype).

Joint. A node, point of attachment or point of articulation.

Keel. A dorsal ridge or crease centrally located along the axis of a formation, similar to the keel of a boat. Also the inner two and often united petals of *Fabaceae* species.

Lacerate. A margin appearing irregularly torn or cleft.

Laciniate. A leaf or margin divided into narrow lobes or segments.

Lanate. Densely covered with long woolly hairs.

Lanceolate. Lance shaped, widest in the lower half and gradually tapering to a generally acute apex, and more abruptly tapering to the base.

Lateral. Pertaining to or positioned on or at the side.

Leaflet. An often leaf-like segment of a compound leaf.

Legume. The fruit of *Fabaceae* species, a one-celled pod from a simple pistil, with one to many seeds positioned along the ventral suture, most commonly splitting longitudinally into two halves that remain united at the base. Also a generic name for *Fabaceae* species.

Lemma. The lower and generally larger of the two bracts immediately subtending the flowers of *Poaceae* (grass) species (see glumes, palea and spikelet).

Lenticular Lens, lentil or disk-shaped.

Ligulate. Strap or tongue shaped.

Ligulate head. A flower head of *Asteraceae* species in which all of the flowers are with ligulate corollas.

Ligulate flower. Flowers of *Asteraceae* species in which the corollas are generally strap-shaped, but narrowed at or near the base into a tube. Distinguished from a ray flower in being produced in a ligulate head (see ray flower and disk flower).

Ligule. The strap-shaped corollas of some *Asteraceae* species. Also the thin and collar-like appendage situated at the juncture of a grass blade and sheath.

Limb. The expanded and often lobed portion of a united corolla or calyx, situated above the tube or throat.

Linear. Narrow to very narrow, elongated, and generally uniform in width. More narrow than oblong.

Lyrate. Lyre-shaped, such as a pinnatifid leaf with a much larger terminal segment.

Margin. The edge of a more or less flat formation.

Membranaceous, membranous. Membrane-like, i.e., thin, pliable, and often translucent.

Midrib. The central rib or vein of a leaf or other formation.

Monocot, Monocotyledon= Monocotyledoneae.

Monocotyledoneae. The smaller class of flowering plants, in which the germinating seeds are with one cotyledon, the leaves are most typically linear and with a parallel vein structure, the trunks or branches of tree or shrub like plants are not truly woody and do not develop growth rings, and the outer flower parts are in 1's or 2's, or arranged in one or more series of 3's. Grasses, sedges, rushes, cat tails, lilies, orchids, irises, etc.

Monoecious. A species in which pistillate and staminate flowers are produced separately, often in separate formations.

Monotypic. A taxon with only one type or representative, such as genus with only one species.

Montane. Of or pertaining to mountains.

Nectariferous. Containing or producing nectar.

Node. A joint of a stem, the juncture of a stem and a branch, or the point of insertion of a leaf.

n. The number of chromosomes of a cell.

Nut. A one-seeded fruit with a hard and indehiscent shell. In some taxa the shell is at first enclosed by a fleshy and deciduous outer casing.

Nutlet. A small nut or nut-like fruit, with an individual flower often producing more than one. Like an akene but with a thicker shell.

Obcompressed. Flattened front to back as opposed to side to side.

Obconic. Inversely conic, like a cone turned upside down.

Obcordate. Generally shaped like a valentine heart, with the point of attachment at the base and the notch at the apex (see cordate).

Oblanceolate. Inversely lanceolate, wider in the outer half and gradually tapering to the base (see lanceolate).

Oblong. Longer to much longer than wide, and equal or nearly equal in width. Broader than linear.

Obovate. Inversely ovate, much wider in the outer half and narrowing to the base (see ovate).

Obovoid. A three-dimensional formation that is obovate in outline.

Obsolete. A formation that is much reduced or absent.

Obtuse. An apex or point that is blunt or rounded.

Opposite. Located directly across from, such as leaves that are produced in pairs but on opposing sides of a node.

Orbicular. Pertaining to a flat and round or nearly formation, such as a leaf.

Oval. In botany referring a broadly elliptic formation (not an egg-shaped formation).

Ovary. The generally larger and ovule producing portion of a pistil.

Ovate. Pertaining to a flat formation (such as a leaf or petal) that is generally egg-shaped in outline, wider to much wider at the base and tapering to the apex.

Ovoid. A three-dimensional formation that is ovate in outline (i.e., egg-shaped).

Ovule. The reproductive formation or formations within an ovary. After fertilization the ovules develop into seeds.

Palate. The enlarged and/ or raised central portion of the lower lip of a bilabiate corolla.

Palea. In *Asteraceae* a chaff-like scale on the receptacle. In *Poaceae* the inner or upper and usually smaller bract immediately subtending a flower (see glumes, lemma & spikelet).

Palmate, palmately Radiating from a central point, like a hand with the fingers spread. Generally applied to lobes, divisions or veins of leaves.

Panicle. A compoundly branched inflorescence. In strict usage the term applies to a compound inflorescence in which some or all of the basal or lateral flowers of any axis open before the terminal or central flowers.

Pappus. The modified calyx limbs of many *Asteraceae* species, comprised one to several series of scale, bristle or plume-like formations that are terminally positioned on an akene.

Pedicel. The stalk of an individual flower or fruit (see peduncle).

Pedicellate. Having or with a petiole, as opposed to sessile.

Peduncle. The common stalk of an inflorescence or flower cluster, or of an individual flower that is not produced in an inflorescence (see pedicel).

Pedunculate. With or having a peduncle.

Perennial. Here applied to plants that live for at least three years or three growing seasons.

Perfect. In botany the term is applied to a flower that is both staminate or pistillate, i.e., bisexual or hermaphroditic (see imperfect).

Perianth. The calyx and corolla collectively. The term is

used mostly in families or genera in which the calyx and corolla are often not clearly differentiated, such as in *Liliaceae* and *Polygonaceae.*

Pericarp. The inner and fruiting wall of an ovary.

Perigynia. The plural of perigynium.

Perigynium. Here used to describe the womb or sac-like structures surrounding the akenes in *Carex,* and which at first may appear to be akenes.

Perigynous. Produced around the ovary as opposed to below it, such as stamens or petals inserted on a floral tube.

Petal. A distinct or mostly distinct segment of a corolla; usually colorful and delicately textured (see corolla).

Petiolate. With a petiole (see petiole).

Petiole. The stalk of an individual leaf.

Petiolule. The stalk of an individual leaflet.

Phyllary. An individual bract subtending a flower head in *Asteraceae* species, collectively the phyllaries form the involucre.

Pilose. With soft and spreading hairs.

Pinae. The plural of pinna.

Pinna. A leaflet or primary leaflet of a pinnately compound leaf, most commonly used to describe the primary leaflets of ferns.

Pinnate. Applied to a compound or deeply lobed leaf in which the segments are arranged in rows on opposing sides of a common axis (petiole). Also used to describe the vein structure of a leaf or other formations.

Pinnatifid. Pinnately cleft or divided.

Pinnule. The secondary leaflet or lobe of a bipinnately divided leaf, or of a leaf that is more than two times pinnately parted.

Pistil. The female reproductive structure of a flower. Pistils are typically comprised of a basal ovary, one or more styles, and one or more terminal and pollen receiving stigmas.

Pistillate. Applied to a flower possessing a pistil but without stamens (or fertile stamens).

Placenta. The ovule producing surface of an ovary.

Planoconvex. Flat on one side and convex on the other side.

Plumose. Plume-like; with fine and generally downy hairs arranged along more than one side of an axis.

Pod. A general term for a dehiscent fruit, such as the legumes of *Fabaceae* species.

Pollen. The male spores produced by an anther.

Polygamous. Applied to a plant that produces staminate, pistillate and perfect flowers.

Polyploid Having three or more sets of chromosomes (see diploid, haploid and tetraploid).

Pome. An apple or apple-like fruit of some *Rosaceae* species, i.e., an indehiscent fruit comprised of an inferior and compound ovary (core) that is surrounded by a thick (or relatively thick) and fleshy hypanthium.

Procumbent. A prostrate stem or branch, primarily applied to such a formation when it does not root at the nodes.

Prostrate. A stem, branch or leaf that lays flat or nearly flat on the ground.

Puberulent. Minutely pubescent.

Pubescent. Covered with short and soft hairs.

Raceme. An unbranched inflorescence with pedicellate flowers, with the lower (the first produced) flowers opening first. Often becoming much elongated with age.

Rachilla. A small and secondary axis; most commonly applied to the axes of the spikelets of *Poaceae* (grass) species.

Rachis. The axis of a spike, raceme, or compound leaf.

Radiate. Spreading outward from a common point.

Radiate Head. A flower head of *Asteraceae* species, in which the central portion of the receptacle produces tubular disk flowers and marginal portion produces ligulate or ray flowers. The ray flowers generally radiate outward and thus resemble petals (see discoid head and ligulate head).

Ray. A primary and radiating branch of a compound umbel. In *Asteraceae* often applied to a ray flower.

Ray flower. A flower of *Asteraceae* species that is characterized by having short tube at the base and an elongated and one-sided limb, and thus resembling a petal. Distinguished from a ligulate flower in being situated at or near the margins of a radiate head (see disk flower & ligulate flower).

Receptacle. The portion of a flower to which the various parts are attached. In *Asteraceae* species the structure to which the sessile flowers are attached.

Recurved. Gradually curved backward or downward.

Reflexed. Bent or curved downward or backward at an abrupt angle.

Relict. Applied to a plant species generally of limited and/or localized distribution that was in ancient times more widely distributed.

Reniform. Kidney-shaped.

Reticulate. With a network of veins or vein-like ridges or markings.

Retrorse. Bent backward or downward.

Retuse. A rounded apex with a shallow notch.

Revolute. Applied to a margin which is downwardly curved or rolled.

Rhizomatic. Applied to a plant that produces rhizomes.

Rhizome. An underground and generally horizontal stem with scales and buds, producing roots on the lower side and stems or leafy shoots on the upper side. Rhizomatic plants often appear to be groups of plants growing in close proximity.

Rhombic. With the general shape of a baseball diamond.

Riparian. A plant community comprised of plants that are generally restricted to wet or moist habitats, such as along perennial or mostly perennial streams, lake shores, at springs, in marshy areas, etc. Riparian woodland: a riparian habitat dominated by water-loving tree species, such as *Alnus* (alder), *Platanus* (sycamore), *Populus* (cottonwood), and *Salix* (willow).

Rosette. A radiating cluster of leaves, usually at or near ground level.

Rotate. Wheel-shaped; applied mostly to a united corolla with a short to nearly absent tube and a flat and spreading limb.

Ruderal. Weedy.

Rudiment. A much reduced and sometimes imperfectly developed formation.

Rugose. A wrinkled and thus roughened surface.

Rugulose. Minutely rugose.

Sagittate. Shaped like an arrowhead, with the basal lobes pointed downward.

Salverform. With a narrow tube and an abruptly spreading and generally flat limb.

Samara. An indehiscent winged nutlet.

Saprophyte. A plant that lives off of dead organic material. Such plants do not produce chlorophyll, and are thus not green.

Savannah. A grassland characterized by the presence of spaciously placed trees.

Scabrous. Rough to the touch due to a roughened surface or the presence of short and stiff hairs.

Scape. The leafless peduncle of an acaulescent plant.

Scarious. A nongreen formation that is thin, dry, and translucent to dark colored.

Sclerophyll. Pertaining to woody plants with rather thick and/or leathery evergreen leaves.

Scorpioid. Pertaining to a raceme or racemose branch of a panicle that is ultimately coiled, at least when young.

Scree. An unstable slope comprised of an amalgamation of small rock fragments, sometimes as small as gravel.

Scurfy. Covered with small scales.

Secund. One sided, often applied to an inflorescence in which the flowers are produced on only one side of the axis.

Seed. A fertilized ovule; usually applied to such a formation when at full maturation.

Seep. A wet or moist area where underground water comes to or near the surface.

Sepal. A segment or lobe of a calyx.

Seriate. Produced in series or rows.

Serpentine. Rock outcrops, and the soils derived from them, which represent parts of the earth's mantle that have been forced to the surface of the crust by the forces of plate tectonics. The composition of both the rocks and soils are characterized by being low in calcium and other nutrients, while high in magnesium, iron, and sometimes toxic metals. Many plants will not grow on serpentine, while others are largely to entirely restricted to serpentine. The word serpentine specifically refers a type of metamorphosed ultramafic rock that has a greasy, silky or soapy texture, and is so named for having a like the skin of a snake. Ultramafic rock is a non metamorphosed type of rock that also comes from the mantle of the earth, and the soils derived from them have similar effects on plant life.

Serrate. Applied to a sharply toothed margin in which the teeth are angled towards the apex of the formation, such as the teeth of a saw.

Serrulate. Finely or minutely serrate.

Sessile. Without a stalk and thus attached directly to an axis, such as a leaf without a petiole or a flower without a pedicel.

Sheath. An often tubular formation that surrounds or partially surrounds another formation, such as the lower portion of grass leaves.

Shrub. A woody plant that is smaller than a tree and usually with two or more branches at the base (see tree and subshrub).

Silicle. A short silique, generally not more than twice as long as broad (see silique).

Silique. A narrow and many-seeded capsule of *Brassicaceae* species. The valves detach from the bottom to the top.

Simple. Comprised of only one part or axis; not divided or branched.

Sinuate. A strongly wavy margin (wavy in and out).

Sinus. The space or indentation between lobes.

Sordid. With a dull or dirty hue.

Sori. The plural or sorus.

Soros. A cluster of sporangia on the undersurface of a fem leaf.

Spatulate. Spatula or spoon-shaped, generally elongate and roundish to broadly elliptic at the apex.

Spicate. Spike-like in form or arranged in a spike.

Spike. An elongated and unbranched inflorescence with sessile flowers, flower clusters, or spikelets. Often loosely applied to any narrow and racemose inflorescence.

Spikelet. A secondary spike. In *Poaceae* (grasses) and *Cyperaceae* (sedges and related plants) applied to the individual and one to many flowered floral structures and their associated parts.

Spine. A stiff, sharply pointed, and sometimes woody projection. Also applied to a raised or otherwise prominent axis.

Spinulose. With diminutive spines.

Sporangia. The plural of sporangium.

Sporangium. A spore producing structure of non-flowering plants (such as ferns and fern allies).

Spores. The minute and dispersing reproductive units of non-flowering plants (such as ferns and fern allies) that are capable of producing new plants.

Stamen. The male reproductive organs of a flower, most commonly comprised of a slender filament and a terminal and pollen producing anther.

Staminate. With stamens, or pertaining to a flower (or plant) with stamens but without a pistil or a functional pistil (see pistillate).

Staminode. A sterile stamen lacking an anther.

Stellate. Star-like, applied mostly to a hair with three or more branches radiating from a common point.

Stem. The axis or axes of a plant, here used mostly to describe primary axes (secondary axes are usually referred to as branches or branchlets).

Sterile. Not reproductively functional, such as a stamen without an anther, a flower without a pistil, or a seed without an embryo.

Stigma. The pollen receiving organ(s) of a pistil. Stigmas are usually terminal and elevated on a style (see pistil, style and ovary).

Stipe. The petiole of a fem leaf or the peduncle of an ovary.

Stipitate. With a stipe or stalk.

Stipules. A pair of appendages situated at the base of a petiole. Stipules vary from being leaf-like to scale-like or gland-like.

Stolon. A prostrate or semi prostrate (or hanging) stem (runner) that roots at the nodes and/or tip, and (usually) from which erect or generally erect stems arise. The shoots of some species can produce new plants.

Strigose. With upwardly appressed hairs that are straight and relatively stiff.

Strigulose. Minutely strigose.

Style. The narrowed portion of a pistil situated between the ovary and the stigma, which is often simple but may be cleft into two or more segments. Pistils vary from being without a style (the stigmas then sessile) to having two or more styles.

Subshrub. A perennial that is woody at or near the base, but not or only slightly woody upward; semi-shrubby, suffrutescent.

Subtend. Positioned below of and in close proximity to, such as bracts placed just below a flower.

Subulate. Awl-shaped.

Succulent. Generally thick and fleshy or juicy, such as the stems or segments of cacti or the leaves of a jade or aloe plant.

Suffrutescent. Semi-shrubby or semi-woody at the base; often used in the description of subshrubs.

Superior ovary. An ovary that is situated above the point of attachment of calyx, petals and stamens, or the hypanthium on which these formations are inserted, although the ovary may be surrounded by such formations (see inferior ovary).

Symmetrical. Here used to describe a formation in which the parts of are of equal or nearly equal size, shape and arrangement.

Talus. A sloping accumulation of generally large rock fragments.

Taproot. A more or less stout and vertical primary root sending off small lateral roots. A carrot is a good example of such a structure.

Taxa. The plural of taxon.

Taxon. Any taxonomic unit, such as an order, genus, species, variety, etc.

Tendril. Slender, coiling and grasping formations, usually terminal on a stem or leaf, which allow a vine to climb on plants or other objects.

Terminal. The upper-most or outer-most point of a structure.

Ternate. Divided into three leaflets or sections, such as the leaves in *Trifolium* (clover). If the sections are again divided into three's, the leaf is biternate, and if once again divided into threes, the leaf is triternate.

Tetraploid. Having four sets of chromosomes (see diploid, haploid and polyploid).

Throat. Here used to describe the portion of a fused corolla between the basal tube and the terminal limb, lobes or lips.

Thyrse, thyrsus. A compact and generally ovate inflorescence or flower cluster, with the main axis indeterminate, while the secondary axes are cymose.

Tomentose. Densely covered with short, soft, and interwoven woolly hairs.

Tooth. Here used to describe any small marginal lobe or projection.

Tortuous. Twisted, full of turns, curves or windings.

Tripinnate. Three times pinnately divided (see pinnate).

Triternate. Three times ternately divided (see ternate).

Truncate. Abruptly ending at the apex or base, as if cut off.

Tuber. A short and thick underground stem functioning as a storage area for food and/or water, and sometimes propagating. A potato is a good example.

Tufted. Bearing a close cluster (clump) of leaves or short, leafy branches from the base. Most frequently used in the description of perennial grasses and sedges, but sometimes in the description of low shrubs, subshrubs, or perennial herbs.

Turbinate. Inversely conical, like a top.

Type. A specimen on which the description of a species or other taxon is based (see holotype and isotype).

Umbel. A commonly flat or convex flower cluster in which the pedicels arise from a common point, such as the spokes of an umbrella. Compound umbel: an umbellate inflorescence in which the peduncles (rays) diverge from a common point, and end in a simple umbel.

Undulate. A slightly to moderately wavy margin (see sinuate).

Urticle. A small and one-seeded fruit in which the seed is loosely enclosed in a balloon or bladder-like ovary wall.

Valve. One of the segments into which a dehiscent capsule or legume separates.

Vascular plant. A plant which has a system of veins that transport a fluid comprised of water and dissolved minerals. Vascular plants include the ferns and related plants (fern allies), coniferous trees, and all flowering plants. Nonvascular plants include true mosses, fungi (mushrooms and related organisms), lichen, algae, etc.

Ventral. The inner side or face of a formation (see dorsal).

Vernal. Of or pertaining to the spring season.

Versatile. An anther attached to the filament at or near the middle, and easily swaying from one side to the other.

Villous. With relatively long, soft, and wavy or shaggy hairs.

Virgate. Used to describe branches that are slender and relatively straight and erect.

Viscid. Bearing a sticky or glutinous substance.

Whorl. A ring of three or more leaves or flowers attached at the same point on a stem.

Wing. A thin and often extending border of a structure, such as on a fruit, stem, or petiole.

Wings. The two lateral petals of *Fabaceae* species, which are positioned below the singular and usually larger petal (the banner), and are often wholly or partly obscuring the inner petal(s) (the keel).

Xerophyte. Here used to describe annual herbs in which most of the growth occurs during the dry season (generally starting in May), and in which the flowering season occurs from about July through September (in some species the flowering season may extend to late fall). In strict usage the term applies to desert plants or plants that are resistant to prolonged periods of drought.

Xerophytic. Being or pertaining to a xerophyte.

THE INDEX TO VOLUMES ONE AND TWO IS IN VOLUME ONE.

THE ILLUSTRATION SOURCES, CREDITS AND EXPLANATIONS OF THE PLATES OF VOLUME TWO SECTION IS IN VOLUME ONE.