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THE PLANTS
OF
SOUTHERN NEW JERSEY

With Especial Reference to the
FLORA OF THE PINE BARRENS

And the Geographic Distribution
of the Species

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Order PARIETALES.

Family HYPERICACEÆ. St. John's-worts.

- a. Sepals 4, one pair narrower than the other, petals 4, yellow.
 - b. Plant low, 1-2.5 dm. high, leaves sessile, flowers 15-25 mm. broad.
 - Ascyrum hypericoides*, p. 552
 - bb. Plant taller, 3-6 dm. high, leaves clasping, flowers 12-18 mm. broad.
 - A. stans*, p. 552
- aa. Sepals and petals 5.
 - b. Petals yellow.
 - c. Leaves reduced to minute appressed scales.
 - Sarothra gentianoides*, p. 557
 - cc. Leaves not reduced to scales.
 - d. Styles 5, flowers 40-60 mm. broad. *Hypericum ascyron*, p. 552
 - dd. Styles 3 (rarely 4).
 - e. Stamens numerous, always more than 12.
 - f. Shrubby, 5-20 dm. high, flowers 8-12 mm. broad.
 - H. densiflorum*, p. 553
 - ff. Not shrubby, 2-9 dm. high.
 - g. Stamens in three to five clusters, petals with black dots or lines.
 - h. Leaves oblong or linear, 10-20 mm. long, dots only in the margin of the petals.
 - [*H. perforatum*]*
 - hh. Leaves oblong, 20-80 mm. long, several rows of dots or lines on the petals. *H. punctatum*, p. 555
 - gg. Stamens not in clusters, petals without black dots.
 - h. Leaves lanceolate or oblong, margins revolute.
 - H. adpressum*, p. 553
 - hh. Leaves elliptic or oval, spreading, flowers pale yellow.
 - H. ellipticum*, p. 554
 - hhh. Leaves oval, erect and appressed, flowers copper yellow. *H. virgatum ovalifolium*, p. 554
 - ggg. Stamens 5-12.
 - h. Flowers small, usually 4-5 mm. broad.
 - i. Cyme leafy-bracted, leaves elliptic.
 - H. boreale*, p. 555
 - ii. Cyme subulate-bracted.
 - j. Leaves ovate, oblong or elliptic.
 - H. mutilum*, p. 555
 - jj. Leaves ovate deltoid.
 - H. gymnanthum*, p. 556
 - jjj. Leaves linear obtuse. *H. canadense*, p. 556
 - hh. Flowers 6-10 mm. broad, plants 3-9 dm. high.
 - H. majus*, p. 556
 - bb. Petals red purple, leaves ovate obtuse, plant 3-5 dm. high.

* Common St. John's-wort, a weed.

c. Leaves sessile, flower-clusters peduncled.

Triadenum virginicum, p. 557

cc. Leaves petioled, flower-clusters nearly sessile.

T. petiolatum, p. 558

ASCYRUM L.

Ascyrum stans Mich. St. Peter's-wort.

Ascyrum stans Michaux, Fl. Bor. Am. II. 77. 1803 [Carolina].—Knieskern 8.—Willis 11.—Britton 66.—Keller and Brown 223.

Ascyrum hypericoides Pursh, Fl. Am. Sept. II. 374. 1814.—Barton, Fl. Phila. II. 13. 1818.

Damp or dry sandy ground; common in the Pine Barrens; occasional in the Cape May district and rare and local in West Jersey.

Fl.—Late July to early September. *Fr.*—Late October through autumn.

Middle District.—Merchantville (P), Mickleton (NB), Dividing Creek.

Pine Barrens.—Four miles south New Egypt, West Creek (S), Manchester, Waretown, Dover Forge, Bamber, Chatsworth, Speedwell (S), Bear Swamp, Mouth of Batsto (S), Pleasant Mills, Hammonton, Egg Harbor City, Mays Landing, Weymouth (T), Tuckahoe, Browns Mills (P), Quaker Bridge (P), Absecon, Hamilton Mon. Co. (C).

Cape May.—Ct. House, Cold Spring (S), Town Bank (OHB).

Ascyrum hypericoides L. St. Andrew's Cross.

Ascyrum Hypericoides Linnæus, Sp. Pl. 788. 1753 [Virginia].—Keller and Brown 223.

Ascyrum multicaule Barton, Fl. Phila. II. 13. 1818.

Ascyrum Crux-Andreae Pursh, Fl. Am. Sept. II. 373.—Britton 66.—Knieskern 66.

Common in dry sandy soil of the coastal plain at several stations north of our limits and throughout the Middle, Cape May, Coast and Pine Barren districts.

Fl.—Early July to early September. *Fr.*—Early September through autumn.

Middle District.—Keyport (NB), Asbury Park (P), Brindletown, Arney's Mt. (S), Camden (P), Medford (S), Oaklyn (S), Westmont (S), Washington Park, Jericho (NB), Bridgeton (NB), Dividing Creek.

Pine Barrens.—Forked River, Chatsworth, Bear Swamp, Clementon (S), Landisville, Mouth of Batsto (S), Pleasant Mills, Egg Harbor City, Mays Landing (S).

Coast Strip.—Beach Haven (L), Surf City (L), Ship Bottom (L).

Cape May.—Green Creek (S), Cold Spring, Cape May (S).

HYPERICUM L.

Hypericum ascyron L. Giant St. John's-wort.

Hypericum Ascyron Linnæus, Sp. Pl. 783. 1753 [Canada].—Britton 67.—Keller and Brown 224.

Limited to the valley of the upper Delaware, just entering our limits at Bordentown, where it is reported in Britton's Catalogue on the authority of Mr. Stowell.

Fl.—Early July to late July. *Fr.*—Early September into October.

***Hypericum densiflorum* Pursh. Shrubby St. John's-wort.**

Hypericum densiflorum Pursh, Fl. Am. Sept. 376. 1814 [Virginia Mts.].—Britton 67.—Keller and Brown 224.

Hypericum prolificum var. *densiflorum* Knieskern 8.—Willis 11.

Hypericum prolificum Britton 67 (in part).

Plentiful in damp spots in the Pine Barrens, rare and local in the Middle district.

H. prolificum is reported in Britton's Catalogue, but I feel convinced that all the coastal plain plants of New Jersey are referable to *H. densiflorum*. Specimens from three of the localities prove to belong to this species, and I have little doubt that the records for Manchester, Freehold and Pemberton are based on the same. There is some variation both in the size of the flowers and density of the inflorescence, but I have seen no specimens at all referable to *H. prolificum*, as we have it in the Susquehanna valley in Pennsylvania.*

Fl.—Early July to early September. *Fr.*—Early October through autumn.

Middle District.—Shark River, Pt. Pleasant, New Egypt, Lindenwold.

Pine Barrens.—Toms River, Island Hts., Cassville, Woodmansie, Hanover, Browns Mills, Chatsworth, Speedwell (S), Pasadena, Parkdale, Tuckerton, Bear Swamp, Kenilworth, Clementon, Ballengers Mill, Braddocks Mill, Taunton, Sicklerville, Winslow Inc., Winslow (S), Folsom, Eighth St. (T), Hammononton, Pleasant Mills, Egg Harbor City, Mays Landing, Weymouth, Woodbine, Millville.

***Hypericum adpressum* Barton. Barton's St. John's-wort.†**

Hypericum adpressum Barton, Comp. Fl. Phila. II. 15. 1818 [Lansdowne, on the Schuylkill, above Buck's Isl., Phila.].—Willis 11.—Britton 67.—Keller and Brown 224.

* cf. Sargent Garden and Forest, 1890, 524.

† Discovered by Wm. P. C. Barton (1786-1856), Professor of Botany at the University of Pennsylvania, and author of the Compendium Florae Philadelphiae. Probably the first botanist of this vicinity to conduct weekly field trips.

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Hypericum galioides Pursh, Fl. Am. Sept. II. 376. 1814 (as to N. J. records).

Open swamps; confined to the Middle and Cape May districts, occurring north of our limits only at several stations in Bergen County. The statement of Torrey and Gray that it occurs in the Pine Barrens is not substantiated, and is no doubt due to the loose use of the term to cover all of southern New Jersey.

Fl.—Early July to late August. *Fr.*—Mid-September through autumn.

Middle District.—Burlington, Delanco, Florence, Moorestown (KB), Union Grove.

Coast Strip?—Mays Landing (CDL).

Cape May.—Bennett, Cold Spring, Cape May (S).*

***Hypericum ellipticum* Hook. Pale St. John's-wort.**

Hypericum ellipticum Hooker, Fl. Bor. Am. I. 110. 1830 [Canada to Lake Winnepeg].—Britton 67.—Keller and Brown 224 (in part).

Confined to the upper Delaware valley in swampy ground and bogs, locally southward to Camden.

Fl.—Mid-June to early July. *Fr.*—Late August into October.

Middle District.—Burlington (P), Kaighus Pt., Camden (C).†

***Hypericum virgatum ovalifolium* Britton. New Jersey St. John's-wort.**

Hypericum virgatum var. *ovalifolium* Britton, Trans. N. Y. Acad. IX. 10. 1889 [Pine Barrens of N. J.].—Britton 67.

Hypericum angulosum Muhlenberg, Cat. 68. 1813.—Pursh, Fl. Am. Sept. II. 378. 1814.—Knieskern 8.—Willis 11.

Hypericum virgatum Keller and Brown 224.

Frequent in bogs and swamps of the Pine Barrens and Cape May peninsula; rare and local in Pine Barren islands in the Middle district.

The peculiar coppery color of the flowers distinguishes this from any of the other species of our range.

Fl.—Mid-July to early September. *Fr.*—Late September through autumn.

* I have grave doubts about the record for Freehold, given by Britton on authority of Willis, and there is no specimen to substantiate it. Keller and Brown's records for Egg Harbor, Atco and Mays Landing are probably *H. densiflorum*.

† The records in Keller and Brown for Egg Harbor and Mays Landing, and probably for Pt. Pleasant, are based on *H. v. ovalifolium*.

Middle District.—Union Grove.

Pine Barrens.—Spring Lake (NB), Pt. Pleasant, Speedwell (S), Atsion, Parkdale, Hammonton, Egg Harbor City, Mullica River, Quaker Bridge, Pleasant Mills (NB), Batsto, Mouth of Batsto, Woodbine, Belleplain (S).

Cape May.—Court House (S), Bennett (S), Cold Spring (S), Nummeytown (S).*

***Hypericum punctatum* Lam. Spotted St. John's-wort.**

Hypericum punctatum Lamarck, Encycl. IV. 164 1796 [Typ. Loc. unknown].

Hypericum maculatum Britton 68.

Hypericum corymbosum Knieskern 8.

Frequent in low grounds in the northern counties and occasional in the Middle and Cape May districts.

Fl.—Early July to early August. *Fr.*—Early September into October.

Middle District.—Farmingdale, New Egypt, Delair, Mickleton, Swedesboro, Centerton (S).

Pine Barrens.—Ancora (Bassett) introduced?

Cape May.—Cold Spring (OHB).

***Hypericum mutilum* L. Dwarf St. John's-wort.**

Hypericum mutilum Linnæus, Sp. Pl. 787. 1753 [Virginia and Canada].—Knieskern 8.—Britton 68.

Common in low grounds throughout the State, except in the Pine Barrens.

Fl.—Early July to early September. *Fr.*—Mid-September through autumn.

Middle District.—New Egypt, Birmingham, Pemberton Jnc. (S), Morris, Clementon, Blackwood, Lawnside (S), Swedesboro, Riddleton, Dividing Creek.

Coast Strip.—Sandy Hook (NB), Seaside Park, Manahawkin, Barnegat City (L), Barnegat City Jnc. (L), Holgate's (L), Absecon (S), Atlantic City (S), Beesleys Pt. (S), Ocean City (S), Palermo (S), Holly Beach (UP).

Cape May.—Three miles west Court House.

***Hypericum boreale* (Britton). Northern St. John's-wort.**

Hypericum Canadense boreale Britton, Bull. Torrey Bot. Club XVIII. 367. 1891. n. n. for *H. C. minimum* Gray [Wisconsin].

*There is no specimen to substantiate the record for Anglesea, given by Keller and Brown, and exhaustive collections from the same vicinity have failed to discover it.

Frequent in boggy locations in the northern counties; south along the coast and occasional in the Middle district and Pine Barrens in boggy situations.

Fl.—Early July to early September, probably. *Fr.*—Mid-September through autumn.

Middle District.—Delanco.

Pine Barrens.—Folsom.

Coast Strip.—Seaside Park, Forked River, Peahala (L), Beach Haven Terrace (L), Barnegat City (L), Sherburn's (L), Holgate's (L), St. Albans (L), Holly Beach (UP).

Cape May.—Cold Spring (S).

***Hypericum gymnanthum* Engelm. and Gray. Clasping-leaved St.**

John's-wort.

Hypericum gymnanthum Engelmann and Gray, Bost. Jour. Nat. Hist. V. 212. 1847 [Houston, Tex.].—Britton 68.—Keller and Brown 224.

Low ground; occasional in the lower Middle district.

First detected in the State by Mr. Benjamin Heritage at Mickleton in 1887, and collected later at Medford by Mr. Stewardson Brown and the writer July 27, 1902.

Flowers—and immature fruit July 27.

Middle District.—Medford, Mickleton (H).

***Hypericum majus* (A. Gray). Larger Canada St. John's-wort.**

Hypericum Canadense var. *major* Gray, Man. Ed. V. 86. 1867 [Lake Superior, Southern N. Y. and southward].—Britton 68.

Recorded in Britton's Catalogue from Hudson and Sussex Counties, and once collected near Camden by Mr. C. F. Parker September 7, 1862. I have examined Mr. Parker's specimen, which is still in his herbarium, now at Princeton University, and there is no question as to the correctness of his identification.

Mature fruit September 7.

Middle District.—Camden (P).

***Hypericum canadense* L. Canada St. John's-wort.**

Hypericum canadense Linnæus, Sp. Pl. 785. 1753 [Canada].—Knieskern 8.—Britton 68.

Common in damp sandy soil throughout the coastal plain, but not abundant in the northern counties.

The most abundant small St. John's Wort found in the Pine Barrens.

Fl.—Early July to early September. *Fr.*—Mid-September through autumn.

Middle District.—Red Bank (NB), New Egypt, Medford, Lawnside (S), Swedesboro, Dividing Creek.

Pine Barrens.—Allaire, Speedwell (S), Parkdale, Albion, Williamstown Inc., Landisville, Mouth of Batsto, Tuckahoe (S).

Coast Strip.—Pt. Pleasant, Long Branch, Manahawkin, Ship Bottom (L), Barnegat City (L), Peahala (L), Spray Beach (L), Holgate's (L), Palermo.

Cape May.—Court House (S).

SAROTHTA L.

Sarothra gentianoides L. Orange Grass.

Pl. LXXXII., Fig. 1.

Sarothra Gentianoides Linnæus, Sp. Pl. 272. 1753 [Virginia and Pennsylvania].

Hypericum sarothra Knieskern 8.

Hypericum gentianoides Britton 68.

Sandy ground; common throughout the State, often occurring on roadsides and railroad embankments, like a weed.

Fl.—Mid-July to mid-September. *Fr.*—Late September through autumn.

Middle District.—New Egypt, Clementon, Swedesboro.

Pine Barrens.—Bear Swamp (S), Landisville (T), Hammonton (S), Egg Harbor City, Tuckahoe, Tuckerton (S).

Coast Strip.—Asbury Park (P), Pt. Pleasant, Island Heights, Spray Beach (L), Atlantic City (S), Wildwood.

Cape May.—Cold Spring (S).

TRIADENUM Rafinesque.

Triadenum virginicum (L.). Pink St. John's-wort.

Hypericum virginicum Linnæus, Sp. Pl. 2nd. Ed. 1104. 1763 [Pennsylvania]. Britton 68.

Open swamps; common throughout the State.

A characteristic plant of every bog.

Fl.—Early August to early September. *Fr.*—Mid-September into October.

Middle District.—New Egypt, Fish House, Kaighns Pt., Washington Park (S), W. Deptford, Bridgeport, Dividing Creek.

Pine Barrens.—Jones Mill (S), Speedwell (S), Bear Swamp (S), Clementon (S), Ancora (P), Parkdale (S), Quaker Bridge (NB), Vineland (T), Egg Harbor City, Tuckahoe (S).

Coast Strip.—Long Branch, Seaside Park, Peahala (L), Spray Beach (L),

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Holgate's (L.), Absecon (S), Ocean City (S), Wildwood.

Cape May.—Bennett (S), Cape May.

Triadenum petiolatum (Walt.). **Large Pink St. John's-wort.**

Hypericum petiolatum Walter, Fl. Car. 191. 1788 [S. Carolina].—Britton 68.
—Keller and Brown 225.

The occurrence of this species in New Jersey rests on a fragment in the herbarium of the Philadelphia Academy labeled "near Camden," from the herbarium of J. K. Potts. Torrey and Gray's statement that it occurs in the State (Flora. N. A., i, 168) is no doubt based on the same specimen.

Family ELATINACEÆ. Waterworts.

ELATINE L.

Elatine americana (Pursh.). **Waterwort.**

Peplis americana Pursh, Fl. Am. Sept. 238. 1814 [Pennsylvania].

Crypta minima Nuttall, Jour. Acad. Nat. Sci., Phila., I. 117. 1817.—[Shores of Delaware, above Phila.].—Barton, Fl. Phila. I. 17. 1818.

Elatine Americana Britton 66.

Reported on muddy shores of the Passaic River and Lake Hopatcong; also on the Delaware at Camden and along the upper coast and in the Pines.

Fl.—Early July well into autumn.

Middle District.—Camden, in mud, Delaware river (P).

Coast Strip.—Bayhead, Spring Lake, Pt. Pleasant.*

Pine Barrens.—Lakehurst (Mackenzie), 8 miles south of Manchester (P), Ferago Pond (C).

Family CISTACEÆ. Rock-rose, etc.

Key to Species.

a. Petals 5, yellow, showy.

b. Leaves lanceolate or oblong, flowers 15–30 mm. broad.

c. Petaliferous flowers 5–12, in a short terminal cymose raceme, their capsules 3–4 mm. long, little, if at all, surpassed by later branches; capsules of later apetalous, flowers 1 mm. in diameter.

Helianthemum majus, p. 559

cc. Petaliferous flowers 1–2, their capsules 6–8 mm. long, much overtopped by later branches, capsules of apetalous flowers often 3–4 mm. in diameter.

H. canadense, p. 560

bb. Leaves subulate or scale like, imbricated; flowers about 8 mm. broad, plant 1–2 dm. high.

* The record for Wenonah (Githens) in Keller and Brown's list has not been verified.

c. Greenish, soft pubescent, leaves subulate, 6-8 mm. long.

Hudsonia ericoides, p. 561

cc. Pale, hoary pubescent, leaves 2 mm. long, appressed.

H. tomentosa, p. 560

aa. Flowers very small, greenish or purplish, numerous in panicles, stem leaves minute and entire, horizontal basal leafy shoots develop late in the season, often with broader leaves.

b. Leaves on basal shoots oblong to ovate, not three times as long as broad.

c. Pubescence of the stem spreading, panicle dense.

Lechea villosa, p. 563

cc. Pubescence of the stem appressed, panicle more open.

d. Outer sepals exceeding the inner.

L. minor, p. 562

dd. Outer sepals shorter than the inner.

e. Fruiting heads obovoid, pyriform, basal shoots green.

L. racemulosa, p. 562

ee. Fruiting heads subglobose, basal shoots hoary, pubescent.

L. maritima, p. 563

bb. Leaves on basal shoots narrowly lanceolate to linear.

c. Inner sepals 1-nerved, usually exceeded by the outer ones, stem leaves narrowly linear.

L. tenuifolia, p. 563

cc. Inner sepals 3-nerved, equalling or longer than the outer ones.

d. Plant canescent pubescent.

L. maritima, p. 563

dd. Plant green.

L. leggettii, p. 563

HELIANTHEMUM Persoon.

The flowers are of two kinds; large showy petaliferous blossoms appearing early, and small, practically apetalous ones, appearing later and bearing much smaller capsules. Some specimens in the latter stage resemble certain species of *Lechea*.

Helianthemum majus (L.). Hoary Frostweed.

Lechea major Linnæus, Sp. Pl. 90. 1753 [Canada].

Helianthemum corymbosum Barton, Fl. Phila. II. 7. 1818.—Willis 10.—Britton 53.

Helianthemum ramuliflorum Pursh, Fl. Am. Sept. II. 363. 1814.—Barton, Fl. Phila. II. 7. 1818.

Dry sandy soil; common throughout our region, except in the Pine Barrens.

Fl.—(Petaliferous) Late May to late June. *Fr.*—(Of apetaliferous flowers) Early July to early September.

Middle District.—Farmingdale (S), Arney's Mt. (S), Pemberton (NB), New Egypt, Medford, Haddonfield (C), Clementon, Griffith's Swamp, Tomlin, Woodbury, Swedesboro, Centerton (S).

Coast Strip.—Asbury Park, Como, Palermo.

Cape May.—Seaville, Court House, Anglesea Inc. (S), Bennett.

Helianthemum canadense (L.). Frostweed.

Cistus canadensis Linnæus, Sp. Pl. 526. 1753 [Canada].

Helianthemum canadense Barton, Fl. Phila. II. 6. 1818.—Knieskern 7.

Helianthemum majus Britton 53.

Common in dry sandy soil throughout the State, especially abundant in the Pine Barrens.

As the apetalous flowers begin to develop the plant looks very much like a large flowered *Lechea*.

Fl.—(Petaliferous) Early May to late July. *Fr.*—(Of apetaliferous flowers) Early August to early October.

Middle District.—Hartford, Medford (S), Camden, Mickleton, Swedesboro.

Pine Barrens.—Farmingdale, Lakehurst, Browns Mills, Whitings, E. and W. Plains (S), Speedwell, Applepie Hill (S), Clementon (S), Summer, Albion, Atco, Landisville, Cain's Mill, Folsom, Pleasant Mills, Mays Landing (S), Absecon.

Cape May.—Court House, Bennett, Cape May Pt. (S).

Helianthemum corymbosum Michx. Pine Barren Frostweed.

Helianthemum corymbosum Michaux, Fl. Bor. Am. I. 307. 1803 [Carolina and Georgia].

This plant has been credited to New Jersey by several writers, but the only specimen from that State that proves to belong to this species is one of Nuttall's, in the Philadelphia Academy herbarium. I have a strong suspicion that two or three of Nuttall's specimens, notably *Chondrophora virgata*, which are labeled New Jersey, really came from farther south, and perhaps that is the case with the present plant. At all events, diligent search has failed to discover another specimen. Nuttall's label is simply "N. Jersey." Dr. Britton says: (Ill. Flora, ii, p. 440) "Specimens [from N. J.] so called, prove to be *H. canadense*," but the Nuttall plant is certainly *corymbosum*.

HUDSONIA L.

Hudsonia tomentosa Nutt. Woolly Hudsonia, Beach Heather.

Hudsonia tomentosa Nuttall, Gen. II. 5. 1818 [Coast of N. J., Del. and Md.].
—Knieskern 7.—Willis 10.—Britton 54.—Keller and Brown 226.

Common on sands of the seacoast and occasional in the Pine Barrens.

This low, white, woolly shrub, seldom over six inches in height, forms patches of considerable extent over the wind-swept sand dunes of the coast, which it so closely resembles in color as to be inconspicuous, except in late spring, when its branches are covered with the little starry yellow blossoms. Like a few other maritime species, notably *Lechea maritima*, it strays inland here and there in the white sand of the Pine Barrens, where it seems to find conditions quite as favorable to its growth.*

Fl.—Late May to early June. *Fr.*—Late June into July.

Pine Barrens.—Hornerstown, Toms River (S), Head of Batsto (S), Speedwell, Quaker Bridge (P).

Maritime.—Sandy Hook, Long Branch, Asbury Park, Pt. Pleasant, Forked River, Seaside Park, Barnegat, Beach Haven Terrace (L), Barnegat City (L), Beach Haven (L), Atlantic City, Longport (S), Ocean City (S), Five-Mile Beach, Cape May (S), Cape May Pt. (S).

Hudsonia ericoides L. Heath-like *Hudsonia*, Pine Barren Heather.

Hudsonia ericoides Linnæus, Mantissa I. 74. 1767 [Virginia] —Pursh, *Fl. Am.* Sept. II. 364. 1814.—Nuttall, *Gen.* II. 4. 1818.—Knieskern 7.—Willis 10.—Britton 54.—Keller and Brown 226.

Common in white sand in the Pine Barrens, also reported from Middlesex County.

This is the "Heather" of the Pine Barrens; the characteristic species in the patches of open white sand. It resembles the preceding in manner of growth, but is greenish instead of grayish-white, lacking the dense tomentum; and its foliage is somewhat bristly, as contrasted with the softness of the other species. On the "plains," where it reaches its maximum development, I have seen it only in late June, when the season of flowering was past, but a little earlier, judging from the abundance of seed pods, the whole surface of this desolate region must have been a carpet of golden bloom.

Fl.—Late May to early June. *Fr.*—Late June into July.

Pine Barrens.—Allaire, Pt. Pleasant, Toms River, Forked River, Island Hts., Bamber, Barnegat, New Lisbon (C), Browns Mills, South of New Egypt, E. Plains (S), Clementon, Albion, Sumner, Head of Batsto (S), Iona (S), Iskip, Williamstown Jnc., Folsom, Willow Grove (NB), Mouth of

* Cf. Bartlett, *Rhodora*, Dec. 1909, 221. *In re* maritime plants away from the coast.

Batsto (S), Vineland (S), Hammonton (Bassett), Quaker Bridge, Pleasant Mills, Batsto, Mays Landing (S), Bridgeton, Atco (P), Absecon (P).

Coast Strip.—Atlantic City.

LECHEA.

Flowering and Fruiting Data.—The date under "Basal leaves" signifies the approximate time of their appearance. Along with the capsules they are more or less persistent over winter into early summer.

The flowers are small and inconspicuous, and of little or no taxonomic importance. They appear in mid or late summer. Identification can only be satisfactorily made when mature fruit is present, or better when the basal leaves also are developed.

Lechea minor L. Thyme-leaved Pinweed.

Pl. LXXXIII., Fig. 3.

Lechea minor Linnæus, Sp. Pl. 90. 1753 [Canada].

Lechea thymifolia Knieskern 8.—Willis 11.—Britton 54.

Lechea Novæ-Cæsareæ Austin, Gray's Man. Ed. V. 81. 1867 [N. New Jersey and adjacent N. Y.].

Frequent in the Pine Barrens, and occasional in outlying islands in the Middle district and in the Cape May peninsula.

Fr.—Late August to early October. *Basal leaves*.—About mid-October.

Middle District.—Red Bank (C), Long Branch (C), Griffith's Swamp, Haddonfield.

Pine Barrens.—Cassville, Toms River, Pasadena, Chatsworth, Atco (C), Penbryn (S), Folsom, Quaker Bridge (S), White Horse (P).

Cape May.—Court House (S).

Lechea racemulosa Michx. Oblong-fruited Pinweed.

Pl. LXXXIII., Fig. 2.

Lechea racemulosa Michaux, Fl. Bor. Am. I. 77. 1803 [Virginia].—Pursh, Fl. Am. Sept. I. 91. 1814.—Britton 54.

Common in dry sandy ground of the Pine Barrens and Cape May peninsula, and occasional in the North and Middle districts.

Fr.—Early August to mid-September. *Basal leaves*.—About late September.

Middle District.—Oaklyn (S), Orchard (S), Bridgeton (NB).

Pine Barrens.—Forked River (NB), Fort Barnegat, Speedwell (S), Parkdale (S), Penbryn (S), Palermo (S), Tuckahoe (S).

Cape May.—Dennisville (S), Cold Spring.

***Lechea villosa* Ell. Large Hairy Pinweed.**

Pl. LXXXIII., Fig. 1.

Lechea villosa Elliot Bot. S. Car. and Ga. I. 184. 1817 [S. Carolina].*Lechea major* Barton, Fl. Phila. I. 75. 1818.—Knieskern 7.*Lechea minor* Britton 54.

Dry soil; frequent throughout the State.

Fr.—Late July to early September. *Basal leaves.*—About mid-September.*Middle District.*—Keyport (NB), New Egypt, Medford (S), Orchard (S), Lindenwold (S), Westville, Mickleton.*Pine Barrens.*—Bamber, Manahawkin, Speedwell (S), Atco, Malaga (S), Penbryn (S), Clementon, Landisville, Dennisville (S).*Cape May.*—Seaville, Court House (S), Cape May Pt., Bennett.***Lechea maritima* Leggett. Beach Pinweed.**

Pl. XXXIII., Fig. 4.

Lechea maritima Leggett, Britton Prelim. Cat. N. J. Plants 13. 1881. n. n. for *L. thymifolia* Pursh (nec Michaux). [Virginia].—Britton 54.—Keller and Brown 226.Common on sandy dunes, etc., along the coast and occasional in the Pine Barrens. The inland plant may prove to be *L. m. interior* Robinson (Rhodora, 1908, 34), but it does not seem to differ from the coast form.*Fr.*—Early September to early October. *Basal leaves.*—About late September.*Pine Barrens.*—Barnegat, Winslow Jnc. (S), Hammonton, Quaker Bridge (C), Egg Harbor City (S).*Maritime.*—Sandy Hook, N. Spring Lake (NB), Seaside Park, Spray Beach (L), Barnegat City (L), Atlantic City, Longport (S), Ocean City, Holly Beach, Wildwood, Cape May, Cape May Pt.***Lechea tenuifolia* Michx. Narrow-leaved Pinweed.***Lechea tenuifolia* Michaux, Fl. Bor. Am. I. 77. 1803 [near Santee, S. C.].—Britton 55.—Keller and Brown 226.

But one record: "Phalanx Monmouth Co.—Leggett." (Britton's Catalogue.)

Lechea leggettii* Britt. and Holl. Leggett's Pinweed.

Pl. LXXXIII., Fig. 5.

Lechea Leggettii Britton and Hollick, Prelim. Cat. N. Y. Plants 6. 1888 n. n. for *Lechea minor* Lam. (nec L.) [Canada].—Britton 54.*Lechea minor* Knieskern 8.

*I am in doubt as to the identity of *L. Leggettii* var. *pulchella*, Britton's Catalogue 55.

Common in dry soil in the northern counties and occasional southward, especially along the Coast strip.

Fr.—Late July to mid-September. *Basal leaves.*—About mid-September.

Middle District.—Medford, Dividing Creek.

Pine Barrens.—Atsion, Egg Harbor City.

Coast Strip.—Manahawkin, Anglesea, Wildwood.

Cape May.—Cape May (OHB).

Family VIOLACEÆ. Violets.

VIOLA L.*

Key to the Species.

- a. Plants stemless, leaves and flower scapes growing direct from a root-stalk.
 - b. Style club-shaped, beakless; orange tips of the stamens large and conspicuous in the center of the flower, leaves divided into numerous linear segments. *Viola pedata lineariloba*, p. 565
 - bb. Style dilated upward, with a conical beak on the lower side.
 - c. Flowers blue or lilac purple.
 - d. Leaves heart shaped.
 - e. Plants glabrous or essentially so.
 - f. Cleistogamous flowers on erect or ascending peduncles.
 - g. Cleistogamous flowers long and slender, petaliferous flowers usually pale blue with dark blue center. *V. cucullata*, p. 568
 - gg. Cleistogamous flowers ovoid, petaliferous flowers pale purple. *V. affinis*, p. 568
 - ff. Cleistogamous flowers on short prostrate peduncles, petaliferous flowers deep violet. *V. papilionacea*, p. 568
 - ee. Plants more or less pubescent.
 - f. Leaves palmately 5-9 lobed. *V. palmata*, p. 566
 - ff. Leaves, or some of them, hastately 3-5 lobed. *V. p. tribola*, p. 566
 - fff. Leaves all undivided.
 - g. Pubescence general. *V. p. sororia*, p. 567
 - gg. Pubescence confined to the upper surface of the leaves. *V. hirsutula*, p. 568
 - dd. Leaves not heart shaped.
 - e. Ovate oblong, pubescent, short petioled, often with short basal lobes. *V. fimbriatula*, p. 569
 - ee. Lanceolate, usually glabrous, basal lobes often dilated and incised. *V. sagittata*, p. 569
 - eee. Deltoid, glabrous, with short lobes at base, petals often emarginate. *V. emarginata*, p. 570
 - eeee. Divided into narrow lobes, essentially glabrous. *V. brittoniana*, p. 567

* Cf. Stone Proc. Acad. Nat. Sci. Phila., 1903, pp. 656-699. Violets of Philadelphia and vicinity.

cc. Flowers white.

d. Leaves lanceolate. *V. lanceolata*, p. 571dd. Leaves ovate, acute. *V. primulifolia*, p. 571

ddd. Leaves heart shaped.

e. Stem not spotted. *V. pallens*, p. 570ee. Stem red spotted. *V. blanda*, p. 570

bbb. Style dilated upward, beakless, flowers yellow, leaves round, cordate.

V. rotundifolia, p. 570

aa. Plants with leafy stems.

b. Style capitate, beakless, bearded at the summit, flowers yellow.

c. Plant softly pubescent, root leaves often wanting, stem leaves often over 7 cm. wide. *V. pubescens*, p. 571cc. Plant sparingly pubescent, root leaves usually 1-2, stem leaves smaller. *V. scabriuscula*, p. 572

bb. Style not capitate, slender, stipules fringed-toothed.

c. Flowers white. *V. striata*, p. 572cc. Flowers pale violet. *V. conspersa*, p. 572bbb. Style much enlarged upward into a globose, hollow summit, stipules large, leaf-like, lyrate pinnatifid, flowers bluish white, tinged with yellow. *V. rafinesquii*, p. 572

Flowering and Fruiting Data.—The flowering season indicated is that of petaliferous flowers. Under "fruit of cleistogenes" is given the approximate time when mature capsules are usually present.

The flowers of violets are of two kinds. The showy petaliferous blossoms appear early, and only regularly produce fruit in a few species. The small green apetalous flowers (cleistogenes) appear later, and generally produce fruit abundantly. The characters of the cleistogenes, the seeds and the capsules, are very important in the systematic study of the genus.

Viola pedata lineariloba DC. Bird-foot Violet.

Pl. LXXXV.

Viola pedata var. *lineariloba* DeCandolle, Prodr. I. 291. 1824, based on Curtis Bot. Mag. pl. 89 [Virginia].—Stone, Proc. Acad. Nat. Sci. Phila., 1903, 681.

Viola pedata Barton, Fl. Phila. I. 120. 1818.—Knieskern 7.—Willis 9.—Britton 55.

Dry sandy soil; occasional through the northern counties, common in the Middle district and down the Coastal strip to Cape May; rare and apparently introduced in the Pine Barrens.

The Bird-foot Violet, so different from all the other species, with its orange cluster of stamens and large lilac purple flowers,

is one of the showiest spring flowers of West Jersey. The plants differ greatly in the length of the pedicels; in some they are so short that the flowers appear almost sessile, while in other more luxuriant examples they stand up six inches from the ground. Like most of the other blue violets it is occasionally found blooming in the autumn. The true *V. pedata*, with the two upper petals, dark purple, I have never found within our limits.

Fl.—Late April to mid-May, sporadically later. *Cleistogenes* wanting.

Middle District.—Famingdale, Pemberton (NB), Medford (S), Orchard (S), Haddonfield, Clementon, Washington Park, National Park, Westville, Mantua, Mickleton, Woodbury, Zion, Glassboro, Marlboro (NB), Bridgeton (S).

Pine Barrens.—Berlin, Whitings.

Coast Strip.—Pt. Pleasant, Petersburg, Ocean City Inc.

Cape May.—Court House.

Viola palmata L. **Palmate Violet.**

Viola palmata Linnæus, Sp. Pl. 933. 1753 [Virginia].—Britton 55 (in part).

Rich woodlands of the northern counties and less common southward in the Middle district.

Fl.—Late April to mid-May. *Fr.*—Of *cleistogenes*, mid-June to mid-July (approx.).

Middle District.—Freehold (Willis), Medford (S).

Viola palmata triloba Schwein. **Three-lobed Violet.**

Viola triloba Schwein, Amer. Jour. Sci. V. 57. 1822 [no locality, probably Pennsylvania].

Viola cucullata var. *palmata* Knieskern 7.—Willis 9.

Viola palmata Britton 55 (in part).

Viola palmata dilatata Stone, Proc. Acad. Nat. Sci., Phila., 1903, 676.

Common in woodlands of the northern counties and less abundant southward in the Middle and Cape May districts.

Fl.—Late April to mid-May. *Fr.*—Of *cleistogenes*, mid-June to mid-July (approx.).

Middle District.—Medford (S), Haddonfield (S), Collingswood (S), Bridgeton (S), Dividing Creek.

Cape May.—Bayside (OHB), East of Price's Beach (S).

Viola palmata sororia Willd. Blue Woodland Violet.

Viola sororia Willdenow, Hort. Berol. pl. LXXII. 1806 [North America].

Frequent with the preceding.

These three forms show all sorts of intergrades. The extremes, with the narrowly divided leaves (*palmata*) and undivided leaves (*sororia*), are much less common in our limits than the more or less three-lobed (*triloba*).

Fl.—Late April to mid-May. *Fr.*—Of cleistogenes, mid-June to mid-July (approx.).

Middle District.—Medford (S).

Cape May.—Cape May.

Viola brittoniana Pollard. Britton's Violet.

Viola Brittoniana Pollard, Bot. Gazette XXVI., p. 332. 1898 [Boston to Va. Beach].—Keller and Brown 227.—Stone, Proc. Acad. Nat. Sci. Phila. 1903, 679.

Viola atlantica Britton, Bull. Torr. Bot. Club 1897, 92.

Viola palmata Britton 55 (in part).

Frequent along the Coast strip and occasional in the Middle district.

This very distinct form of the cut-leaved group was first recognized by Dr. N. L. Britton, Director of the New York Botanic Garden, formerly botanist to the New Jersey Geological Survey, and author of the Catalogue of New Jersey Plants, 1888. To Dr. Britton's example and encouragement, and to the influence of his Illustrated Flora and Manual are mainly due the development of the "new school" of botanists in North America and the great advance in our knowledge of the flora of the Middle States, where he has been for many years a leader both in the field and the herbarium.

Fl.—Late April to early June. *Fr.*—Of cleistogenes, late July to late August (approx.).

Middle District.—Farmingdale, Arney's Mt. (S), Lawnside (S), Orchard (S), Mickleton, Swedesboro, Salem (NB).

Coast Strip.—Sea Bright (NB), Bay Head, Manahawkin, Cox's, Tucker-ton, West Creek, Somers Point, Absecon (Bassett), Ocean City Inc., Tuckahoe (S), Cold Spring (S), Cape May.

Viola pectinata Bicknell. **Pectinate Violet.**

Viola pectinata Bicknell, Torrey IV. 129. 1904 [Woodmere, L. I.].

This curious triangular-leaved violet is usually associated with *V. brittoniana*, of which it seems to be an entire leaved form. Discovered in our region by Mr. Bayard Long.

Cape May.—Bennett.

Viola affinis LeC. **Thin-leaved Wood Violet.**

Viola affinis LeConte, Ann. Lyc. N. Y. II. 138. [no locality]—Stone, Proc. Acad. Nat. Sci. Phila. 1903, 671.

Frequent in moist woods and edges of thickets in the North and Middle districts.

Fl.—Late April to late May. *Fr.*—Of cleistogenes, mid-June to mid-July (approx.).

Middle District.—Medford (S), Oaklyn (S), Westville, Gloucester Co., Quinton.

Vilooa papilionacea Pursh. **Blue Meadow Violet.**

Viola papilionacea Pursh, Fl. Am. Sept. I. 173. 1814 [Philadelphia].—Stone, Proc. Acad. Nat. Sci. Phila. 1903, 670.

Fields and edges of woodland; common in the Northern and Middle districts.

Fl.—Mid-April to mid-May. *Fr.*—Of cleistogenes, early June to early July (approx.).

Middle District.—Kinkora, Blackwood, Collingswood, Woodbury, Medford (S), Alloway.

Viola hirsutula Brainerd. **Southern Wood Violet.**

Viola hirsutula Brainerd, Rhodora 1907, 98. [n. n. for *V. villosa* Nutt. nec Walter.—Philadelphia].

Viola cucullata var. *cordata* Britton 56.

Viola villosa cordifolia Stone, Proc. Acad. Nat. Sci. Phila. 1903, 670.

Occasional in woods in the Northern and Middle districts.

Fl.—Late April to late May. *Fr.*—Of cleistogenes, mid-June to mid-July (approx.).

Middle District.—Kinkora, Collingswood (S).

Viola cucullata Ait. **Blue Marsh Violet.**

Pl. LXXXIV., Fig. 1.

Viola cucullata Aiton, Hort. Kew. III. 288. 1789 [North America].—Knieskern 7.—Britton 55.

Viola cucullata macrotis and *leptostachya* Stone, Proc. Acad. Nat. Sci. Phila. 1903, 673.

Common in swamps and meadows throughout the State, except in the Pine Barrens.

Fl.—Late April to late May. *Fr.*—Of cleistogenes, mid-June to mid-July (approx.).

Middle District.—Freehold (Willis), Farmingdale, Bordentown, Delanco, Fish House (S), Delair, Medford (S), Orchard (S), Haddonfield, Collingswood, Blackwood, Woodbury, Westville, Washington Park, Glassboro, Bridgeton.

Coast Strip.—Palermo (S), Cold Spring (OHB).

***Viola sagittata* Ait. Arrow-leaved Violet.**

Pl. LXXXVII.

Viola sagittata Aiton, Hort. Ken. III. 287. 1789 [Pennsylvania].—Barton, Fl. Phila. I. 120. 1818.—Knieskern 7.—Britton 56.

Frequent in fields and on banks in the Northern and Middle districts and occasional on the Coast Strip. Rare along railroads in the Pine Barrens.

Fl.—Late April to mid-May. *Fr.*—Of cleistogenes, late June to late August (approx.),

Middle District.—Shark River, Fish House, Locust Grove (S), Orchard (S), Oaklyn, Woodbury, Yorktown, Riddleton, Alloway.

Pine Barrens.—Whitings (S).

Coast Strip.—Pt. Pleasant, Palermo.

***Viola fimbriatula* J. E. Smith. Ovate-leaved Violet.**

Pl. LXXXVI.

Viola fimbriatula J. E. Smith, Rees Cyclopædia XXXVIII. 1817 [Canada to Virginia].

Viola ovata Barton, Fl. Phila. I. 121. 1818.—Willis 9.

Viola sagittata var. *ovata* Britton 56.

Frequent in dry soil throughout the Coastal plain, except in the Pine Barrens, where it occurs mainly along railroads and is not common.

Fl.—Late April to mid-May. *Fr.*—Of cleistogenes, late June to late August (approx.).

Middle District.—Haddonfield (S), Westville, W. Deptford, Collingswood (S), Swedesboro.

Pine Barrens. Whitings (S), New Germany (T).

Coast Strip.—Asbury Park, Pt. Pleasant, Barnegat City Jnc. (L), Palermo, Mays Landing (NB).

Cape May.—Court House (S).

***Viola emarginata* (Nutt.). Triangle-leaved Violet.**

Viola sagittata emarginata Nuttall, Gen. I. 147. 1818 [New Jersey, near Philadelphia].—Barton, Fl. Phila. I. 120. 1818.—Stone, Proc. Acad. Nat. Sci. Phila. 1903, 684.

Occasional or locally common through the Middle, Coast and Cape May districts; rare in the Pine Barrens along railroads.

Fl.—Late April to mid-May. *Fr.*—Of cleistogenes, late June to late August (approx.).

Middle District.—Medford (S), Orchard (S), Tuckahoe.

Pine Barrens.—Folsom.

Coast Strip.—Bayhead.

Cape May.—Court House, Cape May (OHB).

***Viola rotundifolia* Michx. Round-leaved Violet.**

Viola rotundifolia Michaux, Fl. Bor. Am. II. 150. 1803 [High Mountains of Carolina].—Britton 56.—Keller and Brown 228.

Frequent or occasional in rich woods of the Northern Counties; very rare southward within our limits in the upper Middle district.

Fl.—Early April to late April. *Fr.*—Of cleistogenes, late June to late August (apparently).

Middle District.—Keyport (C), Kinkora.

***Viola blanda* Willd. Red-stemmed White Violet.**

Viola blanda Willdenow, Hort. Berol. pl. XXIV. 1806 [North America].

Rich woods of the northern counties, rare southward, just entering our limits.

Fl.—Immature cleistogenes May 28–30, 1910.

Middle District.—Farmingdale.

Viola pallens* (Banks). Sweet White Violet.*PL. LXXXIX.**

Viola rotundifolia pallens "Banks" DeCandolle, Prodr. I. 295 [Labrador].

Viola blanda Barton, Fl. Phila. I. 122. 1818.—Knieskern 7.—Britton 56.

In swampy ground; rather common in the northern counties, becoming much less plentiful southward in the Middle district.

Fl.—Late April to late May. *Fr.*—Of cleistogenes, mid-June to mid-July (approx.).

Middle District.—Bordentown, Riverton (Bassett), Merchantville, Sewell, Woodbury, Clementon.

***Viola primulifolia* L. Primrose-leaved Violet.**

Pl. LXXXVIII., Fig. 1.

Viola primulifolia Linnæus, Sp. Pl. 934 [Virginia].—Barton, Fl. Phila. I. 123. 1818.—Knieskern 7.—Willis 8.—Britton 56.—Stone, Proc. Acad. Nat. Sci. Phila. 1903, 668.

Plentiful in swamps throughout the Middle and Coast districts, following the Coastal plain north of our limits, also occasional in the Pine Barrens.

Fl.—Late April to early June. *Fr.*—Of cleistogenes, mid-August to mid-October (approx.).

Middle District.—Farmingdale, Bordentown, Kinkora, Delanco, New Egypt, Browns Mills, Medford, Oaklyn, W. Deptford, Oaklyn (S), Westville, Woodbury, Collingswood, Glassboro, Mickleton, Yorktown, Alloway.

Pine Barrens.—Landisville (T), Pleasant Mills, Egg Harbor (S), Tuckahoe.

Coast Strip.—Seabright (NB), Pt. Pleasant, Bayhead, Palermo.

***Viola lanceolata* L. Lance-leaved Violet.**

Pl. LXXXVIII., Fig. 2.

Viola lanceolata Linnæus, Sp. Pl. 934. 1753 [Canada].—Barton, Fl. Phila. I. 123. 1818.—Knieskern 7.—Britton 56.—Stone, Proc. Acad. Nat. Sci. Phila. 1903, 669.

Plentiful in swamps and bogs throughout our region and northward on the Coastal plain and along the Delaware River.

This is the most widely distributed of the White Violets in our region, and the most abundant violet of any kind in the Pine Barrens. It is apparently the only one that is truly indigenous there, all the others being intrusions from the Middle district.

Fl.—Late April to early June. *Fr.*—Of cleistogenes, early September to early October (approx.).

Middle District.—New Egypt, Delanco, Medford, Orchard (S), Haddonfield, Locust Grove, Haddonfield, Glassboro, Center Sq., Bridgeton (S).

Pine Barrens.—Toms River, Forked River, Bear Swamp (S), Head of Batsto, Atco, White Horse, Head of Batsto, Clementon (S), Landisville (T), Pleasant Mills (T), Egg Harbor River, Mays Landing (NB), Bellevue (T).

Coast Strip.—Bayhead, Spray Beach (L), Surf City (L), Barnegat City (L), Sherburn's (L).

Cape May.—South Dennis.

***Viola pubescens* Ait. Hairy Yellow Violet.**

Viola pubescens Aiton, Hort. Ken. III. 290. 1789 [N. America].—Knieskern 7.—Willis 10.—Britton 57.

Frequent in woods of the northern counties, but very rare within our limits, being reported definitely only from Cream Ridge, Monmouth County (Willis), while Knieskern states that it occurs in the same county.

Fl.—[In Pennsylvania] Late April to mid-May. *Fr.*—Of cleistogenes, early July to early August (approx.).

Viola scabriuscula* (T. & G.). Smooth Yellow Violet.

Viola pubescens var. *scabriuscula* Torrey and Gray, Fla. N. A. I. 142. 1838 [Pennsylvania and Kentucky].—Britton 57.

Frequent in woods of the northern counties; rarely south in the Middle district.

Fl.—Mid-April to early May. *Fr.*—Of cleistogenes, late June to late July (approx.).

Middle District.—New Egypt, Kinkora, Swedesboro.

***Viola conspersa* Reich. American Dog Violet.**

Viola conspersa Reichenbach Iconographia Botanica I. 44. 1823 [New York].

Viola canina Willis 10.

Viola canina var. *Muhlenbergii* Britton 57.

Frequent in woods of the northern counties; rare and local southward in the Middle district and in the lower Cape May peninsula.

Fl.—Late April to late May.. *Fr.*—Of cleistogenes, mid-June to mid-July (approx.).

Middle District.—Freehold (C), Pemberton Jnc. (C), Lindenwold, Mullica Hill (NB), Swedesboro, Marlboro (NB).

Cape May.—Cold Spring (OHB).

***Viola rafinesquii* Greene. Field Pansy.**

Viola rafinesquii Greene, Pittonia IV. 9. 1899. n. n. for *V. tenella* Raf., Amer. Mo. Mag. IV. 191. 1819=*V. arvensis* Nutt. [Vicinity of Phila., prob. N. J.]

Viola bicolor Barton, Fl. Phila. I. 124. 1818.

Viola tenella Muhlenberg Cat. 26. 1813.—Britton 58.

Frequent in dry sandy situations throughout the Middle district and northward on rocks along the Delaware River.

*I am convinced that the record of *V. striata*, from our region, is based on an escape from cultivation.

Named in honor of C. S. Rafinesque (1783-1840), an eccentric naturalist, but to some extent fulfilling his own estimate that in matters of classification and nomenclature he was far in advance of the men of his time. Rafinesque was thoroughly acquainted with the flora of the Pines and discovered not a few new species among the swamps and bogs of this region.*

Fl.—Mid-April to mid-May.

Middle District.—New Egypt (NB), Crosswicks, Pensauken (S), Moorestown (NB), Medford, Locust Grove, Camden, Fancy Hill, Westville, Red Bank, Woodbury, Bridgeport, Mantua, Sewell, Bridgeton, Vineland (C).

Cape May.—Cape May Co. (C).

Order OPUNTIALES.

Family CACTACEÆ. Cacti.

OPUNTIA Miller.

Opuntia opuntia (L.). Prickly Pear.

Pl. XXIX., Fig. 1.

Cactus Opuntia Linnaeus, Sp. Pl. 468. 1753 [Pennsylvania and Virginia].—Pursh, Fl. Am. Sept. I. 327. 1814.—Nuttall, Gen. I. 296. 1818.

Opuntia vulgaris Knieskern 15.—Britton III.—Martindale, Bull. Tor. Bot. Club VI. 105.

Opuntia rafinesquii Willis 25.—Martindale, Bull. Tor. Bot. Club VI. 116.

Opuntia opuntia Britton 229.

Rocky situations in Bergen, Passaic, Morris and Hunterdon Counties, and frequent in sand in the Middle and Coast districts. Only known from the Pine Barrens close to the edge of the Middle district.

Fl.—Early June to early July.

Middle District.—Matawan (Willis), New Egypt, Pemberton (NB), Medford (S), Clementon (S), Swedesboro, Willow Grove (T), Vineland (S).

Coast Strip.—Sandy Hook, Pt. Pleasant (Kn), Toms River (Kn), Seaside Park (S), Barnegat City (L), Tucker's (L), Beach Haven (L), Atlantic City, Wildwood (UP).

* Cf. Life and Writings of Rafinesque. R. E. Call. Louisville 1895.

Order THYMELEALES.

Family THYMELEACEÆ. Mezereon, etc.

DIRCA L.

Dirca palustris L. Leatherwood.

Dirca palustris Linnæus, Sp. Pl. 358. 1753 [Virginia].—Britton 213.—Keller and Brown 230.

Occasional in rich woods of the northern counties and at one station within our limits.

Fl.—Early or mid-April, probably; before the leaves.

Middle District.—Two miles west Woodstown, Swedesboro (CDL), Salem (H).

Order MYRTALES.

Family LYTHRACEÆ. Loosestrife, etc.

Key to the Species.

- a. Calyx tube campanulate, flowers regular.
 - b. Flowers small axillary, low aquatic herbs.
 - c. Capsule bursting irregularly. [*Ammania koehnei*]¹
 - cc. Capsule splitting longitudinally. *Rotala ramosior*, p. 574
 - bb. Flowers large, purple, in axillary cymes, forming whorls, plant an aquatic shrub. *Decodon verticillatus*, p. 575
- aa. Calyx tube cylindrical, flowers regular, purple.
 - b. Flowers axillary, solitary.
 - c. Leaves mostly alternate, flowers 6–10 mm. broad. *Lythrum alatum*, p. 576
 - cc. Leaves mostly opposite, flowers 3 mm. broad. *Lythrum lineare*, p. 575
 - bb. Flowers in panicled terminal spikes 12–16 mm. broad. [*L. salicaria* L.]¹
- aaa. Calyx tube tubular, flowers irregular, purple, plant viscid. *Parsonia petiolata*, p. 576

ROOTALA L.

Rotala ramosior (L.). *Rotala*.

Ammania ramosior Linnæus, Sp. Pl. 120. 1753 [Virginia].—Britton 107.

Ammania humilis Barton, Fl. Phila. I. 91. 1818.—Willis 24.

Rotala ramosior Keller and Brown 230.

¹ Occurs on the Hackensack Marshes.

² Purple Loosestrife, wet meadows and swamps locally introduced.

Swamps in the western part of the Middle district to the Cape May peninsula and the lower Coast district and southwestern edge of the Pine Barrens. Also at Closter, Bergen County.

Fl.—Early July into September. *Fr.*—Late July through autumn.

Middle District.—Burlington (C), Florence, Delanco, Camden (P), Gloucester Pt., Mickleton, Sharpstown.

Pine Barrens.—Woodbine, Belleplain (S).

Coast Strip.—Palermo.

Cape May.—Anglesea Inc., Bennett.

DECODON J. F. Gmelin.

Decodon verticillatus (L.). Swamp Loosestrife.

Pl. CVIII., Fig. 1.

Lythrum verticillatum Linnæus, Sp. Pl. 446. 1753 [Virginia].—Barton, Fl. Phila. I. 223. 1818.

Nesæa verticillata Knieskern 14.—Britton 108.

Decodon verticillatus Keller and Brown 230.

Swamps; common throughout the State, especially in the Pine Barrens and Cape May district.

A conspicuous plant on the edges of ponds, with long, wand-like branches and verticils of purple flowers. The base of the stems, growing in water or wet sphagnum, are often covered with a leathery or corky growth, such as is frequent in *Rhexia virginica* and *aristosa*, *Hypericum adpressum*, *Ludvigia sphaerocarpa*, etc.

Fl.—Early August to early September. *Fr.*—Early September into October.

Middle District.—New Egypt, Fish House, Camden, Swedesboro, Dividing Creek.

Pine Barrens.—Toms River (P), Parkdale (S), Cedar Brook, Clementon, Malaga (S), Landisville (T), Mouth of Batsto, Mays Landing, Tuckahoe (S).

Coast Strip.—Manahawkin, Surf City (L), Barnegat City (L), Ship Bottom (L), Absecon (Bassett), Wildwood, Dennisville.

Cape May.—Seaville (S), Dias Creek, Green Creek, Whitesboro.

LYTHRUM L.

Lythrum lineare L. Linear-leaved Loosestrife.

Lythrum lineare Linnæus, Sp. Pl. 447. 1753 [Virginia].—Willis 24.—Britton 107.—Stone, Barton I. 23.

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Rare and local along the edge of the salt marshes, and reported from the Hackensack meadows north of our boundary.

Fl.—Early August to mid-September. *Fr.*—Mid-September, through autumn.

Maritime—Monmouth and Ocean Counties on Salt Marsh (C), Atlantic County (T), Palermo, Cold Spring.

Lythrum alatum Pursh. Wing-angled Loosestrife.

Lythrum alatum Pursh, Fl. Am. Sept. 334. 1814 [Lower Georgia].—Britton 107.—Keller and Brown 231.

Rare and local; apparently introduced.

Fl.—Late June to early August. *Fr.*—Mid-September through autumn.

Middle District.—New Egypt.

Pine Barrens.—Williamstown Jnc.

Coast Strip.—Beach Haven (L).

Cape May.—Cape May.

PARSONSIA P. Browne.

Parsonsia petiolata (L.). Clammy Cuphea.

Lythrum petiolatum Linnæus, Sp. Pl. 446. 1763 [Virginia].

Cuphea petiolata Britton 108.

Occasional or frequent in the Northern and Middle districts, usually appearing as a weed in cultivated fields.

Fl.—Late July into October. *Fr.*—Early September through autumn.

Middle District.—New Egypt, Moorestown (NB), Gloucester (P), Cooper's Ferry, Mickleton (H), Oaklyn (S), Lawnside (S).

Family MELASTOMACEÆ. Meadow-Beauties.

Key to the Species.

- a. Stem cylindric, very pubescent, flowers pale purple. *Rhexia mariana*, p. 578
- aa. Stem square or angled, flowers deep purple.
 - b. Plant more or less pubescent, leaves ovate. *R. virginica*, p. 576
 - bb. Plant glabrous, leaves lance-oblong. *R. aristosa*, p. 577

RHEXIA L.

Rhexia virginica L. Meadow Beauty.

Rhexia virginica Linnæus, Sp. Pl. 346. 1753 [Virginia].—Barton, Fl. Phila. I. 180. 1818.—Michaux, Fl. Bor. Am. I. 222. 1803.—Knieskern 14.—Willis 24.—Britton 106.

Common in sandy swamps throughout the Coastal plain region and northward to Closter, Bergen County, and Stockton, Hunterdon County. Especially abundant in the Pine Barrens.

This plant seems to take the place of such late spring plants as *Limodorum*, *Arethusa*, etc., in the color scheme of the swamps and bogs of the Pine Barrens, and throughout the latter part of summer its gorgeous flowers are conspicuous, sometimes in scattered clumps or individual plants, and again massed in large patches, so that the whole surface of the bog seems crimson. There is a certain amount of variation in color, some flowers being very deep magenta, but they never approach the pale pink of *R. mariana*.

Fl.—Early July to mid-September. *Fr.*—Early August into autumn.

Middle District.—New Egypt, Medford (S), Pemberton Inc. (S), Lindenvold, Fish House, Kaighns Pt., Washington Park, Lawnside (S), Center Square, Paulsboro, Salem (S).

Pine Barrens.—Whitings (S), Speedwell (S), Parkdale, Bear Swamp, Cedar Brook, Clementon (S), Landisville (T), Hospitality Branch (T), Egg Harbor City, Tuckahoe (S), Belleplain (S), Woodbine, Sea Isle Inc., Dennisville (S).

Coast Strip.—Waretown, Cox's, N. Beach Haven (L), Holgate's (L), Ocean View (S), Beesley's Pt. (S), Anglesea.

Cape May.—Green Creek (S), Cape May.

***Rhexia aristosa* Britton. Awned Meadow Beauty.**

Rhexia aristosa Britton, Bull. Torr. Bot. Club XVII. 14 pl. 99. 1890 [Egg Harbor City, N. J.].—Britton 107.—Keller and Brown 231.

Rare and local; confined to the Pine Barrens.

The original specimens were discovered by Messrs. E. H. Kilmer and John C. Gifford in August, 1888, at Egg Harbor City and sent to Rev. John C. Peters, who submitted them to Dr. Britton. He at once recognized them as representatives of a new species. While the plant was collected on several subsequent occasions at the type locality, it has been found at only one other station, and that only a few miles to the east, near Cologn, where Mr. C. F. Saunders discovered it on August 21, 1898.

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Fl.—Late July to late August. *Fr.*—Late September into autumn.

Pine Barrens.—Egg Harbor City, Cologn.*

Rhexia mariana L. Maryland Meadow Beauty.

Rhexia mariana Linnæus, Sp. Pl. 346. 1753 [Maryland].—Barton, Fl. Phila. I. 180. 1818.—Knieskern 14.—Willis 24.—Britton 107.—Keller and Brown 231.

Common in moist sandy ground throughout the Pine Barrens, Cape May peninsula and western part of the Middle district, occasional on the coast. Not reported in the State north of our limits.

Fl.—Early July to early September. *Fr.*—Early August into autumn.

Middle District.—New Egypt, Florence, Burlington (C), Pemberton Inc. (S), Mt. Holly, Moorestown (C), Medford (S), Haddonfield (S), Griffith's Swp. (C), Kirkwood (C), Lawnside (S), Woodbury, Lindenwold, Mickleton (H), Bridgeton (NB), Dividing Creek.

Pine Barrens.—Clementon, Albion, Atco, Braddock's Mill, Winslow (S), New Italy, Pancoast (S), Egg Harbor City, Mays Landing (NB), Tuckahoe (S).

Cape May.—Clermont, Dias Creek (S), Cold Spring (S), Cape May, Cape May Pt.

Coast Strip.—Pt. Pleasant (C), Cox's, Beesley's Pt. (S).

Family ONAGRACEÆ. Evening Primroses, etc.

Key to the Species.

- a. Calyx divisions and petals 2. *Circea lutetiana*, p. 585
- aa. Calyx divisions and petals 4.
 - b. Prostrate herbs, creeping or floating, leaves opposite, flowers axillary.
 - c. Flowers sessile, inconspicuous. *Isnardia palustris*, p. 580
 - cc. Flowers stalked, with yellow conspicuous petals. *Ludwigiantha arcuta*, p. 579
 - bb. Upright herbs.
 - c. Petals none, or small, yellowish or greenish, inconspicuous, flowers axillary.
 - d. Capsules subglobose or top shaped, leaves lanceolate, acute at both ends, 50–100 mm. long. *Ludvigia sphaerocarpa*, p. 580
 - dd. Capsules obpyramidal, several times longer than broad, leaves narrowly linear, 25–50 x 2 mm. *L. linearis*, p. 581
 - cc. Petals conspicuous, yellow.
 - d. Stamens 4.

* The records for Woodbine and Cape May in Keller and Brown prove to be *R. virginica*.

- e. Plant hirsute, capsules bristly pubescent. *L. hirtella*, p. 581
- ee. Plant glabrous or nearly so, capsules glabrous.
L. alternifolia, p. 582
- dd. Stamens 8.
 - e. Stamens equal in length, capsule cylindrical.
 - f. Tall, 3-25 dm. high, flowers 25-50 mm. broad, in a leafy bracted terminal spike. *Oenothera biennis*, p. 583
 - ff. Low or decumbent, 1-5 dm. high, flowers 12-30 mm. broad, axillary.
 - g. Leaves repand dentate, the lower pinnatifid, plant silvery appressed-pubescent. *O. humifusa*, p. 583
 - gg. Leaves oblong or oval lanceolate, sinuate dentate often pinnatifid, plant glabrous or sparingly pubescent. *O. laciniata*, p. 583
 - ee. Stamens unequal in length, the alternate ones longer, capsule more or less club-shaped.
 - f. Flowers 10-25 mm. broad, plant 2-6 dm. high.
Kneiffia pumila, p. 585
 - ff. Flowers 25-50 mm. broad.
 - g. Capsule glabrous or sparingly pubescent, with glandular hairs. *K. fruticosa*, p. 585
 - gg. Capsule pubescent, with fine incurved glandless hairs. *K. linearis*, p. 584
 - ggg. Capsule pubescent, with numerous straight spreading glandless hairs.
K. longipedicellata, p. 584
- ccc. Petals pink, whitish or purple.
 - d. Fruit a long slender pod splitting lengthwise, seeds with long downy coma.
 - e. Flowers 15-30 mm. broad, purple, in showy terminal racemes. *Chamaenerion angustifolium*, p. 582
 - ee. Flowers 4-6 mm. broad, pink or white.
 - f. Leaves linear or lanceolate, entire or nearly so; stem pubescent, with straight spreading hairs.
Epilobium molle, p. 582
 - ff. Leaves lanceolate, serrate, stem somewhat canescent above with incurved hairs. *E. coloratum*, p. 583
- dd. Fruit ovoid, hard, nut-like, 1-4 seeded, flowers 8-10 mm. broad; white or pinkish, turning reddish as they fade.
Gaura biennis, p. 585

LUDWIGIANTHA Small.

Ludwigiantha arcuata (Walt.). Creeping *Ludwigia*.

Ludwigiantha arcuata Walter, Fl. Car. 89. 1788 [Carolina].

Coast strip; rare and local.

Mr. Bayard Long, who discovered this interesting plant, has furnished me with the following information concerning it: "On the northern part of the New Jersey coast there are numerous fresh water ponds of appreciable dimensions, but on Long

Beach Island there are only a few small pond holes, which dry up in large part during the summer. These pond holes are the habitat of such interesting species as *Zannichellia palustris* and *Potamogeton pectinatus* in the water, while on the wet, muddy, sandy margin, or on the bottom as the water recedes, are *Limosella*, *Hypericum boreale*, *Cyperus diandrus*, *Ilysanthes anagallidia*, *Scirpus nanus*, etc.

In such a habitat grows the plant here temporarily referred to *Ludwigiantha arcuata*. It grows in extensive mats, creeping over the moist sand and mud on the margin of a pond hole at St. Albans. It appears to be a much more robust plant than the southern species and differs constantly from it in numerous characters, the most striking of which is the length of the flower peduncle, which is shorter than the leaves, instead of longer. It has not been possible, as yet, to make comparison with material from Virginia, the nearest known station, but unless this should prove intermediate between the New Jersey plant and material from farther south, the former would appear to represent a distinct species."

Fl.—July and August, probably.

Coast Strip.—St. Albans (L), (BC).

ISNARDIA L.

Isnardia palustris L. Marsh Purslane.

Isnardia palustris Linnæus, Sp. Pl. 120. 1753 [Europe and Virginia].—Bar-
ton, Fl. Phila. I. 85. 1818.

Ludwigia palustris Knieskern 14.—Britton 109.

Ditches and edges of ponds; common in the Northern, Middle and Coast districts. Very rare and probably introduced in the Pine Barrens.

Fl.—Mid-June into September. *Fr.*—Mid-July into October.

Middle District.—Farmingdale, Pemberton (NJ), New Egypt, Delanco (S), Delair, Fairton (S).

Pine Barrens.—Hammonton (T), Pleasant Mills (T).

Coast Strip.—Forked River (NB), Surf City (L), Spray Beach (L), Palermo (S), Ocean City (S), Holly Beach (UP), Cold Spring (OHB), Cape May (P).

LUDVIGIA L.

Ludvigia sphærocarpa Ell. Globe-fruited Ludwigia.

Ludwigia sphærocarpa Elliot, Bot. S. C. and Ga. I. 213. 1817 [Orangeburgh, S. Carolina].—Willis 24.—Britton 109.—Keller and Brown 232.

Frequent in swamps in the Pine Barrens, Cape May peninsula and southern part of the Middle district. Only reported from north of our region at Closter, Bergen County, but occurs also in lower Mercer county.

Fl.—Late July to mid-September. *Fr.*—Late August to mid-October.

Middle District.—Delanco, Center Square, Mickleton, Mannington (C), Dividing Creek.

Pine Barrens.—Parkdale, Atsion, Newtonville, Pleasant Mills (T), Egg Harbor City (KB), Mays Landing (Leeds), Woodbine.

Cape May.—Green Creek (S), Bennett.

***Ludvigia hirtella* Raf. Hairy Ludwigia.**

Ludwigia hirtella Rafinesque, Med. Rep. (II.) 5. 358. 1808 [near Baltimore].—Willis 24.—Britton 109.—Keller and Brown 232.

Swampy ground; rare and local; Pine Barrens and lower part of the Cape May peninsula.

This plant was known to both Pickering and Nuttall from the State, though who first discovered it in New Jersey I cannot say. Parker obtained it at Atsion, Burlington County, September 26, 1867; Bassett, near Hammonton, August 9, 1879, and Gross near Landisville. On July 22, 1905, I discovered it below Cape May Court House, and subsequently it has turned up in several bogs in lower Cape May.

Its strict stem and hairy leaves give it quite a different aspect from the other species of the genus found in our region.

Fl.—Early July to late August. *Fr.*—Early August to late September.

Pine Barrens.—Atsion, "Landisville"—Main Road Sta. (T), Hammon-ton, Quaker Bridge (C), Batsto (C), "Burlington Co." Parker (NB).

Cape May.—Below Court House, Cold Spring, Bennett.

***Ludvigia linearis* Walt. Linear-leaved Ludwigia.**

Ludwigia linearis Walter, Fl. Car. 89. 1788 [S. Carolina].—Willis 24.—Britton 109.—Keller and Brown 232.

Swamps of the Pine Barrens; not common.

Fl.—Early July to early September. *Fr.*—Late August to early October.

Pine Barrens.—Atsion, Hammonton, Egg Harbor City, Woodbine.*

* The Mays Landing record (KB) seems to refer to something else. There is no specimen in Mr. Lippincott's herbarium.

Ludvigia alternifolia L. Seed Box.

Ludvigia alternifolia Linnæus, Sp. Pl. 118. 1753 [Virginia].

Ludvigia alternifolia Knieskern 14.—Britton 109.

Swamps; common throughout the State.

Fl.—Early July to late August. *Fr.*—Early August to late September, and more or less persistent through autumn.

Middle District.—New Egypt, Burlington, Fish House, Delaire, Pemberton Jnc. (S), Camden, Oaklyn (S), Dividing Creek.

Coast Strip.—Long Branch, Forked River, Barnegat City (L), Surf City (L), Holgate's (L), Ocean City (S), Five-Mile Beach, Cold Spring (S).

Pine Barrens.—Landisville (T), Winslow (S), Parkdale (S), Woodbine (S).

CHAMÆNERION Adanson.**Chamænerion angustifolium (L.). Fire Weed.**

Epilobium angustifolia Linnæus, Sp. Pl. 347. 1753 [Northern Europe].—Knieskern 14.

Epilobium spicatum Britton 108.

Frequent in woods and clearings of the northern counties, and not uncommon in our region in burnt ground, apparently recently introduced as a weed along the railroad.

Fl.—Early June to early September. *Fr.*—Late June to late September.

Middle District.—N. Spring Lake (NB), New Egypt, Griffiths Swamp, Sicklerville, Camden (C), Bridgeport (H), Mickleton (H), Swedesboro.

Pine Barrens.—Forked River, Bamber, New Lisbon (C), White Horse, Inslip, Atco (C), Evansville (C), Landisville, Winslow Jnc., Hammonton, Tuckahoe (S), Woodbine (S).

Cape May.—Cold Spring (OHB).

EPILOBIUM L.**Epilobium molle Torr.* Downy Willow-herb.**

Epilobium molle Torrey, Fl. U. S. I. 393. 1824 [Schenectady, N. Y.].

Epilobium strictum Britton 109.—Keller and Brown 233.

Locally in swamps of the northern counties, once reported from within our limits at Pemberton on authority of Lighthipe (Britton's Cat.).

*The record of this species at Sea Isle City, given by Keller and Brown, proves to be *E. coloratum*, that of *E. lineare* from Cape May (*Jahn*) is almost certainly the same, though no specimens are preserved.

Epilobium coloratum Muhl. **Purple-leaved Willow-herb.**

Epilobium coloratum Muhlenberg in Willdenow, Enum. I. 411. 1809 [Pennsylvania].—Knieskern 14.—Britton 109.

Damp ground throughout the State; common.

Fl.—Late July to early September. *Fr.*—Mid-August to early October.

Middle District.—New Egypt, Delanco, Medford (S), Oaklyn (S), Lawnside (S), Salem (S), Dividing Creek.

Pine Barrens.—Whitings (S), Landisville, Quaker Bridge (S), Tuckahoe (S).

Coast Strip.—Seaside Park, Spray Beach (L), Surf City (L), Beach Haven (L), Holgate's (L), Absecon (S), Ocean City (S), Wildwood (UP).

Cape May.—Green Creek (S), Bennett (S), Cold Spring (OHB).

ÆNOTHERA L.**Ænothera biennis** (L.). **Evening Primrose.**

Ænothera biennis Linnæus, Sp. Pl. 346 [Virginia].—Knieskern 14.—Britton 109.

Dry open ground; common in the Northern, Middle and Coast districts south to Cape May. To a great extent a weed in waste and cultivated ground, and in that character occasional in the Pine Barrens.

Fl.—Late June into October. *Fr.*—Late July through autumn.

Middle District.—New Egypt, Edge of Bear Swamp, Fish House.

Coast Strip.—Sandy Hook (NB), Asbury Park, Barnegat City (L), Ship Bottom (L), Crowleystown, Absecon, Ocean City (S), Palermo (S), Piermont (S), Wildwood, Cold Spring (S).

Pine Barrens.—Landisville (introduced).

Ænothera humifusa Nutt. **Seaside Primrose.**

Ænothera humifusa Nuttall, Gen. I. 245. 1818 [near Cumberland Island, Fla.].—Britton 110.—Keller and Brown 233.

Frequent on the sand dunes and upper beaches of the southern coast.

Fl.—Early July to late September. *Fr.*—Early August to late October.

Coast Strip.—Ocean City, Anglesea, Holly Beach (T), Cape May.

Ænothera laciniata Hill. **Sinuate-leaved Primrose.**

Ænothera laciniata Hill, Veg. Syst. XII. 64. 1767 [Carolina].—Keller and Brown 233.

Ænothera sinuata Barton, Fl. Phila. I. 182. 1818.—Willis 24.—Britton 110.

Ænothera sinuata var. *minima* Nuttall, Gen. I. 182. 1818.—Britton 110.

Frequent in the Middle and Coast districts, largely a weed in cultivated ground, and as such found in the Pine Barrens. Not reported in the State north of our limits.

Fl.—Mid-May to mid-July. *Fr.*—Mid-June to mid-August.

Middle District.—New Egypt, Beverly, Pemberton Inc. (S), Mt. Holly, Vincentown (NB), Kaighns Pt., Camden, Medford (S), Locust Grove, Glassboro, Mickleton.

Pine Barrens.—Landisville, Atco, Head of Batsto, Atsion, Hammonton (Bassett).

Coast Strip.—Spray Beach (L), Atlantic City, Wildwood, Cold Spring (OHB), Cape May, Cape May Pt.

KNEIFFIA Spach.

Kneiffia linearis (Michx.). *Narrow-leaved Sundrops.*

Oenothera linearis Michaux, Fl. Bor. Am. I. 225. 1803 [Upper Carolina].—Willis 24.

Oenothera fruticosa var. *linearis* Britton 110.

Kneiffia linearis Keller and Brown 234.

Common in dry open ground all along the Coastal strip, and less plentiful in the Middle district and Pine Barrens. This seems to be decidedly the most common Evening Primrose of our region.

Fl.—Early June to early August, sporadically later. *Fr.*—early July to early September.

Middle District.—Farmingdale, Pemberton (C), Canton (C), Mickleton (H).

Pine Barrens.—Allaire (S), Quaker Bridge (C), Landisville, Esleville (T), Mays Landing, Mullica River (Bassett), White Horse (S), Belleplain (S), Williamstown Inc.

Coast Strip.—Pt. Pleasant (S), Seaside Park, Deal (C), Spray Beach (L), Surf City (L), Barnegat City Inc. (L), Manahawkin, Absecon (C), Atlantic City (C), Ocean City (C), Piermont (C), Holly Beach, Cape May (S).

Kneiffia longipedicellata Small. *Long-stemmed Sundrops.*

Kneiffia longipedicellata Small, Bull. Torr. Bot. Club XXIII. 178. 1896 [W. Virginia to N. Carolina and Florida].—Keller and Brown 234.

Apparently confined to the Middle district, and very rare. Typical specimens examined from Swedesboro, collected by Mr. Chas. D. Lippincott and others from Williamstown Inc., the latter growing with *C. linearis*, but maintaining their peculiarities of pubescence.

Fl. and *Fr.* probably similar to *K. linearis*.

Middle District.—Swedesboro.

Pine Barrens.—Williamstown Inc.

Kneiffia fruticosa (L.). Sundrops.

Ænothera fruticosa Linnaeus, Sp. Pl. 346. 1753 [Virginia].—Knieskern 14.—Britton 110.

Common in the northern counties; rare southward in the Middle district.

Fl.—Early June to early August. *Fr.*—Maturing apparently later than in *K. linearis*.

Middle District.—New Egypt, Lindenwold (S), Swedesboro, Three miles N. W. Mickleton.

Kneiffia pumila (L.). Dwarf Sundrops.

Ænothera pumila Linnaeus, Sp. Pl. Ed. 2. 493. 1762 [North America].—Willis 24.—Britton 110.

Ænothera fruticosa var. *ambigua* Barton, Fl. Phila. I. 182. 1818.

Dry open ground; frequent in the Northern and upper Middle districts and rarely in Cape May County and the Pine Barrens; apparently introduced in the latter region.

Fl.—Late May to mid-July. *Fr.*—Late June to mid-August.

Middle District.—Crosswicks, Brindletown, Medford (S), Haddonfield (S), Sicklerville, Cains Mill, Mickleton.

Pine Barrens.—Atco, Williamstown Jnc.

Cape May.—Cold Spring (S).

GAURA L.**Gaura biennis L. Gaura.**

Gaura biennis Linnaeus, Sp. Pl. 347. 1753 [Virginia and Pennsylvania].—Barton, Fl. Phila. I. 183. 1818.

At a number of stations in the northern counties, mainly along the banks of the Delaware River, rarely southward as far as Camden.

Fl.—Early July into October. *Fr.*—Early September through autumn.

Middle District.—Fish House, Camden, On the Delaware River (P).

CIRCÆA L.**Circæa lutetiana L. Enchanter's Nightshade.**

Circæa lutetiana Linnaeus, Sp. Pl. 9. 1753 [Europe and America].—Britton 111.

Common in woods of the northern counties and occasional southward in the Middle district.

Fl.—Mid-June to late July. *Fr.*—Late July to early September.

Middle District.—Farmingdale, New Egypt, Arney's Mt. (S), Camden Co. (CP), Mickleton (H), Swedesboro.

Family HALORAGIDACEÆ. Water-milfoils.

Key to the Species.

- a. Flowers perfect, the parts in threes, petals none, plant growing on mud or in shallow water, 2-5 dm. long.
 - b. Leaves with flowers in their axils, lanceolate, serrate; those without flowers usually pectinate. *Proserpinaca palustris*, p. 586
 - bb. Leaves all pectinate. *P. pectinata*, p. 587
- aa. Flowers monoecious or dioecious, the parts in fours; plant usually floating in water with leaves often whorled and finely divided. When growing on mud, plant very small with leaves reduced.
 - b. Flowering stems practically naked, accompanied by nearly naked, upright sterile stems, leaves, when present, filiform, undivided, growing upright in shallow water, 7-35 cm. high. *Myriophyllum tenellum*, p. 587
 - bb. Flowering stems leafy.
 - c. Flowers on the axils of unmodified foliage leaves.
 - Carpels smooth and plump. *M. humile*, p. 588
 - dd. Carpels with prominent, irregular dorsal ridges.
 - M. pinnatum*, p. 588
 - cc. Flowers in terminal naked spikes or in the axils of greatly reduced and modified leaves.
 - d. Leaves in definite whorls, carpels papillose, roughened.
 - M. heterophyllum*, p. 588
 - dd. Leaves variously arranged on the same plant, carpels with irregular dorsal ridges.
 - M. pinnatum*, p. 588

PROSERPINACA L.

Proserpinaca palustris L. Mermaid-weed.

Proserpinaca palustris Linnæus, Sp. Pl. 88. 1753 [Virginia].—Barton, Fl. Phila. I. 76. 1818.—Britton 105.—Keller and Brown 234.

Occasional in swamps in the northern counties; locally in the Middle district and common along the Coastal strip to Cape May.

Mr. K. K. Mackenzie has described as *P. intermedia* (Torrey) 1910, p. 250) a plant from half way between Barnegat Pier and Island Heights Jnc., which has the emerged fruiting leaves pectinate with a broad marginal rachis. *P. palustris* regularly puts forth shoots with this sort of leaves late in the season or where the water in which it grows becomes dried up, and I am by no means convinced that this is not a form of this species, in which

such branches are fertile. I am indebted to Mr. Mackenzie for specimens from the type collection. Mr. Bayard Long has collected the same thing at Bennett, Cape May Co., August 13th, 1911.

Fl.—Mid-June into September. *Fr.*—Mid-July into October.

Middle District.—Pine Cottage, Delanco (S), Medford (S), Swedesboro, Dividing Creek.

Coast Strip.—Long Branch, Barnegat City (L), Brant Beach (L), Surf City (L), Holgate's (L), Mays Landing, Ocean View (S), Piermont (S), Avalon, Anglesea, Cape May Ct. House (S), Cold Spring (S), Cape May Pt.

***Proserpinaca pectinata* Lam. Cut-leaved Mermaid-weed.**

Proserpinaca pectinata Lamarck, Tabl. Encycl., pl. 50, f. 1, I. 214. 1791 [North America].—Pursh, Fl. Am. Sept. I. 92. 1814.—Barton, Fl. Phila. I. 76. 1818.—Knieskern 14.—Willis 23.—Britton 105.—Keller and Brown 234.

Common in swamps of the Pine Barrens and Cape May peninsula, rare and local in the outlying islands in West Jersey.

Fl.—Mid-June into September. *Fr.*—Mid-July into October.

Middle District.—Swedesboro.

Pine Barrens.—Shark River, Forked River, Tuckerton, Manchester (Kn), Speedwell, Bear Swamp, Berlin (C), Atsion, Parkdale (S), Quaker Bridge (NB), Hammonton, Egg Harbor City, Mays Landing.

Cape May.—Cold Spring (S), Bennett.

MYRIOPHYLLUM L.

***Myriophyllum tenellum* Bigel. Slender Water Milfoil.**

Myriophyllum tenellum Bigelow, Fl. Bost. Ed. 2. 346. 1824 [Fresh Pond and Tewksbury, Mass.].—Britton 106.—Keller and Brown 235.

In shallow ponds along the upper Coast and on the Delaware River shore, rare and local.

Apparently first discovered in the State by Prof. E. H. Day in a shallow pond near the coast at Pt. Pleasant, July 17, 1882.

Fl.—Early July into September. *Fr.*—Early August into October. Flowers and fruits rare and dates somewhat conjectural.

Middle District.—Fish House.

Coast Strip.—Pt. Pleasant, Spring Lake (KB).

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Myriophyllum humile (Raf.). Low Water Milfoil.

Burshia humilis Rafinesque, Med. Rep. (II.) 5. 357. 1808 [New Jersey].

Myriophyllum ambiguum Nuttall, Gen. II. 212. 1818.—Barton, Fl. Phila. II. 164. 1818.—Knieskern 14.—Willis 23.

Myriophyllum ambiguum var. *limosum* Nuttall, Gen. II. 212. 1818.

Ponds of the Pine Barrens, Middle and Coast districts, frequent.

Most of the records of *Myriophyllum heterophyllum* and *verticillatum* for our region appear to belong here. The species presents a great diversity of form, small plants creeping in mud are form *humile*, those entirely submerged in deep water are *capillacea*, and those with an emersed spike *natans*.

Rafinesque proposed a new genus for the terrestrial form, naming it in honor of Frederick Pursh, the first botanist to publish his researches upon the New Jersey Pine Barrens. Unfortunately a typographical error in Rafinesque's paper makes the genus "Burshia" in honor of "Mr. Bursh."

Fl.—Early June into October. *Fr.*—Late June through autumn.

Middle District.—Keyport (C), Freehold (C), Pemberton (NB), Camden, Gloucester (NB), Clementon, Riddleton, Millville.

Pine Barrens.—Jackson, Taunton, Landisville, Pancoast, Egg Harbor City (P).

Coast Strip.—Deal (KB), Toms River (McK), Manahawkin, Wildwood (H).

Myriophyllum pinnatum (Walt.). Pinnate Water Milfoil.

Potamogeton pinnatum Walter, Fl. Car. 90. 1788 [South Carolina].

Myriophyllum scabratum Willis 23.

Myriophyllum pinnatum Britton 105.—Keller and Brown 235.

Ponds of the Middle and Coast districts south to Cape May, frequent; apparently not in the Pine Barrens.

Fl.—Early June into autumn. *Fr.*—Late June into autumn.

Middle District.—Freehold (C), Washington Park (S), Westville (KB), Taunton (S), Swedesboro, Riddleton.

Coast Strip.—Wildwood, Anglesea, Cape May (NB and P), Cape May Pt.

Myriophyllum heterophyllum Michaux. Various-leaved Water Milfoil.

Myriophyllum heterophyllum Michaux, Flor. Bor. Am. II. 191 [Carolina and Georgia].—Britton 106.—Keller and Brown 235.

Very rare within our limits. Collected by F. L. Bassett in 1882 at Hammonton.

Pine Barrens.—Hammonton.

Order UMBELLALES.

Family ARALIACEÆ. Ginsengs.

Key to the Species.

- a. Leaves alternate, decompose; styles 5.
 - b. Umbels numerous, in a large panicle, leaves large, decompose.
 - c. A spiny shrub or tree, leaflets thick, ovate. *Aralia spinosa*, p. 589
 - cc. A large, branching, unarmed herb, leaflets thin, cordate.
 - A. racemosa*, p. 589
 - bb. Umbels 2-7, stem short, somewhat woody, leaves bipinnate.
 - c. Plant prickly, with a leafy stem. *A. hispida*, p. 590
 - cc. Plant unarmed, leaves and peduncle arising independently from the root-stalk. *A. nudicaulis*, p. 589
- aa. Leaves verticillate, styles 2 or 3.
 - A low herb, 7-20 cm. high, leaves with 3-5 palmately arranged leaflets.
 - Panax trifolium*, p. 590

ARALIA L.

Aralia racemosa L. Wild Spikenard.

Aralia racemosa Linnæus, Sp. Pl. 273. 1753 [Canada].—Barton, Fl. Phila. I. 156. 1818.—Britton 119.

Frequent in woods of the northern counties, rare southward in the Middle district within our limits.

Fl.—Early July to late August. *Fr.*—Early September into October.

Middle District.—Holmdel (C), Blackwood, Mt. Ephraim (P).

Aralia nudicaulis L. Wild Sarsaparilla.

Aralia nudicaulis Linnæus, Sp. Pl. 274. 1753 [Virginia].—Knieskern 16.—Willis 27.—Britton 119.

Frequent in woods of the Northern, Middle and Coast districts; rather rare in the Pine Barrens.

Fl.—Early May to late May. *Fr.*—Late June to mid-July (approx.).

Middle District.—Shark River, New Egypt, Bordentown, Kinkora, Sickler-ville, Glassboro, Bridgeton (S).

Pine Barrens.—Davenport, Albion, Landisville, Tabernacle, Waterford (P).

Coast Strip.—Pt. Pleasant (S), Forked River, Cox's Barnegat, Surf City (L), Manahawkin, Holly Beach (UP).

Aralia spinosa L. Hercules Club.

Aralia spinosa Linnæus, Sp. Pl. 273. 1753 [Virginia].—Britton 119.—Keller and Brown 236.

Very rare, Middle and Pine Barren districts; possibly in part introduced, but certainly native in Delaware.

Middle District.—Keyport (C), Mantua (H), probably an escape.

Pine Barrens.—Swamp at Ancora, July 28, C. F. Parker (P).

***Aralia hispida* Vent. Bristly Sarsaparilla.**

Aralia hispida Ventenot, Hort. Cels. pl. 41. 1800 [Quebec].—Knieskern 16.—

Willis 27.—Britton 119.—Keller and Brown 236.

Open sandy soil of the northern counties occasional or locally common; very rare southward within our limits, in the upper Coast district, according to Knieskern. Mr. C. S. Williamson assures me that it occurred at Asbury Park, though the locality is now destroyed.

Coast Strip.—Monmouth and Ocean Counties (C), Asbury Park (KB).

PANAX L.

***Panax trifolium* L. Dwarf Ginseng.**

Panax trifolium Linnæus, Sp. Pl. 1059, 1753 [Virginia].

Aralia trifolia Willis 27.—Britton 119.

Frequent in woods of the northern counties, rare or local southward in the Middle district.

Fl.—Late April to mid-May. *Fr.*—Mid-May to early June.

Middle District.—Freehold (C), Farmingdale, Pemberton (C), Medford (S), Timber Creek (P), Haddonfield, Mantua, Mickleton (H), Swedesboro, Marlboro (NB).

Family UMBELLIFERÆ. Carrots, etc.

Key to the Species.

- a. Leaves simple, undivided or slightly lobed.
 - b. Leaves narrow, mostly spiny toothed, flowers in dense heads.
 - c. Parallel veined. *Eryngium yuccifolium*, p. 594
 - cc. Reticulate veined. *E. aquaticum*, p. 594
 - bb. Leaves orbicular or ovate, slender petioled, often peltate.
 - c. Leaves nearly orbicular, peltate.
 - d. Pedicels slender. *Hydrocotyle umbellata*, p. 592
 - dd. Some of the pedicels very short.
 - e. Fruit notched at each end. *H. canbyi*, p. 592
 - ee. Fruit not notched. *H. verticillata*, p. 593
 - cc. Leaves nearly orbicular, cordate or reniform, not peltate.
 - H. americana*, p. 593
 - aa. Leaves reduced to hollow jointed petioles or phyllodes, 2–8 cm. tall.
 - Lilaeopsis lineata*, p. 598
- aaa. Leaves, or some of them, pinnate, ternate, digitate, decomposed, or deeply lobed.

- b. Flowers in simple umbels, leaves pedately lobed. *Hydrocotyle*, p. 592
- bb. Flowers in dense heads, leaves spiny toothed. *Eryngium*, p. 594
- bbb. Flowers in compound umbels.
 - c. Flowers white, pink or greenish.
 - d. Fruit bristly or hairy.
 - e. Leaves digitately, 3-7 parted or lobed.
 - f. Styles much exceeding the bristles of the fruit, recurved.
 - g. Fruit 6-7 mm. long, sessile, flowers greenish white. *Sanicula marilandica*, p. 593
 - gg. Fruit 3-4 mm. long, slightly pedicelled, flowers yellow. *S. gregaria*, p. 594
 - ff. Styles shorter than the bristles. *S. canadensis*, p. 593
 - ee. Leaves pinnately or ternately decompound or dissected.
 - f. Fruit linear, tapering to the base, ribbed.
 - g. Stem villose pubescent, style 1 mm. long. *Washingtonia claytoni*, p. 595
 - gg. Stem glabrous except at the nodes, style 2 mm. long. *Washingtonia longistylis*, p. 595
 - ff. Fruit ovid, bristly. [*Daucus carota*]¹
 - dd. Fruit smooth, ribbed or winged (rarely somewhat pubescent).
 - e. Fruit flattened dorsally (i. e., the two carpels separated by the long axis of the fruit).
 - f. Leaves simply ternate or pinnate. *Oxypolis*, p. 600
 - ff. Leaves ternately or pinnately compound.
 - g. Segments oval, plant 6-12 dm. high. *Angelica villosa*, p. 599
 - gg. Segments large cordate, plant 1-3 m. high. *Heracleum lantatum*, p. 601
 - ee. Fruit flattened laterally (carpels separated by the short axis of the fruit).
 - f. Fruit linear.
 - g. Leaves 3-foliolate. *Deringa*, p. 597
 - gg. Leaves decompound, finely dissected. *Cherophyllum*, p. 595
 - ff. Fruit ovate or ovoid.
 - g. Leaves once pinnate. *Sium*, p. 597
 - gg. Leaves pinnately compound.
 - h. Leaf segments lanceolate, plant 9-18 dm. high. *Cicuta maculata*, p. 596
 - hh. Leaf segments narrowly linear, bulblets in the axils of the upper leaves, plant 3-10 dm. high. *C. bulbifera*, p. 596
 - ggg. Leaves finely divided into filiform segments. *Ptilimnium*, p. 598
- cc. Flowers yellow.
 - d. Fruit dorsally flattened. [*Pastinaca sativa*]²

¹ Wild Carrot. An abundant weed in fields, etc.

² Wild Parsnip. A weed in damp meadows, etc.

- dd. Fruit not flattened. Leaves mostly biternate, segments incised or lobed, rather thin. *Thaspium barbinode*, p. 599
- ddd. Fruit laterally flattened.
- c. Leaf segments oval or ovate, entire. *Tacnidia integerrima*, p. 597
- ee. Leaf segments crenate, lobed or incised.
- f. Basal leaves 2-3 ternately compound. *Zizia aurea*, p. 595
- ff. Basal leaves cordate, undivided. *Z. cordata*, p. 596
- ccc. Flowers purple. *Thaspium trifoliatum*, p. 599

HYDROCOTYLE L.

Hydrocotyle umbellata L. Umbellate Marsh Pennywort.

Pl. XC., Fig. 2.

Hydrocotyle umbellata Linnæus, Sp. Pl. 234. 1753 [Virginia].—Willis 25.—Britton 112.

Common in swampy ground in the Middle, Coast and Cape May districts, especially the last.

In the Cape May peninsula the prevalent form has proliferous umbels, but in all other respects appears to be typical *umbellata*.

Fl.—Late June into September. *Fr.*—Early August through autumn.

Middle District.—Red Bank (C), Pt. Pleasant (C), Burlington, Charleston (NB and P), Lindenwold (S), Kaighns Pt., Sewell (S), Pennsgrove, Swedesboro, Beaver Dam.

Coast Strip.—Forked River, Pt. Pleasant, Absecon (S), Atlantic City, Palermo (S), Piermont (S), Anglesea, Holly Beach (T), Bennett (S), Cold Spring (S), Court House (S), Cape May, Dennisville.

Hydrocotyle canbyi C. & R. Canby's Marsh Pennywort.

Hydrocotyle canbyi Coulter and Rose, Bot. Gazette XII. 103. 1887. n. n. for *H. umbellata* var. *ambigua* Gray Man. Ed. 5. 190. 1867 (nec Pursh) [New Jersey to Maryland].

Hydrocotyle umbellata var. *ambigua* Willis 25.

Hydrocotyle ambigua Britton 113.

Rare in wet ground of the Cape May district.

The late Chas. F. Parker apparently first collected it in the State, and August 13th, 1911, Mr. Bayard Long found it at Cape May Court House, on the edge of the salt marsh. The specimens recorded by Dr. Britton from Cumberland County, collected by

Mr. Commons, I have examined carefully and feel confident that they are merely stunted *H. umbellata*.

Cape May.—Court House, Cape May (P).

***Hydrocotyle verticillata* Thunb. Whorled Marsh Pennywort.**

Hydrocotyle verticillata Thunberg, Diss. II. 415 pl. 3. 1798 [no locality].—

Britton 113.—Keller and Brown 238.

Hydrocotyle interrupta Willis 25.

Moist ground, Coast district, not common, extending around to the Bay shore of Cape May County.

Flowers, good fruit and buds July 24, 1894—Wildwood.

Coast Strip.—Red Bank (NB), Deal (KB), Atlantic City, Wildwood, Cape May (C), New England (OHB).

***Hydrocotyle americana* L. American Marsh Pennywort.**

Hydrocotyle americana Linnæus, Sp. Pl. 234. 1753 [North America].—

Knieskern 15.—Willis 25.—Britton 112.

Moist shaded places in the northern counties, south locally in the Middle district.

Fl.—Early June into September. *Fr.*—Early July through autumn.

Middle District.—Freehold (C), Keyport (C), Shark River (Kn), Farmingdale, Birmingham, Pemberton (C), Mullica Hill (NB), Mantua, Mickleton (NB), Camden (C), Swedesboro.

SANICULA L.

***Sanicula marilandica* L. Sanicle.**

Sanicula marilandica Linnæus, Sp. Pl. 235. 1753 [Maryland and Virginia].

—Knieskern 15.—Britton 113.

Woodland of the Northern and Middle districts, frequent.

Fl.—Late May to mid-June. *Fr.*—Early August to early September.

Middle District.—Squan (C), New Egypt, Vincentown (NB), Lindenwold (S), Camden (C), Swedesboro.

Cape May.—Bennett (S).

***Sanicula canadensis* L. Short-styled Sanicle.**

Sanicula canadensis Linnæus, Sp. Pl. 235. 1753 [Virginia].—Britton 113.

Woodland of the Northern and Middle districts, frequent; also occasional on the Coastal Strip on the Cape May peninsula.

Fl.—Late May to mid-June. *Fr.*—Early August to early September.

Middle District.—Delair, Camden (C), Lawnside (S), Oaklyn (S), Clementon.

Coast Strip.—Pt. Pleasant (S), Cox's Atlantic City, Wildwood (UP).

Cape May.—Dias Creek.

***Sanicula gregaria* Bicknell. Yellow-flowered Sanicle.**

Sanicula gregaria Bicknell, Bull. Torrey Bot. Club 22. 354. 1895 [Van Courtland Park, N. Y. City].

Known only from Swedesboro within our range, doubtless occurs in rich woods of the northern counties.

Fl.—Late May to mid-June. *Fr.*—Early August to early September.

ERYNGIUM L.

***Eryngium aquaticum* L. Rattlesnake Master.**

Pl. LXXXII., Fig. 2.

Eryngium aquaticum Linnæus, Sp. Pl. 232. 1753 [Virginia].

Eryngium virginianum Barton, Fl. Phila. I. 136.—Knieskern 15.—Willis 25.—Britton 113.

Common on the salt marshes of the coast from Spring Lake southward, and locally along Delaware Bay and the lower Delaware River, also on tidewater streams some distance from the shore. Recorded by Torrey from the marshes near Hoboken.

A peculiar plant, usually growing with sedges, grasses and other vegetation, its large compound umbels of bluish heads and spiny involucres presenting a peculiar misty appearance at a distance against the dark green of the salt meadows.

Fl. and *Fr.*—Late July into October.

Middle District.—Camden, Coopers Creek, Center Square, Swedesboro, Millville.

Coast Strip.—Sea Girt, Spring Lake (C), Squan (C), Bayhead, Toms River, Forked River, Island Hts., Coxe's, Barnegat, Mouth of Batsto, West Creek (S), Absecon, Ocean City, Palermo (S), Petersburg (S), Ocean View, Mays Landing (NB), Sea Isle City (S), Wildwood, Anglesea, Tuckahoe (T), Clermont (T), Cold Spring, Bennett (S), Cape May.

***Eryngium yuccifolium* Michx. Tall Rattlesnake Master.**

Eryngium yuccifolium Michaux, Fl. Bor. Am. I. 164. [Virginia].—Willis 25.

Willis quotes Dr. Gray as authority for its occurrence in the Pine Barrens, and Dr. Britton gives it in his Catalogue as

occurring "in dry sand between Atsion and Quaker Bridge," on authority of Canby. There is a specimen in the herbarium of Mr. Benj. Heritage, collected by him in the "Pine Barrens, August 25th, 1897." Inadvertently he neglected to note the exact spot, but he thought it was obtained on a trip he took from Atsion to Quaker Bridge, which is curiously confirmatory of Canby's statement above quoted and of which Mr. Heritage was in ignorance.

Pine Barrens.—Atsion to Quaker Bridge? (BH).

CHÆROPHYLLUM L.

Chærophyllum procumbens (L.). Spreading Chervil.

Scandix procumbens Linnæus, Sp. Pl. 257. 1753 [Virginia].—Willis 27.—Britton 115.—Keller and Brown 239.

Occasional along the Delaware River from Mercer to Camden Counties, and reported by Torrey from "Hoboken Hills."

Fl.—Mid-April to early May. *Fr.*—Mid-May to early June.

Middle District.—Crosswicks, Bordentown (P), Delair, Fish House, Pavonia (P), Beverly, Westville, Below Gloucester (P).

WASHINGTONIA Rafinesque.

Washingtonia longistylis (Torr.). Smooth Sweet Cicely.*

Myrrhis longistylis Torrey, Fl. U. S. 310. 1824 [Geneva, N. Y.].

Osmorhiza longistylis Britton 115.

Frequent in rich woods of the northern counties, rare southward to our limits.

Fl.—Early May to late May. *Fr.*—Late July to late August.

Middle District.—Crosswicks, Keyport (C), Camden (Bassett), Swedesboro.

ZIZAE Koch.

Zizia aurea (L.). Golden Meadow Parsnip.

Smyrniium aureum Linnæus, Sp. Pl. 262. 1753 [North America].

**Washingtonia claytoni* (Michx.) Wooly Sweet Cicely.

Myrrhis claytoni Michaux, Fl. Bor. Am. I. 170. 1803 [Allegheny Mts.].

Frequent in rich woods in the northern counties, but not definitely known from within our limits. The only published records are from Middletown (Knieskern) and Camden (Martindale), neither of which I have been able to verify. All other specimens supposed to belong here prove to be *longistylis*.

Rich woods; reported from Warren and Hunterdon counties, and occurs rarely in the Middle and Cape May districts.

Fl.—Early May to early June. *Fr.*—Early August to early October.

Middle District.—Farmingdale.

Cape May.—Cold Spring, Cape May.

***Zizia cordata* (Walt.). Heart-leaved Meadow Parsnip.**

Smyrniun cordatum Walter, Fl. Car. 114. 1788. [South Carolina].

Frequent in parts of the northern counties and at one station in the Middle district.

Fl.—Early May to early June. *Fr.*—Early August to early October.

Middle District.—Five miles south of Mickleton.

CICUTA L.

***Cicuta maculata* L. Water Hemlock.**

Cicuta maculata Linnæus, Sp. Pl. 256. 1753 [Virginia].—Britton 114.

Common in swamps and along streams in the Northern, Middle and Coast districts and on both sides of the Cape May peninsula.

The most abundant umbelifer of our region, in practically every swamp outside the limits of the Pine Barrens.

Fl.—Mid-June to late August. *Fr.*—Mid-August into October.

Middle District.—Farmingdale, New Egypt, Burlington, Delaire, Hartford, Haddonfield (S), Camden (C), Mickleton (NB), Swedesboro.

Coast Strip.—Bayhead, Manumuskin (S), Barnegat City (L), Tucker's (L), Atlantic City (S), Mays Landing, Clermont, Ocean City (S), Anglesea (UP), Bennett, Cape May (S), Cape May Pt. (S), Dias Creek, Upper English Creek (T), Dennisville (S).

***Cicuta bulbifera* L. Bulb-bearing Water Hemlock.**

Cicuta bulbifera Linnæus, Sp. Pl. 255. 1753 [Virginia and Canada].—Barton, Fl. Phila. I. 143. 1818.—Britton 114.

Rare along the Delaware in Camden County and frequent in swamps of the northern counties.

Nuttall first found this plant in our region, along the Delaware, near Philadelphia, subsequently Parker recorded it from

Camden County, and recently Mr. Bayard Long collected it at Fish House.

Middle District.—Camden Co. (C), Fish House, Gloucester (P).

DERINGA Adanson.*

***Deringa canadensis* L. Honewort.**

Sison canadensis Linnæus, Sp. Pl. 252. 1753 [Virginia].

Cryptotania canadensis Willis 26.—Britton 115.

Common in woods of the northern counties and occasional in the upper Middle district.

Fl.—Early June to early July. *Fr.*—Late August to late September.

Middle District.—Freehold (C), New Egypt, Pemberton (C), Camden (C), Washington Park, Mickleton (H).

SIUM L.

***Sium cicutæfolium* Gm. Hemlock Water Parsnip.**

Sium cicutæfolium Gmelin, Syst. II. 482. 1791 [Siberia].—Britton 114.—Keller and Brown 241.

Sium latifolium Barton, Fl. Phila. I. 141. 1818.

Sium lineare Barton, Fl. Phila. I. 141. 1818.—Willis 26.

Frequent in swamps of the northern counties and coastal strip, and along the Delaware in West Jersey.

This species and *Oxypolis rigidior* are frequent associates of *Cicuta maculata*, but are neither of them so generally distributed. The present plant seems to prefer larger, wetter swamps, and is, I think, most abundant along the coast.

Fl.—Mid-July to late September. *Fr.*—Late August through October.

Middle District.—Monmouth Co. (Willis), Burlington, Delair, Kaighns Pt., Mickleton (KB), Swedesboro, Salem (S), Bridgeport (KB).

Coast Strip.—Long Branch, Forked River (CDL), Bay Head, Barnegat City (L), Surf City (L), West Creek, Crowleytown, Absecon (S), Ocean City, Piermont (S), Anglesea, Wildwood, Tuckahoe (S), Cold Spring, Court House.

* *Tanidia integerrima* (L.). Yellow Pimpernel. *Smyrniium integerrimum* Linnæus, Sp. Pl. 263. 1753 [Virginia]. Frequent in rocky places in the northern counties, but its occurrence within our limits rests entirely upon Knieskern's statement that it is found rarely on shady banks and in open woods in Monmouth and Ocean Counties. We have been unable to verify this statement.

PTILIMNIUM Rafinesque.

Ptilimnium capillaceum (Michx.). Mock Bishop-weed.*Ammi capillaceum* Michaux, Fl. Bor. Am. I. 164. 1803 [Carolina].—
Barton Fl. Phila. I. 138. 1818.*Discopleura capillacea* Knieskern 16.—Willis 26.*Discopleura major* Britton 116.*Ptilimnium capillaceum* Keller and Brown 241.

Common on the salt marshes of the coast and up Delaware Bay. Occasional in fresh swamps (introduced?).

The finely divided leaves of this little umbelifer, with their almost thread-like divisions, are to be found often buried by taller vegetation along the whole Coastal strip where salt and fresh meadows merge one into the other. Its occurrence inland is probably due to artificial introduction with soil or sand from near the coast, but it seems to thrive quite well beyond all maritime influence.

Fl.—Mid-July to late September. *Fr.*—Late August through autumn.

Middle District.—New Egypt, Pemberton Jnc., Kaighns Pt.

Maritime.—Long Branch, Pt. Pleasant, Bay Head, Toms River (S), Ocean Beach (T), Spray Beach (L), Manahawkin Beach, Absecon, Atlantic City, Piermont, Anglesea, Wildwood, Palermo (S), Tuckahoe (T), Cape May, Upper English Creek (T), Beaver Dam.

LILÆOPSIS Greene.

Lilæopsis lineata Michaux. *Lilæopsis*.

Pl. XC., Fig. 3.

Hydrocotyle lineata Michaux, Fl. Bor. Am. I. 162. 1803 [S. Carolina].*Crantzia lineata* Nuttall. Gen. I. 178. 1818.*Lilæopsis lineata* Stone. *Bartonia* I. 20. 1909.

Very rare on the salt marshes of the coast.

This humble little plant was first detected in New Jersey by Thomas Nuttall, who found it growing on the salt meadows near "Egg Harbor"—apparently near Beesley's Point.

On August 30, 1909, in company with Mr. S. S. Van Pelt, I found it on the marshes below Palermo, in the same neighborhood and heralded the event as the rediscovery of the plant* as I could find no record of its having been collected in the State

* *Bartonia* I., p. 20, 1909.

since Nuttall's time. It now develops, however, that Mr. K. K. Mackenzie had collected *Lilæopsis* between Mantoloking and Chadwick, on the shores of Barnegat Bay, although the fact had never been recorded. I am indebted to him for a specimen from his locality.

At Palermo the little plants were creeping over the white sand of a slight depression where a fresh water spring bursts forth near the edge of the salt marsh.

Fl.—Early July probably into August. *Fr.*—Late September probably into October.

Coast Strip.—Between Mantoloking and Chadwick on shores of Barnegat Bay (Mackenzie), Below Palermo, Near Egg Harbor (same as last?)

THASPIUM Nuttall.*

***Thaspium trifoliatum* L. Purple Meadow Parsnip.**

Thapsia trifoliata Linnæus, Sp. Pl. 262. 1753 [Virginia].

Thaspium aureum var. *trifoliatum* Britton 117.

Occasional in open woods in the Middle district, north to Union, Hunterdon and Middlesex Counties.

Fl.—Late May to late June.

Middle District.—Farmingdale, Pemberton, Merchantville (P), Medford (S), Sewell (S), Swedesboro.

ANGELICA L.

***Angelica villosa* (Walt.). Pubescent Angelica.†**

Ferula villosa Walter, Fl. Car. 115. 1788 [S. Carolina].

Archangelica hirsuta Knieskern 16.

Angelica villosa Britton 117.

Occasional in dry woods or clearings in the northern counties, and southward in the Middle district and in lower Cape May County.

* *Thaspium barbinode* is given in Keller and Brown's list from Magnolia on authority of Dr. Harshberger, but the record cannot be verified. Knieskern gives it from Prospertown, but the record cannot be verified. *T. aureum* seems to be erroneously referred to this region; all specimens so labelled are *Zizia aurea*.

† *A. atropurpurea* is recorded in Britton's Catalogue from Moorestown, Vineland and Salem, but there are no specimens preserved, and as our field work has utterly failed to discover it I am convinced that these records must refer to *A. villosa*. Dr. Stokes disclaims the Moorestown record, and the author of the Vineland one made other errors of identification.

Fl.—Mid-July to mid-August. *Fr.*—Late September into October.

Middle District.—Crosswicks, Lindenwold (S), Mickleton, Swedesboro, Fairton,.

Cape May.—Bennett, Cold Spring (OHB).

OXYPOLIS Rafinesque.

Oxypolis rigidior (L.). Cowbane.

Sium rigidius Linnæus, Sp. Pl. 251. 1753 [Virginia].

Oenanthe rigidius Barton, Fl. Phila. I. 142. 1818.

Archemora rigida Knieskern 16.

Tiedmannia rigida Britton 118.

Common in swamps throughout the Middle, Coast and Cape May districts north to Bergen, Middlesex and Mercer Counties; rare in the Pine Barrens.

Fl.—Mid-August to late September. *Fr.*—Mid-September to late October.

Middle District.—New Egypt, Burlington, Brown's Mills, Medford (S), Ashland, Haddonfield, Camden, Tomlin, Swedesboro.

Pine Barrens.—Landisville (T).

Coast Strip.—Toms River, Forked River, Waretown, Manahawkin, West Creek, Coxe's, Barnegat, Barnegat City (L), Mouth of Batsto, Absecon (S), Petersburg (S).

Cape May.—Court House (S), Cold Spring (S), Green Creek (S).

Oxypolis rigidior longifolia Pursh. Slender-leaved Cowbane.

Sium longifolium Pursh Fl. Am. Sept. 194. 1814 [New Jersey].

Oenanthe ambigua Nuttall Gen. I. 190. 1818 [Banks of the Delaware near Phila.].—Barton Fl. Phila. I. 143. 1818.

Apparently restricted to swamps of the Pine Barrens.

The distinguishing character of this form is the narrowness of the leaf segments (rarely over 4–5 mm.) rather than in the entire margin. They are in a majority of cases entire, it is true, but even the narrowest are sometimes lobed, while plants with leaf segments 18–20 mm. wide (*rigidior*) have them sometimes entire.

Fl. and Fr.—Apparently similar to the preceding.

Middle District.—Tomlinson's.

Pine Barrens.—Toms River (C), Bamber, Quaker Bridge (C), Speedwell (S), Mo. of Batsto, West Creek, Absecon (S), Hammonton (C), Petersburg (S), Mays Landing (S), Woodbine.

HERACLEUM L.

Heracleum lanatum Michx. Cow Parsnip.*Heracleum lanatum* Michaux, Fl. Bor. Am. I. 166. 1803 [Canada].—Britton 118.

Frequent in swamps of the northern counties, descending into our limits rarely, along the Delaware River.

Fl.—Early May to early June. *Fr.*—Mid-June to mid-July.

Middle District.—Crosswicks, Camden.

Family CORNACEÆ. Dogwoods.

Key to the Species.

a. Flowers four parted, perfect, petals present.

b. Flowers greenish yellow, surrounded by four white obovate petal-like bracts 26–60 mm. long; fruits red. A tree. *Cornus florida*, p. 601

bb. Flowers white in flat terminal cymes, no involucre. Shrubs.

c. Leaves opposite.

d. Branchlets, stalks and lower surface of the leaves downy, often rusty; fruit blue, leaves ovate or elliptic.

C. amomum, p. 602

dd. Branchlets smooth, gray; leaves whitish beneath, not downy, ovate lanceolate, taper pointed; fruit white.

C. paniculata, p. 603

cc. Leaves alternate, clustered at the ends of the branches. Branchlets greenish streaked with white, leaves ovate or oval, whitish and minutely pubescent beneath, fruit white. *C. alternifolia*, p. 603

aaa. Flowers greenish, five parted, diœciously polygamous, petals very minute or wanting; fruit bluish-black; leaves oval, glabrous and shining.

Nyssa sylvatica, p. 603

CORNUS L.

Cornus florida L. Flowering Dogwood.

Cornus florida Linnæus, Sp. Pl. 117. 1753 [Virginia].—Knieskern 16.—Britton 120.—Stone, Barton I. 23. 1909.

Common in woods of the North and Middle districts, and occasional in the Coastal Strip and Cape May peninsula.

All through northern and western New Jersey the Dogwood is one of the most conspicuous trees of the woodland in spring time. Just as the countryside is tinged with the soft green of opening leaves and the yellow of the oak catkins, the great involucre bracts of the Dogwood, which pass popularly as petals,

grow out rapidly, forming great billowy masses of snowy-white, which remain very conspicuous in the woods until enveloped in the universal green of unfolding foliage.

In the Pine Barrens the tree is absent, but it grows right up to the eastern limit of the Middle district, and like many other "West Jersey" plants reappears in the narrow strip bordering the salt marsh of the coast and in the Cape May peninsula. As we cross the State by rail in mid-spring, we can tell the minute we are out of the Pine Barrens by the sudden flash of the white boughs of the Dogwood as we rush past.

Fl.—Late April to late May, from buds formed the previous season. *Fr.*—Early September to early October or through autumn.

Middle District.—New Egypt, Birmingham, Pemberton Inc. (S), Bordentown, Pensauken, Medford (S), Springdale (S), Sicklerville (S), Westville, Wenonah, Woodbury, Mickleton, Swedesboro, Centerton, Quinton, Willow Grove (T), New Germany, Fairton (S).

Coast Strip.—Forked River, Palermo, Mays Landing (S).

Cape May.—Goshen (S), Sluice Creek (S), Court House (S), Cold Spring, Bennett, Cape May (S).

Cornus amomum* Mill. Kinnikinnik.

Cornus amomum Miller, Gard. Dict. Ed. 8, No. 5. 1768 [Virginia].

Cornus stolonifera Knieskern 16.—Willis 27.

Cornus sericea Britton 120.

Frequent along streams and in damp thickets in the Northern and Middle districts. Occasional on the coast.

A familiar shrub usually associated with *Viburnum dentatum* and *V. scabrellum* on the borders of swampy thickets, where it is not wet enough for alders or *Viburnum nudum*. The white panicles of Dogwoods, Viburnums and Elder are conspicuous in late spring or early summer and resemble one another not a little.

Fl.—Mid-June to early July. *Fr.*—Early August to late August, sporadically later.

*It seems almost certain that Knieskern's and Willis' record of *C. stolonifera* refers to this species, and so probably does the record for Woods-town given by Keller and Brown on authority of Miss Ware. There is no evidence and little likelihood of this species occurring within our range.

Middle District.—Farmingdale, Pemberton Jnc. (S), Vincentown, Medford (S), Locust Grove (S), Clementon (C), Oaklyn (S), Lawnside (S), Kirkwood (C), Fancy Hill, Kaighns Pt., Washington Park, Mickleton, Swedesboro.

Coast Strip.—Toms River.

Cape May.—Dias Creek (S).

***Cornus paniculata* L'Her. Panicked Dogwood.**

Cornus paniculata L'Heritier de Brutelle, *Cornus* IX., pl. 5. 1788 [North America].

Cornus candidissima Britton 120.—Keller and Brown 243.

Frequent or common in dry soil in the northern counties, and occasional southward in the Middle district.

Fl.—Early June to late June. *Fr.*—Early August to late August, sporadically later.

Middle District.—Farmingdale, New Egypt, Pemberton (C), Delanco (C), Mouth of Rancocas (C), Lindenwold, W. Collingswood (KB), Salem (H).*

***Cornus alternifolia* L. f. Alternate-leaved Dogwood.**

Cornus alternifolia Linnæus filius, Suppl. 125. 1781 [North America].—Britton 121.—Keller and Brown 244.

Frequent on the edges of woods in the northern counties, becoming less common southward in the Middle district.

Fl.—Mid-May to early June. *Fr.*—Mid-July apparently to early August.

Middle District.—Farmingdale, New Egypt, Bordentown, Kinkora, Pemberton (NB), Mantua (KB), Kirkwood, Lawnside (S), Magnolia (NB), Pitman, Woodstown (NB), Swedesboro.

NYSSA L.

***Nyssa sylvatica* Marsh. Sour Gum.**

Nyssa sylvatica Marshall, Arb. Am. 97. 1785 [Pennsylvania].—Britton 121.

Nyssa aquatica Barton, Fl. Phila., II. 192. 1818.

Nyssa multiflora Knieskern 16.

Common in woods throughout the State except in the mountains of Sussex and Warren counties; most abundant on the Coastal plain in swamps of the Pine Barrens, Middle and Cape May districts.

Fl.—Mid-May to mid-June. *Fr.*—Early September into October.

* Swedesboro record (KB) = *C. amomum*.

Middle District.—Farmingdale, New Egypt, Hainesport, New Lisbon, Kin-kora, Delanco, Medford (S), Lawnside (S), Oaklyn (S), Sicklerville (S), Kaighns Pt., Washington Park, Sewell (S), Glassboro, Pitman, Mickleton, Fairton (S), Dividing Creek.

Pine Barrens.—Lakehurst, Speedwell, Bear Swamp (S), Cedar Brook, Inskip, Albion, Folsom, Mays Landing (S).

Coast Strip.—Pt. Pleasant (S), Forked River, Waretown, Surf City (L), Ship Bottom (L), Piermont (S), Wildwood.

Cape May.—Court House (S), Green Creek (S), Cape May (S), Cape May Pt. (S).

Series II. GAMOPETALÆ.

*Key to the Herbaceous Species.**

- a. Flowers minute, closely crowded in involuclral heads, stamens usually united by their anthers forming a ring.
 - b. Flowers all expanded into ray flowers, juice milky.
 - Cichoriaceæ*, p. 718
 - bb. Flowers of the disc tubular, with or without a circle of ligulate ray flowers around the edge.
 - c. Stamens merely connivent, not actually united, pistillate involucre often bur like.
 - Ambrosiaceæ*, p. 724
 - cc. Stamens united by their anthers in a ring around the style (except in *Kuhnia*).
 - Compositæ*, p. 726
- aa. Flowers not in involuclral heads.
 - b. Upright or prostrate herbs.
 - c. Stamens more numerous than the lobes of the corolla.
 - d. Flowers irregular.
 - e. Petals 4, forming a sort of pendent sac, enlarged at the base, narrowed to a slightly flaring tip.
 - Fumariaceæ*, p. 461
 - cc. Petals 3, lower one keeled, others lateral, flaring.
 - Polygalaceæ*, p. 519
 - dd. Flowers regular.
 - e. Shrubby plants, flowers white or pink.
 - Ericaceæ*, p. 612
 - cc. Low delicate herbs with three-parted leaves and yellow or violet flowers.
 - Oxalidaceæ*, p. 516
 - cc. Stamens equal to or less than the lobes of the corolla.
 - d. Corolla regular.
 - e. Stamens equal in number to the corolla lobes.
 - f. Leaves in a single whorl at the top of the stem, flower white, star-like.
 - Trientalis*, p. 633
 - ff. Leaves all basal.
 - g. Flowers greenish, in a long, slender or short globular head.
 - Plantaginaceæ*, p. 698
 - gg. Flowers lavender, in a branching panicle.
 - Limonium*, p. 633

* Trees, shrubs and aquatic plants are included in the keys on pp. 380-390.

fff. Leaves opposite.

g. Reduced to mere appressed scales. *Bartonia*, p. 642

gg. Somewhat fleshy, clustered at the end of the short stem, 6-15 cm. tall. Flowers and whole plant purplish, lower leaves scale-like. *Obolaria*, p. 643

ggg. Leaves normally developed.

h. Abruptly narrowed to winged connate perfoliate base, flowers axillary. *Triosteum*, p. 711

hh. Leaves not narrowed to a perfoliate or clasping base.

i. Flowers yellow.

j. Leaves serrate. *Diervilla*, p. 712

jj. Leaves entire.

k. Flowers in a terminal, spike-like raceme. *Lysimachia*, p. 631

kk. Flowers in axillary fascicles on long, slender pedicels.

Steironema, p. 632

ii. Flowers blue.

j. Stamens exserted. *Trichostema*, p. 664

jj. Stamens not exserted.

k. Plant low, 7-18 cm., corolla 8-12 mm. broad, basal leaves spatulate, upper small oblong sessile.

Houstonia, p. 701

kk. Plant over 20 cm. tall, corolla 25 mm. long or more. *Gentiana*, p. 640

iii. Flowers neither pure blue nor yellow.

j. Leaves serrate.

k. Flowers in whorls, often forming interrupted terminal spikes, flowers purple. *Mentha*, p. 673

kk. Flowers in long, slender spikes, axillary and terminal flowers violet or white. *Verbena*, p. 660

jj. Leaves entire.

k. Plants low, prostrate or trailing.

Rubiaceæ, p. 700

kk. Plants erect.

l. Flowers star-like, bright pink or white. *Gentianaceæ*, p. 638

ll. Flowers small, bell shaped, white, tinged with pink or greenish, juice milky.

Apocynum, p. 645

lll. Flowers with reflexed sepals and a rotate crown of five hooded bodies on the tube of the stamens, juice milky.

Asclepias, p. 646

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fff. Leaves in several whorls.

g. Flowers minute, white, greenish or purplish.

Galium, p. 704

gg. Flowers yellow, showy.

Lysimachia, p. 631

ggg. Flowers pink or green and white, with reflexed sepals and crown, juice milky.

Asclepias, p. 640

ffff. Leaves alternate (or a few opposite).

g. Leaves pinnate, lobes deeply serrate.

Hydrophyllum, p. 657

gg. Leaves slightly serrate, flowers bell shaped, white, 6 mm. long, stem weak and reclining.

Campanula, p. 714

ggg. Leaves orbicular, amplexicaul, crenate, flowers rotate, 12 mm. broad, purple.

Specularia, p. 715

gggg. Leaves coarsely toothed, large coarse herbs, 3-15 dm. tall, flowers 75 mm. long, white or purplish.

Datura, p. 674

ggggg. Leaves entire.

h. Glabrous or slightly soft pubescent.

i. Flowers blue, 15 mm. long, leaves 125 × 60 mm.

Mertensia, p. 658

ii. Flowers white, 50 mm. long.

Convolvulus, p. 653

iii. Flowers yellow, 12 mm. across, seed in an inflated involucre.

Physalis, p. 675

iiii. Flowers very minute, white, leaves 18 × 12 mm.

Samolus, p. 631

hh. Minutely roughened or scabrous or rough hairy, terminal part of inflorescence often coiled.

Boraginaceæ, p. 658

ec. Stamens less in number than the lobes of the corolla.

f. Leaves all basal.

Plantago, p. 698

ff. Leaves cauline.

g. Plants erect, 3 dm. or more high.

h. Leaves serrate, opposite.

i. Flowers in terminal, slender spikes.

Verbena, p. 660

ii. Flowers in axillar whorls.

Lycopus, p. 672

iii. Flowers in terminal, globular clusters.

Valerianella, p. 713

hh. Leaves serrate in whorls.

Leptandra, p. 683

hhh. Leaves entire, hairy, flowers blue, 25 mm. long.

Ruellia, p. 696

gg. Plants creeping or low, less than 3 dm. high, flowers minute, blue or white.

Veronica, p. 682

dd. Corolla irregular.

e. Anther-bearing stamens 5.

f. Flowers white or yellow.

Verbascum, p. 675

ff. Flowers blue.

Echium, p. 658

ee. Anther-bearing stamens 2 or 4.

f. Stems leafy.

g. Stem 4-angled.

h. Leaves opposite, plants aromatic, flowers two-lipped. *Labiata*, p. 661

hh. Plants not aromatic. *Scrophulariaceæ*, p. 675

gg. Stem not 4-angled (or if so, not aromatic).

h. Stamens united by their anthers into a tubular ring. *Lobelia*, p. 715

hh. Stamens not united.

i. Leaves opposite.

j. Flowers in heads on pedicles 1-1.5 dm. long, leaves entire. *Dianthera*, p. 697

jj. Flowers minute, scattered in long slender terminal and axillary spikes.

k. Reflexed in fruit. *Phryma*, p. 697

kk. Not reflexed in fruit. *Verbena*, p. 660

jjj. Flowers single axillary, or in short terminal spikes. *Scrophulariaceæ*, p. 675

ii. Leaves alternate. *Scrophulariaceæ*, p. 675

ff. No normal leaves; leaves reduced to scales; flowers spurred, yellow (or minute, brownish).

Utricularia, p. 688

bb. Trailing or climbing vines.

c. Stems bright orange, on bushes, etc., no leaves. *Cuscuta*, p. 654

cc. Stems normal, leaves present.

d. No tendrils present.

e. Plant trailing on the ground.

f. Flowers two (twin) white, terminating the branches.

Mitchella, p. 703

f. Flowers in small heads, on pedicels 50-75 mm. long.

Lippia, p. 661

fff. Flowers axillary, solitary, yellow. *Lysimachia*, p. 631

ee. Plant trailing over bushes, etc., or sometimes on the ground.

f. Flowers white, pink or blue; large, funnel-form, 25 mm. or more in length. *Convolvulaceæ*, p. 652

ff. Flowers greenish, purplish or white minute; leaves whorled. *Galium*, p. 704

fff. Flowers purple, wheel-shaped, with projecting connivent stamens. *Solanum*, p. 675

ffff. Flowers trumpet-shaped, bright red *Lonicera*, p. 712

dd. Tendrils present. Flowers greenish in clusters, leaves 5-lobed or angled. *Cucurbitaceæ*, p. 713

Order ERICALES.

Family CLETHRACEÆ. Sweet Pepper Bushes.

CLETHRA L.

Clethra alnifolia L. Sweet Pepperbush.

Pl. XCII., Fig. 2.

Clethra alnifolia Linnæus, Sp. Pl. 1057. 1753 [North America].—Barton, Fl. Phila. 204. 1818.—Knieskern 20.—Britton 163.—Keller and Brown 244.

Swamps; frequent or common throughout our district, occurring to the north, mainly on the coastal plain, but also at Budds Lake and Lake Hopatcong.

This is a characteristic shrub of all the swamps of the coastal plain. Its fragrance fills the air after the somewhat similar odor of the swamp Magnolia of early summer has passed away, while its handsome white flower spikes furnish a touch of color at a time when few other shrubs are in bloom.

At Manahawkin it is called Soap Bush, from the idea that the flowers when rubbed together in water make a sort of soapy lather. Our results have not been very startling, however.

Fl.—Late July to early September.

Middle District.—New Egypt, Fish House, Kaighns Pt., Tomlin (S), Blackwood, Clementon, Salem (S), Dividing Creek.

Pine Barrens.—Toms River (S), New Lisbon, Forked River, Jones Mill (S), Speedwell, Bear Swamp (S), Landisville (T), Hammonton, Mouth of Batsto River, Pleasant Mills, Egg Harbor City.

Coast Strip.—Pt. Pleasant (S), Surf City (L), Harvey Cedars (L), Ship Bottom (L), Beesleys Pt. (S).

Cape May.—Cape May.

Family PYROLACEÆ. Wintergreens.

Key to the Species.

a. Leaves all basal, oval or orbicular.

b. Flowers 6-8 mm. broad in a distinctly one-sided raceme, leaves distinctly crenate. *Pyrola secunda*, p. 610

bb. Flowers 10-18 mm. broad, raceme not one-sided, leaves obscurely crenate or entire.

c. Calyx lobes oblong or lanceolate, leaves shining.

P. americana, p. 609

cc. Calyx lobes ovate or triangular, leaves dull.

d. Blades orbicular, usually shorter than the petioles, 12-25 mm. long. *P. chlorantha*, p. 609

dd. Blades oval, longer than the petioles, 35-45 mm. long.

P. elliptica, p. 609

aa. Leaves opposite or verticillate, lanceolate or spatulate.

b. Leaves mottled with white.

Chimaphila maculata, p. 610

bb. Leaves uniform, green, shining.

C. umbellata, p. 610

PYROLA L.

Pyrola americana Sweet. Round-leaved Wintergreen.

Pl. XXXVIII., Fig. 2.

Pyrola americana Sweet, Hortus Britannicus, Ed. 2. 341. 1830, n. n. for *P. rotundifolia* Pursh, non Eng. Botanists [Canada-Carolina].*

Pyrola rotundifolia Knieskern 21.—Britton 162.

Frequent in woodlands of the northern counties, and less abundant in the Middle and Pine Barren districts. Occasional on the Cape May peninsula.

Fl.—Late June to mid-July.

Middle District.—Farmingdale, Haddonfield, Medford (S), Mickleton (H), Yorktown, Bridgeton (NB).

Pine Barrens.—Waretown, Landisville, Hammonton (C), Atco (C), Pan-coast (T), Mays Landing (S).

Cape May.—Court House, Bennett (S).

Pyrola elliptica Nutt. Oval-leaved Wintergreen.

Pyrola elliptica Nuttall, Gen. I. 273. 1818 [Philadelphia and woods of New Jersey].—Britton 163.

Frequent in woods of the northern counties and Middle district.

Fl.—Mid-June to early July.

Middle District.—Phalanx (NB), New Egypt, Moorestown (C), Medford (S), Camden Co. (C), Glassboro (P), Swedesboro, Bridgeton (C).

Pine Barrens.—Hammonton (Bassett).

Pyrola chlorantha Sw. Greenish-flowered Wintergreen.

Pyrola chlorantha Swartz, Vet. Akad. Handl. 1810. 190. Pl. 5 [Sweden].—Nutt. Gen. I. 274. 1818.—Barton, Fl. Phila. 202. 1818.—Britton 163.—Keller and Brown 245.

Woods of the Northern and upper Middle districts; everywhere local and not abundant. Very rare in the Pine Barrens.

Described as a new species *P. convoluta* by Barton, Prodrum. Fl. Phila., from the "woods of New Jersey," where Nuttall also

* Cf. Fernald *Rhodora*, 1904, p. 195.

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states that it is abundant, specifying "sandy pine forests near Philadelphia."

Fl.—Late May to mid-June.

Middle District.—Fairhaven (C), Farmingdale, Pemberton (C), Moorestown, Camden (P), Medford, Sumner.

Pine Barrens.—Cedar Brook, Greenbank (Bassett) [prob. "Hammonton" (C)].

Pyrola secunda L. One-sided Wintergreen.

Pyrola secunda Linnæus, Sp. Pl. 396. 1753 [Europe].—Pursh, Fl. Am. Sept. I. 299. 1814.—Britton 163.—Keller and Brown 245.

Woods of the Northern and upper Middle districts; rare and local within our limits.

Fl.—Early June to late June.

Middle District.—Freehold (C), Farmingdale, Camden Co. (P), Medford, Blackwood (KB).

CHIMAPHILA Pursh.

Chimaphila maculata (L.). Spotted Pipsissewa.

Pl. XCI.

Pyrola maculata Linnæus, Sp. Pl. 396. 1753 [North America].—Barton, Fl. Phila. 204. 1818.—Knieskern 21.—Britton 163.

Dry woods; frequent throughout the State.

Fl.—Late June to mid-July.

Middle District.—Freehold (NB), New Egypt, Birmingham, Arney's Mt. (S), Brown's Mills, Haddonfield (S), Medford (S), Tomlin (S), Swedesboro, Yorktown, Centerton (S), Bridgeton (S).

Pine Barrens.—Albion, Inskip, Hammonton (Bassett), Manumuskin (S).

Coast Strip.—Pt. Pleasant (S), Forked River, Manahawkin, Atlantic City (S), Palermo (S), Beesley's Pt. (S), Mays Landing (S), Holly Beach.

Cape May.—Bennett, Cold Spring (OHB).

Chimaphila umbellata (L.). Plain Pipsissewa.

Pyrola umbellata Linnæus, Sp. Pl. 396. 1753 [Europe, Asia and North America].—Barton, Fl. Phila. 203. 1818.—Knieskern 21.—Britton 163.

Dry woods of the Northern, Middle and Cape May districts; not nearly as abundant as the preceding in our territory; very rare in the Pine Barrens.

Fl.—Late June to mid-July.

Middle District.—New Egypt, Birmingham, Medford (S), Swedesboro, Union Grove (S), Fairton (S).

Pine Barrens.—Inskip, Hammonton (Bassett).

Cape May.—Cold Spring (OHB), Green Creek.

Family MONOTROPACEÆ. Indian Pipes.

Key to the Species.

- a. Flower solitary, plant white—rarely pinkish—drying black. *Monotropa*, p. 611
 aa. Flowers racemose, plant yellowish, often tinged with red. *Hypopitys*, p. 611

MONOTROPA L.

Monotropa uniflora L. Indian Pipe.

Pl. XCIII., Fig. 2.

Monotropa uniflora Linnæus, Sp. Pl. 387. 1753 [Maryland, Virginia and Canada].—Knieskern 21.—Britton 164.

Woodlands; frequent in the Northern and Middle districts, less common in the Cape May peninsula and apparently quite rare in the Pine Barrens.

This curious ghostly, fungus-like plant seems rather out of place in the sandy woods of New Jersey, as we usually associate it with the deep rich forests of the higher grounds, but it seems to flourish very well right up to the edge of the Pine Barrens themselves.

Fl.—Early June into September or even October.

Middle District.—Farmingdale, New Egypt, Kenilworth (S), Haddonfield (S), Orchard (S), Medford (S), Lawnside (S), Tomlin (S), Clementon, Sicklerville (S), Yorktown.

Pine Barrens.—Pt. Pleasant, Manahawkin, Williamstown Inc., Newtonville.

Cape May.—Bennett (S), Cape May.

HYPOPITYS Hill.

Hypopitys hypopithys (L.). Pine Sap.

Monotropa Hypopithys Linnæus, Sp. Pl. 387. 1753 [Europe and Canada].—Knieskern 21.

Hypopithys lanuginosa Barton, Fl. Phila. 200. 1818.

Hypopitys monotropa Britton 164.

Woodlands; rather frequent in the Northern and Middle districts, rare in the Cape May peninsula and occasional on the eastern edge of the Pine Barrens.

The two nominal forms *H. americana* and *H. lanuginosa* are represented in our material, but they do not appear to be separable by any good constant differences.

Fl.—Early July into September or even October.

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Middle District.—N. Spring Lake (NB), New Egypt, Arney's Mt. (S), Brown's Mills, Kaighns Pt., Oaklyn (S), Bridgeton (S).

Pine Barrens.—Landisville, Manumuskin (S), Manahawkin.

Cape May.—Anglesea Jnc. (S), Bennett.

Family ERICACEÆ. Heath, etc.

Key to the Species.

- a. Petals separate white, leaves 6-14 mm. long, crowded, oval, thick, obtuse, shining; an evergreen shrub 1-4 dm. high. *Dendrium*, p. 615
- aa. Petals united.
 - b. Corolla funnel-form, campanulate or saucer-shaped.
 - c. Funnel-form or salver form.
 - d. A trailing vine, flowers pink and white 10-15 mm. long, leaves orbicular 12-30 x 25-70 mm. *Epigaea*, p. 619
 - dd. Shrubs; flowers 35-50 mm. long, leaves oblanceolate or obovate.
 - e. Flowers pink, appearing before the leaves expand. *Azalea nudiflora*, p. 612
 - ee. Flowers white, clammy, appearing after the leaves have expanded.
 - f. Leaves glaucous. *A. viscosa glauca*, p. 614
 - ff. Leaves not glaucous. *A. viscosa*, p. 613
 - cc. Corolla campanulate, 35-50 mm. broad, white or tinged with pink, with yellowish dots within. Leaves 10-20 x 3-6 cm., evergreen. *Rhododendron*, p. 614
 - ccc. Corolla saucer-shaped, leaves oblong to oval, evergreen.
 - d. Flowers 6-10 mm. broad, deep pink, leaves 30-60 mm. long. *Kalmia angustifolia*, p. 616
 - dd. Flowers 16-25 mm. broad, white or pink, leaves 5-13 mm. long. *Kalmia latifolia*, p. 616
 - bb. Corolla small, urn-shaped pendant, white, or pink tinted.
 - c. Trailing vine, leaves spatulate, 12-25 mm. long, evergreen. *Arctostaphylos*, p. 621
 - cc. Low shrub, 50-150 mm. high from a subterranean stem; leaves, oval clustered at the ends of the branches, 25-50 mm. long, evergreen. *Gaultheria*, p. 620
 - ccc. Erect shrubs.
 - d. Flowers 6-8 mm. long, in conspicuous second racemes.
 - e. Low bog shrub, 6 dm. high. *Chamædaphne*, p. 619
 - ee. Tall shrub, 12-18 dm. high. *Leucothoe*, p. 617
 - dd. Flowers 10-12 mm. long in lateral umbels. Low shrub, 3-6 dm. high. *Pieris*, p. 618
 - ddd. Flowers 3 mm. long, in terminal, often dense panicles. *Xolisma*, p. 618

AZALEA L.

Azalea nudiflora L. Pink Azalea, Wild Honeysuckle.

Pl. XCV.

Azalca nudiflora Linnæus, Sp. Pl. Ed. 2. 214. 1762 [Virginia].—Barton, Fl.

Phila. 113, 1818.—Knieskern 20.

Rhododendron nudiflorum Britton 162.

Common in woodlands of the Northern and Middle districts, occasional in the Cape May peninsula, and very rare in the Pine Barrens.

While frequent in the woods of West Jersey, this *Azalea* is by no means typical of the coastal plain, the following species being the characteristic species of the region.

A specimen from Mickleton represents the form known as *A. nudiflora glandifera* Porter (Bull. Torrey Bot. Club XXVII, 508, 1900).

Fl.—Early May to late May, appearing before or with the leaves. *Fr.*—Early July to late July.

Middle District.—New Egypt, Bordentown, Birmingham, Medford (S), Camden (P), Westville, Gloucester, Woodbury, Mickleton, Swedesboro, Quinton.

Pine Barrens.—Hammonton, Speedwell.

Cape May.—Cold Spring (OHB).

Azalea viscosa L. White Azalea.

Pl. LVIII., Fig. 2.

Azalea viscosa Linnæus, Sp. Pl. 151. 1753 [Virginia].—Barton, Fl. Phila. 113. 1818.—Knieskern 20.

Rhododendron viscosum Britton 162.

Azalea viscosa nitida Keller and Brown 246.

Common in swamps throughout the coastal plain and at several stations in Sussex, Warren and Morris Counties in the mountains. Very abundant in the Pine Barrens, but rather rare on the coast islands and lower Cape May peninsula.

One of our most attractive Pine Barren shrubs. Its white flower clusters fill the swamps with a delicate heliotrope-like fragrance, following close upon the Magnolia and lasting until the white spikes of the Clethra are ready to take their place. The three keep the swamps redolent with perfume nearly the whole summer through.

Fl.—Early June to early July, sporadically somewhat later, appearing after the leaves. *Fr.*—Early September to early October apparently.

Middle District.—Farmingdale, Pensauken (S), Brown's Mills, Kaighns Pt., Haddonfield (KB), Medford, Westville, Washington Park, Mickleton, Swedesboro, Yorktown, Elmer (P), Union Grove (S), Dividing Creek.

Pine Barrens.—Manchester, Davenport, Forked River, W. Plains (S), Albion, Malaga (P), Andrews', Ancora, Inskip, Winslow Jnc., Egg Harbor City.

Coast Strip.—Beach Haven Crest (L), Holgate's (L), Beesley's Pt. (S).

Cape May.—Bennett.

***Azalea viscosa glauca* Michx. Glauous Azalea.**

Azalea viscosa glauca Michaux, Fl. Bor. Am. I. 151. 1803 [Lower Carolina].

—Keller and Brown 246.

Rhododendron viscosum glaucum Britton 162.

Frequent with the preceding, but not so plentiful. This is not a geographic form in any sense, but seems to occur wherever the true *viscosa* is found.

Fl.—Apparently slightly later than the last.

Middle District.—Spring Lake (C), Mickleton 7 miles west (= Repaupo); Swedesboro, Union Grove (S).

Pine Barrens.—Allaire, Lakehurst, Forked River, Hammonton, Inskip.

Coast Strip.—Peahala (L), Beach Haven Crest (L), Cold Spring.

RHODODENDRON L.

***Rhododendron maximum* L. Rhododendron.**

Pl. XCIV., Fig. 1.

Rhododendron maximum Linnæus, Sp. Pl. 392. 1753 [Virginia].—Willis 39.

—Britton 161.—Keller and Brown 247.

Rhododendron maximum album Pursh, Fl. Am. Sept. I. 297. 1814.

Along streams and lakes at various points in the northern counties and down the Delaware to Florence Heights. Also at two isolated localities in Cedar Swamps in the Pine Barrens.

The occurrence of the *Rhododendron* in the flat plains of the Pine Barrens has always been a surprise to me. Associated as it is in my mind with cool shaded slopes of the mountains, it seems entirely out of place in South Jersey.

Pursh seems to have been the first one to have recorded its occurrence here, as he mentions under the habitat of the species "Shady Cedar Swamps, New Jersey and Delaware."

The stations are remote and not easy of access, so that the plant is not threatened with annihilation as it would be in more frequented spots.

On July 9, 1910, I visited a colony near Sicklerville. My own efforts on a previous trip having failed to discover it, I was fortunate in obtaining directions from a native who had been

to the "Oleander patch" several times. Entering a low wood I walked for perhaps two hundred yards on a gradual descent until I reached a point where white cedars began to appear, and soon the ground pitched steeply down to the characteristic sphagnum bottom of the cedar swamp, with great rank growths of ferns, *Woodwardias*, *Osmunda cinnamomea* and *Dryopteris simulata*. The cedars rose on every hand like tall columns, their dense tops shutting off much of the light, and under them, with tangled and twisted trunks and branches, grew the Rhododendrons, the masses of white blossoms standing out conspicuously against the dark leaves and the general gloom. The high humidity, the absolute lack of motion in the air, and the low basin-like character of the spot made it extremely oppressive and the atmosphere seemed fairly reeking with moisture.

I have suffered from excessive perspiration in the Rhododendron thickets of the Alleghenies much as I did that day in the cedar swamp, and perhaps the similarly humid conditions are what the plant needs. It was interesting to note growing with it another straggler from the north, *Ilicioides mucronata*, brought evidently by the same climatic upheaval which drove the Rhododendron so far to the south of its usual range. The swamp stretched away on all sides, and one might wander for hours through its gloomy depths without finding this little thicket, or without finding the way out again, if it were not for the path that had been opened up by woodchoppers. Another larger patch of Rhododendrons has been seen by gunners in winter time in the swamps bordering the upper Egg Harbor River, but I could find no one who had visited it in summer, and those who had stumbled upon it in autumn or winter could not find their way back again.

Fl.—Late June to late July. *Fr.*—Early August into autumn.

Middle District.—Bordentown, Kinkora, Florence (C).

Pine Barrens.—Near Sicklerville, Near Atsion.

DENDRIUM Desvaux.

Dendrium buxifolium (Berg.). Sand Myrtle.

Pl. XCVI., Fig. 2.

Ledum buxifolium Berg, Act. Petrop. I: 213. 1778 [New Jersey].

Ammyrsine buxifolia Pursh, Fl. Am. Sept. I. 301. 1814.

Leiophyllum buxifolium Knieskern 20.—Willis 39.—Britton 161.

Dendrium buxifolium Keller and Brown 247.

Frequent in damp sand of the Pine Barrens, usually in open situations, finding here the northern limit of its range.

This curious little evergreen, like a miniature Box-bush, is typical of the very center of the Pines and does not range in New Jersey beyond the limits of this region. The white flowers, which it bears in great abundance, prove very attractive to various insects, and entomologists frequently haunt the patches of Sand Myrtle when searching for rarities.

Fl.—Early May (rarely late April) to early June. *Fr.*—Early July through summer.

Pine Barrens.—Brindletown, Lakewood (NB), Lakehurst (NB), Toms River, Brown's Mills, New Lisbon, Bamber, Forked River, Barnegat, East Plains, Speedwell, Bear Swamp, Taunton, Clementon, Atco, Jackson (P), Waterford (P), Cedar Brook, Landisville (T), New Germany (T), Winslow Inc., Hammonton, Batsto (S), Pleasant Mills, Mays Landing.

KALMIA L.*

Kalmia angustifolia L. Sheep Laurel.

Kalmia angustifolia Linnæus, Sp. Pl. 391. 1753 [Pennsylvania, New Jersey and New York].—Knieskern 20.—Britton 161.

Kalmia glauca Barton, Fl. Phila. 199. 1818.

Frequent in sandy ground, especially about the edges of bogs, everywhere except in the Cape May peninsula, where we have no record south of Dennisville. Most abundant in the Pine Barrens, where it often covers large areas.

Fl.—Late May to late June. *Fr.*—Late August through autumn.

Middle District.—Farmingdale, New Egypt, Washington Park, Glassboro, Lindenwold (S), Sewell (S), Swedesboro.

Pine Barrens.—Toms River, Brown's Mills, Bamber, Forked River, Coxe's, East Plains, West Plains (S), Tabernacle, Taunton, Albion, Jackson, Andrews, Cedar Brook, Landisville (T), Hammonton (Bassett), Pleasant Mills, Egg Harbor City, Dennisville (OHB).

Coast Strip.—Spray Beach (L), Peahala (L), North Beach Haven (L), Holgate's (L).

Kalmia latifolia L. Laurel.

Pl. LXIV., Fig. 1.

Kalmia latifolia Linnæus, Sp. Pl. 391. 1753 [Maryland, Virginia and Pennsylvania].—Barton, Fl. Phila. 199. 1818.—Knieskern 20.—Britton 161.

* Named for Peter Kalm (1715-1779), the Swedish explorer, who visited America 1748-51, and brought back many plants to Linnæus.

Throughout the State, except on the Cape May peninsula, where we have no record south of Goshen. Common in both dry and moist situations; an abundant plant in the Pine Barrens.

The Pines seem to be the chosen land of the *Ericaceæ*, which abound there both in species and individuals. As we visit them in early spring in search of the finest *Arbutus* that I know of, so by the end of June we may be sure of finding the greatest display of Laurel that can be found anywhere in the Middle States even on the mountains themselves, which are supposed to be its proper home. It is snow white in shady spots and reaches a height of six to eight feet, while in open ground, even out on the plains, it grows in low rounded bushes with flowers of the deepest pink. Unfortunately, the demand for bushes to plant on the estates of the wealthy has caused the nurseryman to nearly exterminate it in some parts of South Jersey, and many car loads have been hauled out of the State.

Fl.—Late May to late June. *Fr.*—Late August into autumn.

Middle District.—Farmingdale, New Egypt, Crosswicks, Birmingham, Arney's Mt. (S), Medford (S), Washington Park, Eight miles from Mickleton, Swedesboro.

Pine Barrens.—Bayhead, Toms River, Brown's Mills, Bamber, Forked River, Barnegat, Manahawkin, West Creek, East Plains, W. Plains (S), Coxe's, Bear Swamp (S), Sumner, Albion, Atco, Andrews, Cedar Brook, Williamstown Inc., Landisville (T), Hammonton (Bassett), Mays Landing, Manumuskine, Tuckahoe, Dennisville (OHB).

LEUCOTHOË D. Don.

Leucothoe racemosa (L.). Swamp *Leucothoe*.

Pl. C., Fig. 1.

Andromeda racemosa Linnæus, Sp. Pl. 394. 1753 [Pennsylvania].—Barton, Fl. Phila. 198. 1818.

Leucothoe racemosa Knieskern 20.—Willis 38.—Britton 160.—Keller and Brown 247.

Frequent in moist thickets throughout the coastal plain, except on the coast islands, where we have no records, also at several stations in the uplands of the northern counties.

The long one-sided racemes remind one of the *Chamædaphne*, but they are much less conspicuous, blooming when the leaves are well developed.

Fl.—Mid-May to late June. *Fr.*—Late September through autumn.

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Middle District.—Farmingdale, Arney's Mt. (S), Delair, Fish House (S), Medford (S), Washington Park, Glassboro, Dividing Creek.

Pine Barrens.—Davenport, Brown's Mills, Forked River, Speedwell (S), Jackson, Cedar Brook, Malaga (P), Landisville, Hammonton (Bassett), Pan-coast (S).

Cape May.—Court House (S), Cold Spring (OHB).

PIERIS D. Don.

Pieris mariana (L.). Stagger-bush.

Andromeda mariana Linnæus, Sp. Pl. 393. 1753 [Virginia].—Barton, Fl. Phila. 197. 1818.—Knieskern 20.—Willis 38.—Britton 247.

Pieris mariana Keller and Brown 247.

Common in sandy ground throughout the Coastal plain, although not noted south of Dennisville on the Cape May peninsula. Also at a few points in the uplands of the northern counties.

The flowers of this little bush are the largest and handsomest of any of the urn-shaped blooms so frequent among the Huckleberries and Ericaceous shrubs.

Their dense white masses form one of the attractive features of the sandy road—I will not say roadsides, for they grow quite as frequently in the middle—in June.

Fr.—Late May to late June. *Fr.*—Early September through autumn.

Middle District.—Matawan (NB), Farmingdale, New Egypt, Arney's Mt. (S), Pemberton (NB), Medford, Lawnside (S), Washington Park, Lindenswold (S), Mickleton, Mantua, Sewell (S), Glassboro (S), Dividing Creek.

Pine Barrens.—Pt. Pleasant, Davenport, Toms River (S), Brown's Mills, Forked River, Tuckerton, Manahawkin, East Plains, West Plains (S), Speedwell, Tabernacle, Bear Swamp (S), Albion, Williamstown Jnc., Atco, Cedar Brook, Landisville, Hammonton (Bassett), Egg Harbor City, Mays Landing, Dennisville (S).

Coast Strip.—Holgate's (L), Spray Beach (L), Surf City (L), Peahala (L), Sherburn's (L), Beach Haven Crest (L).

XOLISMA Rafinesque.

Xolisma ligustrina (L.). Privet Andromeda.

Vaccinium ligustrina Linnæus, Sp. Pl. 351. 1753 [Pennsylvania].

Andromeda paniculata Barton, Fl. Phila. 198. 1818.

Andromeda ligustrina Knieskern 20.—Britton 161.

Xolisma ligustrina Keller and Brown 247.

Frequent throughout the State, usually in moist thickets; very common in the Pine Barrens.

While the flowers are the smallest of any of the Andromeda-like shrubs, they are sometimes born in such masses as to be

quite conspicuous. One specimen in my herbarium has an inflorescence measuring 25 cm. in length.

Fr.—Mid-June to early July. *Fr.*—Early September through autumn.

Middle District.—Shark River, Farmingdale, New Egypt, Hartford, Medford (S), Westville, Washington Park, Lawnside (S), Mickleton, Tomlin, Swedesboro, Yorktown, Dividing Creek.

Pine Barrens.—Pt. Pleasant (S), Forked River, Manahawkin, Speedwell, Applepie Hill, Bear Swamp, Albion, Andrews, Williamstown Jnc., Winslow (S), Hammonton (Bassett), Weekstown, Folsom, Tuckahoe (S).

Cape May.—Cape May.

EPIGÆA L.

Epigæa repens L. *Arbutus*.

Pl. XCVIII.

Epigæa repens Linnæus, Sp. Pl. 395 [Virginia and Canada].—Knieskern 20.—Britton 160.

Found in dry sandy woods throughout the State; most abundant in the Pine Barrens and the mountains of the northern counties.

Arbutus seems out of place in the sandy stretches of the Pine Barrens, but, nevertheless, it grows here in luxuriance and with as fine flowers as I have ever seen in richer soil. Sometimes fire sweeps over its haunts and frequently the mid-summer sun curls up its leaves until the edges are brown and brittle, but still it persists and rivals the Pyxie and Helonias as the most attractive early spring flower of the region.

Fl.—Early April to early May. *Fr.*—July, probably.

Middle District.—Farmingdale, New Egypt, Bordentown, Birmingham, Fish House, Kirkwood, Glassboro, Swedesboro.

Pine Barrens.—Brown's Mills, Bamber, Woodmansie, Waretown, E. Plains (S), Bear Swamp (S), Hammonton (Bassett), Pleasant Mills, Mays Landing (S), Palermo, Petersburg (S).

Cape May.—Court House, Cold Spring (OHB).

CHAMÆDAPHNE Moench.

Chamædaphne calyculata (L.). *Leather-leaf*, *Cassandra*.

Pl. XCII., Fig. 1; Pl. C., Fig. 2.

Andromeda calyculata Linnæus, Sp. Pl. 394. 1753 [Virginia, Canada and Siberia].—Barton, Fl. Phila. 197. 1818.

Cassandra calyculata Knieskern 20.—Britton 160.

Chamædaphne calyculata Keller and Brown 247.

Swamps and edges of ponds and bogs. Most abundant in the Pine Barrens and parts of the northern counties, less common elsewhere and apparently absent from the coast and Cape May peninsula.

The small wet bogs of the Pine Barrens where shallow water is always standing and the borders of the large cranberry bogs are covered with a thick growth of this little shrub; the upper parts of the branches are covered with the small, dull green, often brown, leaves, while below is a wiry mass of stems and twigs.

In early spring, when the Shadbush and Red Maple are the only taller shrubs or trees to bloom, the Leather-leaf puts forth the one sided racemes of white cylindrical flowers, which have gained for it the name of "false teeth bush."

Fl.—Early April to early May, from buds of the previous season. *Fr.*—Early September through autumn.

Middle District.—Shark River, New Egypt, Berlin, Kaighns Pt., Six miles west Mickleton, Swedesboro.

Pine Barrens.—Toms River, Brown's Mills, Bamber, Forked River, West Creek, Cedar Bridge, High Bridge, Bear Swamp, Albion, Cedar Brook, Landisville (T), Buena Vista, Pleasant Mills (T), Winslow Jnc., Hammonton (P), Pancoast, Mays Landing (S), Dennisville (OHB).

GAULTHERIA L.

Gaultheria procumbens L. Wintergreen.

Pl. XCIII., Fig. 2; XCVII., Fig. 1.

Gaultheria procumbens Linnæus, Sp. Pl. 395. 1753 [Canada].—Barton, Fl. Phila. 194. 1818.—Knieskern 20.—Britton 160.

Woods and thickets; most abundant in the Pine Barrens and in the mountains of the northern counties.

The Wintergreen is a characteristic plant of the South Jersey woods, and the berries are often gathered and sold by the natives of the Pine Barrens.

Fl.—Late June to early August. *Fr.*—Late September into October, persisting over winter.

Middle District.—Shark River, New Egypt, Medford (S), Sicklerville (S), Braddock's Mill (S), Lindenwold, Swedesboro.

Pine Barrens.—Pt. Pleasant (S), Brown's Mills, Toms River (P), Forked River, Waretown, Pasadena, Cox's, Tuckerton, Manahawkin, E. Plains (S), Speedwell, Clementon (S), Cedar Brook, Winslow Jnc., Hammonton (Bassett).

ARCTOSTAPHYLOS Adanson.

Arctostaphylos uva-ursi (L.). Bearberry, "*Uvursy*."

Pl. XCIX; Pl. C., Fig. 3.

Arbutus Uva-ursi Linnæus, Sp. Pl. 395. 1753 [Europe frig. and Canada].—

Pursh, Fl. Am. Sept. I. 283. 1814.

Arctostaphylos Uva-ursi Knieskern 20.—Willis 38.—Britton 159.—Saunders, Proc. Acad. Nat. Sci. Phila. 544.—Keller and Brown 248.

Reported from three localities on the Palisades and mountains of the northern counties and frequent in the central Pine Barrens.

This is one of the species most characteristic of the plains of the Pine Barrens, though it is not so closely restricted to this area of dwarf vegetation as is the *Corema*. Both are northern species of wind-swept coast and mountain top, which here find their southernmost limit.

Mr. C. F. Saunders says of it in this region: "In some places the Bearberry formed a veritable carpet, the dry, astringent berries not yet tinged with the crimson that makes them so conspicuous in winter. The gathering of this plant for shipment to the cities, where it has been more or less extensively employed in medicine, used to be a considerable industry in southern New Jersey. A reminiscence of this old-time trade still lingers in one of the common names of the plant down there, viz., *Uvursy*—the shop name of the berry being *uva-ursi*."

In early spring the plant is particularly attractive when we find among the dark, shining evergreen leaves the tiny little urn-shaped pink and white blossoms, like diminutive Huckleberry flowers, but far more delicate.

In mid-summer, on the white sandy wastes, the dense mats of foliage of the Bearberry offer welcome shelter to various grasshoppers, lizards, etc., which go scuttling away as their retreat is threatened.

Fl.—Late April to mid-May. *Fr.*—Early August into September, persisting through the winter into the following spring.

Pine Barrens.—Lakehurst, Davenport, Toms River, Whitings, Mt. Misery, Hanover, Bamber, Pasadena, Cedar Grove (S), Cedar Bridge, E. Plains, W. Plains, Speedwell (S), Chatsworth, Atsion (KB), Pleasant Mills, Batsto, Elwood (KB).

Family VACCINIACEÆ. Huckleberries, etc.

Key to the Species.

- a. Trailing vine, corolla, white tinged with pink, deeply four parted, with reflexed lobes. Berry large, crimson. *Orycoccus*, p. 627
- aa. Erect shrubs.
 - b. Flowers open, campanulate, yellowish or purplish green, berry green or yellowish. *Polycodium*, p. 624
 - bb. Flowers cylindrical, bell-shaped.
 - c. Leaves entire.
 - d. Pale and glaucous beneath.
 - e. Berries in loose racemes, bracts foliaceous, deciduous flowers greenish pink. *Gaylussacia frondosa*, p. 623
 - ee. Berries in more compact racemes, bracts none.
 - f. Bushes 2-4 m. high.
 - g. Berries black, flowers pink, appearing before the leaves, leaves pubescent beneath. *Vaccinium atrococcum*, p. 626
 - gg. Berries blue, flowers white, appearing with the leaves, leaves nearly or quite glabrous. *V. corymbosum*, p. 624
 - ff. Bushes 1.5-8 dm. high, berries blue, leaves glabrous, flowers pink. *V. vacillans*, p. 627
 - dd. Leaves resinous dotted, green on both sides, racemes leafy, berries black.
 - e. Bracts inconspicuous, deciduous. *Gaylussacia baccata*, p. 624
 - ee. Bracts leaf-like, persistent, berries somewhat hispid. *G. dumosa*, p. 623
 - cc. Leaves serrate, small twigs green.
 - d. Leaves narrowly oval-oblong 25-65×12-25 mm.
 - e. Shrub 9-30 dm. high. *Vaccinium virgatum*, p. 625
 - ee. Shrub 1.5-8 dm. high. *V. vacillans*, p. 627
 - dd. Leaves acute at both ends, 18-36×6-12 mm., shrub 1.5-6 dm. high. *V. pennsylvanicum*, p. 626

Large quantities of huckleberries are gathered and shipped out of southern New Jersey every year. *Vaccinium corymbosum* yields the best berry, but it is not so plentiful as the lower species, and growing in the swamps is harder to get at. The bulk of the crop consists of *V. vacillans*, *Gaylussacia baccata* and *G. frondosa*. The somewhat hispid berries of *G. dumosa*—"Grouseberry" as it is locally called—do not seem to be marketable, while *Vaccinium pennsylvanicum*, such an abundant fruit bearer in the mountains, does not seem to develop full-sized fruit in this region, at least not in the lower part.

Gaylussacia baccata is probably the most abundant species, and is popularly known as "Hog huckleberry."

GAYLUSSACIA Humboldt, Bonpland & Kunth.

***Gaylussacia frondosa* (L.). Blue Huckleberry.**

Pl. CII., Fig. 1.

Vaccinium frondosum Linnæus, Sp. Pl. 351 1753 [N. America].—Barton, Fl. Phila. 196. 1818.

Vaccinium frondosum var. *lanceolatum* Pursh, I. 286. 1814 [N. J. to Carolina].

Gaylussacia frondosa Knieskern 20.—Britton 158.—Keller and Brown 248.

Dry woodland; frequent throughout but mainly on the coastal plain and most abundant in the Pine Barrens.

Fl.—Late May to late June. *Fr.*—Mid-July into September.

Middle District.—Farmingdale, Arney's Mt. (S), Fish House (S), Kaighns Swp., Medford (S), Repaupo, Tomlin (S), Sewell (S), Clementon, Sickler-ville, Glassboro, Dividing Creek (S).

Pine Barrens.—Pt. Pleasant (S), Toms River (S), Brown's Mills, Bamber, Forked River, Tuckerton, W. Plains, Speedwell, Chatsworth, Bear Swamp (S), Albion, Cedar Brook, Winslow (S), Mouth of Batsto, Egg Harbor City (S), Tuckahoe (S).

Coast Strip.—Brant Beach (L), Surf City (L), Spray Beach (L), Beach Haven (L), Holgate's (L).

Cape May.—Court House (S), Cape May.

***Gaylussacia dumosa* (Andr.)* Leafy-bracted Huckleberry.**

Pl. CII., Fig. 3.

Vaccinium dumosum Andrews, Bot. Rep. II. pl. 112. 1799 [North America].—Barton, Fl. Phila. 195. 1818.—Pursh, Fl. Am. Sept. I. 285. 1814.

Gaylussacia dumosa Knieskern 20.—Britton 158.—Keller and Brown 248.

Plentiful throughout the Pine Barrens and locally in the Middle and Cape May districts, in open sandy swamps.

Fl.—Late May to late June. *Fr.*—Late July into September.

Middle District.—Shark R., Squan (NB), Farmingdale, Burlington, Kaighns Pt., Griffith's Swp., Kirkwood, Sewell (S), Swedesboro, Dividing Creek.

Pine Barrens.—Manchester, Lakehurst, Davenport, Bamber, Forked River, Mayetta, E. Plains, Speedwell, Bear Swamp, Clementon, Albion, Jackson, Atco, Andrews, Williamstown Inc., Cedar Brook, Landisville (T), Winslow (S), Hammonton, Quaker Bridge, Egg Harbor City, Folsom, Twelfth St. (T), May's Landing, Woodbine, Tuckahoe (S).

Cape May.—Dias Creek (S).

* I fail to distinguish the variety *bigeloviana*, proposed by Prof. Fernald, cf. *Rhodora* 1911, 99.

Gaylussacia baccata Wang.† **Black Huckleberry.**

Pl. CII., Fig. 2.

Vaccinium baccatum Wangenheim, Brit. Am. 30, pl. 39, f. 69. 1787 [New York].*Vaccinium resinolum* Barton, Fl. Phila. 196. 1818.*Gaylussacia resinosa* Knieskern 20.—Britton 158.

Dry woodland; common throughout the State.

Fl.—Early May to early June. *Fr.*—Early July into August*Middle District.*—Farmingdale, Arneys Mt. (S), Merchantville, Medford (S), Clementon (S), Sicklerville (S), Swedesboro.*Pine Barrens.*—Toms River, Brown's Mills, New Lisbon, Bamber, Waretown, E. Plains, W. Plains, Speedwell, Cedar Brook, Landisville (T), Winslow (S), Atsion (NB), Head of Batsto, Pleasant Mills (NB), Tuckahoe (S).*Coast Strip.*—Surf City (L), Ship Bottom (L), Beach Haven Crest (L), Piermont (S).*Cape May.*—Court House (S).**POLYCODIUM Rafinesque.****Polycodium stamineum** (L.). **Deerberry.***Vaccinium stamineum* Linnæus, Sp. Pl. 350. 1753 [North America].—Barton, Fl. Phila. 195. 1818.—Knieskern 20.—Britton 158.? *Vaccinium album* Pursh, Fl. Am. Sept. I. 285. 1814 [New Jersey to] Carolina.]

Frequent in woodlands of the northern counties and rare southward in the Middle district only.

Fl.—Mid-May to early June. *Fr.*—Early September through autumn.*Middle District.*—Bordentown, Washington Park, Mickleton, Delair.**VACCINIUM L.****Vaccinium corymbosum** L. **Tall Blueberry.**

Pl. CI., Fig. 1.

Vaccinium corymbosum Linnæus, Sp. Pl. 350. 1753 [North America].—Barton, Fl. Phila. 196. 1818.—Knieskern 20.—Britton 149.

Frequent in swampy thickets throughout the State.

Fl.—Early May to late May, appearing when the leaves are partly expanded. *Fr.*—Early July to early August, sporadically through the latter month.This is the most frequent tall blueberry. It varies a good deal in the size of flowers and fruit and in leaf characters. These variations are discussed under *V. casariense* below.

† cf. Mackenzie Torrey 1907: 60.

Middle District.—Farmingdale, Bordentown, New Egypt, Kaighns Pt., Pensauken (S), Washington Park, Westville, Mickleton, Mantua, Sicklerville (S), Swedesboro, Union Grove (S), Quinton, Beaver Dam.

Pine Barrens.—Toms River (S), Forked River, Manahawkin, Speedwell, Harris, Penbryn (S), Head of Batsto, Cedar Brook, Landisville (T), Weekstown, Egg Harbor City, Dennis (S).

Coast Strip.—Ocean City (S), Piermont (S), Surf City (L), Spray Beach (L).

Vaccinium virgatum Ait. **Southern Black Blueberry.**

Vaccinium virgatum Aiton, Hort. Kew. II. 12. 1789 [North America].—Mackenzie, Torreyia VII. 144.

Pine Barrens; rather local.

Fl. and *Fr.*.—Apparently similar to *V. corymbosum*.

Pine Barrens.—New Lisbon, Farmingdale, Pt. Pleasant, Speedwell, Chatsworth, Lakehurst (Mackenzie).

Vaccinium cæsariense Mackenzie. **New Jersey Blueberry.**

Vaccinium cæsariense Mackenzie, Torreyia 1910. 230 [Toms River].

Frequent in the Pine Barrens.

Fl. and *Fr.*.—Apparently similar to *V. corymbosum*.

Middle District.—Woodbury.

Pine Barrens.—Pleasant Mills.

Coast Strip.—Five-Mile Beach.

There seem to be, as stated by Mr. Mackenzie, three forms of tall Blueberry in the New Jersey coastal plain. Material is not available for a satisfactory study of the flowers as compared with the tall Blueberries of eastern Pennsylvania or northern New Jersey, but considering leaves only we have within our limits, (1) a form with finely serrate leaves (*virgatum*) somewhat pubescent below, apparently restricted to the Pine Barrens in southern New Jersey, although some specimens from the Cape May peninsula are intermediate between this and the next, the serration being obscure, but clearly present; (2) a form with entire leaves somewhat pubescent below, particularly on the veins (*corymbosum*) and (3) an entire leaved absolutely glabrous form (*cæsariense*).

The last two occur also on the Alleghenies of Sullivan and Wyoming Counties, Pennsylvania, and doubtless elsewhere in the intervening country, while a serrate-leaved very pubescent plant was found by Mr. E. B. Bartram, at Bangor, Northampton Co., Penna.

V. corymbosum is admittedly wide ranging, and the evidence is suggestive that the other forms are to be found materially north of the New Jersey coastal plain, unless it be found that the more northern specimens have distinctive floral characters. If not, it seems possible that some older names may have to be considered in straightening out the nomenclature of the group. Provisionally, however, the New Jersey plants had better be named in accordance with Mr. Mackenzie's conclusions.

***Vaccinium atrococcum* (Gray). Black Blueberry.**

Vaccinium corymbosum var. *atrococcum* Gray, Man. Ed. V. 292. 1867.
[Eastern North America].

Vaccinium disomorphum Britton 159.

Vaccinium atrococcum Keller and Brown 249.

Moist thickets throughout our region and also northward in Bergen and Hudson Counties.

Fl.—Late April to mid-May, appearing before or with the leaves. *Fr.*—Late June to late July, sporadically into August.

Middle District.—Farmingdale, Burlington (C), Pemberton (NB), Washington Park, Woodbury, Mickleton, Palatine, Alloway, Union Grove (S).*

Pine Barrens.—Forked River (C), Toms River (S), Mayetta, Chatsworth, Winslow (S), Egg Harbor City.

Coast Strip.—Surf City (L), Peahala (L), Beach Haven Terrace (L), Spray Beach (L).

Cape May.—South Dennis, Court House (S), Cold Spring.

***Vaccinium pennsylvanicum* Lam. Narrow-leaved Dwarf Blueberry.**

Pl. Cl., Fig. 2.

Vaccinium pennsylvanicum Lamarck, Encycl. I. 74. 1783 [Pennsylvania].—

—Knieskern 20.—Britton 159.—Keller and Brown 249.

Vaccinium tenellum Barton, Fl. Phila. 197. 1818.

Frequent in the northern counties and northeastern part of the Middle district, less common in the southern part, generally near the edge of the Pine Barrens, but very rare in that region itself.

Fl.—Late April to mid-May, appearing with the leaves. *Fr.*—Late June to late July, rarely slightly later.

* Swedesboro (KB) = *V. vacillans*.

Middle District.—Shark River, Farmingdale, Bordentown, Kirkwood, Pensauken (S), Arneys Mt. (S), Pemberton (C), New Lisbon, Brown's Mills, Fish House (S), Haddonfield (KB), Taunton, Westville (KB), Ballingers Mill, Lindenwold, Fairview (H), Atco (C), Clementon, Swedesboro (CDL), Elsinboro (C), Millville (KB).

Pine Barrens.—Bamber.*

***Vaccinium vacillans* "Kalm," Torrey. Low Blueberry.**

Pl. CI., Fig. 3.

Vaccinium vacillans "Kalm," Torrey Fl. N. Y. I. 44. 1843 [near New York].—Britton 159.

Dry woods; common throughout the State.

Fl.—Early May to late May, when the leaves are partly expanded. *Fr.*—Late June to late July, rarely slightly later.

Middle District.—Farmingdale, Bordentown, Pensauken (S), Arney's Mt., Delaire, Fish House (S), Medford (S), Woodbury Hts., Sicklerville (S).

Pine Barrens.—Davenport, Toms River, Bamber, Forked River, E. Plains, W. Plains, Speedwell, Clementon, Cedar Brook, Tuckahoe, Somers Pt. (NB).

Coast Strip.—Five-Mile Beach.

Cape May.—Court House (S).

OXYCOCCUS HILL.

***Oxycoccus macrocarpus* (Ait.). Cranberry.†**

Pl. XCVII., Fig. 2.

Vaccinium macrocarpon Aiton, Hort. Kew. II. 13 pl. 7. 1789 [North America].

Oxycoccus macrocarpus Barton, Fl. Phila. 184. 1818.—Britton 158.—Keller and Brown 250.

Vaccinium Oxycoccus Knieskern 20.

Locally in Bergen, Essex and Hudson Counties and plentiful in the bogs of the Pine Barrens; rarely in the Middle and Cape May districts.

The cultivation of the Cranberry is to-day the principal industry of the Pine Barrens, and every year acres of natural bog,

* The Hammonton record (KB) has not been verified, and is, I think, very doubtful.

† Cf. Wm. Saunders, *Cranberry Culture*, U. S. Dept. Agr., Farmers' Bulletin 13. 1894. J. B. Smith, *Insects Injurious in Cranberry Culture*, U. S. Dept. Agr., Farmers' Bulletin 178. 1903. C. L. Shear, *Cranberry Diseases*, U. S. Dept. Agr., Bulletin 110, Bureau Plant Industry. 1907.

Prof. Willis in his catalogue, p. 37, states that *Vaccinium oxycoccus* occurs in Ocean and Monmouth counties, but that it is rapidly being supplanted by the larger *V. macrocarpon*. I find no other evidence, and think that the smaller cranberry to which he referred was merely the wild native form of *O. macrocarpus*.

open savanna land or cleared cedar swamp are converted into cultivated bog. The usual procedure is to construct a dyke or dam across the stream which waters the tract and along the sides of the area also wherever the natural slope of the land is not sufficient to serve as a barrier; ditches are then cut through at intervals and the vines are planted. In the late autumn or early winter the floodgates are put down and the green bog becomes a spacious lake.* Early in May the water is drawn off and after about two weeks the bog is again flooded for a few days to drown out certain insect pests which devour the vines. The bogs occasionally require to be sanded to lighten the soil and produce better growth. This is done in winter by spreading the sand over the ice, which when it melts, of course, deposits the sand evenly over the bog.

By September first the picking begins. Some of it is done by hand, but much of it by scoops provided with long slender fingers, which, drawn lengthwise along the vines, pull the berries off into the hollow of the scoop. The berries that are scattered or lost from the scoops are often secured by flooding the bogs again, when they rise to the surface and can be scooped up wherever they collect. The picking ends about the middle of October and then the bogs are raked so as to draw all the vines in one direction to aid the gathering of the next crop. Several different types of berry have originated as the result of cultivation, a large ovoid one, the "Howell"; a more spherical berry, the ordinary Jersey form, and a smaller, darker one, the "Cape Cod." All are mere forms of *O. macrocarpus*.

The picking was in old times done by the natives, but for some years past it has been almost entirely done by Italians, who are brought down from Philadelphia and other neighboring cities in large numbers, accompanied by their wives and families, all of whom aid in the work. Their camps, with blazing fires and music at night, are quite picturesque, offset as they are by the darkness of the surrounding forest and cedar swamps.

Fl.—Mid-June to mid-July. *Fr.*—Late August to mid-September, persisting over winter.

* See Pl. CXXIX.

Middle District.—Farmingdale, New Egypt, Burlington, Washington Park, Mickleton, Clementon (S), Centerton (S), Union Grove (S), Swedesboro, Repaupo (CDL), Beaver Dam.

Pine Barrens.—Pt. Pleasant, Davenport, Toms River, Hanover, Brown's Mills, Forked River, Bear Swamp (S), Kenilworth (S), Speedwell, Balinger's Mill, Albion, Andrews, Cedar Brook, Landisville (T), Inskip, Hammonton, Egg Harbor City, Folsom, Absecon, Palermo.

Coast Strip.—Barnegat City (L), Surf City (L), Spray Beach (L), Beach Haven (L), Holgate's (L), Seaside Park (S).

Cape May.—Dias Creek (S).

Family DIAPENSIACEÆ. Diapensia, etc.

PYXIDANTHERA Michaux.

Pyxidanthera barbulate Michx. Pyxl.

Pl. XXXIV., Fig. 1.

Pyxidanthera barbulate Michaux, Fl. Bor. Am. I. 152 pl. 17. 1803 [Upper Carolina].—Knieskern 24.—Willis 48.—Britton 164.—Keller and Brown 250.

Diapensia cuneifolia Pursh, Fl. Am. Sept. I. 148. 1814.

Plentiful in the white sand of the Pine Barrens, also at several localities in Middlesex County and one in Camden County in the Middle district.

The Pyxie to some extent takes the place of the Hepatica in the Pine Barrens as one of the emblems of spring. Certainly there are few more attractive sights in the still brown woods than its white starry blossoms looking forth from their green moss-like setting and often partly covered by dead strands of grass or withered leaves which have covered them during the winter. The Pyxie seems to grow both in dry and moist situations, but always in sand, sometimes forming patches a foot in diameter, with little sprays trailing off from the main colony each lined with the little round petaled flowers.

Fl.—Early April to early May.

Middle District.—Griffith's Swamp.

Pine Barrens.—Shark River (P), Brindletown, Toms River (NB), Brown's Mills, Bamber, Woodmansie, Forked River, Waretown, Manchester (NB), Cedar Bridge, E. Plains, Bear Swamp, Clementon, Sumner, Jackson, Cedar Brook, Waterford (P), Landisville, Millville, Hammonton, Pleasant Mills, Egg Harbor City, Mays Landing (S), Belleplain (OHB).

Order PRIMULALES.

Family PRIMULACEÆ. Primroses, etc.

Key to the Species.

- a. Plants of ponds or marshes, with inconspicuous flowers.
 - b. Aquatic herb, with crowded submersed pinnate leaves and a thick emersed spike of small flowers. *Hottonia*, p. 630
 - bb. Small, prostrate, maritime herbs with opposite fleshy leaves and minute axillary flowers. *Glauz*, p. 633
- aa. Plants of swamps or dry ground, flowers conspicuous.
 - b. Flowers white.
 - c. Not over 2 mm. broad in an elongated terminal raceme; leaves alternate, obovate, obtuse 20-80 mm. long. *Samolus*, p. 631
 - cc. Flowers 8-12 mm. broad, few or solitary, leaves lanceolate or oblong lanceolate, clustered in a whorl at the top of the stem. *Trientalis*, p. 633
 - bb. Flowers yellow.
 - c. Plant trailing, flowers axillary, solitary. *[Lysimachia nummularia]*¹
 - cc. Plant erect.
 - d. Leaves verticillate. *L. quadrifolia*, p. 631
 - dd. Leaves opposite.
 - e. Flowers not over 10 mm. broad, in a terminal raceme.
 - f. Raceme leafy only at the base. *L. terrestris*, p. 631
 - ff. Raceme leafy to the middle. *L. producta*, p. 632
 - ee. Flowers 10-25 mm. broad, axillary and slender peduncled.
 - f. Petioles strongly ciliate, plant 3-12 dm. high. *Steironema ciliata*, p. 632
 - ff. Petioles not ciliate, plant 1.5-9 dm. high. *S. lanceolata*, p. 632
 - bbb. Flowers scarlet, axillary, 4-6 mm. broad, leaves opposite, black dotted below. *[Anagallis arvensis]*²

HOTTONIA L.

Hottonia inflata Ell. Featherfoil.

Hottonia inflata Elliott, Eot. S. C. and Ga. I: 231. 1817 [Millidgeville, Ga.].—Britton 164.—Keller and Brown 250.

In ponds, etc., rare; several localities in Bergen County; two in the Middle and one in the Cape May district.

Fl.—May and June specimens show flower, mature capsules and buds.

¹ Money-wort, "Wandering Jew," a bad weed in lawns.

² Scarlet Pimpernel, a weed in waste ground.

Middle District.—Eatontown (C), Riddleton.

Cape May.—Green Creek (OHB).

SAMOLUS L.

Samolus floribundus H.B.K. Water Pimpernel.

Samolus floribundus Humboldt, Bonpland and Kunth, Nov. Gen. II. 224. 1818 [near Callao, Peru].—Keller and Brown 250.

Samolus Valerandi var. *floribundus* Britton 166.

Samolus Valerandi Nuttall, Gen. I. 121. 1818.

Samolus Valerandi var. *Americanus* Knieskern 22.—Willis 41.

Common along the edges of the Maritime marshes of the coast, also in the Middle district; at two localities in Burlington County and two in Hunterdon County.

Fl.—Late May into October.

Middle District.—Rancocas Creek, Medford (S).

Coast Strip.—Sea Bright, Long Branch, Pt. Pleasant, Seaside Park, Forked River, Spray Beach (L), Beach Haven Terrace (L), Ship Bottom (L), Absecon (S), Atlantic City, Palermo (S), Piermont, Wildwood, Holly Beach, Cold Spring (S), Cape May.

Also a specimen in Bassett's herbarium, from Hammonton, which I regard as of coastal origin; see p. 800.

LYSIMACHIA L.

Lysimachia quadrifolia L. Whorled Loosestrife.

Lysimachia quadrifolia Linnæus, Sp. Pl. 147. 1753 [Virginia].—Knieskern 21.—Britton 165.

Open woods, clearings, etc.; frequent in the Northern and Middle districts. Occasional in the Coast strip and Cape May peninsula; also in the Pine Barrens, where it is apparently introduced.

Fl.—Early June to late June.

Middle District.—Farmingdale, New Egypt, Medford (S), Washington Park, Lindenwold (S), Mickleton, Swedesboro, Yorktown, Dividing Creek.

Pine Barrens.—Landisville, Winslow Jnc., Hammonton (Bassett).

Coast Strip.—Cox's.

Cape May.—Cold Spring (OHB).

Lysimachia terrestris (L.). Bulb-bearing Loosestrife.

Viscum terrestris Linnæus, Sp. Pl. 1023. 1753 [Philadelphia].—Britton 165.

Lysimachia stricta Knieskern 21.

Lysimachia racemosa Barton, Fl. Phila. 104. 1818.

Low swampy ground; frequent throughout the State. A common species in the Pine Barrens, where the preceding is

absent or practically so. The supposed hybrid, *L. producta* (Gray), has been collected at Burlington by S. W. Conrad.

Curious little jointed bulblets grow out from the axils of the leaves in late summer producing an appearance quite different from that presented at the flowering season. Specimens in this condition were mistaken by Linnæus for a terrestrial Mistletoe, which accounts for the plant being originally described in the genus *Viscum*.

Fl.—Mid-June to early July.

Middle District.—Farmingdale, New Egypt, Hartford, Pemberton Jnc. (S), Kaighns Pt., Washington Park, Lindenwold (S), Mickleton.

Pine Barrens.—Toms River, Forked River, Bear Swamp, Clementon, Jackson, Albion, Landisville (T), Atsion, Hammonton (Bassett), Folsom, Palermo.

Coast Strip.—Surf City (L), Spray Beach (L), Ship Bottom (L).

Cape May.—Cold Spring (S).

STEIRONEMA Rafinesque.

Steironema ciliatum (L.). Fringed Loosestrife.

Lysimachia ciliata Linnæus, Sp. Pl. 147. 1753 [Virginia and Canada].—

Barton Fl. Phila. 105. 1818.—Knieskern 22.—Willis 41.

Steironema ciliatum Britton 165.

Edges of low woods and thickets; frequent in the Northern and upper Middle districts.

Fl.—Mid-June to late July.

Middle District.—Farmingdale, New Egypt, Delair, Camden, Oaklyn (S), Washington Park, Swedesboro.

Steironema lanceolatum (Walt.). Lance-leaved Loosestrife.

Lysimachia lanceolata Walter, Fl. Car. 92. 1788 [Carolina].

Steironema lanceolatum Britton 165.—Keller and Brown 251.

?*Lysimachia angustifolia* Barton, Fl. Phila. 105. 1818.

Low grounds of the northern counties and rarely southward in the Middle district.

This is one of the species that extend southward along the Delaware River, seldom occurring far from its shores.

Fl.—Early July to mid-August.

Middle District.—Florence, Delanco, Washington Park (KB), between Camden and Glassboro, Swedesboro (CDL), Mickleton.

Also a specimen from Main Road Station in the Pine Barren region, collected by C. A. Gross, and, like many other plants from the same vicinity, obviously introduced.

TRIENTALIS L.

Trientalis borealis Raf. Star Flower.

Trientalis borealis Rafinesque, N. Y. Med. Repos. 354 [New England and Canada]. New name for "*T. europæa*, American form" of Michaux [New England and Canada].

Trientalis americana Knieskern 21.—Britton 165.—Keller and Brown 251.

Generally distributed in woodland throughout the State, but apparently most plentiful in the northern counties and along the coast.

Fl.—Early May to early June.

Middle District.—Farmingdale, Pemberton (C), Moorestown (NB), Camden (P), Gloucester (C), Woodbury, Mickleton, Clementon (KB), Quinton (C), Buckshutem.

Pine Barrens.—Davenport, Toms River (NB), Ancora (KB), Vineland (C), Hammonton (C), Pleasant Mills, Mouth of Batsto, Mays Landing, Manumuskin (S), Absecon (S).

Coast Strip.—Deal (KB), Ocean Grove (H), Bay Head, Pt. Pleasant, Surf City (L), Spray Beach (L), Cox's, Manahawkin, West Creek, Atlantic City (P), Piermont (S), Anglesea, Wildwood.

Cape May.—South Dennis, Goshen (S), Bennett, Cold Spring.

GLAUX L.

Glaux maritima L. Sea Milkwort.

Glaux maritima Linnæus, Sp. Pl. 207. 1753 [Europe].—Britton 166.

This plant was collected many years ago at Deal Beach by the late Aubrey H. Smith. Dr. Britton regarded it as "a fugitive from further north," but as it has been found in abundance at Chestertown, Maryland, by Mr. E. G. Vanatta, there seems no reason why we should regard the plant as other than a native of our coast. There are specimens in the Philadelphia herbarium from Deal, but it has not been found elsewhere in the State.

Coast Strip.—Deal—August—fresh flowers.

Family PLUMBAGINACEÆ. Sea Lavender, etc.

LIMONIUM Adanson.

Limonium carolinianum (Walt.). Sea Lavender.

Statice carolinianum Walter, Fl. Car. 118. 1788 [Carolina].—Pursh. Fl. Am. Sept. I. 212. 1814.—Willis 40.

Statice Limonium Knieskern 21.—Willis 40.

Statice Limonium var. *Carolinianum* Britton 164.

Limonium Carolinianum Keller and Brown 252.

Frequent on the salt marshes of the coast and lower Delaware bay.

Fl.—Late July into September.

Coast Strip.—Sandy Hook, Shark River, Manasquan, Pt. Pleasant, Forked River, Barnegat Pier, Spray Beach (L), Barrel Island (L), Tuckerton, Absecon (Bassett), Atlantic City, Ocean City, Avalon, Stone Harbor (S), Anglesea, Wildwood, Cold Springs (S), Cape May.

Order EBENALES.

Family EBENACEÆ. Ebony, Persimmon, etc.

DIOSPYROS L.

Diospyros virginiana L. Persimmon.

Diospyros virginiana Linnæus, Sp. Pl. 1057. 1753 [North America].—Barton, Fl. Phila. II. 198. 1818.—Knieskern 21.—Britton 166.

Common in fields and thickets of the Middle and Coast districts south to Cape May; casual north of the fall line in the northern counties—Morris, Hunterdon, Somerset, Essex, Union, Hudson—but apparently absent from the Pine Barrens, except along the edges.

The Persimmon is one of the typical Carolinian trees which give to the low woods of western New Jersey their austral tone. Its distribution is identical with that of the Opossum, which likes so well to feed upon the ripe fruit and, also, it has always seemed to me, of the country darkey and his little cabin, the type of darkey whose name is so closely associated with both 'Possum and 'Simmons in the folk lore of the south. All three may be found in Chester and Delaware Counties in Pennsylvania, but no farther back than the true Carolinian fauna and flora extend.

There is quite a difference in the fruit of different trees, some bearing decidedly ovoid fruit, while on others it is merely globular. As the leaves fall in mid-October the Persimmons become quite conspicuous, hanging tightly on the branches, their bright, russet-red coats shining in the sun; but their proper flavor is not acquired and the astringency modified until they are touched by frost and their skin somewhat wrinkled and turned purple; and those that are picked up from among the frost-covered leaves in late November or December are perhaps the best of all.

Fl.—Mid-June to late June. *Fr.*—October and November, after frost.

Middle District.—Farmingdale, New Egypt, Camden, Gloucester (P), Westville (P), Medford (S), Washington Park, Bridgeport, Swedesboro, Yorktown (S), Albion, Andrews, Williamstown Jnc.

Coast Strip.—Toms River (Mick.), Forked River, Holgate's (L), Staffordville, Atlantic City (S), Mays Landing (S), Ocean City (S), Piermont (S), Cold Spring (S), Cape May Ct. House.

Cape May.—Bennett.

Order GENTIANALES.

Family OLEACEÆ. Olive, Ash, etc.

Key to the Species.

- a. Flowers with slender, long lobed, white flowers, forming fringe-like panicles; leaves opposite entire, fruit a blue drupe. *Chionanthus*, p. 636
- aa. Flowers small, green, leaves pinnate, fruit a winged seed (samara).
 - b. Lateral leaflets with short petioles.
 - c. Wing of fruit almost entirely terminal, not developed on the sides of the seed. *Fraxinus americana*, p. 635
 - cc. Wing beginning at the base of the seed and continued along its sides, widening gradually.
 - d. Branches, petioles and sometimes the under surface of the leaves pubescent.
 - e. Samara narrowly spatulate, leaves thin serrate. *F. pennsylvanica*, p. 635
 - ee. Samara broadly spatulate, leaves thick entire. *F. michauxi*, p. 636
 - dd. Branches, etc., glabrous, leaves bright green, both sides. *F. p. lanceolata*, p. 636
 - bb. Lateral leaflets sessile. *F. nigra*, p. 636

FRAXINUS L.

Fraxinus americana L. White Ash.

Fraxinus americana Linnæus, Sp. Pl. 1057. 1753 [Carolina and Virginia].—Britton 167.

Rich woods of the northern counties; rare southward within our limits and in the Middle district only.

Fl.—Early May to mid-May. *Fr.*—Early Autumn.

Middle District.—Arney's Mt. (S), Camden (P), Mickleton (P), Atco (C), Yorktown (S).

Fraxinus pennsylvanica Marsh. Red Ash.

Fraxinus pennsylvanica Marshall, Arb. Am. 51. 1785 [probably Pennsylvania].

Fraxinus pubescens Britton 167.

636 REPORT OF NEW JERSEY STATE MUSEUM.

Common in low woods of the northern counties; much less common in the Middle district and rare in the Cape May peninsula.

Fl.—Early May to mid-May. *Fr.*—Early Autumn.

Middle District.—Farmingdale, New Egypt, Birmingham, Delair, Oaklyn (S), Washington Park, Lawnside (S), Pennsgrove (C).

Cape May.—Cold Spring (OHB), Court House.

Fraxinus pennsylvanica lanceolata (Borkh.). **Green Ash.**

Fraxinus lanceolata Borkhausen, Handl. Forst. Bot. I. 826. 1800 [North America].—Keller and Brown 253.

Fraxinus viridis Knieskern 25.—Britton 167.

Distribution as in the preceding.

Fl. and Fr.—Similar to the last.

Middle District.—Monmouth and Ocean Co. (Knieskern), Center Square (H), Mullica Hill (H).

Cape May.—Goshen (S).

Fraxinus michauxi Britton.

Fraxinus Michauxi Britton Manual, 1085. 1907 [Bronx Park, N. Y. City].

Rare and found only in the Middle district.

Fl. and Fr.—Probably as in *F. pennsylvanica*.

Middle District.—Swedesboro, Three miles northeast Mickleton.

Fraxinus nigra Marsh. **Black Ash.**

Fraxinus nigra Marshall, Arb. Am. 51. 1785 [probably Pennsylvania].—Keller and Brown 254.

Fraxinus sambucifolia Willis 50.—Britton 167.

Wet woods of the northern counties and reported from Freehold (Willis in Britton's Catalogue), while at Swedesboro a few trees of this species were discovered by Mr. Chas. D. Lippincott.

Middle District.—Freehold (C), Swedesboro (CDL).

CHIONANTHUS L.

Chionanthus virginica L. **Frlnge Tree.**

Chionanthus virginica Linnæus, Sp. Pl. 8. 1753 [North America].—Nutt. Gen. I. 5. 1818.—Willis 50.—Britton 167.—Keller and Brown 254.

Chionanthus virginicus maritimus Pursh, Fl. Am. Sept. I. 8. 1814 [Sea coast and boggy woods, N. J.—Carolina].

Found only in low woods along the lower part of the Maurice River and Cohansey Creek and up the tributaries of the former

to Buena Vista. Nuttall's reference to a thirty-foot tree at "Port Elizabeth [Z. Collins]" probably refers to the village of that name below Millville in Cumberland County and not to Elizabeth in Union County, as given in Britton's Catalogue.

It is stated by Willis to grow at Camden, according to Canby, but I suspect this may have been an escape.

This is one of a group of species which push northward along the Susquehanna Valley and again along the lower Delaware, in each case following the arms of the Carolinian life zone, but checked in their eastern extension in New Jersey by the arid stretches of the Pine Barrens, which are quite unsuited to their needs.

Fl.—Late May to early June. *Fr.*—Early autumn.

Middle District.—Above Swedesboro, Bridgeton (C), Port Elizabeth (C), Buckshutem, Below Millville, Buena Vista (T), Near Landisville (probably same location), Bradway (Bassett).

Family GENTIANACEÆ. Gentians, etc.

Key to the Species.

- a. Leaves reduced to scales, plants 1-3 dm. high.
 - b. Sepals 2, flowers purplish, 8-12 mm. long. *Obolaria*, p. 643
 - bb. Sepals 4, flowers greenish yellow, 2mm. long.
 - c. Lobes of the corolla blunt and usually denticulate, plant generally strict and erect. *Bartonia virginica*, p. 643
 - cc. Lobes of the corolla acute and entire, plant generally flexuous and paniculately branched, but sometimes strict. *B. paniculata*, p. 642
- aa. Leaves normal, plants 3-10 dm. high.
 - b. Corolla blue, flowers 3-5 cm. long.
 - c. Margin of petals fringed. *Gentiana crinita*, p. 641
 - cc. Petals not fringed.
 - d. Leaves linear, mouth of corolla flaring open. *G. porphyrio*, p. 640
 - dd. Leaves ovate to lanceolate, corolla constricted at the mouth, sometimes nearly closed.
 - e. Corolla lobes distinct, equal to or exceeding the intervening plaits. *G. saponaria*, p. 642
 - ee. No perceptible lobes between the plaits. *B. andrewsii*, p. 641

* In Britton's Manual *Spigelia marylandica* L. is given as occurring in New Jersey, "according to Gray." The new Gray's Manual ignores this reference and restricts the plant to west of the Alleghenies, which, I have no doubt, is correct. If it ever did occur in New Jersey it must have been an introduction.

- bb. Corolla pink.
 c. Salverform 6-8 mm. broad. [Erythræa pulchella]*
 cc. Rotate 15-40 mm. broad.
 d. Four to five parted.
 e. Branches opposite. Sabatia angularis, p. 638
 ee. Branches alternate.
 f. Calyx lobes shorter than the corolla. S. stellaris, p. 639
 ff. Calyx lobes equal to the corolla. S. gracilis, p. 639
 dd. Eight to twelve parted. S. dodecandra, p. 640
 bbb. Corolla white.
 c. Flowers oblong, funnel-form, striped within; in a sessile cluster. Gentiana villosa, p. 641
 cc. Flowers rotate in bracteolate cymes.
 d. Branches opposite. Sabatia lanceolata, p. 638
 dd. Branches alternate, white forms of. S. stellaris, p. 639

SABATIA Adanson.

Sabatia lanceolata (Walt.). Lance-leaved Centaury.

Chironia lanceolata Walter, Fl. Car. 95. 1788 [Carolina].

Sabbatia lanceolata Knieskern 24.—Willis 49.—Britton 171.—Keller and Brown 255.

Common in bogs and swamps of the Pine Barrens and similar situations at two or three stations in the Cape May peninsula.

A conspicuous species in mid-summer.

Fl.—Early July to late August.

Pine Barrens.—Cassville, Toms River, Hanover, Browns Mills, Pasadena, Double Trouble, Tuckerton, Speedwell (S), High Bridge (S), Bear Swamp (S), Ballingers Mill, Braddock's Mill, Cedar Brook, Atsion, Hammonton (S), Quaker Bridge, Batsto, Pleasant Mills, Egg Harbor, Hospitality Bridge 8th St. and 12th St., Mays Landing, Woodbine.

Cape May.—Bennett (S).

Sabatia angularis (L.). Square-stemmed Centaury.

Pl. CVI., Fig. 1.

Chironia angularis Linnæus, Sp. Pl. 190. 1753 [Virginia].

Sabbatia angularis Barton Fl. Phila. 113. 1818.—Willis 49.—Britton 171.

Rather frequent in open ground of the northern counties and down the Coast strip to Cape May; also occasional in the Middle district.

Fl.—Late July to late August.

Middle District.—Keyport (C), New Egypt, Burlington (C), Lindenwold, Sea Breeze (C).

Coast Strip.—Absecon (NB), Palermo (S), Wildwood, Wildwood Inc., Rio Grande, Court House, Whitesboro (S), Cold Spring, Cape May, W. Cape May, Dias Creek.

* Branching Centaury, introduced as a weed.

***Sabatia stellaris* Pursh. Sea Pink.**

Pl. CVL., Fig. 3.

Sabbatia stellaris Pursh, Fl. Am. Sept. I. 137. 1814 [Salt marshes of New York, New Jersey, etc.].—Knieskern 25.—Willis 49.—Britton 171.—Keller and Brown 255.

Abundant on the salt marshes of the coast and lower Delaware Bay and up the large tidewater streams.

This is one of the most abundant and characteristic flowering plants of the salt meadows, and its starry pink blooms with their yellow eye do much to produce that great profusion of color which marks the edge of the marshes toward the end of summer. Their stems and leaves are somewhat inconspicuous, and it sometimes looks as if the pink stars might have been scattered broadcast over the low coarse grass and rushes of the meadows. White flowered plants occur occasionally and starved dwarf individuals are sometimes found.

Fl.—Late July to early September.

Maritime.—Long Branch, Pt. Pleasant, Barnegat Pier, Spray Beach (L), Sherburn's (L), West Creek (S), Brigantine, Atlantic City, Crowleytown, Ocean City (S), Sea Isle City (S), Stone Harbor, Clermont, Wildwood, Anglesea, Bennett, Cape May, Green Creek, Dennisville, Beaver Dam.

Introduced at Batsto and Main Road Sta.

***Sabatia gracilis* (Michx.). Slender Sea Pink.**

Sabbatia gracilis Michaux, Fl. Bor. Am. I: 146. 1803 [Lower Carolina].

Sabbatia gracilis Britton 171.

Sabbatia campanulata Keller and Brown 255.

Brackish or fresh marshes along the coast and on the Delaware River at Burlington; local and not always clearly distinct from the last.

The record in Keller and Brown's List for Atco has not been authenticated and seems unlikely.

Fl.—Mid-July to mid-August.

Middle District.—Burlington.

Coast Strip.—Ocean Grove, Spring Lake (NB), Pt. Pleasant, Ocean Beach (C), Sherburn's (L), Court House (NB), Cold Spring (S), Cape May (S), W. Cape May.

Sabatia dodecandra (L.). Large Marsh Centaury.

Pl. CVI., Fig. 2.

Chironia dodecandra Linnæus, Sp. Pl. 190. 1753 [Virginia].—Britton 172.—Keller and Brown 255.

Sabbatia chloroides Knieskern 25.—Willis 49.

Frequent on the brackish meadows from the Hackensack marshes south. In the Cape May peninsula it occurs also in fresh marshes over a mile from the coast.

This larger species, with its more numerous petals, is not so plentiful as *S. stellaris*, but is locally abundant, notably near Absecon and at several points in Cape May County.

Fl.—Late July to late August.

Coast Strip.—Pt. Pleasant, Forked River, Spray Beach (L.), Manahawkin, Cox's, Mullica River, Absecon, Pleasant Mills, Mays Landing (NB), Palermo, Clermont.

Cape May.—Court House, Wildwood Jnc., E. of Dias Creek (S), Dias Creek.

GENTIANA L.

Gentiana porphyrio J. F. Gmel. Pine Barren Gentian.

Pl. CIV.

Gentiana Porphyrio J. F. Gmelin, Syst. II. 462. 1791 [Carolina].—Keller and Brown 257.

Gentiana angustifolia Pursh, Fl. Am. Sept. I. 186. 1814.—Knieskern 25.—Willis 49.—Britton 173.

Damp sand of the Pine Barrens, frequent, and occasional in the southern part of the Cape May peninsula.

It is probably a matter of individual preference to determine which gentian is the handsomest. The present species, found only in the remote sections of the Pine Barrens, is certainly the least known and to my mind as handsome as any. Its flaring mouth, the delicate markings within, and the intensity of the blue, make it one of the choicest blooms of the region.

It was apparently first discovered by William Bartram*, who sent a drawing of it to Edwards, the British naturalist, who published it in his *Gleanings of Natural History*, vol. V., p. 98, 1758, as the "Autumnal Perennial Gentian of the Desert," but it was

* (1739-1823) famous as a botanist and orinthologist, who resided at "Bartram's Garden," founded by his faather, John Bartram, also a botanist of note and correspondent of Linnæus.

not properly named until 1791, and then from the Pine Barrens of South Carolina.

Fl.—Early September into October.

Pine Barrens.—Manahawkin, Cox's, Cedar Grove (S), Cedar Bridge, Jones Mill (S), Tuckerton, Chatsworth, Atco, Atsion, Hammonton (S), Batsto, Pleasant Mills (T), Quaker Bridge, Elwood, Egg Harbor City (P).*

Cape May.—Bennett.

***Gentiana crinita* Froel. Fringed Gentian.**

Pl. CIII.

Gentiana crinita Froelich, Gent. Diss. 112. 1796 [New York].—Willis 49.—Britton 172.—Keller and Brown 256.

Frequent in damp open ground in the northern counties, occasional in the upper Middle district, and at one station on the Coast Strip.

The Fringed Gentian is a rarity within our limits, but at one station it grows in such wonderful abundance and luxuriance that one cannot imagine a spot more suited to its needs—an open bog where the Painted Cup, Tall Pedicularis and other more northern species are associated with it. The lateness of its flowering has apparently resulted in its escaping general attention and extermination. On some plants I have counted no less than thirty blossoms.

Fl.—Mid-September into October.

Middle District.—Lindenwold, Clementon.

Coast Strip.—Ocean View (S).

***Gentiana villosa* L.† Striped Gentian.**

Gentiana villosa Linnæus Sp. Pl. 228. 1753 [Virginia].—Britton 173.—Keller and Brown 256.

A single specimen found near Bridgeton, Cumberland Co., in 1881, by Drs. N. L. Britton and J. B. Potter, is the only record for the State. This specimen is still preserved in the State herbarium at New Brunswick.

***Gentiana andrewsii* Griseb. Closed Gentian.**

Pl. CV.

Gentiana Andrewsii Grisebach in Hookers Fl. Bor. Am. II. 55. 1834 [Canada].—Knieskern 25.—Willis 49.—Britton 172.

* Mays Landing (KB) was an error for Egg Harbor City.

† *Gentiana quinqueflora* Lam. is stated by Prof. Willis to grow at Freehold (Cat. p. 49). We have no other evidence of its occurrence within our limits.

Low ground; common in the northern counties, occasional in the Middle district and rare on the coast and Cape May peninsula.

Fl.—Early September into October.

Middle District.—Keyport (C), Shark River (C), Pemberton (C), Kaighns Pt., Mickleton (H).

Coast Strip.—Absecon, Weeksville (C).

Cape May.—Cape May.

***Gentiana saponaria* L. Soapwort Gentian.**

Gentiana saponaria Linnæus, Sp. Pl. 228. 1753 [Virginia].—Barton Fl. Phila. 134. 1818.—Knieskern 25.—Britton 172.—Keller and Brown 256.

Frequent in low ground in the Middle district and rare along the Coast Strip to Cape May. Occasionally ranging above the fall line in the northern counties.

Fl.—Early September into October.

Middle District.—Shark River (C), Swimming River (NB), New Egypt, Burlington, Moorestown (KB), Medford (S), Orchard (S), Lindenwold, Woodbury, So. Westville, Clementon, Berlin.

Coast Strip.—Absecon, Pleasant Mills, Mays Landing (Leeds), Cold Spring (OHB).

BARTONIA Muhlenberg.

***Bartonia paniculata* (Michx.). Twining Bartonia.**

Centaurella paniculata Michaux, Fl. Bor. Am. I. 98. 1803 [Carolina].

Andrewsia paniculata Barton, Fl. Phila. 89. 1818. (Partly the next.)

Low damp ground; frequent in the Pine Barrens, Cape May and Coast districts, apparently rare and local in the Middle district.

These curious little plants, practically devoid of leaves, are more common than generally supposed, but frequently escape attention, buried as they are among the taller vegetation. They are named in honor of Prof. Benjamin Smith Barton (1766–1815), professor of botany in the University of Pennsylvania and author of a general work on botany and the interesting "Fragments of Natural History" in which the blooming of plants, arrival of birds, etc., are arranged in chronological tables.

Fl.—Late August to late September.

Middle District.—Kaighns Swamp, Dividing Creek.

Pine Barrens.—Forked River, Waretown, Manahawkin, Coxe's, Chatsworth, Hammonton, Pleasant Mills, Petersburg (S).

Coast Strip.—Barnegat City (L).

Cape May.—Bennett, Cold Spring (S), Green Creek (S).

***Bartonia virginica* (L.). Upright *Bartonia*.**

Pl. CVII., Fig. 2.

Sagina virginica Linnæus, Sp. Pl. 128. 1753 [Virginia].

Bartonia virginica Britton 173.—Keller and Brown 257.

Bartonia tenella Knieskern 25.

Low damp ground; frequent throughout our region and apparently also in the northern counties.

Fl.—Mid-July to late August.

Middle District.—Farmingdale, New Egypt, Florence, Delanco, Kaighns Pt., Medford (S), Tomlin (S), Taunton (S), Lindenwold, Mickleton, Paulsboro, Fairton (S), Beaver Dam, Dividing Creek.

Pine Barrens.—Whittings, Jones' Mills (S), Bear Swamp, Braddock's Mill, Speedwell (S), Clementon, Pleasant Mills, Egg Harbor City (S), Woodbine, Tuckahoe (S).

Coast Strip.—Pt. Pleasant, Asbury Park, Seaside Park, Spray Beach (L), Peahala (L), Sherburn's (L), Manahawkin, West Creek (S), Palermo.

Cape May.—Court House (S), Wildwood Inc. (S), Whitesboro, Green Creek (S), Cape May (S).

OBOLARIA L.

***Obolaria virginica* L. Pennywort.**

Obolaria Virginia Linnæus, Sp. Pl. 632. 1753 [Virginia].—Britton 173.—Keller and Brown 257.

Rich woodland of the northern and Middle districts, rare especially within our limits, where it is known from but four stations.

Fl.—Late April to late May.

Middle District.—New Egypt, Haddonfield (C), Swedesboro, Salem (C).

Family MENYANTHACEÆ. Buckbeans, etc.

Key to the Species.

- a. Bog plant, leaves 3-foliate, long petioled; flowers white in an erect raceme. *Menyanthes*, p. 644
- aa. Aquatic plants. Leaves oval, heart-shaped, floating on the surface of the water with an umbel of white flowers attached just beneath and coming up to the surface when in bloom.
 - b. Flowering leaves 20–50 mm. long. *Limnanthemum lacunosum*, p. 644
 - bb. Flowering leaves 50–150 mm. long. *L. aquaticum*, p. 645

MENYANTHES L.

Menyanthes trifoliata L. Buckbean.

Menyanthes trifoliata Linnæus, Sp. Pl. 145. 1753 [Europe].—Barton, Fl. Phila. 104 and app. 215. 1818.—Pursh, Fl. Am. Sept. I. 139.—Britton 173.—Keller and Brown 257.—Stone, Bartonia I. 20. 1909.

Swamps and bogs at a number of localities in the northern counties and at three isolated stations within our limits, one at Repaupo, Gloucester Co., discovered by Mr. Benj. Heritage, May 13, 1893; one at Cold Spring, Cape May Co., discovered July 15, 1906, by Messrs. C. S. Williamson, S. S. Van Pelt and the writer, and the last at West Cape May, discovered by Mr. O. H. Brown. The last is the most southern known locality for the species in America, with the exception of one station in the mountains of West Virginia.* Barton mentions a station, long since destroyed, in a bog half a mile southeast of Kaighn's Point, where it was abundant.

Fl.—Late April to late May.

Middle District.—Kaighn's Pt. (Barton), Repaupo.

Cape May.—Cold Spring, W. Cape May.

LIMNANTHEMUM S. G. Gmelin.

Limnanthemum lacunosum (Vent.). Floating Heart. †

Villarsia lacunosum Ventenat, Choix des Plantes 9. 1803 [Carolina].—Pursh, Fl. Am. Sept. I. 139. 1814.

Limnanthemum lacunosum Knieskern 25.—Britton 174.—Keller and Brown 257.

In ponds of the Pine Barrens, Coast strip and Middle district, but much less frequent in the last. There is but one record in the State north of our limits, namely at Princeton Junction.

A colony of this plant, which I found in 1910 at Centerton, was particularly attractive. Hundreds of the little heart-shaped leaves were floating on the surface of a pond interspersed everywhere with the delicate little white starry flowers, appearing in

* Cf. Sheldon, *Rhodora* 1910, p. 11.

† The nomenclature of these plants seems to require investigation by an expert. The generic name *Nymphoides* adopted in the new Gray's Manual is simply referred to in synonymy by Ventenat (Choix des Plantes 9. 1803), and his species name *lacunosa* is a new name for *aquatica* Walter proposed because *aquatica* was meaningless in a genus of exclusively aquatic plants.

some respects like miniatures of the white water lilies which occurred side by side with them.

Fl.—Early July to late August.

Middle District.—Delanco, Center Square (H), Woods Mill (KB), Swedesboro, Palatine, Centerton (S).

Pine Barrens.—Pasadena, Webb's Bridge, Ocean Co. (P), 2 miles north Speedwell (S), Vineland (KB), Franklinville, Malaga (S), Winslow, Hamonton, Atsion (NB), Quaker Bridge (Bassett), Egg Harbor City, Hospitality Br., Eighth St. (T), Mays Landing (H).

Coast Strip.—Deal, Squan, Spring Lake, Pt. Pleasant (KB), Manahawkin.

***Limnanthemum aquaticum* (Walt.). Large Floating Heart.**

Anonymos aquatica Walter, Fl. Car. 109. 1788 [Carolina].—Britton 174.

The only New Jersey station is a pond near Bridgeton, in Cumberland Co., N. J., where it was discovered by the late Prof. A. C. Apgar, August 5, 1886.

Fl.—During July and August, probably.

Middle District.—Bridgeton (NB).

Family APOCYNACEÆ. Dog Banes.

APOCYNUM L.

Key to the Species.

- a. Corolla 5-9 mm. long, its lobes spreading or recurved, white or tinged with pink.
 - b. Corolla 8 mm. long, inflorescence partly axillary.
 - A. androsæmifolium*, p. 645
 - bb. Corolla 6 mm. long, inflorescence strictly terminal. *A. medium*, p. 646
- aa. Corolla 3-4.5 mm. long, its lobes erect, greenish white.
 - b. Branches of inflorescence and upper side of leaves glabrous.
 - A. cannabinum*, p. 646
 - bb. Branches of inflorescence and upper side of leaves pubescent.
 - A. c. pubescens*, p. 646

***Apocynum androsæmifolium* L. Dogbane.**

Apocynum androsæmifolium Linnæus, Sp. Pl. 213. 1753 [Virginia and Canada].—Knieskern 25.—Britton 168.

Frequent in the northern counties and southward mainly in the Middle district, elsewhere apparently introduced.

Fl.—Mid-June to late July or into August.

Middle District.—Shark River, New Egypt, Mickleton, Sicklerville, Swedesboro.

Pine Barrens.—Ballenger's Mill, Berlin (S), Atsion (S), Forked River, Chatsworth.

Apocynum medium Greene. **Small-flowered Dogbane.**

Apocynum medium Greene, Pittonia III. 229. 1897 [Brookland, D. C.].

Tolerably common in the Pine Barrens and probably elsewhere in cultivated ground or on roadsides; very variable and including *A. milleri* Britton and *A. urceolifer* G. S. Miller.

The Speedwell specimen has the leaves pubescent on both sides, the others only below.

Fl.—Early June to early August, occasionally later.

Pine Barrens.—Toms River, Chatsworth, Harris, Speedwell.

Apocynum cannabinum L. **Indian Hemp.**

Apocynum cannabinum Linnæus, Sp. Pl. 213. 1753 [Canada and Virginia].—Knieskern 25.—Britton 168.

Apparently frequent throughout the State in one form or another, usually appearing as a weed within our limits, but perhaps still in its native habitat along the Coast Strip.

In all the specimens here listed the inflorescence is glabrous; some have the leaves all tomentous below, others have most of them entirely glabrous.

Fl.—Early June to late August, occasionally later.

Middle District.—Medford (S), New Egypt, Westville, Swedesboro, Mickleton, Landisville.

Coast Strip.—Surf City (L), Atlantic City, Wildwood.

Apocynum cannabinum pubescens R. Br. **Pubescent Indian Hemp.**

Apocynum pubescens R. Brown, Mem. Wern. Soc. Nat. Hist., p. 68. 1811 [Virginia].

Occasional in the Pine Barrens and probably elsewhere. A form with velvety pubescence on the inflorescence and both sides of the leaves.

Fl.—As in the preceding.

Pine Barrens.—Winslow Jnc., Landisville, Egg Harbor City.

Family ASCLEPIADACEÆ. **Milkweeds.***Key to the Species.*

a. Corolla crown of five hooded, fleshy bodies, with an incurved horn rising from the cavity of each hood.

b. Leaves hirsute pubescent, mainly alternate, corolla and hood both orange. *Asclepias tuberosa*, p. 647

bb. Leaves glabrous or nearly so, verticillate.

- c. Leaves narrowly linear, 3-7 in a whorl; corolla greenish-white, hood white. *A. verticillata*, p. 651
- cc. Leaves ovate or lanceolate 3-4 in a whorl, corolla pink, hood white. *A. quadrifolia*, p. 650
- bbb. Leaves glabrous or in some species downy-pubescent, opposite.
- c. Corolla bright red, hood orange, leaves linear lanceolate. *A. lanceolata*, p. 650
- cc. Corolla and hood various shades of pink or purple.
- d. Plant essentially glabrous.
- e. Leaves oblong, clasping at the base, margins wavy. *A. amplexicaulis*, p. 648
- ee. Leaves not wavy margined.
- f. Leaves lanceolate, acute or acuminate. *A. rubra*, p. 648
- ff. Leaves oblong rounded at the end. *A. purpurascens*, p. 648
- dd. Plants pubescent, especially on the under side of the leaves.
- e. Leaves 10-12 x 3-3.5 mm., often lanceolate. *A. pulchra*, p. 649
- ee. Leaves 12-15 x 5-7 mm., oblong.
- f. Flowers entirely purple. *A. purpurascens*, p. 648
- ff. Flowers more or less greenish. *A. syriaca*, p. 651
- ccc. Corolla white or green, hood white or pinkish.
- d. Corolla green, plant 10-20 dm. high. *A. exaltata*, p. 650
- dd. Corolla white, plant 3-9 dm. high. *A. variegata*, p. 649
- aa. Corolla crown, without incurved horns, flowers entirely green. *Acerates viridiflora*, p. 651

ASCLEPIAS L.

Asclepias tuberosa L. Butterfly Weed.

Pl. CVIII, Fig. 2.

Asclepias tuberosa Linnæus, Sp. Pl. 217. 1753 [North America].—Kniesskern 25.—Britton 170.—Keller and Brown 259.

Asclepias decumbens Keller and Brown 260.

Open sandy ground; common throughout the State, except in the Pine Barrens, where it has apparently been introduced, and is only common locally in cultivated ground.

Fl.—Late June to early August, sporadically somewhat later.

Middle District.—Farmingdale, New Egypt, Haddonfield (S), Medford (S), Washington Pk., Tomlin (S), Mickleton, Clementon, Sicklerville, Beaver Dam.

Pine Barrens.—Landisville, Vineland (S), Egg Harbor City, Folsom, Manumuskin (S), Woodbine (S).

Coast Strip.—Pt. Pleasant, Manahawkin, St. Albans (L), West Creek (S), Tuckerton, Atlantic City, Pleasantville, Mays Landing (S), Sea Isle Inc. (S).

Cape May.—Cape May (UP).

***Asclepias purpurascens* L. Purple Milkweed.**

Asclepias purpurascens Linnæus, Sp. Pl. 214. 1753 [Carolina].—Britton 169.

Frequent in dry ground of the northern counties and rather rare southward, occurring in the Middle district only.

Fl.—Mid-June to mid-July.

Middle District.—Farmingdale, New Egypt, Crosswicks, Camden (C), Rid-
dleton, Elsinboro, Clarksboro (UP).

Specimens are also preserved in several herbaria from Landisville (C. A. Gross). There seems to be an intrusion of Middle district plants up the tributaries of the Maurice River which may account for this record.

***Asclepias rubra* L. Red Milkweed.**

Asclepias rubra Linnæus, Sp. Pl. 217. 1753 [Virginia].—Willis 50.—Britton 170.—Keller and Brown 260.

Asclepias acuminata Pursh, Fl. Am. Sept. I. 182. 1814 [Cedar Swamps, N. J., &c.].

Asclepias periplocaefolia Nuttall, Gen. I. 167. 1818 [N. J. to Fla.].

Frequent in bogs of the Pine Barrens and rare or occasional in similar situations in the Middle and Cape May districts.

This is the typical Milkweed of the Pine Barrens and finds here the northern limit of its distribution.

Fl.—Late June to late July, sporadically into August.

Middle District.—Burlington, Pemberton (C), Griffith's Swamp, Linden-
wold, Mickleton.

Pine Barrens.—Ocean Grove (P), Toms River (McKenzie), Pt. Pleasant (S), Bamber, Waretown (C), Barnegat (NB), Manahawkin, Coxe's, Tuckerton, Speedwell (S), High Bridge (S), Chatsworth, White Horse (S), Landisville, Hammonton, Atsion (S), Quaker Bridge (NB), Batsto, Pleasant Mills (P), Egg Harbor City (UP), Hospitality Br. 8th St. (T).

Cape May.—Goshen, Cold Spring (S), Cape May (P).

***Asclepias amplexicaulis* Michx. Blunt-leaved Milkweed.**

Asclepias amplexicaulis Michaux, Fl. Bor. Am. I. 115. 1803 [Savannah, Ga.].—Keller and Brown 260.

Asclepias obtusifolia Pursh, Fl. Am. Sept. I. 182. 1814.—Barton, Fl. Phila. 133. 1818.—Knieskern 25.—Britton 170.

Common in woods and open ground throughout the coastal plain with the exception of the Cape May peninsula; also at a number of localities above the fall line in the northern counties

Fl.—Mid-June to mid-July, sporadically into August.

Middle District.—Farmingdale, New Egypt, Burlington, Riverside, Pensauken, Locust Grove (S), Gloucester, Lawnside (S), Bridgeport, Tomlin (S), Williamstown, Sicklerville, Yorktown, Husted (S), Elmer (P), Franklerville (P).

Pine Barrens.—Whitings, Forked River, W. Plains (S), Albion, Williamstown Inc., Cedar Brook, Landisville, Inskip, Winslow Inc., Hammonton (Bassett), Atsion, Atco (UP), Mouth of Batsto, Egg Harbor City, Belleplain (S).

Coast Strip.—Belmar (UP), Surf City (L), Mays Landing (UP), Cape May (UP).

***Asclepias pulchra* Ehrh. Hairy Milkweed.**

Pl. CIX., Fig. 1.

Asclepias pulchra Ehrhart, in Willdenow Sp. Pl. I. 1267. 1798 [North America].

Asclepias incarnata var. *pulchra* Britton 170.

Asclepias incarnata Knieskern 25.

Moist open ground; common throughout the Middle, Coast and Cape May districts, and ranging over much of the Northern district, but replaced in the mountains by *A. incarnata*. Not found in the Pine Barrens.

Fl.—Early July to mid-August.

Middle District.—New Egypt, Camden (P), Medford (S), Pemberton Inc. (S), Tomlin, Albion, Swedesboro, Salem (S).

Coast Strip.—Long Branch (UP), Seaside Park (UP), Surf City (L), Beach Haven (L), Spray Beach (L), Absecon, Atlantic City (S), Mays Landing, Ocean City (S), Tuckahoe (T), Piermont (S), Five-Mile Beach, Cape May (S).

***Asclepias variegata* L. White Milkweed.**

Asclepias variegata Linnæus, Sp. Pl. 215. 1753 [North America].—Barton, Fl. Phila. 133. 1818.—Britton 169.—Keller and Brown 260.

Sandy woodlands; locally distributed through the Middle and Cape May districts, rarely occurring above the fall line in the northern counties.

Fl.—Early June to early July.

Middle District.—Smithville (C), Burlington, Birmingham (C), Moorestown (C), Camden (P), Locust Grove (S), Medford, Washington Park, Mickleton, Sicklerville, Swedesboro.

Pine Barrens (?).—Vineland (C), Hammonton (C).

Coast Strip.—Palermo.

Cape May.—Bennett, Cold Spring (S).

***Asclepias exaltata* (L.). Tall Milkweed.**

Asclepias Syriaca var. *exaltata* Linnæus, Sp. Pl. Ed. 2. 313. 1762 [Virginia].
Asclepias exaltata Britton 169.—Keller and Brown 260.

Edges of woods and thickets; rather frequent in the northern counties, but only known within our limits from the record in Britton's Catalogue: "Roadside near Moorestown—Miss Anna M. Kaighn," and the statement of Mr. C. S. Williamson that he once observed it at Mt. Holly. No specimens are preserved. The record for "Egg Harbor [City]—Leeds" in Brown and Keller's List is *A. rubra*.

***Asclepias quadrifolia* Jacq. Four-leaved Milkweed.**

Asclepias quadrifolia Jacquin, Obs. Part 2, 8 pl. 33. 1767 [Virginia].—Britton 170.

Frequent in dry woods of the northern counties; rare within our limits and confined to the Middle district.

Fl.—Late May to late June.

Middle District.—Little Timber Creek (C), Atco, Swedesboro.

***Asclepias lanceolata* Walt. Smooth Orange Milkweed.**

Pl. CIX, Fig. 2.

Asclepias lanceolata Walter, Fl. Car. 105. 1788 [Carolina].—Britton 170.—Keller and Brown 260.

Asclepias pauperula Knieskern 25.—Willis 50.

Found only along the Coast strip, where the salt meadows join the mainland; somewhat locally distributed and not detected north of Pt. Pleasant, which is, therefore, the most northern station for the species, as it does not range north of New Jersey.

This is one of the finest of our milkweeds. Its flowers are larger than those of any other species and the brilliant red and orange coloring makes it especially conspicuous among the many showy flowers of the marsh edge. Its slender, glabrous foliage, too, gives it a delicacy that is missing in the coarse-leaved species. Though said in the books to be a plant of "wet pine barrens," it is, so far as New Jersey is concerned, strictly confined to the edge of the salt marshes, where they join the upland.

Fl.—Late June to late July.

Coast Strip.—Pt. Pleasant, Forked River (KB), Manahawkin, West Creek, C. M. Court House, Opp. Anglesea (C), Bennett, Cold Spring, Cape May.

***Asclepias syriaca* L. Common Milkweed.**

Asclepias syriaca Linnæus, Sp. Pl. 214. 1753 [Virginia].—Britton 169.

Asclepias cornuti Knieskern 25.

Generally distributed in rich open ground, except in the Pine Barrens, where it is strictly confined to cultivated and waste ground and is obviously introduced. Everywhere, however, it is largely a weed, and it is impossible at this time to ascertain just what its native habitat may have been.

Fl.—Mid-June to late July.

Middle District.—Farmingdale, Burlington, Locust Grove (S), Medford (S).

Pine Barrens.—Mays Landing.

Coast Strip.—St. Albans (L), Barnegat City (L).

Cape May.—Cold Spring (S).

***Asclepias verticillata* L. Whorled Milkweed.**

Asclepias verticillata Linnæus, Sp. Pl. 217. 1753 [Virginia].—Pursh, Fl. Am. Sept. I. 183.—Barton, Fl. Phila. 133. 1818.—Britton 170.—Keller and Brown 261.

In sandy or rocky places; locally throughout the State. Most frequent within our limits in the Middle district, but nowhere common. Barton knew it only from a bog a quarter of a mile north of Kaighns Point. In Pennsylvania it is a characteristic plant of the serpentine barrens of Chester and Delaware Counties.

Fl.—Early July to mid-August.

Middle District.—Holmdel (C), Red Bank (NB), Leedsville (C), Freehold (C), Birmingham (C), Kaighns Pt., Medford, Clarksboro (P), Mickleton, Berlin, Glassboro, Swedesboro, Oliphant's Mill (KB), Bridgeton, Millville (KB).

Pine Barrens.—Newtonville, Tuckahoe (S).

Cape May.—One mile east Dias Creek.

ACERATES Elliott.***Acerates viridiflora* (Raf.). Green Milkweed.**

Asclepias viridiflora Rafinesque, Med. Rep. (II.) 5. 360. 1808 [Maryland and Pennsylvania].

Acerates viridiflora Willis 50.—Keller and Brown 261.

Open sandy ground or limestone cliffs; locally distributed in the northern counties. Known within our limits only from Black's Mills, Monmouth County, where it was obtained by the Rev. Samuel Lockwood, according to Britton's Catalogue. It

has been introduced as a weed at Cold Spring, Cape May County (O. H. Brown).

A characteristic plant of the serpentine outcrops of southeastern Pennsylvania and perhaps not native anywhere in southern New Jersey.

Fl.—Late June to mid-August, and sporadically into September.

Order POLEMONIALES.

Family CONVULVULACEÆ. Morning Glories.

Key to the Species.

- a. Style two cleft, flowers white. *Breweria*, p. 652
- aa. Style entire, up to the stigma.
- b. Stigmas two, filiform to oblong.
- c. Calyx with two large bracts at the base, which enclose it.
- d. Plant trailing.
 - e. Glabrous, leaves hastate, flowers pink with white stripes or white. *Convolvulus sepium*, p. 653
 - ee. Pubescent, leaves cordate, flowers white. *C. repens*, p. 654
 - dd. Plant upright, flowers white. *C. spithameus*, p. 653
- cc. Calyx without bracts, flowers pink or white. [*C. arvensis*]*
- bb. Stigmas one or two, capitate or globose.
 - c. Flowers white, sometimes with striped throat, leaves cordate or often contracted in the middle.
 - d. Corolla 50-80 mm. long. *Ipomœa pandurata*, p. 653
 - dd. Corolla 8-20 mm. long. *I. lacunosa*, p. 653
 - cc. Flowers normally blue, sometimes pink, white or variegated.
 - d. Leaves entire, cordate. [*I. purpurea*]†
 - dd. Leaves deeply three-lobed. [*I. hederacea*]‡

BREWERIA R. Browne.

Breweria pickeringii (M. A. Curtis). **Pickering's Morning Glory.**

Convolvulus Pickeringii M. A. Curtis, Bost. Jour. Nat. Hist. I. 130. 1837 [Wilmington, N. C.].

Bonamia Pickeringii Willis 48.

Breweria Pickeringii Britton 180.—Keller and Brown 263.

Confined to dry sandy banks in the Pine Barrens, where it is known from probably not more than three or four stations. Certain it is that two, and probably three, of those given in

* Small Bindweed. A weed in fields and waste ground.

† Morning Glory. Escaped in waste ground, fields, etc.

‡ Ivy-leaved Morning Glory. Often escaped, less frequent than the last.

Britton's Catalogue refer to the same colony of plants. Named for Charles Pickering (1805-1878), a prominent Philadelphia naturalist, member of the Wilkes Exploring Expedition, and prominent in local botanical work.*

Fl.—Mid-July to late August.

Pine Barrens.—Pleasant Mills, Batsto, between Atsion and Quaker Bridge, Little Egg Harbor R. (C), three miles above Atsion (Williamson), Chatsworth (H).

IPOMŒA L.†

Ipomœa pandurata (L.). Wild Potato.

Convolvulus panduratus Linnæus, Sp. Pl. 153. 1753 [Virginia].—Barton Fl. Phila. I. 107. 1818.

Ipomœa pandurata Knieskern 24.—Willis 48.—Britton 179.

Open sandy ground or thickets in nearly all parts of the State, except the Pine Barrens, but nowhere very common.

Fl.—Early July into October.

Middle District.—New Egypt, Florence Heights, Kaighns Pt., Lawnside (S).

Pine Barrens.—Newtonville.

Cape May.—1 mile east Dias Creek (S), Cape May.

CONVOLVULUS L.

Convolvulus spithamæus L. Upright Morning Glory.

Convolvulus spithamæus Linnæus, Sp. Pl. 150. 1753 [Virginia].—Britton 180.—Keller and Brown 264.

Calystegia spithamæa Willis 48.

Convolvulus stans Barton, Fl. Phila. I. 158. 1818.

Sandy ground in the Northern and Middle districts; local, and at some stations certainly a weed.

Fl.—Late May to late June.

Middle District.—Long Branch, Camden (S), Collingswood (S), Ridgleton.

Convolvulus sepium L. Hedge Morning Glory or Bindweed.

Convolvulus sepium Linnæus, Sp. Pl. 153. 1753 [Europe].—Britton 179.

Calystegia sepium Knieskern 24.

Middle District.—Farmingdale, Delair, Washington Park, Mickleton, Salem (S), Beaver Dam.

*Cf. Proc. Am. Acad. Arts and Sci. XIII., 414.

†*Ipomœa lacunosa* is entirely an introduced species within our limits.

Frequent in moist soil; Northern, Middle and Coast districts south to Cape May; most common along streams and on the juncture of the salt marshes and sand dunes along the coast.

Fl.—Early June to late August, sporadically into September.

Middle District.—Farmingdale, Delair, Washington Park, Mickleton, Salem (S), Beaver Dam.

Pine Barrens.—Landisville (T).

Coast Strip.—Barnegat City (L), St. Albans (L), Spray Beach (L), Surf City (L), Atlantic City (S), Ocean City, Piermont (S), Wildwood (UP), Cold Spring (S), Cape May (S), Cape May Pt. (S).

Convolvulus sepium repens L.

Convolvulus repens Linnæus, Sp. Pl. 158. 1753 [America, on the coast].

Tolerably common along the Coast strip.

Fl.—Probably as in the last.

Coast Strip.—Long Branch, Barnegat City (L), Spray Beach (L), Surf City (L), Beach Haven (L), Stone Harbor, Wildwood, Cape May (OHB).

Family CUSCUTACEÆ. Dodders.

Key to the Species.

- a.* Stigmas elongated; capsule circumscissile. [*Cuscuta epithymum*]*
- aa.* Stigmas capitate; capsule indehiscent.
 - b.* Sepals united.
 - c.* Capsule depressed, globose.
 - d.* Flowers in globular clusters, corolla persistent at the base of the capsule. *C. arvensis*, p. 655
 - dd.* Flowers in paniced, often densely compound cymes, corolla withering on the summit of the large capsule. *C. cephalanthi*, p. 655
 - cc.* Capsule pointed, capped by the persistent corolla, flowers in loose paniced cymes. *C. gronovii*, p. 655
 - bb.* Sepals distinct, five, capsule capped by the persistent corolla, flowers in sessile, densely-compact clusters. *C. compacta*, p. 655

These curious parasites are quite conspicuous, especially in the swamps of the Middle district, where their bright orange, naked stems may be seen trailing about over the shrubs and tall herbs, attaching themselves to the stems and branches. The group has received but little critical study in our region and further collections may alter our ideas upon the relative abundance and distribution of the several species. (Cf. Matthew Bull. Torr. Bot. Club XX. 310.)

* Clover Dodder. Introduced on clover.

CUSCUTA L.***Cuscuta gronovii* Willd. Dodder.**

Cuscuta Gronovii Willdenow, in Roemer and Schultes Syst. 6: 205. 1820 [Virginia].—Britton 180.

Cuscuta glomerata Knieskern 24.

Moist ground; frequent in the Northern and Coast districts, less common elsewhere; not known in the Pine Barrens.

Fl.—Early August through September. *Fr.*—Early September into autumn.

Middle District.—Medford (S).

Coast Strip.—Seaside Park, Surf City (L), Barnegat City Inc. (L), Beach Haven (L), Sherburn's (L), Ocean City (S).

Cape May.—1 mile east Dias Creek (S).

***Cuscuta arvensis* Beyrich. Field Dodder.**

Cuscuta arvensis Beyrich in A. Gray Manual, Ed. 2. 236. 1856 [N. W. America].—Willis 48.—Britton 180.—Keller and Brown 264.

Locally common in the northern counties; reported within our limits from the Middle and Cape May districts; rare.

Fl.—Mid-July into September. *Fr.*—Mid-August into autumn.

Middle District.—Shark River (C), Delanco (S), Salem (C).*

Pine Barrens.—Hammononton (C), Egg Harbor (CDL), Parkdale (S), Quaker Bridge (S).

Cape May.—Cape May (P).

***Cuscuta cephalanthi* Engelm. Button-bush Dodder.**

Cuscuta Cephalanti Engelman, Am. Jour. Sci. 43: 336 pl. 6, fig. 1-6. 1842 [St. Louis, Mo.].—Britton 180.—Keller and Brown 265.

Reported only from the Pine Barrens.

Quaker Bridge (NJ), Toms River (C), Swedesboro (KB).

***Cuscuta compacta* Juss. Compact Dodder.**

Cuscuta compacta Jussieu, in Choisy, Mem. Soc. Gen. IX. 281 t. 4, fi. 2. 1842 [North America].—Britton 181.—Keller and Brown 265.

Frequent in the Middle and Pine Barren districts.

Fl.—Early August through September. *Fr.*—Early September into autumn.

*Swedesboro (KB) was an error for Egg Harbor City.

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Middle District.—Pemberton (KB), Camden, Laurel Springs (KB), Westville (KB), Delanco (S), Medford (S), Swedesboro (CDL), Woodstown (KB).

Pine Barrens.—Toms River (P), Whitings (S), Barnegat, New Germany (KB), Hammonton (KB), Weymouth, Egg Harbor City (NB), Mays Landing (KB), Tuckahoe (S).

Family POLEMONIACEÆ. Phloxes.

Key to the Species.

- a. Corolla salver-form, leaves opposite, entire, flowers pink.
 - b. Leaves subulate, stems creeping. *Phlox subulata*, p. 657
 - bb. Leaves flat.
 - c. Stems glabrous or nearly so, spotted with purple. *P. maculata*, p. 656
 - cc. Stems soft, downy. *P. pilosa*, p. 656
- aa. Corolla tubular, bright scarlet. [*Gilia rubra* L.]*
- aaa. Corolla open, bell-shaped, blue; leaves pinnate. *Polemonium reptans*, p. 657

PHLOX L.

Phlox maculata L. Spotted-stemmed Phlox.

Pl. LIV, Fig. 1.

Phlox maculata Linnæus, Sp. Pl. 152. 1753 [Virginia].—Barton, Fl. Phila. I. 107. 1818.—Britton 174.

Moist open ground; frequent or occasional in the Middle and Cape May districts and up the Delaware to Hunterdon County.

Fl.—Mid-May to late June.

Middle District.—New Egypt, Bordentown (C), Burlington, Birmingham (C), Vincentown (C), Griffith's Swamp, Lindenwold, Medford (S), Mickleton, Sewell (S), Swedesboro, Salem (C).

Cape May.—Cold Spring, Cape May (P).

Phlox pilosa L. Downy Phlox.

Phlox pilosa Linnæus, Sp. Pl. 152. 1753 [Virginia].—Knieskern 24.—Willis 47.—Britton 174.—Keller and Brown 266.

Open sandy ground; mainly in the northern counties and at several stations in the Middle district; always local.

Middle District.—Burlington, Moorestown (C), Woodbury (C), "Ocean Co." (Kn).

* Scarlet *Gilia*, escaped from cultivation about Manumuskin, its gorgeous scarlet spikes standing out brilliantly against the green of the pines.

Phlox subulata L. Moss Pink.

Phlox subulata Linnæus, Sp. Pl. 152. 1753 [Virginia].—Pursh Fl. Am. Sept. I. 151. 1814.—Barton Fl. Phila. I. 108. 1818.—Britton 175.—Keller and Brown 200.

Rocky and sandy exposed banks; at a number of stations in the Northern and upper Middle districts.

This and *Viola pedata lineariloba* make a brilliant show between Moorestown and New Lisbon along the railroad banks in alternating beds of pink and blue.

Fl.—Mid-April to late May and often again in autumn.

Middle District.—Red Bank (C), Ewansville (NB), Birmingham (C), Moorestown (NB), Merchantville (KB), Vincentown (C), Camden, Cinna-minson (KB), Mickleton, Blackwood (KB), Almonesson (KB), Swedes-boro.

POLEMONIUM L.**Polemonium reptans L. Jacob's Ladder.**

Polemonium reptans Linnæus, Syst. Nat. Ed. 10, 925. 1759 [based on Miller Gard. Dict., pl. 209, from N. A.].—Britton 175.—Keller and Brown 266.

Rich woods; very rare; known from one station in Warren County and several in the western part of the Middle district.

Fl.—Early May to early June.

Middle District.—Bordentown (NB), Bet. Haddonfield and Camden (C), Three m. west Woodstown.

Family HYDROPHYLLACEÆ. Water-leaf.**HYDROPHYLLUM L.****Hydrophyllum virginianum L. Virginia Water-leaf.**

Hydrophyllum virginianum Linnæus, Sp. Pl. 146. 1753 [Virginia].

Hydrophyllum virginicum Britton 175.

Rich woods; frequent in the northern counties, but rare within our limits and confined to the upper Middle district.

Fl.—Early May to early June.

Middle District.—Freehold (C), New Egypt.

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Family BORAGINACEÆ. Forget-me-not, etc.

Key to the Species.

- a. Nutlets armed with prickles.
 - b. Flowers and nutlets 8-10 mm. broad.
 - c. Flowers reddish purple, nutlets flat, stem leafy to top. [Cynoglossum officinale]*
 - bb. Flowers 2 mm. broad white, nutlets 4 mm. broad. Lappula, p. 658
- aa. Nutlets unarmed.
 - b. Flowers regular.
 - c. Corolla funnel-shaped, blue, 20 mm. long, whole plant glabrous. Mertensia, p. 658
 - cc. Corolla much less than 20 mm. long, plant bristly hairy or roughened (or nearly glabrous in Myosotis laxa).
 - d. Racemes leafy.
 - e. Plant minutely roughened. [Lithospermum arvense]†
 - ee. Plant harsh with appressed bristles. Onosmodium virginianum, p. 659
 - dd. Racemes naked or leafy at the base.
 - c. Appressed pubescent, flowers blue. Myosotis laxa, p. 659
 - ee. Bristly hirsute, flowers white. M. virginica, p. 659
 - bb. Flowers irregular, blue, plants very rough bristly. [Echium vulgare]‡

LAPPULA Moench.

Lappula virginiana (L.). Virginia Stickseed.

Myosotis virginiana Linnæus, Sp. Pl. 131. 1753 [Virginia].

Echinospermum virginianum Britton 177.

Lappula virginiana Keller and Brown 268.

Frequent in woods and thickets of the northern counties; not common within our limits and confined to the Middle district.

Fl.—Early July to late August. *Fr.*—Mid-August into October.

Middle District.—Freehold (C), New Egypt, Oaklyn (S), Mickleton (H), Mullica Hill (H), Swedesboro (CDL).

MERTENSIA Roth.

Mertensia virginica (L.). Virginia Cowslip.

Pulmonaria virginica Linnæus, Sp. Pl. 135. 1753 [Virginia].

Mertensia virginica Britton 177.—Keller and Brown 269.

* Hound's Tongue, waste ground.

† Corn Gromwell, a weed in sandy ground.

‡ Bugloss, local in waste places; roadsides, etc., rare.

Meadows along the Raritan and in the Delaware Valley near Trenton and one or two other stations; rare.

Fl.—Late April to mid-May.

Middle District.—Walnford (C), Hornerstown, between Bordentown and Lumberton.

MYOSOTIS L.

Myosotis laxa Lehm. Smaller Forget-me-Not.

Myosotis laxa Lehmann, Asperif. 83. 1818 [North America].

Myosotis palustris var. *laxa* Willis 47.—Britton 177.

Myosotis palustris Knieskern 24.

Common in the northern counties and frequent in the Middle district. One record each for the Pine Barrens and Cape May, the former possibly based on an introduction.

Fl.—Mid-May into September.

Middle District.—Deal Beach (NB), New Egypt, Pemberton Inc. (S), Lindenwold (S), Medford (S), Mickleton (H), Pitman, Mantua, Swedesboro, Mannington (C).

Pine Barrens.—White Horse (S).

Cape May.—Cape May (OHB).

Myosotis virginica (L.). Scorpion Grass.

Lycopsis virginica Linnæus, Sp. Pl. 139. 1753 [Virginia].

Myosotis virginica Britton 178.

Open sandy ground; frequent or occasional, except in the Pine Barrens.

Fl.—Late April to mid-June.

Middle District.—New Egypt, Crosswicks, Brown's Mills, Hainesport, Glassboro, Woodbury, Medford (S), Locust Grove, Westville, Washington Park, Mickleton, Mantua, Swedesboro.

Cape May.—Cape May (OHB).

ONOSMODIUM Michaux.

Onosmodium virginianum (L.). Virginia False Gromwell.

Lithospermum virginianum Linnæus, Sp. Pl. 132. 1753 [Virginia].

Onosmodium Virginianum Britton 178.—Keller and Brown 270.

Purshia hispida Barton, Fl. Phila. I. 103. 1818.

Open sandy ground; occasional throughout the Middle district, extending northward in the Delaware Valley. The only Pine Barren records seem to be introductions, and the plant has a tendency to become a weed elsewhere.

Fl.—Early June to early July. *Fr.*—Early July to early August or into September.

Middle District.—Keyport (C), Birmingham (NB), Griffith's Swamp (S), Medford (S), Westville (KB), Woodbury (H), Lindenwold (S), Clementon, Iona (P), Centerton (S).

Pine Barrens.—Folsom, Hammonton (Bassett).

Family VERBENACEÆ. Verbenas.

Key to the Species.

- a. Plant decumbent, flowers in a globular head. *Lippia*, p. 661
- aa. Plant erect, flowers in slender spikes. *Verbena urticifolia*, p. 660
 - b. Flowers white.
 - bb. Flowers blue or purplish.
 - c. Leaves lanceolate, acuminate, petioled. *V. hastata*, p. 660
 - cc. Leaves linear to spatulate, lanceolate, mainly sessile. *V. angustifolia*, p. 661

VERBENA L.

Verbena urticifolia L. White Verbena.

Verbena urticifolia Linnæus, Sp. Pl. 20. 1753 [Virginia and Canada].—Knieskern 23.—Britton 194.

Frequent in the Northern and Middle districts; usually in cultivated or waste ground. Two records from the Pine Barrens are obviously recently introduced plants.

Fl.—Late June to early September.

Middle District.—New Egypt, Swedesboro (CDL).

Pine Barrens.—Landisville (T), Weymouth.

Verbena hastata L. Purple Verbena, Blue Vervain.

Verbena hastata Linnæus, Sp. Pl. 20. 1753 [Canada].—Barton Fl. Phila. II. 41. 1818.—Knieskern 23.—Britton 194.

Open moist ground; common throughout the State, except in the Pine Barrens, where it is absent.

One of the components of the typical late summer flora of the damp meadows and swamps of the Middle district, along with *Eupatorium maculatum*, *E. perfoliatum*, *Asclepias pulchra*, *Veronica noveboracensis*, etc.

Fl.—Late June to early September.

Middle District.—Farmingdale, New Egypt, Masonville, Pemberton Inc. (S), Medford (S), Chairville (S), Oaklyn (S), Lawnside (S), Clementon, Swedesboro (CDL), Beaver Dam.

Coast Strip.—Peahala (L), Beach Haven Terrace (L), Absecon (S), Atlantic City (S), Crowleystown, Ocean City (S).

Cape May.—Court House (S), Dias Creek.

Verbena angustifolia Michx. Narrow-leaved Verbena.

Verbena angustifolia Michaux, Fl. Bor. Am. II. 14. 1803 [Tennessee and Carlisle, Pa.].—Knieskern 23.—Britton 194.—Keller and Britton 271.

Open ground; occasional throughout the State, especially in the Middle district. A weed in many places, and the few Pine Barren records are all to be so regarded.

Fl.—Early June to late July and sporadically into September.

Middle District.—New Egypt, Delanco, New Lisbon (KB), Mickleton (KB), Lake Church, Asbury, Sicklerville, Swedesboro (KB).

Pine Barrens.—Winslow Jnc., Hammonton, Absecon (S).

LIPPIA L.

***Lippia lanceolata* Michx. Fog-fruit.**

Lippia lanceolata Michaux, Fl. Bor. Am. II. 15. 1803 [near Ashley, Carolina].—Keller and Brown 272.

Found only at Wildwood, on the coast; a southern plant pushing north also along the Susquehanna Valley in Pennsylvania.

Fl.—Late July into September.

Coast Strip.—Wildwood.

Family LABIATÆ. Mints, etc.

Key to the Species.

- a. Corolla five parted, lobes nearly or quite equal, not two-lipped.
 - b. Flowers blue, 1-3 on terminal or axillary pedicels.
 - c. Flowers solitary at the ends of the branches or axillary branchlets 12-18 mm. long, stamens much exserted. Plant 2-6 dm. high.
 - d. Leaves oblong or lanceolate. *Trichostema dichotomum*, p. 664
 - dd. Leaves linear. *T. lineare*, p. 664
 - cc. Flowers axillary, on 1-3 flowered pedicels, 4-6 mm. long. Plant 2-5 dm. high. Viscid pubescent. *Ianthus*, p. 664
 - bb. Flowers purplish or white, often very small, in dense axillary clusters, or forming a terminal interrupted spike.
 - c. Plants strongly odorous, anther-bearing stamens 4. *Mentha*, p. 673
 - cc. Plants not odorous, anther-bearing stamens 2. *Lycopus*, p. 672
- aa. Corolla very irregular, apparently only one-lipped, the upper lip very short and inconspicuous stamens exserted, flowers pink or purplish.
 - b. Leaves lanceolate to ovate, glabrous or sparingly appressed pubescent. *Teucrium canadense*, p. 663
 - bb. Leaves narrower, densely appressed pubescent and papillose, plant shorter and stiffer. *T. canadense littorale*, p. 663
- aaa. Corolla distinctly two-lipped.
 - b. Calyx with a protuberance on the upper side. *Scutellaria*, p. 664

bb. Calyx without a protuberance on upper side.

c. Upper lip concave.

d. Anther-bearing stamens 4.

e. Upper pair longer than the lower.

f. Tall herbs (6-15 dm.) glabrous or slightly pubescent, leaves serrate, petioled, flowers in a dense terminal spike.

g. Corolla greenish-yellow, scarcely exceeding the calyx. *Agastache nepetoides*, p. 666

gg. Corolla bluish, slightly exceeding the calyx.

A. scrophularifolia, p. 666

ff. Erect, densely whitish downy herbs 6-9 dm. high, with oblong, petioled, crenate, leaves and small, whitish, purple dotted flowers, in verticillate clusters forming interrupted terminal spikes.

[*Nepeta cataria*]¹

fff. Low creeping herbs with reniform crenate leaves and blue flowers in axillary verticillate clusters.

[*Glechoma hederacea*]²

ee. Upper pair of stamens shorter than the lower.

f. Calyx distinctly two-lipped; low herbs 5-6 dm. high, with petioled, oblong, leaves and blue flowers 8-12 mm. long in dense bracted spikes or heads.

Prunella vulgaris, p. 666

ff. Calyx not distinctly two-lipped.

g. Decumbent herbs with orbicular, coarsely crenate, leaves, and reddish-purple flowers 12-16 mm. long in axillary and terminal clusters.

[*Lamium amplexicaule*]³

gg. Upright herbs with pink or purple flowers in verticillate, clustered, terminal spikes or axillary.

h. Leaves three parted or cleft.

[*Leonurus cardiaca*]⁴

hh. Leaves linear, lanceolate or oblong.

i. Leaves narrowed at the base, linear 2-5 mm. wide; plant 3-5 dm. high, nearly glabrous. *Stachys hyssopifolia*, p. 667

ii. Leaves cordate or truncate at the base, lanceolate to ovate, plant 3-12 dm. high. Rough hairy or pubescent.

j. Leaves all very short petioled, stem pubescent all over. *S. palustris*, p. 667

jj. Leaves with petioles 6-35 mm. long, stem pubescent on the angles only.

S. aspera, p. 667

¹ Catnip. This and the following are common weeds about houses, etc.

² Ground Ivy.

³ Henbit.

⁴ Mother-wort.

dd. Anther-bearing stamens 2.

e. Calyx 2-lipped, flowers blue, 20–30 mm. long, in whorls.

Salvia lyrata, p. 667

ec. Calyx tubular equally 5-toothed, corolla elongated, 25–40 mm. long, flowers in dense terminal or axillary capitate clusters, with colored leaf-like bracts immediately below.

f. Flowers lilac or purplish. *Monarda fistulosa*, p. 668

ff. Flowers yellowish, the upper lip spotted with purple.

M. punctata, p. 668

cc. Upper lip flat or only slightly concave.

d. Flowers in axillary whorls or terminal capitate clusters, white or purple.

e. Stamens curved, often more or less converging.

f. Anther-bearing stamens 2. Low herbs, 1.5–4 dm. high, flowers 6 mm. long, purple, in axillary clusters or interrupted spikes, and small nearly glabrous leaves.

Hedeoma, p. 668

ff. Anther-bearing stamens 4. Herbs 3–6 dm. high, hirsute, with dense axillary or terminal clusters of pink flowers.

Clinopodium vulgare, p. 669

ee. Stamens never curved, often divergent.

f. Anther-bearing stamens 4. Very small white or purple-dotted flowers in dense terminal or axillary glomerules or cymose clusters.

Koellia, p. 669

ff. Anther-bearing stamens 2. Flowers lilac, 10–12 mm. long, in loose cymose terminal clusters.

Cunila, p. 671

dd. Flowers in an open terminal panicle, yellow.

Collinsonia, p. 674

TEUCRIUM L.

Teucrium canadense L. Germander.

Teucrium canadense Linnæus, Sp. Pl. 564. 1753 [Canada].—Knieskern 23.
—Britton 203.

Low moist ground; frequent in the Northern and Middle districts.

Fl.—Late June to early August and sporadically into September.

Middle District.—New Egypt, Cooper's Ferry, Washington Park, Swedesboro, Salem (S).

Teucrium canadense littorale (Bicknell). Coast Germander.

Teucrium littorale Bicknell, Bull. Torr. Club. 1901. 160 [York Harbor, Me.].

Frequent along the edge of the maritime marshes.

Fl.—Early July to early August, sporadically later.

Coast Strip.—Pt. Pleasant (S), Seaside Park, Ship Bottom (L), Tucker's (L), Atlantic City (T), Beesley's Pt. (S), Piermont (S), Anglesea, Cold Spring, Cape May Pt.

ISANTHUS Michaux.**Isanthus brachiatus (L.). False Pennyroyal.***Trichostema brachiatum* Linnæus, Sp. Pl. 598. 1753 [North America].*Isanthus cæruleus* Willis 44.*Isanthus brachiatus* Britton 203.—Keller and Brown 273.

Dry sandy ground; at several points along the Delaware above Trenton, also in Bergen and Monmouth Counties; rare and quite likely introduced, as it occurs along railroads in Pennsylvania.

Middle District.—Freehold (C).

TRICHOSTEMA L.**Trichostema dichotomum L. Blue Curls.***Trichostema dichotomum* Linnæus, Sp. Pl. 598 [Virginia and Pennsylvania].

Barton Fl. Phila. II. 40. 1818.—Britton 202.

Dry fields, etc., throughout the State, in many instances a weed in cultivated or waste ground.

Fl.—Mid-August to mid-September.

Middle District.—New Egypt, Hartford, Camden (T), Medford (S), Oaklyn (S), Washington Park, Lawnside (S), Lindenwold, Swedesboro.

Pine Barrens.—Speedwell (S), Pen Bryn (S), Atsion (S), Landisville (T), Egg Harbor City, Belleplain (S).

Coast Strip.—Barnegat City Jnc. (L), Tucker's (L), West Creek (S), Atlantic City (S), Avalon.

Cape May.—Bennett (S), Cold Spring (S).

Trichostema lineare Nutt. Narrow-leaved Blue Curls.*Trichostema linearis* Nuttall, Gen. II. 39. 1818 [New Jersey].—Barton Fl.

Phila. II. 40. 1818.—Knieskern 23.—Willis 44.—Britton 203.—Keller and Brown 274.

Locally in sandy ground of the Middle and Pine Barren districts; apparently not common.

Fl.—Mid-August to mid-September.

Middle District.—Hainesport, Camden, Griffith's Swamp (NB), Washington Park, Clementon.

Pine Barrens.—Monmouth and Ocean Cos. (C), Malaga (P), Quaker Bridge (C), Palermo (S), Seaville.

SCUTELLARIA L.*Key to the Species.*

a. Flowers 6–10 mm. long, in axillary or sometimes terminal racemes.

S. lateriflora, p. 665

aa. Flowers 12–30 mm. long, in terminal, often panicled, racemes.

b. Leaves, except the floral ones, broad, crenate or dentate.

S. pilosa, p. 665

bb. Leaves, all except the lowest, narrow entire. *S. integrifolia*, p. 665

aaa. Flowers 16–26 mm. long, solitary in the axils, leaves lanceolate, nearly sessile. *S. galericulata*, p. 666

***Scutellaria lateriflora* L. Mad-dog Scullcap.**

Scutellaria lateriflora Linnæus, Sp. Pl. 598 [Canada and Virginia].—Knieskern 24.—Britton 201.

Common in wet shaded ground or along streams throughout the State, except in the Pine Barrens, where it does not occur.

Fl.—Early July to mid-September.

Middle District.—New Egypt, Fish House, Kaighns Pt., Medford (S), Oaklyn (S), Washington Park, Lawnside (S), Lindenwold (S), Bridgeport, Blackwood, Clementon (S), Swedesboro, Willow Grove, Salem.

Coast Strip.—Manahawkin.

Cape May.—Goshen (S), Court House (S), Dias Creek, Cold Spring, Green Creek (S).

***Scutellaria pilosa* Michx. Hairy Scullcap.**

Scutellaria pilosa Michaux, Fl. Bor. Am. II. 11. 1803 [Carolina and Georgia].—Willis 46.—Britton 200.

Dry ground; rather frequent or occasional in the Middle and Cape May districts, ranging north to Hunterdon and Mercer Counties.

Fl.—Mid-June to mid-July.

Middle District.—Keyport (NB), Birmingham, Medford (S), Mickleton, Swedesboro, Union Grove (S), Fairton (S).

Cape May.—Cold Spring (S), Bennett.

***Scutellaria integrifolia* L. Hyssop Scullcap.**

Scutellaria integrifolia Linnæus, Sp. Pl. 599. 1753 [Virginia and Canada].—Barton Fl. Phila. II. 39. 1818.—Knieskern 24.—Britton 200.

Common in moist ground throughout the State, except in the Pine Barrens, where it is only occasional.

Fl.—Mid-June to mid-July.

Middle District.—Keyport (NB), Farmingdale, New Egypt, Riverside, Hartford, Arney's Mt. (S), Albion, Locust Grove (S), Medford (S), Oaklyn (S), Washington Park, Lawnside (S), Repaupo, Sicklerville (S), Yorktown, Husted (S), Haleyville (NB).

Pine Barrens.—Williamstown Jnc., Winslow Jnc., Hammonton (Bassett).

Coast Strip.—Pt. Pleasant, Waretown, Forked River, Sherburn's (L), Cox's, Beesley's Pt. (S), Petersburg (S), Mays Landing (S).

Cape May.—Bennett (S), Cold Spring (S).

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Scutellaria galericulata L. Marsh Scullcap.

Scutellaria galericulata Linnæus, Sp. Pl. 599. 1753 [Europe].—Nuttall Gen. II. 37. 1818.—Barton Fl. Phila. II. 38. 1818.—Britton 201.—Keller and Brown 275.

In wet ground in the northern counties and southward along the Delaware River, also at Cape May. The statement in Britton's Catalogue to the effect that it is "frequent in Atlantic County (Peters)" must be an error; there are no specimens in the State herbarium.

Fl.—Early June to late August.

Middle District.—Riverton (Bassett), Delanco, Cooper's Creek, Westville (KB), Repaupo, Swedesboro, Woodstown (KB).

Cape May.—Cape May (OHB).

AGASTACHE Clayton.

Agastache nepetoides (L.). Catnip Giant Hyssop.

Hyssopus nepetoides Linnæus, Sp. Pl. 569. 1753 [Virginia and Canada].

Lophanthus nepetoides Willis 45.—Britton 200.

Agastache nepetoides Keller and Brown 275.

Locally on edges of woods in the northern counties; rare within our limits, in the upper Middle district only.

Fl.—Late July into September.

Middle District.—Freehold (C), Gloucester (KB), Pea-shore Camden (P).

Agastache scrophularifolia (Willd.). Giant Hyssop.

Hyssopus scrophularifolius Willdenow, Sp. Pl. III. 48. 1801 [Virginia and Canada].—Barton, Fl. Phila. II. 31. 1818.

Lophanthus scrophulariæfolius Britton 200.

Agastache scrophulariæfolia Keller and Brown 275.

Frequent on the edges of woods in the northern counties; rare southward in the Middle district.

Fl.—Late July into September.

Middle District.—Freehold (C), Camden.

PRUNELLA L.

Prunella vulgaris L. Self-heal.

Prunella vulgaris Linnæus, Sp. Pl. 600. 1753 [Europe].

Brunella vulgaris Britton 201.

Frequent as a weed in cultivated ground and also in woods, etc., in remote sections, where it appears as if native. Original habitat not ascertainable.

Fl.—Early June into October.

STACHYS L.

Stachys hyssopifolia Michx. Hyssop Hedge Nettle.*Stachys hyssopifolia* Michaux, Fl. Bor. Am. II. 4. 1803 [Carolina].—Willis 46.—Britton 202.—Keller and Brown 277.

Open wet ground in the Middle district; local.

Fl.—Late July to late August.*Middle District.*—Florence, Delanco, Pemberton (NJ), Moorestown (KB), Camden (C), Medford (NB).*Pine Barrens?*—Malaga (KB).*Stachys palustris* L. Hedge Nettle.*Stachys palustris* Linnæus, Sp. Pl. 580. 1753 [Europe].—Knieskern 24.—Britton 201.

Damp open ground, rare; known only from one locality in the Coast district, and possibly not native there.

Fl.—Mid-June to late July, probably.*Coast Strip.*—Spray Beach (L).*Stachys aspera* Mich. Rough Hedge Nettle.*Stachys aspera* Michaux, Fl. Bor. Am. II. 5. 1803 [Carolina].—Barton, Fl. Phila. II. 33. 1818.—Britton 201.

Moist open ground of the Northern and Middle districts.

Fl.—Mid-June to late July, sporadically into September.*Middle District.*—Atlantic Highlands (NB), New Egypt, Fish House, Washington Park, Center Square, Salem (S).

SALVIA L.

Salvia lyrata L. Lyre-leaved Sage.

Pl. CXXIII., Fig. 2.

Salvia lyrata Linnæus, Sp. Pl. 23. 1753 [Virginia].—Knieskern 23.—Britton 199.

Sandy ground; frequent in the Middle district north to Middlesex and Mercer Counties, and on the Coast strip south to Cape May.

Fl.—Mid-May to mid-June.*Middle District.*—Farmingdale, New Egypt (NB), Pemberton (NB), Medford (S), Taunton (S), Washington Park, Camden (P), Lindenwold (S), Two miles east Sewell (S), Wenonah (S).*Coast Strip.*—Pt. Pleasant (S), Atlantic City, Avalon, Piermont (S), Cold Spring (S), Cape May Court House.

MONARDA L.

***Monarda fistulosa* L. Wild Bergamot.**

Monarda fistulosa Linnæus, Sp. Pl. 22. 1753 [Canada].—Britton 199.

In dry soil; locally in the northern counties; rare within our limits and confined to the Middle district.

Fl.—Early July to late August.

Middle District.—Keyport (C), Cassville.

***Monarda punctata* L. Horse-mint.**

Pl. CX.

Monarda punctata Linnæus, Sp. Pl. 22. 1753 [Virginia].—Pursh Fl. Am. Sept. I. 18. 1814.—Barton Fl. Phila. 14. 1818.—Knieskern 23.—Willis 45.—Britton 199.—Keller and Brown 278.

Common in dry, open, sandy ground of the Middle, Coast and Cape May districts north to Middlesex and Mercer Counties. Appears as a weed in many places, and the occurrences in the Pine Barrens seem to be of this nature.

This is one of the characteristic native plants of the Middle district which takes kindly to cultivation, increasing abundantly in fields, along roadsides, etc. While its flowers are handsome individually, the colors are too neutral and the pink bracts not bright enough to produce much effect in bulk.

Fl.—Late July into October.

Middle District.—New Egypt, New Lisbon, Camden, Medford (S), Mickleton, Blackwood, Clementon, Swedesboro.

Pine Barrens.—Speedwell (S), Landisville (T), Hammonton, Mouth of Batsto, Egg Harbor City.

Coast Strip.—Absecon (S), Atlantic City (S), Ocean City (S), Wildwood.

Cape May.—Cold Spring (OHB), Dias Creek, Cape May.

HEDEOMA Persoon.

***Hedeoma pulegioides* (L.). Pennyroyal.**

Melissa pulegioides Linnæus, Sp. Pl. 593. 1753 [Virginia and Canada].

Hedeoma pulegioides Knieskern 23.—Britton 198.

Frequent in open dry ground or in woodland throughout the State, except in the Pine Barrens, where it is local and perhaps introduced, as it has a tendency to spread everywhere in cultivated ground.

Fl.—Late July to early September.

Middle District.—New Egypt, Oaklyn (S), Swedesboro, Camden (P).

Pine Barrens.—Cedar Brook, Egg Harbor City.

Cape May.—Cold Spring (OHB).

CLINOPODIUM L.

Clinopodium vulgare L.

Clinopodium vulgare Linnæus, Sp. Pl. 587. 1753 [Europe and Canada].

Calamintha clinopodium Knieskern 23.—Britton 198.

Dry ground, woods or thickets; frequent in the northern counties and less common southward in the Middle district; introduced as a weed into the Pine Barrens.

Fl.—Early July into September.

Middle District.—Ocean and Monmouth Cos. (Kn), New Egypt, Moorestown (C), Atco (C), Swedesboro.

Pine Barrens.—Landisville.

KOELLIA Moench.

Key to the Species.

- a.* Bracts and calyx teeth awn-tipped, rigid, as long as the corolla, flowers in dense heads, terminating the branchlets, leaves slightly petioled.
K. aristata, p. 670
- aa.* Bracts and calyx teeth not long-awned.
 - b.* Leaves linear.
K. flexuosa, p. 669
 - bb.* Leaves lanceolate.
 - c.* Leaves all glabrous or slightly pubescent on the nerves beneath.
K. virginiana, p. 670
 - cc.* Leaves, at least the uppermost, closely pubescent above.
K. verticillata, p. 670
 - bbb.* Leaves ovate or ovate oblong.
 - c.* Calyx and bracts with close minute appressed pubescence; leaves hoary with whitish wool beneath.
K. incana, p. 671
 - cc.* Calyx and bracts pilose or hispid, with distant spreading hairs; leaves ovate, rigid, acute, rounded at base, green and glabrate when old; floral leaves, bracts and calyx teeth hoary.
K. mutica, p. 671

Koellia flexuosa (Walt.). Narrow-leaved Mountain Mint.

Origanum flexuosum Walter, Fl. Car. 165. 1788 [Carolina].

Dry rocky ground; frequent in the northern counties, but rare within our limits and confined to the upper Middle district and lower Cape May.

Fl.—Early July to late August.

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Middle District.—Pt. Pleasant, New Egypt, Burlington, Swedesboro (CDL).

Cape May.—Cold Spring (S), Court House.

***Koellia virginiana* (L.). Virginia Mountain Mint.**

Satureja virginiana Linnæus, Sp. Pl. 567 [Virginia].

Pycnanthemum lanceolatum Barton, Fl. Phila. II. 35. 1818 (in part).

Pycnanthemum virginicum Britton 198.

Mainly dry ground; perhaps frequent in the northern counties; very rare within our limits. Known from one locality only in the Middle district.

Fl.—Early July to early September.

Middle District.—Kaighns Pt.

***Koellia verticillata* (Michx.). Torrey's Mountain Mint.**

Brachystemon verticillatum Michaux, Fl. Bor. Am. II. 6. pl. 31. 1803 [mountains of Pennsylvania and Upper Carolina].

Pycnanthemum Torreyi Britton 197.

Koellia verticillata Keller and Brown 280 (in part).

Frequent in low grounds of the northern and Middle districts southward to Salem County; occasional in the Pine Barrens.

Fl.—Early July to early September.

Middle District.—Farmingdale, Freehold (C), New Egypt, Kaighns Pt., Medford (S), Lawnside (S), Lindenwold, Salem Co. (KB), Swedesboro.

Pine Barrens.—Ancora, Piper's Corner (S), Elwood (C), Egg Harbor City (KB).

***Koellia aristata* (Michx.). Awned Mountain Mint.**

Pycnanthemum aristatum Michaux, Fl. Bor. Am. II. 8. pl. 33. 1803 [Maryland and Upper Carolina].—Knieskern 23.—Willis 45.—Britton 197.

Koellia aristata Keller and Brown 280.

Apparently restricted to the Central part of the Coast strip from Forked River to Absecon and on the outlying island; locally common. Although generally credited to the "Pine Barrens" we have been unable to find it away from the immediate vicinity of the coast.

Fl.—Early July to early September.

Coast Strip.—Ocean Co. (Kn), Waretown (C), Forked River, Manahawkin, Cox's, Beach Haven (L), Ship Bottom (L), North Beach Haven (L), Absecon.

Koellia incana (L.). Hoary Mountain Mint.

Clinopodium incanum Linnæus, Sp. Pl. 588. 1753 [N. Europe].

Pycnanthemum incanum Britton 197.

Open woods, rocky or sandy soil; frequent in the northern counties and locally and irregularly southward; apparently to some extent introduced in our territory.

Fl.—Early July to early September.

Middle District.—Griffith's Swamp, Mickleton (C), Bridgeton (C), Merchantville (C).

Pine Barrens.—Hammonton (Bassett), Quaker Bridge (P).

Cape May.—Cold Spring (OHB), Three miles west Court House (S).

Koellia mutica (Michx.). Short-toothed Mountain Mint.

Brachystemon muticum Michaux, Fl. Bor. Am. II. 6. pl. 32. 1803 [Upper Carolina].

Pycnanthemum muticum Britton 197.

Frequent in open sandy ground, mainly restricted to the Middle and Pine Barren districts, though it ranges northward along the Delaware and probably passes the fall line at other points in the northern counties.

Fl.—Early July to early September.

Middle District.—Farmingdale (NB), Pemberton Jnc. (S), Camden, Hadonfield (P), Medford (NB), Mickleton.

Pine Barrens.—Cassville, Absecon, Atsion, Hammonton.

CUNILA L.**Cunila origanoides (L.). Dittany.**

Satureja origanoides Linnæus, Sp. Pl. 568. 1753 [Virginia].

Cunila mariana Britton 197.

Dry soil, usually in open woodland; common in the northern counties and locally frequent in the Middle and Cape May districts.

Fl.—Mid-August to late September.

Middle District.—Keyport (C), Mickleton (C), Mantua, Timber Creek near Gloucester (P), Swedes Bridge (C), Swedesboro (CDL), Bridgeton.

Cape May.—Bennett, Green Creek (S).

LYCOPUS L.

Key to the Species.

a. Calyx-teeth ovate, scarcely acute, shorter than the mature nutlets.

b. Leaves mostly ovate, often purple, base of stem not tuberous.

Lycopus virginicus, p. 672

bb. Leaves mostly lanceolate to oblong, base of stem tuberous.

L. uniflorus, p. 672

aa. Calyx-teeth lanceolate, subulate or very acute, larger than the nutlets.

b. Leaves deeply incised or pinnatifid.

L. americanus, p. 673

bb. Leaves merely serrate.

c. Leaves sessile.

L. sessilifolius, p. 672

cc. Leaves narrowed into a manifest petiole.

L. rubellus, p. 673

***Lycopus virginicus* L. Purple Water Hoarhound or Bugle-weed.**

Lycopus virginicus Linnæus, Sp. Pl. 21. 1753 [Virginia].—Knieskern 23.—Britton 196.

Moist ground; frequent in the Northern and Middle districts.

Fl.—Late July into September.

Middle District.—Long Branch, New Egypt, Medford (S), Oaklyn (S), Lawnside (S), Salem.

Pine Barrens.—Landisville (T), Atsion (S).

***Lycopus uniflorus* Michx. Common Water Hoarhound.**

Lycopus uniflorus Michaux, Fl. Bor. Am. 14. 1803 [Lakes, St. John and Mistassini, Canada].

Moist ground; frequent in the Northern and Coast districts; apparently rare in the Middle district at least within our limits.

Fl.—Late July into September.

Middle District.—New Egypt, Clementon.

Coast Strip.—Cox's, Manahawkin, Barnegat City (L), Ship Bottom (L), Holgate's (L), Sherburn's (L).

***Lycopus sessilifolius* Gray. Sessile-leaved Water Hoarhound.**

Lycopus europæus var. *sessilifolius* Gray, Man. Ed. 5. 345. 1867 [Atsion Creek, N. J.]—Willis 44.—Britton 196.—Keller and Brown 280.

Common in the Pine Barrens and frequent elsewhere throughout our region, but apparently not recorded in the State north of our limits.

This is the typical Hoarhound of the Pine Barrens common about the Cranberry bogs and other wet spots, always with abundantly-developed stolons. The type specimen was collected

by the late William M. Canby on Atsion Creek, in the heart of the Pines, that he was so fond of exploring.

Fl.—Early August into October.

Middle District.—Delanco (S), Fish House, Oaklyn (S), Swedesboro (CDL), Pennsgrove (NB), Salem (S), Dividing Creek.

Pine Barrens.—Como, Toms River (KB), Forked River, West Creek (S), Speedwell (S), Clementon (S), Atsion (C), Parkdale, Batsto, Green Bank (C), Egg Harbor City (KB), Mays Landing, Palermo (S), Seaville (S), Ocean City Jnc., Petersburg (S).

Coast Strip.—Seaside Park, Barnegat City (L).

Cape May.—Bennett, Cape May, Cape May Pt. (S).

***Lycopus rubellus* Moench. Stalked Water Hoarhound.**

Lycopus rubellus Moench, Meth. Suppl. 146. 1802 [No loc., prob. Virginia]
—Britton 196.—Keller and Brown 281.

Apparently rare. I am, however, by no means certain that the plant referred to is certainly distinct from *L. sessilifolius*. The example from Cape May shows short petioled leaves, but one from Forked River is nearly as much petioled. The sepals, too, are nearly glabrous, while in *sessilifolius* they are usually hispid.

Cape May.—Cape May.

***Lycopus americanus* Muhl. Cut-leaved Water Hoarhound.**

Lycopus americanus "Muhlenberg," Barton, Fl. Phila. Prodr. 15. 1815 [Canada].

Lycopus sinuatus Willis 44.—Britton 196.

Moist ground; frequent or common throughout the State, except in the Pine Barrens, where it is conspicuous by its absence. Especially abundant on the coast strip.

Fl.—Mid-July into September.

Middle District.—New Egypt, Florence, New Lisbon, Delanco (S), Camden, S. Westville, Swedesboro, Millville.

Coast Strip.—Seaside Park, Waretown, N. Beach Haven (L), Peahala (L), Spray Beach (L), Atlantic City (S), Beesley's Pt. (S), Ocean City (S), Palermo (S), Mays Landing (S), Seaville, Piermont (S), Court House (S), Cold Spring (S).

Cape May.—Dennisville (S), E. of Dias Creek (S).

MENTHA L.

Key to the Species.

- a. Whorls of flowers axillary only.
- aa. Whorls of flowers forming terminal spikes.
- b. Plants glabrous or nearly so.

M. canadensis, p. 674

- c. Spikes slender, mostly interrupted, leaves sessile or nearly so. [M. *spicata*]*
 cc. Spikes shorter and denser, leaves petioled. [M. *piperita*]†
 bb. Plants villose, hirsute or canescent.
 c. Leaves lanceolate, acute. [M. *longifolia*]‡
 cc. Leaves elliptic, obtuse. [M. *rotundifolia*]§

Mentha canadensis L. Wild Mint.

Mentha canadensis Linnæus, Sp. Pl. 577. 1753 [Canada].—Britton 196.

Common in open moist ground in the northern counties and less common southward in the Middle and Coast districts.

Fl.—Early July into September.

Middle District.—Fish House, Medford (S), Washington Park, Mickleton, Swedesboro, Woodstown (NB).

Coast Strip.—Spray Beach (L).

COLLINSONIA L.**Collinsonia canadensis L.**

Collinsonia canadensis Linnæus, Sp. Pl. 28. 1753 [Virginia and Canada].—Knieskern 23.—Britton 195.

Frequent in woods of the northern counties; rare southward within our limits.

Fl.—Early August to late September.

Middle District.—New Egypt, Mantua, Swedesboro (CDL).

Family SOLANACEÆ. Potatoes, Groundcherries, etc.

- a. Fruit a prickly capsule, flowers long funnel-form, 70–90 mm. long. Rank herbs 3–15 dm. high.
 b. Corolla white. [Datura *stramonium*]¹
 bb. Corolla violet purple. [D. *tatula*]²
 aa. Fruit a berry.
 b. Fruiting calyx enlarged, bladder-like, completely enclosing the berry. *Physalis*, p. 675
 bb. Calyx not enlarged.
 c. Climbing vine with purple flowers and red berries.

[*Solanum dulcamara*]³

* Spear Mint, abundantly introduced in meadows.

† Pepper Mint, locally introduced.

‡ Horse Mint, waste ground, very rare.

§ Round-leaved Mint, waste ground.

Several other species of Mint are introduced in various parts of the country.

¹ Jimson Weed, an abundant weed.

² Purple Jimson, less frequent.

³ Nightshade, in thickets, often appearing like a native.

cc. Erect herbs with white or whitish flowers.

d. Plant prickly, berries yellow.

[*S. carolinense*]⁴

dd. Plant not prickly, berries black.

S. nigrum, p. 675

PHYSALIS L.

Physalis heterophylla Nees. Ground Cherry.

Physalis heterophylla Nees. Linnaea VI. 463. 1831 [North America, probably Pennsylvania].

Dry open ground; frequent throughout the State, except in the Pine Barrens, where it is local. This and several other species are credited to our region, but they are all so generally weeds that it is impossible to determine if they are native here and, if so, what their original distribution may have been.

SOLANUM L.

Solanum nigrum L. Black Nightshade.

Solanum nigrum Linnæus, Sp. Pl. 186. 1753 [throughout world].—Britton 181.

Generally distributed, but such a universal weed that all trace of its original habitat has been lost. The introduced *S. dulcamara* (Purple Nightshade or Bitter Sweet) is perfectly naturalized along the coastal islands, where it is as characteristic as some of the native species.

Family SCROPHULARIACEÆ. Figwort, etc.

Key to the Species.

- a. Corolla rotate, anther-bearing stamens 5.
 - b. Plant densely wooly, flowers yellow, in a dense terminal spike. [*Verbascum thapsus*]¹
 - bb. Plant glabrous, flowers in a slender raceme, white or yellow, stamens purplish. [*V. blattaria*]²
- aa. Corolla various, anther-bearing stamens 2 or 4.
 - b. Corolla spurred at the base.
 - c. Flowers 25-30 mm. long, yellow and orange. [*Linaria linaria*]³
 - cc. Flowers 6-12 mm. long, blue. *L. canadensis*, p. 677
 - bb. Corolla not spurred.
 - c. Anther-bearing stamens 2.
 - d. Dwarf aquatic plants with inconspicuous axillary flowers and opposite, entire rounded leaves. *Micranthemum*, p. 681

⁴ Horse Nettle, a bad weed in fields, etc.

¹ Mullein, a common field weed occurring with the next.

² Moth Mullein.

³ Toad-flax, a frequent weed on roadsides and waste ground.

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- dd. Tall herbs 6-20 dm. high, with dense terminal spike-like racemes of tubular white flowers (4 mm. long).
Leptandra virginica, p. 683
- ddd. Low herbs, not over 6 dm. high.
- e. Flowers somewhat tubular, limb two-lipped.
- f. Two protruding sterile stamens in addition to those bearing anthers.
- g. Peduncles long and filiform, exceeding the subtending leaves. *I. anagallidea*, p. 681
- gg. Peduncles as long as the leaves, or shorter.
Ilysanthes dubia, p. 680
- ff. Sterile filaments, short or none.
- g. Flowers bright yellow. *Gratiola aurea*, p. 680
- gg. Flowers white or tinged with yellow or purple.
- h. Plant hirsute, flowers 8 mm. long.
G. pilosa, p. 680
- hh. Plant glabrous, flowers 14 mm. long.
G. sphærocarpa, p. 679
- hhh. Plant glandular, puberulent, flowers 8-10 mm. long.
G. virginiana, p. 679
- ee. Flowers rotate, divisions nearly equal, not 2-lipped.
Veronica, p. 682
- cc. Anther bearing stamens 4.
- d. Terrestrial herbs with conspicuous flowers.
- e. Flower heads appearing scarlet, but color really restricted to the foliaceous bracts, flowers greenish yellow.
Castilleja, p. 687
- ee. Flowers blue or violet, 25 mm. long, plants glabrous.
- f. Leaves sessile, peduncles longer than the calyx.
Mimulus ringens, p. 679
- ff. Leaves petioled, peduncles shorter than the calyx.
M. alatus, p. 679
- eee. Flowers pink or purple.
- f. Plant hispid, flowers salverform, purple, 25 mm. long, the limb nearly equally 5-parted, in a terminal bracted spike.
Buchnera, p. 683
- ff. Plants glabrous, with opposite sessile linear leaves, flowers bell-shaped, pink or purplish, pedicelled, 10-25 mm. long.
Gerardia, p. 685
- eeee. Flowers yellow.
- f. Similar to those of *Gerardia*, 25-35 mm. long.
Dasytoma, p. 684
- ff. Strongly 2-lipped, somewhat compressed, 15-20 mm. long.
- g. Plant glabrous, 3-9 dm. high, leaves pinnately lobed.
Pedicularis lanceolata, p. 687
- gg. Plant pubescent, at least above, 1.5-4.5 dm. high, leaves pinnately parted.
P. canadensis, p. 688

eeeec. Flowers white.

f. Corolla 25 mm. long, inflated and contracted at the mouth, plant glabrous. *Chelone*, p. 678

ff. Corolla 20 mm. long, not contracted at the mouth, often tinged with purple, stem hairy.

Penstemon hirsutus, p. 678

fff. Corolla 8-12 mm. long, two-lipped, lower lip yellow, plant puberulent, 2-5 dm. tall.

Melampyrum lineare, p. 688

ceeeeee. Flowers purplish or yellowish green, sometimes almost brown, or partly yellow, partly maroon.

f. Flowers 6-8 mm. long, numerous in large, nearly leafless thyrses, plant 1-3 m. tall, glabrous below, somewhat glandular above, leaves opposite.

g. Corolla dull outside, sterile stamen purple.

Scrophularia marilandica, p. 678

gg. Corolla shining outside, sterile, stamen greenish yellow. *S. leporella*, p. 678

ff. Flowers laterally compressed, irregular, 2-lipped, 25-40 mm. long, in a bracted spike; plant pubescent, 3-6 dm. high, leaves alternate.

Schwalbea, p. 687

dd. Low succulent aquatic plant, creeping on mud or floating, with slender obtuse leaves 20-120 mm. long, and 1-flowered peduncles, corolla white or pinkish, 2 mm. broad.

Limosella, p. 681

LINARIA Hill.

Linaria canadensis (L.). Blue Toad-flax.

Antirrhinum canadense Linnæus, Sp. Pl. 618. 1753 [Virginia and Canada].—Barton, Fl. Phila. II. 44. 1818.

Linaria canadensis Knieskern 22.—Britton 183.

Open, sandy ground; common throughout our region and in parts of the northern counties; frequently a weed in cultivated and waste ground.

Fl.—Late April to early July.

Middle District.—New Egypt, Burlington, Camden, Medford (S), Washington Park, Mantua, Westville, Mickleton, Swedesboro.

Pine Barrens.—Brown's Mills, Forked River, Atco, Landisville, Head of Batsto.

Coast Strip.—Seaside Park, Surf City (L), Beach Haven Terrace (L), Atlantic City.

Cape May.—Cape May.

* Knieskern's record of *Physostegia virginica* in Monmouth and Ocean counties (p. 24), cannot be verified. The plant has escaped from cultivation farther south and perhaps his record is of this sort.

SCROPHULARIA L.

Scrophularia marilandica L. Maryland Figwort.

Scrophularia marilandica Linnæus, Sp. Pl. 619. 1753 [Virginia].

Scrophularia nodosa var. *Marylandica* Britton 184.

Scrophularia nodosa Knieskern 22.

Open woods and thickets; frequent in the northern counties and south casually in the Middle district, especially along the Delaware.

Fl.—Early July to late August.

Middle District.—Ocean and Monmouth Cos. (Kn), Fish House, Camden (CP), Salem Co.

Scrophularia leporella Bicknell. Hare Figwort.

Scrophularia leporella Bicknell, Bull. Torr. Bot. Cl. 23: 317. 1896 [Near N. Y. City].

Open woods and thickets; frequent in the northern counties and southward along the Delaware and on the Coastal strip.

Fl.—Late May to early July.

Middle District.—Fish House, Washington Park, Woodbury.

Coast Strip.—Spray Beach (L), Piermont.

CHELONE L.

Chelone glabra L. Snakehead, Turtlehead.

Pl. CXI.

Chelone glabra Linnæus, Sp. Pl. 611. 1753 [Virginia and Canada].—Knieskern 22.—Britton 184.

In open swamps; common in the Northern and Middle districts and occasional on the Cape May peninsula.

Fl.—Late August to late September.

Middle District.—New Egypt, Burlington, Hartford, Birmingham, Delair, Kaighns Pt., Medford (S), Washington Park, Ashland.

Cape May.—Seaville (S), Cold Spring (S).

PENSTEMON Solander.

Penstemon hirsutus (L.). Hairy Beard Tongue.

Chelone hirsutum Linnæus, Sp. Pl. 611 [Virginia].

Penstemon pubescens Willis 42.

Rocky situations; frequent in the northern counties and occasional within our limits in sandy fields of the Middle district, where it is probably introduced as a weed.

Fr.—Late May to late June.

Middle District.—New Egypt, Kirkwood (C), Mickleton (C).

MIMULUS L.

Mimulus ringens L. Common Monkey Flower.

Mimulus ringens Linnæus, Sp. Pl. 634 [Virginia and Canada].—Knieskern 22.—Britton 185.

Open swamps; frequent in the Northern and Middle districts and locally on the Cape May peninsula and Coast strip.

Fl.—Early July to late August, sporadically into September.

Middle District.—New Egypt, Pemberton (S), Delaire, Camden (C), Medford, Mickleton (C), Atco (C), Swedesboro, Dividing Creek.

Coast Strip.—Manahawkin, Mays Landing, Wildwood Jnc., Dias Creek, Cape May (S), Cape May Court House.

Mimulus alatus Soland. Wing-stemmed Monkey Flower.

Pl. CXIX., Fig. 2.

Mimulus alatus Solander in Aiton's Hort. Kew. II. 361. 1789 [North America].—Knieskern 22.—Britton 185.—Keller and Brown 288.

Rare and local in open swamps or meadows of the Northern and Middle districts.

Fl.—Early July to late August, sporadically into September.

Middle District.—New Egypt, Crosswicks Creek (C), Delair, Medford, Woodstown (KB).

GRATIOLA L.

Gratiola virginiana L. Clammy Hedge Hyssop.

Gratiola virginiana Linnæus, Sp. Pl. 17. 1753 [Virginia].—Knieskern 22.—Britton 185.

Damp or muddy spots; locally distributed through the Northern and Middle districts.

Fl.—Late May to late July.

Middle District.—Farmingdale (S), New Egypt, Medford (S), Washington Park, Andrews, Swedesboro, Riddleton.

Gratiola sphærocarpa Ell. Round-fruited Hedge Hyssop.

Gratiola sphærocarpa Elliott, Bot. S. C. and Ga. I. 14. 1816 [Four miles from Charleston, S. C., on the neck].—Willis 42.—Britton 185.—Keller and Brown 289.

Wet muddy spots in the Middle and Cape May districts, reaching here, the northern limit of its distribution; rare and local.

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Originally collected in the State by Austin at Dennisville, Cape May County, May, 1855.

Middle District.—Burlington.

Cape May.—Ocean View (NB), Opp. Cold Spring, Cape May (P), Dennisville (P).

***Gratiola aurea* Pursh. Golden Hedge Hyssop.**

Gratiola aurea Pursh, Fl. Am. Sept. I. 12. 1814 [Pine Barrens of N. England, New Jersey and Carolina].—Knieskern 22.—Willis 42.—Britton 186.—Keller and Brown 289.

Common in wet sandy ground throughout the Pine Barrens south to Dennisville, also locally in the Middle district and up the Delaware to Belvidere, also on the shores of Lake Hopatcong and Green Pond.

Fl.—Late June to late September.

Middle District.—Florence Hts., Delanco, Fish House, Gloucester, Paulsboro, Center Square.

Pine Barrens.—Pt. Pleasant, Toms River, Forked River, Manahawkin, Cedar Grove (S), Cedar Bridge, West Creek, Landisville, Winslow, Hammononton, Atsion (S), Batsto, Egg Harbor City, Woodbine, Dennisville (S).

***Gratiola pilosa* Michx. Hairy Hedge Hyssop.**

Gratiola pilosa Michaux, Fl. Bor. Am. I. 7. 1803 [Carolina].—Willis 42.—Britton 186.—Keller and Brown 289.

Damp ground and edges of salt marshes in the Cape May and lower Middle districts, reaching here, the northern limit of its distribution.

Collected at Griffith's Swamp, near Haddonfield, by Diffenbaugh in 1862.

Fl.—Early July to early September.

Middle District.—Four miles east of Camden, Griffith's Swamp, Dividing Creek.

Cape May.—Court House, Two miles west of Court House (S), Three miles west of Court House (S), Bennett, Cold Spring, Green Creek, Cape May.

***ILYSANTHES* Rafinesque.**

***Ilysanthes dubia* (L.). Short-stalked False Pimpernel.**

Gratiola dubia Linnæus, Sp. Pl. 17. 1753 [Virginia].

Wet ground in the northern counties, ranging down the Delaware into the Middle district. Not found elsewhere within our limits.

Fl.—Early July to early September.

Middle District.—Riverside, Kaighns Pt., Swedesboro.

Ilysanthes anagallidea (Michx.)* Long-stalked False Pimpernel.

Gratiola anagallidea Michaux, Fl. Bor. Am. I. 6. 1803 [Carolina].

Ilysanthes gratioloides Knieskern 22.—Britton 186.

Lindernia attenuata Barton, Fl. Phila. I. 8. 1818.

Frequent in wet places throughout the Middle and Cape May districts and along the Coast strip; probably does not range much above the fall line in the northern counties.

Fl.—Early July to early September.

Middle District.—Crosswicks, Florence Hts., Jackson, Clementon, Woodbine (S).

Coast Strip.—N. Spring Lake (NB), St. Albans (L), N. Beach Haven (L), Spray Beach (L), Beach Haven (L), Ocean City (S).

Cape May.—Rio Grande, Nummeytown (S).

MICRANTHEMUM Michaux.

Micranthemum micranthemoides (Nutt.). Nuttall's *Micranthemum*.

Hemianthus micranthemoides Nuttall, Jour. Acad. Nat. Sci. Phila. I. 119, pl. 6. 1817 [Kensington (now in Philadelphia) on the Delaware River].

Micranthemum micranthemoides Keller and Brown 289.

Micranthemum Nuttallii Willis 43.—Britton 186.

Muddy shores of the Delaware from Camden to Burlington; local.

Fl.—Early September into November.

Middle District.—Burlington, Delair, Morris, Camden.†

LIMOSELLA L.

Limosella tenuifolia Hoffm. Narrow-leaved Mudwort.

Pl. XC., Fig. 1.

Limosella tenuifolia Hoffman, Deutsch. Fl. 29. 1804 [Germany].—Keller and Brown 290.

Limosella aquatica var. *tenuifolia* Willis 43.—Britton 186.

Muddy shores of the Delaware and edges of the salt marshes from Long Branch to St. Albans.

Fl.—Early June into September.

* cf. Robinson *Rhodora* 1908, 66, on nomenclature of species.

† The record in Keller and Brown's list for Clementon (Jahn) cannot be substantiated and is almost certainly based upon a misidentification.

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Middle District.—Burlington, Shore of Delaware River.

Coast Strip.—Long Branch (C), Lake Como (S), Spring Lake (NB), Sea Girt, Bay Head, St. Albans (L), Spray Beach (L), Holgate's (L).

VERONICA L.

Key to the Species.

- a. Flowers racemose in the axils of the leaves.
 - b. Plants glabrous or slightly glandular, flowers blue.
 - c. Leaves ovate or oval, petioled. *V. americana*, p. 682
 - cc. Leaves linear or linear lanceolate. *V. scutellata*, p. 682
 - bb. Plants pubescent, leaves oval or obovate, petioled, flowers pale blue. *V. officinalis*, p. 683
- aa. Flowers in terminal spikes or racemes, pale blue with darker stripes. Stems decumbent, leaves opposite, oval, 6-12 mm. long. *V. serpyllifolia*, p. 683
- aaa. Flowers solitary in the axils. Plant 7-30 cm. high.
 - b. Erect glabrous or glandular, leaves oblong, 6-20 mm. long, flowers white. *V. peregrina*, p. 683
 - bb. Much branched and diffuse, leaves ovate or oval, crenate, 4-12 mm. long, flowers blue to nearly white. [*V. arvensis*]*

Veronica americana Schw. Brooklime.

Veronica americana "Schw." Benth in D. C. Prodr. X. 468. 1846 [Canada and Carolina to Oregon].—Knieskern 23.—Willis 43.—Britton 187.

In streams; frequent in the northern counties and occasional within our limits in the Middle district.

Fl.—Early June to early August.

Middle District.—New Egypt (C), Burlington, Swedesboro.

Veronica scutellata L. Marsh Speedwell.

Veronica scutellata Linnæus, Sp. Pl. 12. 1753 [Europe].—Britton 187.—Keller and Brown 290.

Frequent or occasional in swamps of the Northernmost counties, also at Princeton Junction, Black Swamp, Somerset County and Rosemont, Hunterdon County; and at one or two stations near Camden, where it is now probably extinct.

Fl.—Early May to late August.

Middle District.—Cooper's Ferry, Whiskey Road.

* Corn Speedwell a common weed.

Veronica officinalis L. Common Speedwell.

Veronica officinalis Linnæus, Sp. Pl. 11. 1753 [Europe].—Britton 187.

Dry ground; frequent in the Northern and Middle districts and occasional on the coast and lower bay shore. Appearing like a weed in some places.

Fl.—Early May to late July.

Middle District.—Washington Park, Mickleton, Swedesboro.

Coast Strip.—Barnegat City (L).

Cape May.—Town Bank.

Veronica serpyllifolia L. Thyme-leaved Speedwell.

Veronica serpyllifolia Linnæus, Sp. Pl. 12. 1753 [Europe and America].—Knieskern 23.—Britton 187.

Open ground in the Northern and Middle districts.

Fl.—Late April to early July.

Middle District.—New Egypt, Kinkora, Mickleton.

Veronica peregrina L. Purslane Speedwell.

Veronica peregrina Linnæus, Sp. Pl. 14. 1753 [Europe].—Britton 187.

Common or occasional throughout the State, usually in cultivated or waste ground, occurring as a weed.

Fl.—Late April to late June.

Middle District.—New Egypt, Sewell (S), Washington Park, Swedesboro.

Pine Barrens.—Landisville.

Coast Strip.—Beach Haven (L).

Cape May.—Cape May (S).

LEPTANDRA Nutt.**Leptandra virginica (L.). Culver's Root.**

Veronica virginica Linnæus, Sp. Pl. 9. 1753 [Virginia].—Willis 43.—Britton 186.

In low ground; frequent in the northern counties; very rare within our limits and confined to the Middle district.

Fl.—Early July to late August.

Middle District.—Prosper town, Monmouth Co. (Willis).

BUCHNERA L.**Buchnera americana L. Blue Hearts.**

Buchnera americana Linnæus, Sp. Pl. 630. 1753 [Virginia and Canada].—Barton, Fl. Phila. II. 217. 1818.—Britton 188.—Keller and Brown 291.

Very rare; known from but one station in the State, near Burlington, where it is now probably extinct. This marked the northern limit of its range east of the Alleghanies. Barton mentions that it was found by Zaccheus Collins in sandy ground in New Jersey, but whether he referred to the above locality cannot be determined.

Middle District.—Burlington.

DASYSTOMA Rafinesque.

Key to the Species.

- a. Plant glandular pubescent, much branched, leaves finely pinnatifid. *D. pedicularia*, p. 684
- aa. Plant cinereous puberulent, strict and simple, leaves oblong or lanceolate entire or the lowest toothed. *D. flava*, p. 684
- aaa. Glabrous and glaucous, branched, upper leaves entire, the lower 1-2 pinnatifid. *D. virginica*, p. 685

Dasystema pedicularia (L.). Fern-leaved False Foxglove.

Gerardia pedicularia Linnæus, Sp. Pl. 611. 1753 [Virginia and Canada].—Barton, Fl. Phila. II. 46. 1818.—Knieskern 23.—Britton 189.

Frequent or occasional in dry woods throughout the State, most common in the Pine Barrens.

Fl.—Mid-August to mid-September.

Middle District.—Middletown.

Pine Barrens.—Brindletown, Bamber, Taunton (S), Williamstown Inc. (S), Cedar Grove (S), Hammonton.

Cape May.—Cold Spring (OHB).

Dasystema flava (L.). Downy False Foxglove.

Gerardia flava Linnæus, Sp. Pl. 610. 1753 [Virginia and Canada].—Willis 43.—Britton 189.

Dry woodland; frequent throughout the State, but apparently less abundant in the Pine Barrens.

Fl.—Early July to early August.

Middle District.—Leedsville (NB), Farmingdale, Hornerstown, Medford (S), Swedesboro, Fairton (S).

Pine Barrens.—Williamstown Inc. (S), Winslow (S), Hammonton (T).

Cape May.—Court House (S), Whitesboro (S), Bennett (S), Cold Spring (OHB), Cape May.

Dasystema virginica (L.). Smooth False Foxglove.

Rhinanthus virginicus Linnæus, Sp. Pl. 603. 1753 [Virginia].

Gerardia quercifolia Barton, Fl. Phila. II. 46. 1818.—Knieskern 23.—Britton 189.

Occasional in the northern counties, but very rare within our limits and known from but three stations. The statement in Britton's Catalogue and in Keller and Brown's List to the effect that it is "frequent in the middle and southern counties" is certainly incorrect.

Fl.—Mid-August to mid-September.

Middle District.—New Egypt, Fairton.

Pine Barrens?—Hammonton (NB).

GERARDIA L.

Key to the Species.

- a. Pedicels little, if at all, longer than the calyx and capsule.
 - b. Flowers large, corolla 23–31 mm. long.
 - c. Leaves linear 1.5–3.5 mm. wide. *G. purpurea*, p. 685
 - cc. Leaves filiform .05–1.5 mm. wide, often curled. *G. racemulosa*, p. 686
 - bb. Flowers smaller, corolla 14–18 mm. long. *G. maritima*, p. 685
- aa. Pedicels usually exceeding the corolla, corolla 12–20 mm. long.
 - b. Leaves linear, 2.5 mm. wide or less. *G. tenuifolia*, p. 686
 - bb. Leaves filiform, less than 1 mm. wide. *G. setacea*, p. 686

Gerardia maritima Raf. Salt Marsh *Gerardia*.

Gerardia maritima Rafinesque, Med. Rep. II. 5. 361. 1808 [Islands of Egg Harbor, N. J].—Nuttall, Gen. II. 46. 1818.—Knieskern 23.—Willis 43.—Britton 188.—Keller and Brown 292.

Salt marshes along the coast; common.

Fl.—Mid-July to mid-September.

Coast Strip.—Long Branch, Forked River, Barnegat Pier, Barnegat City (L), St. Albans (L), Spray Beach (L), Manahawkin, Atlantic City, Ocean City, Palermo, Sea Isle City, Piermont, Holly Beach, Cold Spring, Cape May.

Gerardia purpurea L. Large Purple *Gerardia*.

Pl. CVII., Fig. 1.

Gerardia purpurea Linnæus, Sp. Pl. 610. 1753 [Virginia and Canada].—Knieskern 23.—Britton 188.

Low ground; common throughout the Middle, Coast and Cape May districts, and frequent in the northern counties, according to Britton's Catalogue.

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A conspicuous flower in late summer and early autumn all along the coast strip, and in West Jersey. Its purple cups mingle with the yellow *Euthamia* and the white *Eupatoriums*, which abound at that season, in every piece of low moist ground.

Fl.—Late August to late September.

Middle District.—Burlington, Delair, Haddonfield (S), Orchard (S), Medford (S), S. Westville, Swedesboro, Dividing Creek.

Coast Strip.—Deal, Seaside Park, Waretown, Barnegat City (L), Spray Beach (L), Manahawkin, Cox's, West Creek (S), Absecon, Atlantic City, Ocean City, Seaville (S), Sea Isle City (S), Wildwood.

Cape May.—Cold Spring, Cape May, Bennett, Dias Creek (S).

***Gerardia racemulosa* Pennell. Pine Barren *Gerardia*.**

Gerardia racemulosa Pennell, Torrey 1911. 15 [Parkdale, N. J.].

Pine Barren bogs; rather frequent, replacing the broader leaved *G. purpurea*.

This species seems to bear to *G. purpurea* the same relationship that *G. holmiana* does to *G. tenuifolia*, both the filiform leaved species being mainly or entirely restricted to the Pine Barrens.

Fl.—Late August to late September.

Pine Barrens.—Hornerstown, Forked River, Egg Harbor City, Cedar Grove to Jones' Mill (S), Parkdale.

***Gerardia tenuifolia* Vahl. Slender *Gerardia*.**

Gerardia tenuifolia Vahl. Symb. Bot. III. 79. 1794 [North America].—Knieskern 23.—Britton 188.

Dry open woods of the Northern, Middle and Cape May districts; most frequent northward.

Fl.—Mid-July to early October.

Middle District.—New Egypt, Westmont (S), Oaklyn (S), Mickleton, Swedesboro.

Cape May.—Bennett, Cold Spring (S).

***Gerardia holmiana*. Bristle-leaved *Gerardia*.**

Gerardia Holmiana Greene, Pittonia IV. 52. 1899 [Brookland, D. C.].—Keller and Brown 292.

Gerardia Skinneriana Keller and Brown 292 (as to N. J.).

Frequent throughout the Pine Barrens in dry sand. This is possibly the *G. setacea* of Walter, but as I cannot be certain I prefer to use Greene's name, as his types have been examined

by Mr. F. W. Pennell, who is familiar with our plant and assures me that they are identical.

Fl.—Mid-August to mid-September.

Middle District.—Orchard (S).

Pine Barrens.—Middletown, Woodmansie, Cedar Grove (S), West Creek (S), Jackson, Egg Harbor City, Quaker Bridge (C), Absecon, Seaville (S).

CASTILLEJA Mutis.

Castilleja coccinea (L.). Painted Cup.

Bartsia coccinea Linnæus, Sp. Pl. 602. 1753 [Virginia and New York].

Castilleja coccinea Britton 189.—Keller and Brown 292.

Low meadows; frequent in the northern counties, but rare and local in Mercer, Union and Somerset Counties and southward in the Middle district.

Fl.—Early May to early June, sporadically into July.

Middle District.—Monmouth Co. (Willis), White House (C), Hurffville (C), Lindenwold.

SCHWALBEA L.

Schwalbea americana L. Chaff-seed.

Schwalbea americana Linnæus, Sp. Pl. 606. 1753 [North America].—Pursh,

Fl. Am. Sept. II. 428.—Barton, Fl. Phila. II., 218. 1818.—Willis 43.—

Britton 189.—Keller and Brown 293.

Damp sandy spots in the Pine Barrens, local and not common, and very rare in the Middle district. Barton states that Zaccheus Collins found it within ten miles of Philadelphia. When in full bloom the flowers are quite handsome, pale lemon yellow and dark maroon.

Fl.—Early June to early July.

Middle District.—Near Burlington.

Pine Barrens.—Pt. Pleasant, Two miles north of Speedwell (S), Williamstown Inc. (Leeds), Waterford (P), Winslow Inc., Hammonton (Leeds), Egg Harbor City.

PEDICULARIS L.

Pedicularis lanceolata Michx. Swamp Lousewort.

Pedicularis lanceolata Michaux, Fl. Bor. Am. II. 18. 1803 [Illinois].—Willis 44.—Britton 190.—Brown and Keller 293.

Pedicularis pallida Nuttall, Gen. II. 50. 1818.—Barton, Fl. Phila. II. 46. 1818.

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Open swamps; frequent in the northern counties and locally in the Middle and Cape May districts.

Fl.—Late August to late September or into October.

Middle District.—Freehold (C), New Egypt, Bordentown (C), Medford, Lindenwold, Woodstown (KB).

Cape May.—Court House (OHB), Cold Spring.

***Pedicularis canadensis* L. Lousewort. Wood Betony.**

Pedicularis canadensis Linnæus, Mantissa 86. 1767 [North America].—Knieskern 23.—Britton 189.

Dry open woods; frequent in the northern counties and locally southward in the Middle and Cape May districts.

Fl.—Late April to late May.

Middle District.—Farmingdale, New Egypt, Birmingham, Medford (S), Mickleton, Glassboro (S), Swedesboro, Centerton (S).

Cape May.—Anglesea Jnc. (3), Cold Spring (OHB), Cape May.

MELAMPYRUM L.

***Melampyrum lineare* Lam. Narrow-leaved Cow-wheat.**

Melampyrum lineare Lamarck, Encyc. IV. 22. 1797 [Carolina].—Britton 190.
Melampyrum Americanum Knieskern 23.

Common in dry woods, probably throughout the State, but we have no records from the Cape May peninsula.

A broad leaved form (*M. latifolium* Barton?) is perhaps distinct. At Medford it blooms two weeks earlier than the narrow-leaved plant, but there do not seem to be any very constant structural differences.

Fl.—Late May—late August.

Middle District.—Farmingdale, New Egypt, Smithville, Arney's Mt. (S), Fish House, Springdale (S), Medford, Washington Park, Sicklerville, Sewell (S), Glassboro (S).

Pine Barrens.—Asbury Park, Lakehurst, Forked River, Manahawkin, Cedar Grove (S), Speedwell, White Horse (S), Braddock's Mill (S), Berlin, Williamstown Jnc. (S), Landisville, Winslow Jnc., Hammonton (Bassett), Batsto (NB), Pleasant Mills (S), Manumuskín.

Family LENTIBULARIACEÆ. Bladderworts.

UTRICULARIA L.

a. Scapes erect, rooting in the mud, bladders few or none.

b. Flowers purple, solitary.

Utricularia resupinata, p. 690

bb. Flowers yellow, 1-10.

c. Scape rather stout, strict.

- d. Flowers 16–20 mm. broad. *U. cornata*, p. 689
- dd. Flowers 8–10 mm. broad. *U. juncea*, p. 690
- cc. Scape filiform, zig-zag. *U. subulata*, p. 691
- bbb. Corolla included in the calyx or absent.
 - c. Flowers 2–6, capsule 1.5–2 mm. in diameter, plant 2–20 cm. high. *U. virgatula*, p. 690
 - cc. Flowers 1–2, about the size of a pin head, plant 2–5 cm. high. *U. cleistogama*, p. 691
- aa. Branches or finely divided leaves floating or creeping on mud and bearing numerous bladders.
 - b. Scape bearing a whorl of leaves with inflated petioles, flowers yellow. *U. inflata*, p. 693
 - bb. Scape leafless or with a few minute scales.
 - c. Leaves verticillate, flowers purple. *U. purpurea*, p. 693
 - cc. Leaves crowded, pinnately divided, flowers yellow, 10–20 mm. broad. *U. vulgaris americana*, p. 694
 - ccc. Leaves scattered, dichotomously divided.
 - d. Cleistogamous flowers among the filiform leaves. *U. clandestina*, p. 692
 - dd. No cleistogamous flowers.
 - e. Bladders mainly on leafless branches.
 - f. Leaf segments linear, flat, *U. intermedia*, p. 693
 - ff. Leaf segments capillary. *U. fibrosa*, p. 690
 - ee. Bladders scattered among the filiform leaves. *U. gibba*, p. 692

Utricularia cornuta Mich. Horned Bladderwort.

Pl. CXII., Fig. 3.

Utricularia cornuta Michaux, Fl. Bor. Am. I. 12. 1803 [Canada].—Knieskern 22.—Britton 192.—Keller and Brown 294.

Sandy swamps of the Pine Barrens; frequent.

The Utricularias are particularly characteristic of the New Jersey pine barren bogs. Shallow ponds with sandy bottoms and masses of aquatic vegetation floating in them are favorite spots for the taller naked-stemmed species like this, *U. juncea* and *U. fibrosa*, while the strictly floating forms are found in deeper water in which great masses of living and decayed vegetation extend down for many feet. The present species is usually almost or entirely devoid of leaves or bladders, but Mr. S. S. Van Pelt collected a fine specimen at Toms River with a great mass of slender, almost filiform, leaves attached to the base. Perhaps they are present more frequently but detached in collecting.

Fl.—Late June into August.

Pine Barrens.—Toms River, Hanover, New Lisbon (C), Bamber, Double Trouble, Mayetta, Speedwell, Atsion, Batsto, Eighth St.

Utricularia juncea Vahl. Rush Bladderwort.

Pl. CXII., Fig. 4.

Utricularia juncea Vahl. Enum. I. 202. 1805 [Cajenna and Porto Rico].

Common in bogs of the Pine Barrens and Cape May peninsula. Distinguished from *U. cornuta* by its smaller and more numerous flowers and the more scattered inflorescence, usually showing buds clear above the uppermost flowers and not covered by their petals, a character pointed out to me by Dr. J. H. Barnhart.

Fl.—Early August well into September.

Pine Barrens.—Forked River, Speedwell, Jackson, Ancora, Pleasant Mills, Egg Harbor, Dennisville.

Cape May.—Cold Spring, Bennett.

Utricularia virgatula Barnhart. Barnhart's Bladderwort.

Pl. CXIII., Fig. 1.

Utricularia virgatula Barnhart, Bull. Torr. Bot. Club XXXIV: 580. 1907 [Riverhead, Suffolk Co., N. Y. (L. I.)].

Apparently rare and known from but two stations within our region.

Fl.—Early August into September (apparently).

Pine Barrens.—Jackson.

Cape May.—Cold Spring.

Utricularia resupinata B. D. Greene. Reversed Bladderwort.

Utricularia resupinata B. D. Greene in Bigel. Fl. Bost. Ed. III. 10. 1840 [Tewksbury, Mass.].—Britton 191.—Keller and Brown 294.

Very rare; known only from a mill pond on the mainland opposite Sea Isle City, where it was collected by Mr. Isaac Burk in 1887. Specimens are in the State Herbarium at New Brunswick, the Philadelphia College of Pharmacy and the Philadelphia Academy, and although they are not prepared very well they show clearly the characteristics of this interesting species.

Coast.—Ocean View.

Utricularia fibrosa Walt. Fibrous Bladderwort.

Pl. CXIV., Fig. 1.

Utricularia fibrosa Walter, Fl. Car. 64. 1788 [Carolina].—Britton 192.—Keller and Brown 295.

Shallow sandy ponds in the Pine Barrens; common.

Fl.—Late May into September.

Middle District.—Elmer (C).

Pine Barrens.—Upper Squankum (Willis), Manchester (C), Lakehurst, Toms River, Whitings, Brindletown, Brown's Mills (C), Double Trouble, Dover Forge, Forked River, Barnegat (KB), Tuckerton, Speedwell (S), High Bridge (S), Bear Swamp, Clementon, Tomlinson's, Jackson, Atco, Cedar Brook, Franklinville (C), Malaga (C), Landisville, Inslip, Hammon-ton, Atsion (C), Pomona (KB), Quaker Bridge, Egg Harbor City (KB), Pancoast, Mays Landing.

***Utricularia subulata* L. Zig-zag Bladderwort.**

Pl. CXIII., Fig. 3.

Utricularia subulata Linnæus, Sp. Pl. 18. 1753 [Virginia].—Knieskern 22.—Britton 192.—Keller and Brown 294.

?*Utricularia minor* Pursh, Fl. Am. Sept. I. 15. 1814.—Barton, Fl. Phila. I. 11. 1818.

Shallow sandy ponds or wet sand; common in the Pine Barrens and Cape May peninsula, locally on the coast islands and very rare in the Middle district.

Fl.—Late May into September.

Middle District.—Woodbury.

Pine Barrens.—Island Hts., Toms River (S), Whitings, Brown's Mills (KB), Hanover (KB), Manchester (P), Bamber, Forked River, Waretown, Chatsworth, Speedwell (S), Parkdale (S), Blue Anchor, Bear Swamp, Taun-ton, Clementon, Sumner, Atco (KB), Hammonton (KB), Atsion, Quaker Bridge, Pleasant Mills, Egg Harbor City, Mays Landing, Pancoast, Absecon.

Coast Strip.—Spray Beach (L), Beach Haven (L).

Cape May.—Cape May (S).

***Utricularia cleistogama* L. Pin-like Bladderwort.**

Pl. CXIII., Fig. 4.

Utricularia subulata var. *cleistogama* A. Gray, Syn. Fl. II. Pt. 1. 317. 1878 [Pine Barrens of New Jersey].

Utricularia cleistogama Britton 192.—Keller and Brown 294.

Wet sand in the Pine Barrens and occasionally on the coast and Cape May peninsula; locally frequent.

Discovered September, 1866, in the New Jersey Pine Barrens by Mr. J. A. Paine, Jr.

This little plant is probably the smallest terrestrial species of our district, consisting of a filiform stem, often not more than an inch in height, with one or two supposedly cleistogamous

purplish flowers no larger than the head of a pin. It is the opinion of some botanists that this is merely a depauperate cleistogamous form of the last, and perhaps it may prove to be so.

Fl.—Probably similar to the last.

Pine Barrens.—Forked River, Bear Swamp (= Medford in KB), Clementon, Inskip, Atsion, Egg Harbor City, Pancoast, Woodbine, Calico.

Coast Strip.—Spray Beach (L).

Cape May.—Cape May (S).

***Utricularia clandestina* Nutt. Hidden-fruited Bladderwort.**

Pl. CXIII., Fig. 2.

Utricularia clandestina Nuttall in Gray. Man. 287. 1848 [Tewksbury, Mass., and R. I.].—Willis 41.—Britton 191.—Keller and Brown 295.

Frequent in ponds in the Pine Barrens and locally along the Delaware River Valley in the Middle district. This is a northern species, reaching its southern limit in New Jersey and Delaware.

Fl.—Early July into September.

Middle District.—Monmouth Co. (C), Tracy's (C), Delanco, Mickleton (KB), Williamstown, Washington Park (S), Woodbury.

Pine Barrens.—Island Hts. (KB), Toms River, Double Trouble, Forked River, Manahawkin, Chatsworth (C), Bear Swamp, Taunton (NB), Berlin (C), Clementon, Atco (C), Waterford (C), Ancora (KB), Vineland (C), Millville (KB), Hammonton, Atsion, Pleasant Mills, Mays Landing (C), Absecon (KB), Woodbine (S), Sea Isle Jnc.

***Utricularia gibba* L. Humped Bladderwort.**

Pl. CXIII., Fig. 5.

Utricularia gibba Linnæus, Sp. Pl. 18. 1753 [Virginia].—Pursh, Fl. Am. Sept. I. 16. 1814.—Britton 192.—Keller and Brown 295.

In bogs and ponds; frequent or occasional in the Middle and Cape May districts, occurring north of our limits at Closter and Woodside, Bergen County. Apparently very rare in the Pine Barrens.

Fl.—Early July into September.

Middle District.—Freehold (C), Delanco, Kaighns Pt., Center Square, Mickleton (KB), Pennsgrove.*

Pine Barrens.—Bay Head (NB), Hammonton.

Cape May.—Cold Spring, Cape May, Cape May Pt.

* Swedesboro (KB) = Center Square.

Utricularia intermedia Hayne. **Flat-leaved Bladderwort.**

Pl. CXII., Fig. 1.

Utricularia intermedia Hayne in Schrad. Jour. Bot. I. 18. 1800 [Upsal, Sweden].—Britton 191.—Keller and Brown 295.

Bogs near Ogdensburg, Sussex County, Budds Lake, Morris County, the Hackensack Swamps and New Durham; south along the coast to Forked River and at Camden in the Middle district.

Fl.—July 7, 1910, in full bloom at Pt. Pleasant; rarely found flowering in our range.

Middle District.—Camden.

Pine Barrens.—Pt. Pleasant, Bay Head, Toms River (KB), Forked River.*

Utricularia inflata Walt. **Swollen Bladderwort.**

Pl. CXIV., Fig. 2.

Utricularia inflata Walter, Fl. Car. 64. 1788 [Carolina].—Willis 41.—Britton 191.—Keller and Brown 294.

Utricularia ceratophylla Barton, Fl. Phila. I. 11. 1818.

Ponds in the Middle, Pine Barren and Cape May districts; frequent. Reported from north of our limits only from near Plainfield.

Some of our specimens, probably all from the Pine Barrens, are referable, apparently, to var. *radiata*,† but the characters are so unsatisfactory that it seems to be based merely upon small, less-robust specimens.

Fl.—Mid-June into September.

Middle District.—Birmingham, Center Square, Woodbury (C), Mickleton (KB), Tomlinson's, Riddleton, Palatine.

Pine Barrens.—Long Branch (C), Spring Lake (C), Forked River (KB), Taunton (KB), Berlin (C), Clementon, Lucaston (KB), Vineland (C), Hammonton (C), Egg Harbor City.

Cape May.—Bennett, Whitesboro, Cape May (KB).

Utricularia purpurea Walt. **Purple Bladderwort.**

Pl. CXII., Fig. 4.

Utricularia purpurea Walter, Fl. Car. 64. 1788 [Carolina].—Knieskern 22.—Willis 41.—Britton 192.—Keller and Brown 294.

Ponds in the Pine Barren and Cape May districts; rather frequent, and at a few stations in the Middle district.

* The Quaker Bridge (KB) record has not been substantiated and seems unlikely.

† Cf. Small, Southern Flora, p. 1090.

The purple flowers of this species are very conspicuous, rising above the surface of the water from a mass of floating filiform leaves and bladders. It is the only purple-flowered species in our range, except the very rare *V. resupinata*.

Fl.—Mid-July into September.

Middle District.—Repaupo, Swedesboro, Franklinville (P).

Pine Barrens.—Toms River, Brown's Mills (Leeds), Speedwell (S), Jackson, Malaga (NB), Landisville, Hammonton, Quaker Bridge, Mullica River, Pleasant Mills.

Cape May.—Nummeytown, Bennett.

***Utricularia vulgaris americana* Gray. Greater Bladderwort.**

Utricularia vulgaris var. *americana* Gray, Man. Ed. V. 318 [America].

Utricularia vulgaris Barton, Fl. Phila. I. 10. 1818.—Britton 191.

Frequent in ditches and streams of the northern counties and occasional in the Middle and Cape May districts.

Fl.—Early June to late August.

Middle District.—Pt. Pleasant, Bordentown, Gloucester, Kaigns Pt., Center Square, Repaupo, Swedesboro.

Cape May.—New England Creek.

Family OROBANCHACEÆ. Broom-rapes.

- a. Flowers of two kinds, scattered along slender paniced branches, lower cleistogamous and fertile, upper tubular sterile. *Leptamnium*, p. 695
- aa. Flowers all alike in a spike or solitary.
 - b. Flowers in a thick, scaly brown spike. *Conopholis*, p. 695
 - bb. Flowers yellow-brown or purplish in a loose spike at the summit of a pubescent stem. [*Orobanche minor*]*
 - bbb. Flower solitary, white tinged with violet. *Thalesia uniflora*, p. 694

THALESIA Rafinesque.

***Thalesia uniflora* L. One-flowered Broom-rape.**

Orobanche uniflora Linnæus, Sp. Pl. 633. 1753 [Virginia].

Aphyllon uniflorum Knieskern 22.—Britton 190.

Frequent in woodlands of the northern counties and occasional within our limits in the Middle district only.

Fl.—Early May to early June.

Middle District.—Farmingdale, New Egypt, Kinkora, Beverly.

* Clover Broom-rape. Parasitic on clover roots.

CONOPHOLIS Wallroth.**Conopholis americana (L. f.). Squaw Root.**

Orobanche americana Linnæus, fil. Suppl. 88. 1767 [Carolina].

Conopholis americana Willis 42.—Britton 190.—Keller and Brown 296.

Rare and local in woods of the Northern counties. Its occurrence within our limits rests wholly upon the indefinite statement in Britton's Catalogue on authority of C. F. Parker for Camden Co. The Swedesboro record in Keller and Brown's List was an error of compilation, as Mr. Lippincott's specimens were really from a Pennsylvania locality.

Middle District.—Camden Co. (C).

LEPTAMNIUM Rafinesque.**Leptamnium virginianum (L.). Beech-drops.**

Orobanche virginiana Linnæus, Sp. Pl. 633. 1753 [Virginia].

Epiphegus Virginiana Britton 191.

Leptamnium Virginianum Keller and Brown 296.

Common in Beech woods of the northern counties and occasional southward within our limits in the Middle district.

This brown, branched, fungus-like plant is always associated with Beech trees on the roots of which it is parasitic.

Fl.—Early September into October.

Middle District.—New Egypt, Pemberton (NB), Mickleton (C), Oaklyn (S), Lawnside (S), Swedesboro.

Family BIGNONIACEÆ. Trumpet Creepers, etc.

a. Flowers bright red, plant a climbing vine. *Tecoma*, p. 695

aa. Flowers white with frilled edges, leaves large, broadly ovate. A large tree. [Catalpa catalpa]*

TECOMA Jussieu.**Tecoma radicans (L.). Trumpet Creeper.**

Bignonia radicans Linnæus, Sp. Pl. 624. 1753 [America].—Barton, Fl. Phila.

II. 43. 1818.

Tecoma radicans Britton 193.—Keller and Brown 296.

Thickets in low grounds; frequent in the lower Cape May peninsula, the southern coast islands and in Cumberland and Salem Counties.

* *Catalpa* or Indian Bean escaped from cultivation.

Also possibly native along the Delaware to Camden and on the coast to Pt. Pleasant. Farther north it is certainly an escape. Barton records it from "a watery thicket three miles below Kaighns Point."

This gorgeous climber is so familiar in cultivation that one does not realize that it is wild when he first comes upon it in its native habitat. It is a familiar sight in lower Cape May, climbing over dead trees and fence posts, its clusters of big red blossoms almost constantly haunted by the Ruby-throated Humming birds seeking honey from their long tubes.

Fl.—Mid-July to mid-August, sporadically later.

Middle District.—Pt. Pleasant (KB), Delair, Cooper's Ferry, Pea Shore (P), Westville (KB), Washington Park (KB), Swedesboro (CDL), Riddleton (KB), Haleyville (NB), Salem (S).

Cape May.—Nummeytown (S), Dias Creek, Cape May, Cape May Pt.

Coast Strip.—Beesley's Pt. (S), Piermont, Anglesea (UP).

Family ACANTHACEÆ. *Acanthus*, etc.

a. Flowers large (35–50 mm.), funnel form, pale blue, axillary. Plant hairy, 3–6 dm. high, with oval leaves. *Ruellia*, p. 696

aa. Flowers small (10–12 mm.) in axillary clusters or single, purplish. Plant glabrous, 3–9 dm. high, with linear lanceolate, entire leaves. *Dianthera*, p. 697

RUELLIA L.

Ruellia ciliosa Pursh. Hairy *Ruellia*.

PL. CXV.

Ruellia ciliosa Pursh, Fl. Am. Sept. 420. 1814 [Savannah, Ga.].—Britton 193.—Keller and Brown 297.

Lower Cape May peninsula; locally common in thickets along the edge of the salt marshes.

This fine plant was first discovered in the State by Mr. Isaac Burk* east of Cape May Court House and proved later to be of regular occurrence along the Coastal strip from there to Cold Spring.

The *Ruellias* seem to be in need of careful study and revision. The New Jersey plant is quite different from the southern sessile-leaved species, called *R. ciliosa* in some herbaria. The leaves are short petioled, and calyx lobes filiform, strongly ciliate. It is

* 1816–1893. A zealous collector of the flora of southern New Jersey, and during the last years of his life engaged in mounting the collection at the Philadelphia Academy.

perhaps *R. parviflora* (Nees), but in the absence of authentic specimens of this species for comparison I have retained the name heretofore given to the New Jersey plant.

Fl.—Mid-July to early August, rarely later.

Cape May.—Court House, Cold Spring.

DIANTHERA L.

Dianthera americana L. Water Willow.

Dianthera americana Linnæus, Sp. Pl. 27. 1753 [Virginia].—Britton 193.—Keller and Brown 297.

Justicia pedunculosa Barton, Fl. Phila. I. 9. 1818.

In shallow water, locally along the Delaware River north to Bordentown, and on the Raritan. This is another of the plants that push up the Susquehanna in Pennsylvania and to a less degree up the Delaware c.f. *Lippia*, *Boltonia*, *Eupatorium coelestinum*, etc.

Fl.—Early June to late August.

Middle District.—Bordentown (NB), Redbank, Swedesboro.*

Family PHRYMACEÆ. Lopseed.

PHYRMA L.

Phryma leptostachya L. Lopseed.

Phryma leptostachya Linnæus, Sp. Pl. 601. 1753 [North America].—Knieskern 23.—Britton 194.

Woods; frequent in the northern counties; rare and local within our limits in the Middle and lower Cape May districts.

Fl.—Early July to late August. *Fr.*—Early August to late September.

Middle District.—New Egypt, Blackwood, Swedesboro, Gloucester (P).

Cape May.—Cape May.

* Mr. Jahn's record for Five-Mile Beach, given in Keller and Brown's list, was due to a confusion of names. *Lippia* was the plant he had in mind.

Order PLANTAGINALES.

Family PLANTAGINACEÆ. Plantains.

PLANTAGO L.

Fruiting Data.—The time of year noted indicates the season of fully developed (and commonly mature) capsules.

Key to the Species.

- a. Corolla of fertile flowers closed over the fruit, flowers in slender spikes.
 - b. Leaves spatulate lanceolate, very pubescent, stamens 4. *Plantago virginica*, p. 699
 - bb. Leaves linear, stamens 2. *P. elongata*, p. 700
- aa. Corolla of fertile flowers not closed over the fruit.
 - b. Leaves more or less dilated, strongly ribbed, flowers in a slender spike.
 - c. Pod splitting around the middle.
 - d. Plant nearly smooth, leaves broad, elliptic to cordate, ovate, undulate or slightly toothed. [*P. major*]¹
 - dd. Plant often quite pubescent, leaves lance ovate or narrowly elliptic. *P. halophila*, p. 698
 - cc. Pod splitting much below the middle. *P. rugelii*, p. 699
 - bb. Leaves lanceolate, flowers in a short terminal spike or head. [*P. lanceolata*]²
 - bbb. Leaves linear or setaceous.
 - c. Leaves setaceous, loosely pubescent, bracts exceeding the calyx and giving a bristly appearance to the head. [*P. aristata*]³
 - cc. Leaves linear or subterete, fleshy, flowers in a long, slender raceme. *P. decipiens*, p. 699

Plantago halophila Bicknell. Salt Marsh Plantain.

Plantago halophila Bicknell, Britt. Manual 1051 [VanCourtland Park, N. Y. City].—Keller and Brown 298.

A plantain closely related to the common weed, *P. major*, occurs along the edge of the salt marshes.

In the new Gray's Manual it is treated as a variety *intermedia* Gilibert, while Mr. Bicknell has described it as a species *P. halophila*, not having material necessary for a study of its relationship, I use the latter name, which beyond question refers to our plant.

Fr.—June into October.

¹ Common Plantain, a familiar weed.

² Ribwort, a common weed.

³ Large-bracted Plantain, introduced from the west.

Maritime.—Surf City (L), Barnegat City Inc. (L), Tucker's (L), Absecon, Somer's Pt., Palermo, Anglesea, Cape May Court House, Cape May.

***Plantago rugelii* Dcne. Rugel's Plantain.**

Plantago Rugelii Decaisne in D. C. Prodr. XIII. pt. 1. 700. 1852 [Decatur, Alabama].—Britton 203.

Reported from the Middle and Coast districts, and probably found also in the northern counties; generally confused with *P. major* and apparently largely or entirely a weed.

Fr.—June into October.

***Plantago decipiens* Barneoud. Seaside Plantain.**

Plantago decipiens Barneoud, Mon. Plant. 16. 1845 [Labrador].—Britton 203.

Plantago maritima Knieskern 21.—Willis 40.—Keller and Brown 298.

Frequent along the salt marshes of the coast, reaching here the southern limit of its distribution. Has also been found in a swamp on the Palisades between Guttenburg and Bull's Ferry.

Fr.—July into October.

Maritime.—Pt. Pleasant, Brigantine, St. Albans (L), Half-way House south of Bond's (L), Absecon, Atlantic City, Ocean City, Palermo, Wildwood, Cape May (OHB).

***Plantago virginica* L. Dwarf Plantain.**

Plantago virginica Linnæus, Sp. Pl. 113. 1753 [Virginia].—Barton, Fl. Phila. I. 89. 1818.—Knieskern 21.—Britton 204.

Common in open sandy ground throughout the Middle and Cape May districts, and occasional on the coast; seldom ranging above the fall line, except along the Delaware River. Often occurs as a weed in cultivated ground and may, no doubt, be introduced into the Pine Barrens in this way.

Fr.—May into June or July.

Middle District.—New Egypt, Crosswicks, Greenville, Kinkora, Medford (S), Woodbury, Woodbury Hts., Mickleton, Mantua, Glassboro, Bridgeton (S).

Coast Strip.—Beach Haven (L).

Cape May.—Cape May (OHB).

Plantago elongata Pursh. **Slender Plantain.**

Plantago elongata Pursh, Fl. Am. Sept. 729. 1814 [Upper Louisiana].—
Britton 204.—Keller and Brown 298.

Open sandy ground of the Middle and Cape May districts;
rare. Not reported from the State north of our limits.

Middle District.—Keyport (C), Pt. Pleasant (Williamson), Haddonfield (C).

Cape May.—Cape May (S).

Order RUBIALES.**Family RUBIACEÆ. Madder, etc.***Key to the Species.*

a. Shrub, with white flowers in dense globular heads. *Cephalanthus*, p. 702
aa. Herbs.

b. Leaves opposite.

c. Trailing, evergreen, with two white funnel-form flowers (10–12
mm. long), with united ovaries producing a red twin berry.

Mitchella, p. 703

cc. Flowers not twin.

d. Flowers axillary, funnel-form, white or lilac, plant much
branched from near the base, branches procumbent.

e. Leaves linear-lanceolate, flowers 4–6 mm. long.

Diodia teres, p. 703

ee. Leaves lanceolate or oval, flowers 12 mm. long.

D. virginiana, p. 703

dd. Flowers terminal and axillary, sessile in clusters, very small,
2 mm. broad, white, plant usually very low and tufted.

Oldenlandia, p. 702

ddd. Flowers terminal, larger, 8–12 mm. broad, leaves lanceolate,
basal spatulate.

e. Flowers blue, with a yellow center, salverform, a dense
rosette of basal leaves.

Houstonia coerulea, p. 701

ee. Flowers lilac, funnel-form.

H. longifolia, p. 701

bb. Leaves verticillate, stems square.

c. Corolla, funnel-form pink, flowers in involucrate heads.

[*Sherardia avensis*]*

cc. Corolla rotate.

d. Annual; fruit and plant bristly hispid, reclining on bushes, etc.,
leaves 6 and 8 in a whorl.

G. apparine, p. 704

dd. Perennials.

e. Fruit bristly hispid.

* Blue Field Madder, a weed in cultivated ground.

- f. Leaves 4 in a whorl, 1 nerved.
 g. Hirsute pubescent. *Galium pilosum*, p. 704
 gg. Glabrous or nearly so. *G. pilosum puncticulosum*, p. 705
- ff. Leaves 4 in a whorl, 3 nerved.
 g. Upper leaves lanceolate acuminate. *G. lanceolatum*, p. 705
 gg. Upper leaves ovate, oval or obovate, obtuse. *G. circaezans*, p. 705
- fff. Leaves 6 in a whorl. *G. triflorum*, p. 705
- ee. Fruit smooth and glabrous.
 f. Fruit dry.
 g. Leaves obtuse.
 h. Corolla 2-2.5 mm. broad, white, leaves, mostly in 4's. *G. tinctorium*, p. 706
 hh. Corolla 1.5 mm. broad or less, greenish white, leaves 4 or 6 in a whorl. *G. claytoni*, p. 706
 gg. Leaves acute or cuspidate.
 h. Stem nearly or quite smooth.
 i. Leaves all in 6's. *G. concinnum*, p. 706
 ii. Leaves in 8's, or in 6's on the branches. [*G. erectum*]*
 hh. Stem retrorse hispid, leaves 6 in a whorl or 4-5 on the branches. *G. asprellum*, p. 707
 ff. Fruit fleshy, resembling a double berry, plant glabrous or hirsute, leaves in 4's. *G. hispidulum*, p. 707

HOUSTONIA L.

Houstonia cærulea L. Bluets. Quaker-Lady.†

Houstonia cærulea Linnæus, Sp. Pl. 105. 1753 [Virginia].—Barton Fl. Phila. I. 84. 1818.—Willis 29.—Britton 125.
Oldenlandia cærulea Knieskern 17.

Frequent in open, damp sandy ground, meadows, etc., in the northern counties, but rare and local within our limits and confined to the upper edge of the Middle district or close to the Delaware.

Fl.—Late April to late May.

Middle District.—Shark River (C), Allentown (C), New Egypt, Vincentown (C), Kinkora, Camden Co. (C), Stoe Creek Twp. (C).

* Wild Madder, occasional on roadsides.

† *Houstonia longifolia* Gaertner (Fruct. I. 226, pl. f. 8. 1788, no location), was collected at Manchester, Ocean County, by J. W. Chickering, Jr., in 1877, according to Britton (125); not known from elsewhere in the State and perhaps merely a casual introduction. I have seen no specimens.

OLDENLANDIA L.

Oldenlandia uniflora L. Clustered Bluets.

Oldenlandia uniflora Linnæus, Sp. Pl. 119. 1753 [Virginia].—Britton 125.—Keller and Brown 299.

Oldenlandia glomerata Pursh, Fl. Amer. Sept. I. 102. 1814.—Willis 29.

Frequent along the edge of the Coast strip, where it joins the salt marshes, and along the edge of brackish or fresh marshes near the Delaware River north to Burlington. Also reported from Manchester (Britton's Catalogue). North of our limits it is reported from only one station in the State—Closter, Bergen County.

Fl.—Late July to early September.

Middle District.—Near Burlington, Camden, Kaighns Pt., Westville (KB), Mickleton, Swedesboro, Riddleton, Elsinboro (C), Sea Breeze (C), Dividing Creek.

Pine Barrens.—Manchester (C).

Coast Strip.—Belmar, Como (T), Spring Lake (C), Brielle (C), Forked River, Barnegat City (L), Surf City (L), Sherburn's (L), N. Beach Haven (L), Spray Beach (L), Atlantic City (KB), Ocean City (KB), Palermo, Wildwood (UP), Cold Spring (S), Cape May, Cape May Pt. (S).

CEPHALANTHUS L.

Cephalanthus occidentalis L. Button-bush.

Pl. XCVI., Fig. 1.

Cephalanthus occidentalis Linnæus, Sp. Pl. 95. 1753 [America].—Barton, Fl. Phila. I. 80. 1818.—Knieskern 17.—Britton 124.

Swamps and edges of streams; frequent throughout the State, but less plentiful in the Pine Barrens, which it usually enters along the larger streams.

A conspicuous bush in mid-summer, with its spherical masses of small, white flowers, resembling white "button-balls."

Fl.—Early July to early August.

Middle District.—New Egypt, Delanco (S), Delair, Camden (P), Fish House, Lindenwold (S), Paulsboro, Haddonfield (P), Swedesboro (CDL).

Pine Barrens.—Bear Swamp (S), Landisville, Hammonton (Bassett), Atsion (S), Pleasant Mills, Pancoast (S), Weymouth.

Coast Strip.—Peahala (L), Ship Bottom (L), Five-mile Beach (UP).

Cape May.—Court House, Nummeytown (S), Cold Spring (OHB), Bennett (S).

MITCHELLA L.

Mitchella repens L. Partridge Berry, Twin Berry.

Pl. LXI., Fig. 2.

Mitchella repens Linnæus, Sp. Pl. III. 1753 [Carolina, Virginia and Maryland].—Barton, Fl. Phila. I. 85. 1818.—Knieskern 17.—Britton 125.

Frequent in woods throughout the State, except in the Pine Barrens, where it occurs rarely along the larger streams as an intrusion from the coast. The twin flowers with united ovaries, and the double red berry, are unique among our plants.

Fl.—Late May to late June. *Fr.*—Autumn, persisting over winter, often into the spring.

Middle District.—Farmingdale, New Egypt, Birmingham, Medford (S), Oaklyn (S), Sicklerville, Swedesboro, Yorktown, Dividing Creek.

Pine Barrens.—Hammonton (Bassett), Weymouth, Pleasant Mills.

Coast Strip.—Forked River, Cox's, Surf City (L), Atlantic City (S), Ocean City (S), Piermont (S), Wildwood (UP).

Cape May.—Cold Spring, Cape May Pt. (S).

DIODIA L.

Diodia teres Walt. Rough Buttonweed.

Diodia teres Walter, Fl. Car. 87. 1788 [Carolina].—Knieskern 17.—Britton 125.

Sandy open ground; frequent throughout the Middle, Coast and Cape May districts and occasional in the Pine Barrens.

To the north it extends up the Delaware to Warren County, and also to Passaic and Plainfield. Everywhere more or less of a weed.

Fl.—Mid-July to late September. *Fr.*—Mid-August to late October.

Middle District.—New Egypt, Florence Heights, Camden, Medford (S), Gloucester, Washington Park (S), Fairton (S).

Pine Barrens.—Lucaston Jnc. (S), Landisville (T), Quaker Bridge (S), Egg Harbor City.

Coast Strip.—Barnegat City (L), N. Beach Haven (L), Tucker's (L), Atlantic City (S), Ocean City (S).

Cape May.—Cold Spring (S).

Diodia virginiana L. Larger Buttonweed.

Diodia virginiana Linnæus, Sp. Pl. 104. 1753 [Virginia].—Willis 29.—Britton 125.—Keller and Brown 299.

Found only in damp open ground in the lower part of the Cape May peninsula from Cape May to Dias Creek. First discovered in the State apparently by Parker and Read in 1871.

Fl.—Early June to late August. *Fr.*—Early August to late October.

Cape May.—Cape May, Dias Creek.

GALIUM L.

Galium aparine L. Cleavers.

Pl. CXVI., Fig. 1.

Galium Aparina Linnæus, Sp. Pl. 108. 1753 [Europe].—Britton 126.

Moist woods and thickets; common in the northern counties and frequent in the Middle and Coast districts; occasional on the Cape May peninsula.

Fl.—Early May to early June. *Fr.*—Late May to late June.

Middle District.—New Egypt, Beverly, Pemberton (NB), Medford (S), Sewell (S), Mickleton, Pitman, Riddleton, Elsinboro (C).

Coast Strip.—Surf City (L), Beach Haven Terrace (L), Spray Beach (L), Barnegat City (L).

Cape May.—Cold Spring (OHB).

Galium pilosum Ait. Hairy Bedstraw.

Pl. CXVIII., Fig. 1.

Galium pilosum Aiton, Hort, Kew. I. 145. 1789 [North America].—Knieskern 17.—Britton 126.

Frequent throughout the Middle, Coast and Cape May districts, ranging up the Delaware to Warren County, and on the Kittatinny Mountain. Two records from the Pine Barrens are in cultivated districts, and the plants may have been introduced, as all the other Pine Barren specimens belong to the following, which seems to replace true *pilosum* in that district.

Fl.—Late June to late July. *Fr.*—Late August into October.

Middle District.—Farmingdale, Florence Heights, Arney's Mt. (S), Medford (S), Fairton (S).

Pine Barrens.—Hammonton (Bassett), Landisville.

Coast Strip.—Sandy Hook, Pt. Pleasant (S), Manahawkin, Surf City (L), Atlantic City, Palermo, Stone Harbor, Anglesea.

Cape May.—Two miles west Court House (S), Dennisville (S), Bennett (S), Cold Spring (OHB).

Galium pilosum puncticulosum (Michx.). **Pine Barren Bedstraw.**

Galium puncticulosum Michaux, Fl. Bor. Am. I. 80. 1803 [Lower Carolina].
Galium pilosum var. *puncticulosum* Britton 127.—Keller and Brown 127.

Frequent in dry ground in the Pine Barrens which mark the northernmost limit of its range.

Fl. and *Fr.*—Probably as in the last.

Pine Barrens.—Ancora, Hammonton, Hospitality Br. Eighth St. (T), Egg Harbor City, Mays Landing (S), Beaver Dam.

Cape May.—Cold Spring (OHB).*

Galium lanceolatum (Torr.). **Torrey's Bedstraw.**

Galium circæzans var. *lanceolatum* Torrey, Cat. Plants, N. Y. 23. 1819 [Near New York].

Galium lanceolatum Willis 28.—Britton 127.—Keller and Brown 300.

Rocky woodlands; frequently in the northern counties; very rare within our limits and confined to the upper Middle district.

Fl.—Early June to early July. *Fr.*—Early August into September.

Middle District.—Freehold (C), Florence Hts.

Galium circæzans Michx. **Wild Liquorice.**

Pl. CXVII., Fig. 1.

Galium circæzans Michaux, Fl. Bor. Am. I. 80. 1803 [Carolina].—Britton 127.

Dry woods of the Northern, Middle and Cape May districts. Frequent north, but less common southward. Not reported from the Pine Barrens or coast.

Fl.—Early June to early July. *Fr.*—Late July into September.

Middle District.—New Egypt, Pemberton (Bassett), Medford (S), Oaklyn (S), five miles south of Mickleton, Swedesboro, Riddleton.

Cape May.—Bennett (S), Cold Spring (OHB).

Galium triflorum Michx. **Fragrant Bedstraw.**

Pl. CXVII., Fig. 3.

Galium triflorum Michaux, Fl. Bor. Am. I. 80. 1803 [Canada].—Knieskern 17.—Britton 126.

Frequent in dry woods of the northern counties ranging southward in the Middle district to our limits.

* Sea Isle City (KB) has not been substantiated, and is probably the former.

Fl.—Early July to early August. *Fr.*—Probably late August into September.

Middle District.—Bordentown, Delair, Moorestown, Taunton (NB), Florence Heights, Farmingdale, Oaklyn.

***Galium tinctorium* L. Stiff Marsh Bedstraw.**

Pl. CXVIII., Fig. 2.

Galium tinctorium Linnæus, Sp. Pl. 106. 1753 [N. America].

Galium trifidum var. *latifolium* Britton 126.

Frequent in swampy spots in the Northern, Middle and Cape May districts; occasional on the Coast strip and Cape May.

Fl.—Late May to early August. *Fr.*—Early August into October.

Middle District.—New Egypt, Crosswicks, Sewell (S), Medford (S), Lindenwold (S), Washington Park, Mickleton, Swedesboro, Riddleton, Sharps-town.

Coast Strip.—Toms River.

Cape May.—Cold Spring.

***Galium claytoni* Michx. Clayton's Bedstraw.**

Galium Claytoni Michaux, Fl. Bor. Am. I. 78. 1803 [Canada and New Jersey].

Galium trifidum Knieskern 16.—Britton 126.

Frequent in swampy ground throughout the State, except in the Pine Barrens, where it has not been detected.

Fl.—Late May to early August. *Fr.*—Early August into October.

Middle District.—Farmingdale, Brown's Mills, Pemberton Inc., Birmingham, Delanco (S), Riverside, Medford (S), Kaighns Pt., Washington Park, Mantua, Glassboro, Centerton (S), Yorktown, Riddleton, Andrews.

Coast Strip.—Toms River (S), Pt. Pleasant (S), Seaside Park, Barnegat City (L), Ship Bottom (L), Peahala (L), Spray Beach (L), West Creek, Atlantic City (S), Ocean City (S), Piermont (S), Wildwood.

Cape May.—Cold Spring, Cape May.

***Galium concinnum* T. & G. Shining Bedstraw.**

Galium concinnum Torrey and Gray, Fl. N. A. II. 23. 1841 [Ann Arbor, Mich., and Blue Lick, Ky.].—Britton 126.—Keller and Brown 301.

The occurrence of this species in the State rests upon a specimen in the State herbarium at New Brunswick labeled as collected by Thomas P. James in "N. J. near Phila." The speci-

men had passed through the hands of Dr. Thomas C. Porter and Charles E. Smith, the latter of whom presented it to Dr. Britton for the State collection.

***Galium asprellum* Michx. Rough Bedstraw.**

Pl. CXVII., Fig. 2.

Galium asprellum Michaux, Fl. Bor. Am. I. 78. 1803 [N. Canada].—Britton 126.

Moist thickets; frequent in the northern counties and occasional southward in the Middle district.

Fl.—Early July to late August. *Fr.*—Probably late August into October; usually imperfect and uncommon.

Middle District.—Farmingdale (NB), New Egypt, Sharptown.

***Galium hispidulum* Michx. Coast Bedstraw.**

Pl. CXVI., Fig. 2.

Galium hispidulum Michaux, Fl. Bor. Am. I. 79. 1803 [Lower Carolina].—Keller and Brown 301.—O. H. Brown, Barton 1910.

Galium peregrinum Britton 127.

Discovered in sandy ground on the Bay shore near the steam-boat landing at Cape May Pt. September 2, 1874, by Mr. Albert Commons, and re-discovered in considerable abundance in the same neighborhood in September, 1910, by Mr. O. H. Brown. Town Bank is the most northern station for the species.

Fl.—Mid-July into August, probably. *Fr.*—Late September or October, persisting into December.

Cape May.—Cape May Pt., Town Bank.

Family CAPRIFOLIACEÆ. Honeysuckles, etc.

Key to the Species.

- a. Upright herbs, 6–10 dm. high. Leaves opposite, ovate to oval, abruptly narrowed near the base and clasping or perfoliate. Flowers purplish axillary, fruit an orange-yellow drupe. *Triosteum*, p. 711
- aa. Climbing woody vines with opposite ovate leaves and tubular, five-lobed, somewhat two-lipped flowers.
 - b. Flowers scarlet or somewhat tinged with yellow, berries scarlet. *Lonicera sempervirens*, p. 712
 - bb. Flowers white, turning to buff, berries black. [*L. japonica*]*
 - bbb. Flowers yellowish green, tinged with purple. *L. dioica*, p. 712
- aaa. Woody shrubs, flowers small, white, in compound cymes.
 - b. Leaves pinnate, berries purplish black. *Sambucus*, p. 708

* Woodbine honeysuckle, escaped from cultivation.

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bb. Leaves simple, flowers white in corymbs.

c. Leaves acutely and rather deeply three-lobed, coarsely dentate.

Viburnum acerifolium, p. 708

cc. Leaves ovate or orbicular, coarsely dentate, veins prominent.

d. Leaves glabrous or with pubescence in the axils of the veins beneath.

e. Petioles glabrous.

V. dentatum, p. 709

ee. Petioles very pubescent.

V. scabrellum, p. 709

dd. Leaves pubescent over the whole lower surface.

V. venosum, p. 710

ccc. Leaves ovate or oval, entire, crenate or finely serrate.

d. Leaves obscurely crenate or entire, cyme peduncled.

e. Peduncle shorter than the cyme, leaves smaller.

V. cassinoides, p. 710

ee. Peduncle longer than the cyme, leaves larger.

V. nudum, p. 710

dd. Leaves finely serrate, cyme nearly or quite sessile.

V. prunifolium, p. 711

bbb. Leaves simple, flowers tubular yellowish, in threes. *Diervilla*, p. 712

SAMBUCUS L.

Sambucus canadensis L. Elder.

Sambucus canadensis Linnæus, Sp. Pl. 269. 1753 [Canada].—Knieskern 16.—Britton 121.

Common in rich soil in open places throughout the Northern, Middle and Coast districts, and occasional on the Cape May peninsula. The only record from the Pine Barrens seems to be based upon an introduced plant, and it is quite likely that there are other similar occurrences. The Elder is, however, certainly not a native of the "Pines," although it may intrude along some of the larger streams, spreading up from the coast.

Fl.—Early June to early July. *Fr.*—Late July to late August, sporadically into September.

Middle District.—Farmingdale, New Egypt, Fish House, Arneys Mt. (S), Camden (T), Medford (S), Andrews, Oaklyn (S), Washington Park, Mickleton, Swedesboro, Yorktown, Centerton (S), Beaver Dam, Pancoastville.

Coast Strip.—Surf City (L), Barnegat City Inc. (L), Cox's, Manahawkin, Ocean City (S), Piermont (S), Wildwood (UP).

Cape May.—Cape May.

VIBURNUM L.

Viburnum acerifolium L. Maple-leaved Viburnum.

Viburnum acerifolium Linnæus Sp. Pl. 268. 1753 [Virginia].—Britton 122.

Common in the woods of the northern counties, less abundant southward in the Middle district and reported from one station on the coast.

Fl.—Late May to early June. *Fr.*—Late September into October.

Middle District.—New Egypt, Bordentown (C), Beverly, Birmingham, Pemberton Jnc. (S), Camden (C), Mt. Ephraim (C), Oaklyn (S), Gloucester, Clementon (NB), Swedesboro (CDL), Yorktown (S).

Coast Strip.—Absecon (C).

***Viburnum dentatum* L. Arrowwood.**

Viburnum dentatum Linnaeus, Sp. Pl. 268. 1753 [Virginia].—Knieskern 16.—Britton 122.

Common in damp thickets throughout the State, except in the Pine Barrens, where it is found only as a coastal intrusion along the larger streams.

Fl.—Late May to mid-June. *Fr.*—Early August to early September.

Middle District.—Farmingdale, New Egypt, Westmont (S), Springdale (S), Medford (S), Bear Swamp (S), Oaklyn (S), Lawnside (S), Lindenvold (S), Washington Park, Swedesboro, Yorktown, Millville, Halesville, Buckshutem, Vineland.

Coast Strip.—Pt. Pleasant, Bay Head, Ship Bottom (L), Beach Haven Crest (L), Waretown, Mays Landing, Weekstown.

Cape May.—Court House, Bennett.

***Viburnum scabrellum* (Torr. & Gray). Downy-stemmed Arrowwood.**

Viburnum dentatum var. *scabrellum* Torrey and Gray, Flora N. A. Vol. II. 16. 1841 [Carolina, ex Michx.].

Common in damp thickets throughout the State, except in the Pine Barrens.

We have two species equally common and usually closely associated—*V. dentatum*, with glabrous petioles, and the present form, which I take to be var. *scabrellum* T. and G., with densely pubescent petioles. The under side of the leaf is about the same in each, nearly glabrous, except for tufts of rusty hairs in the axils of the veins below. This species is perhaps a little more pubescent than *V. dentatum*, and one bush at Riddleton is doubtless referable to *V. venosum* Britton, although it differs from the

present species only in the increased pubescence on the under side of the leaves.

Fl.—Mid-June to early July. *Fr.*—Early September to early October.

Middle District.—Medford (S), Kaighns Pt., Collingswood (K&B), Westville, Washington Park, Lawnside (S), Mullica Hill (P), Swedesboro (KB), Fairton (S).

Coast Strip.—Sandy Hook, Long Branch, Bay Head, Manahawkin, Surf City (L), Atlantic City, Ocean City (S), Palermo (S), Holly Beach.

Cape May.—Green Creek, Dias Creek (S), Court House (S).

***Viburnum venosum* Britton. Coast Arrowwood.**

Viburnum venosum Britton, Man. 871. 1901 [Nantucket].—Keller and Brown 302.

? *Viburnum molle* Britton 122.

Found at one station in the Middle district. All other records refer to the preceding.

Middle District.—Riddleton.

***Viburnum cassinoides* L. Withe-rod.**

Viburnum cassinoides Linnæus Sp. Pl. Ed. 2. 384. 1762 [North America].—Keller and Brown 302.

Viburnum nudum var. *cassinoides* Britton 122.

Frequent in damp thickets and swamps in the Pine Barrens and locally in the Middle district, also in Sussex County, according to Britton.

Fl.—Late May to mid-June. *Fr.*—Late August into September.

Middle District.—Farmingdale, New Egypt, Sicklerville, Kirkwood (KB), Lindenwold (S), Repaupo (KB), Mickleton (KB), Tomlin, Williamstown, Sewell (S), Tomlinson's, Woodstown (KB).

Pine Barrens.—Pt. Pleasant (S), Toms River, Brown's Mills (Leeds), Bamber, Waretown, Forked River, Bear Swamp (S), Clementon, Albion, Cedar Brook, Landisville, Hammonton (KB), Batsto (KB), Mays Landing.

***Viburnum nudum* L. Larger Withe-rod.**

Viburnum nudum Linnæus, Sp. Pl. 268. 1753 [Virginia].—Barton, Fl. Phila. I. 152. 1818.—Knieskern 16.—Britton 122.

Frequent in swamps of the Pine Barrens and Cape May district and less frequently in the Middle district.

Reported in Britton's Catalogue from only four stations north of our limits, *i. e.*, Hackensack Marshes, Succasunna, Morris County, Sunfish Pond, Warren County, and Trenton.

Fl.—Mid-June to early July. *Fr.*—Early September to October.

Middle District.—Farmingdale, Kaighns Swamp, Camden (P), Pitman, Westville, Repaupo, Andrew's, Swedesboro.

Pine Barrens.—Forked River, Waretown, Barnegat, Manahawkin, Cox's, Williamstown Jnc., Hammonton, Egg Harbor City, Folsom, Mays Landing.

Cape May.—Cold Spring, Cape May (S).

***Viburnum prunifolium* L.* Black Haw.**

Viburnum prunifolium Linnæus, Sp. Pl. 268. 1753 [Virginia and Canada].—Britton 122.

Viburnum pyrifolium Barton, Fl. Phila. I. 152.

Edges of woods and thickets in the Northern and Middle districts; frequent, especially northward. Very rare on the Cape May peninsula.

Fl.—Early May to late May. *Fr.*—Early September into October, or persistent somewhat later.

Middle District.—New Egypt. Kinkora, Burlington (C), Camden (P), Medford (S), Washington Park, Mickleton (C), Swedesboro, Alloway.

Cape May.—Cold Spring (OHB).

TRIOSTEUM L.

***Triosteum perfoliatum* L. Feverwort, Horse Gentian.**

Triosteum perfoliatum Linnæus, Sp. Pl. 176. 1753 [N. America].—Knieskern 16.—Britton 123.

Frequent in rich woods in the northern counties and occasional southward in the Middle and Cape May districts. One station only in the Pine Barrens, in a grove near Hammonton, where it may likely have been introduced, as teams are frequently hitched there.

Fl.—Late May to mid-June. *Fr.*—Early September into October.

Middle District.—Red Bank, Washington Park, Sea Breeze (C).

Pine Barrens.—Hammonton.

Cape May.—Court House (S), Cold Spring.

**V. lentago* is given in Britton's Catalogue as "frequent in Camden Co." on the authority of Mr. Martindale. This statement probably refers to *V. prunifolium*, as there is no evidence of the occurrence of *V. lentago* within our limits.

Triosteum aurantiacum Bicknell. **Scarlet-fruited Horse Gentian.**

Triosteum aurantiacum Bicknell, Torrey I. 26. 1901 [Van Courtland Park, N. Y. City].

Very rare within our limits in similar situations to the preceding.

Fl.—Mid-May to early June. *Fr.*—Early August into September.

Middle District.—Red Bank.

LONICERA L.

Lonicera dioica L. **Smooth-leaved Honeysuckle.**

Lonicera dioica Linnaeus, Sp. Pl. Ed. 12. 165. 1767 [No location].—Keller and Brown 304.

Lonicera glauca Britton 124.

Frequent in damp rocky woods of the northern counties, also at three localities in Union and Essex Counties and at one station within our limits in the Middle district according to Britton.

Middle District.—Birmingham (C).

Lonicera sempervirens L. **Coral Honeysuckle.**

Lonicera sempervirens Linnaeus, Sp. Pl. 173. 1753 [Virginia and Mexico].—Keller and Brown 304.—Britton 123.

Frequent in thickets of the Cape May and lower Middle districts; less common farther north, but ranging up the Delaware to Hunterdon County and to the New Durham Swamp, Hudson County, according to Britton. Often in other localities escaped from cultivation.

Fl.—Late May to late July.

Middle District.—Burlington (C), Moorestown (NB), Locust Grove, Washington Park, Sewell (S).

Coast Strip.—Anglesea, Piermont.

Cape May.—Cold Spring, Cape May, Cape May Pt.

DIERVILLA Moench.

Diervilla diervilla (L.). **Bush Honeysuckle.**

Lonicera diervilla Linnaeus, Sp. Pl. 175 [Acadia and New York].

Diervilla Diervilla Keller and Brown 304.

Diervilla trifida Britton 123.

Mr. E. C. Jellett assures me that his record for *Diervilla diervilla* at Millville published in Keller and Brown's List is correct. He was familiar with the plant at the time, and although he pre-

served no specimen, he does not see how he could have mistaken anything else for it. He was visiting the station for *Chionanthus* and found the *Diervilla* growing with it. The plant is frequent in the northern counties, but this is our only evidence of its occurrence on the coastal plain.

Order VALERIANALES

Family VALERIANACEÆ. Valerians.

Valerianella radiata (L.). Beaked Corn Salad.

Valeriana Locusta var. *radiata* Linnæus, Sp. Pl. 34. 1753 [Maryland].

Mr. O. H. Brown assures me that this plant is native about Cape May in sandy woods, associated with *Myosotis virginica*.

It also occurs rarely in the Middle district.

Fl.—Late April to early June.

Middle District.—Washington Park.

Cape May.—Cold Spring.

Order CAMPANULALES.

Family CUCURBITACEÆ. Gourds, Melons and Cucumbers.

Key to the Species.

a. Leaves 3-7 lobed.

b. Fruit ovoid, fleshy, densely spiny.

Micrampelis, p. 713

bb. Fruits smaller, spiny, 3-10, together in a pedicelled head.

Sicyos, p. 714

MICRAMPELIS Rafinesque.

Micrampelis lobata (Mich.). Wild Balsam Apple.

Sicyos lobata Michx., Fl. Bor. Am. II. 217. 1803 [W. Penna., on the Ohio River].

Micrampelis echinata Britton III.

Occasional in the Middle district and rarely on the Cape May peninsula, usually near the Delaware. To some extent escaped from cultivation, possibly entirely so.

Fl.—Late July to late September. *Fr.*—Early September into October.

Middle District.—New Egypt, Burlington, Four miles south Swedesboro.

Cape May.—Cape May.

SICYOS L.

Sicyos angulatus L. Star Cucumber.*Sicyos angulata* Linnæus, Sp. Pl. 1013 [Canada and Mexico].—Knieskern 15.—Britton 111.

Frequent along the Delaware River and at a few other stations in the Middle district. To some extent a weed.

Fl.—Early August to late September. *Fr.*—Mid-September into October.*Middle District.*—New Egypt, Delair, Kaighns Pt., Washington Park, Swedesboro.

Family CAMPANULACEÆ. Bluebells and Lobelias.

*Key to the Species.**a.* Corolla bell-like, white or bluish, stem weak and roughened.*Campanula aparinoides*, p. 714*aa.* Corolla rotate, violet, leaves orbicular, cordate clasping.*Specularia perfoliata*, p. 715*aaa.* Corolla tubular, five-lobed and more or less two-lipped.*b.* Flowers bright scarlet.*Lobelia cardinalis*, p. 715*bb.* Flowers blue.*c.* Flowers 15–25 mm. long.*d.* Leaves glabrous or slightly pubescent, flowers 20–25 mm. long.*L. syphilitica*, p. 716*dd.* Leaves densely pubescent, flowers 15–20 mm. long.*L. puberula*, p. 716*cc.* Flowers 4–10 mm. long.*d.* Leaves ovate or oblong, dentate.*L. inflata*, p. 711*dd.* Leaves on stem, linear, linear oblong or spatulate, scattered, basal leaves broadly oblong, obovate or spatulate.*e.* Stems simple, inflorescence spike-like. *L. spicata*, p. 716*ee.* Stems paniculately branched, flowers in loose racemes.*f.* Corolla 5–7 mm. long, calyx tube hemispheric, in fruit.*L. nuttallii*, p. 717*ff.* Corolla 9–10 mm. long, calyx tube turbinate.*L. canbyi*, p. 717

CAMPANULA L.

Campanula aparinoides Pursh. Marsh Bellflower.**Campanula aparinoides* Pursh, Fl. Am. Sept. 159. 1814 [Pennsylvania to Virginia].—Knieskern 20.—Britton 157.* The record of *C. americana* from Swedesboro (KB) was an error. Mr. Lippincott states that he only reported *C. aparinoides*.

Frequent in swamps of the northern counties, becoming much less common southward in the Middle district, and rare and local in the Cape May peninsula.

Fl.—Late June to late August.

Middle District.—New Egypt, Pemberton Jnc., Hartford, Camden (P), Pitman, Swedesboro.

Cape May.—Cold Spring (S).

SPECULARIA Heist.

Specularia perfoliata (L.). Venus' Looking-glass.

Campanula perfoliata Linnæus, Sp. Pl. 169. 1753 [Virginia].

Specularia perfoliata Knieskern 20.—Britton 157.

Dry open ground throughout the State. Occurs in the Pine Barrens only as a weed in cultivated ground, and the same may be said of many other localities, so that its native habitat in the State is difficult to determine.

Conspicuous Fl.—Early June to early July.

Middle District.—New Egypt, Locust Grove (S), Medford (S), Westville, Washington Park, Swedesboro, Yorktown (S), Millville (S).

Pine Barrens.—Landisville, Mays Landing.

Coast Strip.—Spray Beach (L), Peahala (L).

LOBELIA L.

Lobelia cardinalis L. Cardinal Flower.

Pl. CXIX., Fig. 1.

Lobelia Cardinalis Linnæus, Sp. Pl. 930. 1753 [Virginia].—Knieskern 19.—Britton 156.

Wet grounds; frequent, except in the Pine Barrens, although it follows up the larger streams nearly or quite to the head of tide-water, as at Mays Landing.

This is one of the most brilliant flowers of the late summer swamps of North and West Jersey, its scarlet spike standing out in contrast to the dark green of the surrounding foliage. Along the coast it seems to reach its highest development. Sometimes it covers considerable areas of open wet swamps, where it is only two or three feet high, while elsewhere, as along the Bay shore of Cape May, it occurs in thickets and overgrown swamps, reaching a height of six or seven feet. Near Green Creek I found a plant with pale salmon pink flowers.

Fl.—Late July to mid-September.

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Middle District.—New Egypt, Smithville, Pemberton Inc. (S), Delair, Medford (S), Washington Park, Lindenwold, Center Square, Blackwood, Swedesboro, Beaver Dam.

Coast Strip.—Manahawkin, West Creek (S), Weekstown, Absecon (S), Palermo (S), Ocean View (S), Mays Landing, Wildwood.

Cape May.—Court House, Cold Spring (S), Cape May (S), Green Creek, Dias Creek.

Lobelia syphilitica L. Great Blue Lobelia.

Lobelia syphilitica Linnæus, Sp. Pl. 931. 1753 [Virginia].—Willis 36.—Britton 156.

Low open ground; frequent in the northern counties, but very rare within our limits.

Fl.—Early August to early October.

Middle District.—Keyport (C), Crosswicks Creek (C), Bordentown (C).

Lobelia puberula Michx. Downy Lobelia.

Pl. CXX.

Lobelia puberula Michaux, Fl. Bor. Am. II. 152. 1803 [Carolina].—Britton 156.—Keller and Brown 307.

Frequent in moist open sandy ground in the lower part of the Cape May peninsula, and north along the coast to Beesley's Pt., and locally to Manahawkin; also locally in Cumberland and Salem Counties and at Hartford, Burlington County, Freehold, Monmouth County, and at Lawrenceville Landing, Mercer County.

Fl.—Early August to early October.

Middle District.—Freehold (C), Hartford, Course's Landing (KB), Woodstown (KB), Mannington (C), Haleyville (KB).

Coast Strip.—Manahawkin, Atlantic City (KB), Beesley's Pt. (S), Palermo, Petersburg (KB), Seaville (S), Ocean View (S).

Cape May.—Cold Spring, Cape May, Cape May Pt., Dias Creek.

Lobelia spicata Lam. Slender Spiked Lobelia.

Lobelia spicata Lamarck, Encycl. III. 587. 1789 [Canada].—Britton 156.

Frequent in open ground in the northern counties, and much less common southward in the Middle district. Apparently rare within our limits.

Fl.—Early June to late July, and sporadically later.

Middle District.—New Egypt, Lindenwold (S), Vineland (introduced?).

***Lobelia inflata* L. Indian Tobacco.**

Lobelia inflata Linnæus, Sp. Pl. 931. 1753 [Virginia and Canada].—Knieskern 20.—Britton 156.

Frequent in open ground in the Northern and Middle districts. Largely a weed in cultivated ground and as such enters the Pine Barrens and probably the Cape May and Coast districts. Original native habitat not ascertainable.

Fl.—Mid-July to mid-September.

Middle District.—New Egypt, Florence Heights, Camden (P), Washington Park, Blackwood, Salem (S).

Pine Barrens.—Hammonton (Bassett), Landisville (T).

***Lobelia nuttallii* R. & S. Nuttall's Lobelia.**

Lobelia Nuttallii Roemer and Schultze, Syst. V. 39. 1819 [new name for *L. gracilis* Nutt.].—Knieskern 20.—Britton 156.—Keller and Brown 307.

Lobelia gracilis Nuttall, Gen. II. 77. 1818 [New Jersey to Carolina].

Common in moist sandy ground throughout the Pine Barrens, Cape May and Coast districts, and at many stations in the Middle district, occurring north of our limits at Sayreville, Middlesex County.

Named for Thomas Nuttall (1786–1859), the famous botanist and ornithologist, for many years located at Philadelphia, where he published his Genera of N. A. Plants and studied carefully the region covered by the present work.

Fl.—Early July to early September.

Middle District.—Shark River, Farmingdale (S), Pt. Pleasant, Long Branch, New Egypt, Camden, Haddonfield (S), Tomlin, Swedesboro, Williamstown, Dividing Creek.

Pine Barrens.—New Lisbon, Hanover, Cedar Grove (S), Speedwell (S), Waterford, Cedar Brook, Buena Vista (T), Winslow (S), Hammonton, Pleasant Mills, Eighth St. (T), Egg Harbor City, Tuckahoe (S).

Coast Strip.—Ship Bottom (L), Spray Beach (L), Anglesea.

Cape May.—Court House (S), Cold Spring (S).

***Lobelia canbyi* Gray. Canby's Lobelia.**

Lobelia Canbyi Gray, Man. Ed. V. 284. 1867 [Quaker Bridge, N. J.].—Willis 36.—Britton 157.—Keller and Brown 307.

Frequent in wet sandy spots in the Pine Barrens, reaching here the northern limit of its range.

A taller, somewhat more robust species than the last; usually with the flowers slightly tinted with lilac. It is restricted to the central Pine Barren region, and named for its discoverer William

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M. Canby (1831-1904), the noted botanist of Delaware, and one of the most active students of the New Jersey Pine Barren flora.*

Fl.—Late July to late September.

Pine Barrens.—Lakehurst, Bamber, Jones' Mill (S), Speedwell (S), Cedar Brook, Hammonton, Atsion, Parkdale, Quaker Bridge, Bear Swamp (S), Cedar Lake, Batsto, Opp. Crowleytown, Egg Harbor City, Belleplain, Woodbine.

Family CICHORIACEÆ. Chicory, Dandelions, etc.

Key to the Species.

- a. Flower heads drooping, with a long, cylindrical involucre.
 - b. Heads 5-7 flowered, pappus light straw color. *Nabalus attissimus*, p. 723
 - bb. Heads 8-16 flowered.
 - c. Pappus dark cinnamon-brown. *N. albus*, p. 724
 - cc. Pappus straw color or light brown.
 - d. Inflorescence paniculate.
 - e. Bracts shorter than the pappus. *N. serpentarius*, p. 724
 - ee. Bracts equal to the pappus. *N. trifoliolatus*, p. 723
 - dd. Inflorescence thyrsoid, often simple, and unilateral. *N. virgatus*, p. 724
- aa. Flower heads not drooping.
 - b. Flowers blue or white.
 - c. Flower heads 25-37 mm. broad, bright blue or white. [*Cichorium intybus*]¹
 - cc. Flower heads 4-10 mm. broad.
 - d. Pappus white, flowers bright blue.
 - e. Leaves oblong to ovate, dentate. *Lactuca villosa*, p. 721
 - ee. Leaves pinnatifid. *L. floridana*, p. 721
 - dd. Pappus brown, flowers pale blue or bluish white. *L. spicata*, p. 721
 - bb. Flowers yellow or orange.
 - c. Leaves all basal, scapes with a single head of flowers.
 - d. Heads 15-50 mm. broad, flowers yellow. [*T. taraxacum*]²
 - dd. Heads 6-12 mm. broad, orange. *Adopogon carolinianum*, p. 719
 - cc. Cauline leaves present.
 - d. Cauline leaves 1-5, a rosette of basal leaves.
 - e. Flowers orange, plant glabrous and glaucous. *Adopogon virginicum*, p. 719
 - ee. Flowers yellow.

* cf. Torrey IV. 52.

¹ Chicory. Introduced along roadsides, etc.

² Common Dandelion, an abundant weed.

- f. Leaves more or less purple veined. *Hieracium venosum*, p. 722
- ff. Leaves green. *H. marianum*, p. 722
- dd. Cauline leaves numerous, flowers yellow.
- e. Achenes flattened.
- f. Truncate, not beaked, leaves pinnatifid. [*Sonchus oleraceus*]*
- ff. Narrowed at the summit or beaked, leaves pinnatifid or entire.
- g. Plant glabrous.
- h. Leaves sessile or auriculate at base. *Lactuca canadensis*, p. 720
- hh. Leaves sagittate, clasping. *L. sagittifolia*, p. 721
- gg. Leaves hirsute, at least on the mid-rib below. *L. hirsuta*, p. 720
- ee. Achenes cylindric or prismatic.
- f. Achenes spindle-shaped or with the summit tapering at maturity. *Hieracium gronovii*, p. 723
- ff. Achenes of uniform diameter.
- g. Peduncles stout, spreading. *H. scabrum*, p. 722
- gg. Peduncles slender, ascending. *H. marianum*, p. 722

ADOPOGON Necker.

Adopogon virginicum (L.). *Cynthia*.

Tragopogon virginicum Linnæus, Sp. Pl. 189. 1753 [Virginia and Canada].

Cynthia virginica Knieskern 19.

Krigia amplexicaulis Britton 152.

Moist ground; frequent in the northern counties, becoming less frequent southward in the Middle district, and occasional in the Cape May peninsula. Very sparingly introduced in the Pine Barrens.

Fl.—Mid-May to mid-June.

Middle District.—Farmingdale, New Egypt, Brown's Mills, Pemberton (NB), Lindenwold (S).

Pine Barrens.—Egg Harbor City.

Cape May.—Cold Spring (OHB).

Adopogon carolinianum (Walt.). Dwarf Dandelion.

Hyoseris Caroliniana Walter, Fl. Car. 194. 1788 [Carolina].

Hyoseris ? *ramosissima* Barton, Fl. Phila. Prodr. 75. 1815 [Sandy fields, N. J.].

Krigia dichotoma Nuttall, Gen. II. 127. 1818 [n. n. for last].

Krigia Virginica b. *dichotoma* Barton, Fl. Phila. II. 93.

Krigia virginica Knieskern 19.—Britton 152.

* Sow Thistle, a frequent weed.

Dry sandy soil; frequent throughout our region and northward on the coastal plain, extending occasionally beyond the fall line.

Fl.—Early May to late June.

Middle District.—Farmingdale, New Egypt, Medford (S), Clementon, Gloucester, Westville, Mantua, Swedesboro.

Pine Barrens.—Toms River, E. Plains, Quaker Bridge, Landisville, Pleasant Mills.

Coast Strip.—Surf City (L), Beach Haven (L), Avalon, Piermont (S).

Cape May.—Cold Spring (OHB).

LACTUCA L.

Lactuca canadensis L. Tall Lettuce.

Lactuca canadensis Linnæus, Sp. Pl. 796. 1753 [Canada].—Britton 154.

? *Lactuca elongata* Knieskern 19.

Frequent in clearings, wood edges, etc., throughout the State, except in the Pine Barrens, where it is rare and apparently introduced.

Fl.—Late June into August.

Middle District.—Freehold (NB), Husted (S), Swedesboro, Fairton (S).

Pine Barrens.—Landisville.

Coast Strip.—Spring Lake (T), Seaside Park (S), Barnegat City (L), Surf City (L), Ship Bottom (L), Harvey Cedars (L), Anglesea, Holly Beach, Palermo (S).

Cape May.—Court House, Whitesboro (S), Cold Spring (S), Bennett.

Lactuca hirsuta Muhl. Hairy Lettuce.

Lactuca hirsuta "Muhlenberg," Nuttall Gen. II. 124. 1818 [Pennsylvania].

Britton 154.—Keller and Brown 310.

Occasional in the Coast and Middle districts, rare north of our limits.

Fl.—Mid-June into August.

Middle District.—Vincentown (NB), Camden Co. (C), Medford, Swedesboro.*

Coast Strip.—Asbury Park (KB), Spring Lake (C), Atlantic City (P), Holly Beach, Anglesea, Stone Harbor.

Pine Barrens.—Winslow Jnc., White Horse (S) (probably introduced).

Cape May.—Bennett.

* *L. villosa* Swedesboro (KB) is this.

Lactuca sagittifolia Ell. **Arrow-leaved Lettuce.**

Lactuca sagittifolia Elliot, Bot. S. C. and Ga. II. 253. 1821-4 [Columbia, S. C.].—Keller and Brown 310.

Occasional in the Coast and Middle districts, rare north of our limits.

Fl.—Late June to early September.

Middle District.—Swedesboro (KB).

Coast Strip.—Sandy Hook (NB), Asbury Park (KB), Seaside Park, Piermont (S), Wildwood.

Lactuca villosa Jacq. **Hairy-veined Blue Lettuce.**

Lactuca villosa Jacquin, Hort. Schoen. III. 62, pl. 367. 1798 [Loc. unknown].—Britton 154.—Keller and Brown 310.

At several stations in the northern counties, but rare within our limits and confined to the Middle district.

Fl.—Early August to early September.

Middle District.—Medford (S).*

Lactuca floridana (L.). **Florida Blue Lettuce.**

Sonchus floridanus Linnæus, Sp. Pl. 794. 1753 [Virginia and Canada].—Britton 154.—Keller and Brown 310.

Frequent along the Delaware as far south as Bordentown, and at the base of the Palisades.

Fl.—Early August to early September.

Middle District.—Bordentown (C), Swedesboro.

Lactuca spicata (Lam.). **Tall Blue Lettuce.**

Sonchus spicatus Lamarec, Encycl. III. 401. 1789 [S. Carolina].—Keller and Brown 311.

Lactuca leucophaea Britton 154.

Frequent in the northern counties and occasional in the Middle and Cape May districts in rich soil.

Fl.—Early August into September.

Middle District.—Fish House (S), Springdale (S), Swedesboro, Salem (S).

Cape May.—W. Cape May.

* The Swedesboro record (KB) was an error of compilation. The specimen was from a Pennsylvania locality.

HIERACIUM L.

Hieracium venosum L. Rattlesnake Weed, Vein-leaved Hawkweed.

Hieracium venosum Linnæus Sp. Pl. 800. 1753 [Virginia].—Knieskern 19.—Britton 153.

Dry woodland, common throughout the State.

Fl.—Late May to early July, sporadically into September.

Middle District.—Farmingdale, New Egypt, Beverly, Medford (S), Washington Park, Glassboro, Sewell (S).

Pine Barrens.—Toms River, Bamber, Manahawkin, Tuckerton, East Plains (S), Winslow Jnc., Cedar Brook, Tabernacle, Landisville, Folsom, Mays Landing (S).

Cape May.—Court House (S), Dennisville (S), Cold Spring (OHB).

Hieracium marianum Willd. Maryland Hawkweed.

Hieracium Marianum Willdenow, Sp. Pl. III. 1572. 1804 [North America].—Keller and Brown 312.

These specimens are very unsatisfactorily identified. While the extreme examples fit the description of *H. marianum*, others seem to be merely *H. venosum* with one or two stem leaves. The veining does not seem to be an important character, as many specimens of *venosum* from the Pine Barrens have uniform green leaves and they also show great variation as to the amount of pubescence.

From the material in hand I cannot see any clear cut line of separation between the two, and possibly we do not have true *H. marianum* at all.

Middle District.—Grenloch.

Coast Strip.—Sea Bright, Atlantic City, Piermont, Five-Mile Beach.

Hieracium scabrum Michx. Rough Hawkweed.

Hieracium scabrum Michaux, Fl. Bor. Am. II. 86. 1803 [N. Canada and Mts. of Carolina].—Britton 152.

Dry open woods; frequent in the Northern and Middle districts and occasional on the Coast Strip.

The typical plant has large heads and a wide branching inflorescence, as opposed to the small heads and more strict inflorescence of *H. gronovii*.

We have also specimens with inflorescence of *gronovii*, but with broadly oval leaves all the way up the stem like *scabrum*,

and one from New Egypt which resembles *gronovii* in all respects except that the achenes are uniform in diameter and not narrowed above as in that species.

Fl.—Early August into September.

Middle District.—New Egypt, Hartford, Medford (S), Haddonfield, Oaklyn (S), Blackwood, Swedesboro, Millville, Beaver Dam.

***Hieracium gronovii* L. Hairy Hawkweed.**

Hieracium Gronovii Linnæus, Sp. Pl. 802. 1753 [Virginia and Pennsylvania].

—Willis 35.—Britton 153.

Dry open woods; frequent throughout our limits and occasional in the northern counties.

Fl.—Early July into September.

Middle District.—Hartford, Florence, Medford (S), Lindenwold, Swedesboro.

Pine Barrens.—Toms River (NB), West Creek, Sumner (S), Landisville, Weymouth (T), Hammonton, Egg Harbor City, Mays Landing (S), Tuckahoe (S).

Coast Strip.—Forked River, Seaside Park, N. Beach Haven (L), Surf City (L), Absecon, Atlantic City, Somer's Pt., Ocean City (S), Wildwood.

Cape May.—Dennisville (S), Court House (S), Cold Spring (OHB).

NABALUS Cassini.

***Nabalus altissimus* (L.). Tall Rattlesnake-Root.**

Prenanthes altissima Linnæus, Sp. Pl. 797. 1753 [Virginia and Canada].—Britton 155.

Rich woods of the northern counties and reported from one station in the Middle district within our limits.

Fl.—Late August to early October.

Middle District.—Vincentown (C).

***Nabalus trifoliolatus* Cass. Rattlesnake-Root.**

Nabalus trifoliolatus Cassini, Dict. Sci. Nat. 34, 95. 1825 [Cultivated plant].

Prenanthes Serpentaria Britton 155 (in part).

Dry woodland; common throughout the State, except in the Pine Barrens.

Fl.—Late August to early October.

Middle District.—Keyport (NB), New Egypt, Fish House (S), Medford (S), Orchard (S), Lindenwold, Blackwood, Westville, Beaver Dam.

Coast Strip.—Forked River, Manahawkin, Absecon, Atlantic City (S), Wildwood.

Cape May.—Seaville (S), Bennett (S), Court House (S), Cape May.*

Nabalus serpentarius (Pursh.). Pursh's Rattlesnake-Root.

Prenanthes Serpentaria Pursh, Fl. Am. Sept. 499. 1814 [Mts. of Virginia and Carolina].—Britton 155 (in part).

Frequent in the Pine Barrens and occasional on the coast.

Fl.—Late August to early October.

Pine Barrens.—Whitings (S), Pasadena, Atsion (S), Malaga (S), Landisville, Pleasant Mills, Egg Harbor City.

Coast Strip.—Piermont (S).

Nabalus virgatus (Michx.). Pine Barren Rattlesnake-Root.

Prenanthes virgata Michaux, Fl. Bor. Am. II. 83. 1803 [Virginia and Carolina].—Pursh, Fl. Am. Sept. II. 498. 1814.

Prenanthes autumnalis Britton 155.

Nabalus virgatus Keller and Brown 312.

Open sandy ground in the Pine Barrens.

This slender-spiked Rattlesnake-root is a plant of the central Pine Barrens, associated with *Solidago stricta* and *Lacinaria graminifolia pilosa* plants with a similar form of inflorescence.

Fl.—Early September to early October.

Pine Barrens.—Manchester (C), Brindletown, Bamber, Cox's, Brown's Mills (KB), Jones' Mill (S), Cedar Grove (S), Chatsworth, Woodmansie (KB), Atsion (Leeds), Jackson (P), Cedar Brook, Winslow Jnc., Hammon-ton (S), Quaker Bridge (C), Pleasant Mills, Batsto, Egg Harbor City, Mays Landing (C), Woodbine (KB), Elwood (P).

Nabalus albus (L.). White Rattlesnake-Root.

Prenanthes alba Linnæus, Sp. Pl. 798. 1753 [Carolina, Virginia and Pennsylvania].—Britton 155.

Common in the northern counties; rare within our limits and confined to the Middle district.

Fl.—Late August to early October.

Middle District.—Burlington, Mannington (C).

Family AMBROSIACEÆ.

Key to the Species.

- a. Staminate and pistillate flowers in the same heads. *Iva*, p. 725
- aa. Staminate and pistillate flowers in separate heads.
 - b. Pistillate involucre a conspicuous ovoid, spiny bur, leaves rough, irregularly dentate or somewhat lobed.

* Lippincott's Cape May record for *N. virgatus* (KB) proves to be this.

c. Body of mature bur more than twice as long as thick.

d. Beaks of bur straight or nearly so, prickles relatively few.

Xanthium canadense, p. 726

dd. Beaks of bur incurved or hooked, prickles very numerous.

X. commune, p. 726

cc. Body of mature bur thick-ovoid, not more than twice as long as thick.

X. echinatum, p. 726

bb. Pistillate involucre not conspicuous or prominently spiny.

c. Leaves palmately 3-5 lobed, or undivided, plant 10-50 dm. high.

Ambrosia trifida, p. 725

cc. Leaves finely pinnatifid, plant 3-18 dm. high.

Ambrosia artemisiifolia, p. 725

IVA L.

Iva oraria Bartlett. Marsh Elder.

Iva oraria Bartlett, Rhodora 1906, 26. [Charles River, Boston].

Iva frutescens Britton 142.—Keller and Brown 313.

Common on the salt marshes of the coast, usually bordering the ditches.

This plant, resembling a big coarse Ragweed, borders the edges of the tidal creeks and thoroughfares which intersect the salt marshes in all directions. It is constantly associated with *Baccharis* and *Spartina stricta*.

Fl.—Early August to late September.

Maritime.—Sandy Hook (NB), Long Branch, Forked River, Seaside Park, Barnegat Pier, Surf City (L), Cedar Bonnet (L), Atlantic City, Absecon, Ocean City (S), Piermont, Wildwood, Cape May, Dennisville (S).

AMBROSIA L.

Ambrosia trifida L. Great Ragweed.

Ambrosia trifida Linnæus, Sp. Pl. 987. 1753 [Virginia and Canada].—Knieskern 18.—Britton 143.

Ambrosia trifida integrifolia Britton 143.

Low moist, shady ground; frequent in the Northern and less so in the Middle district, along streams.

Fl.—Late July to early September.

Middle District.—New Egypt, Kaighns Pt., Springdale (S), Woodstown (C), Salem (S).

Ambrosia artemisiifolia L. Ragweed.

Ambrosia artemisiifolia Linnæus, Sp. Pl. 987. 1753 [Virginia and Pennsylvania].—Knieskern 18.—Britton 143.

Common throughout the State as a weed in cultivated ground. It is obviously not native in the Pine Barrens, but its original distribution in the other districts cannot be ascertained.

Fl.—Early August to mid-September.

XANTHIUM L.

***Xanthium canadense* Mill. Cocklebur.**

Xanthium Canadense Miller, Gard. Dict. Ed. VIII. 1768 [Penna. and Maryland].

Occasional in open moist ground of the Middle district.

Fr.—Mid-September into October.

Middle District.—Mt. Holly.

***Xanthium commune* Britton. Clotbur.**

Xanthium commune Britton, Man. 912. 1901 [Westport, N. Y.].

Frequent in open moist ground of the Middle district.

Fr.—Mid-September into October.

Middle District.—New Egypt, Camden.

***Xanthium echinatum* Murr. Beach Clotbur.**

Xanthium echinatum Murray, Comm. Goett. VI. 32, pl. 4. 1785 [New York].
Keller and Brown 314.

Xanthium strumarium var. *echinatum* Knieskern.—Willis 33.

Xanthium canadense var. *echinatum* Britton 143.

Sand dunes of the sea coast and lower Delaware Bay, common.

Fr.—Mid-September into October.

Maritime.—Forked River, Spray Beach (L), Cedar Bonnet (L), Ocean City, Stone Harbor, Five-Mile Beach, Cape May, Cape May Pt. (S).

Family COMPOSITÆ.

Key to the Species.

- a. Flowers all tubular, no flat ray flowers present.
- b. Flowers white, greenish or yellow.
 - c. Shrub with copious white silky pappus in fruit. *Baccharis*, p. 764
 - cc. Herbs.
 - d. Flowers white.
 - e. Woolly, flowers in small, dense heads, with abundant white pappus.
 - f. Dioecious.
 - g. Stem 3-9 dm. high, stem leafy. *Anaphalis*, p. 767

- gg. Stem 2-4.5 dm. high, leaves mainly basal.
 h. Basal leaves small and narrow, 7-20 mm. long, one nerved.
 i. Spatulate, stolons assurgent, rather leafy throughout, but terminal leaves longest.
Antennaria neodioica, p. 766
 ii. Oblanceolate, stolons procumbent, bractiate, but with leaves only at the tip.
A. neglecta, p. 766
 hh. Basal leaves large and broad, 20-120 mm. long, three or five nerved.
 i. Basal leaves and those at the ends of the stolons bright green and glabrous above.
A. parlinii, p. 767
 ii. Basal leaves and those at the ends of the stolons dull above, with tomentous or arachnoid pubescence.
 j. Heads averaging 7 mm. high.
A. plantaginifolia, p. 766
 jj. Heads averaging 9 mm. high.
A. fallax, p. 766
 ff. Not diœcious, stem upright leafy.
 g. 30-90 cm. high. *Gnaphalium obtusifolium*, p. 767
 gg. 5-20 cm. high. *G. uliginosum*, p. 768
 ee. Plants not wooly.
 f. Flower heads 12-20 mm. high.
 g. Leaves lanceolate or ovate-lanceolate, tapering to the base. *Erechtites*, p. 776
 gg. Leaves reniform, or somewhat triangular, often truncate at the base.
 h. Leaves glaucous. *Mesadenia atriplicifolia*, p. 776
 hh. Leaves not glaucous. *M. reniformis*, p. 776
 ff. Flower heads 4-8 mm. high.
 g. Achenes ribbed. *Kuhnia*, p. 739
 gg. Achenes five-angled. *Eupatorium*, p. 732
 dd. Flowers greenish or yellow.
 e. Foliage bristly, heads large. *Carduus spinosissimus*, p. 779
 ee. Foliage not bristly.
 f. Heads green, 2-3 mm. broad in wand-like racemes, leaves finely dissected. *Artemisia*, p. 775
 ff. Heads yellow or greenish, 6-10 mm. broad.
 g. Leaves pinnatifid, achenes without barbed awns.
 [Tanacetum vulgare]¹
 gg. Leaves lanceolate or 3-5 parted, achenes with 2-5 barbed awns. *Bidens*, p. 772
 bb. Flowers blue, pink or purple.
 c. A climbing vine with clusters of purplish, inflorescence and triangular leaves, nearly glabrous. *Willughbæya*, p. 739
 cc. Erect herbs.

¹ Tansy, escaped from gardens.

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- d. Involucral bracts with hooked bristles, a large course branching plant with purplish flower heads. [*Arctium minus*]¹
- dd. No hooked bristles to the involucral bracts.
 - e. Foliage very bristly. *Carduus*, p. 778
 - ee. Foliage not bristly.
 - f. Leaves verticillate, flowers pink.
 - g. Leaves linear, plant 3-6 dm. high, flower head single, 10 mm. wide. *Sclerolepis*, p. 731
 - gg. Leaves ovate lanceolate, plant .5-3 m. high, flower heads very numerous in a terminal cymous panicle. *Eupatorium*, p. 732
 - ff. Leaves not verticillate.
 - g. Flower heads red-purple in a terminal cymose, panicle. Plant 9-27 dm. high, not aromatic. *Vernonia*, p. 730
 - gg. Flower heads pink, broad in a terminal corymbose cyme. Plant 4-9 dm. high, aromatic.
 - h. Leaves sessile cordate or clasping at base. *Pluchea foetida*, p. 765
 - hh. Leaves petioled. *P. camphorata*, p. 765
 - ggg. Flower heads red-purple in a long, usually dense, terminal spike or spike-like raceme, leaves linear or linear lanceolate. Plant 3-20 dm. high.
 - h. Bracts of the cylindrical involucre oblong or oval obtuse, achenes pubescent or smoothish. *Lacinaria spicata*, p. 740
 - hh. Bracts of the obovoid involucre oblong, obtuse or pointed, achenes hairy. *L. graminifolia pilosa*, p. 740
 - gggg. Flower heads blue. *Eupatorium*, p. 732
 - ggggg. Flower heads purplish, leaves whitish wooly. *Gnaphalium purpureum*, p. 768
- aa. Ray flowers present around the central disc.
 - b. Rays yellow.
 - c. Notched at the end. *Helenium*, p. 774
 - cc. Rays not notched.
 - d. No pappus.
 - e. Achenes with barbed awns. *Bidens*, p. 772
 - ee. Achenes without awns.
 - f. Plant rough.
 - g. Leaves 3-7 pointed or lobed. *Rubeckia laciniata*, p. 769
 - gg. Leaves not lobed.
 - h. Disc greenish or yellowish. *Helianthus*, p. 769
 - hh. Disc brown.
 - i. Flower less than 100 mm. broad.
 - j. Leaves linear sessile. *Helianthus angustifolius*, p. 769
 - jj. Leaves lanceolate. [*Rubeckia hirta*]²

¹ Burdock, a weed in waste ground.

² Black-eyed Susan, a common weed in fields.

- ff. Plant glabrous. *Heliopsis*, p. 768
- dd. Pappus present, heads entirely yellow.
- e. Involucral bracts in one row, heads 15-20 mm. broad, in a terminal corymb, basal leaves numerous.
- f. Leaves and stem woolly. *Senecio tomentosus*, p. 777
- ff. Leaves glabrous or nearly so.
- g. Basal leaves cordate; orbicular or ovate. *S. aureus*, p. 777
- gg. Basal leaves not cordate.
- h. Leaves ovate, flowers large. *S. crawfordi*, p. 777
- ze. Involucral bracts in several rows.
- f. Plant low, woolly or with silky hairs.
- g. Leaves elongate linear, plant woolly. *Chrysopsis falcata*, p. 741
- gg. Leaves oblong or lanceolate, pubescent, with silky hairs, becoming glabrate. *C. mariana*, p. 741
- ff. Plants usually tall, pubescent or glabrous, but not woolly or silky hairy.
- g. Rays more numerous than the disc flowers, leaves linear or linear lanceolate.
- h. Leaves 3-5 nerved.
- i. Branches of the inflorescence and leaves except the veins beneath glabrous. *Euthamia graminifolia*, p. 751
- ii. Branches of inflorescence and leaves pubescent. *E. g. nuttallii*, p. 752
- hh. Leaves 1 nerved. *E. tenuifolia*, p. 752
- gg. Rays not more numerous than the disc flowers. *Solidago*, p. 742
- bb. Rays white.
- c. With pappus.
- d. Pappus very short and scaly. [*Galinsoga parviflora*]¹
- dd. Pappus well developed and feathery.
- e. Bracts in 2-many rows.
- f. Involucre oblong or narrowly campanulate, rays white.
- g. Inflorescence a terminal spike like thyrus. *Solidago bicolor*, p. 744
- gg. Inflorescence a cymose panicle.
- h. Leaves linear or spatulate entire. *Sericocarpus linifolius*, p. 753
- hh. Leaves oblong or obovate dentate. *S. asteroides*, p. 753
- ff. Involucre turbinate, bracts thin, rays purple, pink or white. *Aster*, p. 754
- ee. Bracts in 1 or 2 series, very narrow.
- f. Flower heads 12-25 mm. broad.
- g. Leaves lanceolate to ovate, heads numerous.

¹ Galinsoga, a weed in waste ground, etc.

- h. Leaves lanceolate acuminate.
Doellingeria umbellata, p. 763
- hh. Leaves ovate acute. *D. u. humilis*, p. 763
- gg. Leaves at least the lower obovate, heads few.
D. infirma, p. 764
- ff. Flower heads 4 mm. broad. *Leptilon canadense*, p. 763
- cc. No. pappus.
- d. Receptacle chaffy.
- e. Leaves opposite, lanceolate or oblong. [*Eclipta alba*]¹
- ee. Leaves alternate, finely pinnately divided.
- f. Heads less than 10 mm. broad.
 [*Achillaea millifolium*]²
- ff. Heads more than 10 mm. broad. [*Anthemis cotula*]³
- dd. Receptacle naked.
- e. Head 40–60 mm. broad, leaves spatulate or oblong, dentate.
 [*Chrysanthemum leucanthemum*]⁴
- ee. Head smaller, leaves lanceolate entire. *Boltonia*, p. 753
- bbb. Rays pink or blue.
- c. Pappus present.
- d. Leaves narrowly linear, very stiff. *Ionactis*, p. 764
- dd. Leaves not stiff.
- e. Bracts of the involuere in 1 or 2 series.
- f. Heads over 25 mm. broad. *Erigeron pulchellus*, p. 762
- ff. Heads less than 25 mm. broad.
- g. Stem leaves nearly all serrate. *E. annuus*, p. 762
- gg. Stem leaves narrower, nearly all entire.
E. ramosus, p. 762
- ee. Bracts in 2—many series. *Aster*, p. 754
- cc. No pappus, plants glabrous.
- d. Receptacle chaffy, leaves linear, entire. *Coreopsis*, p. 771
- dd. Receptacle naked, leaves lanceolate, entire. *Boltonia*, p. 753

VERNONIA Schreber.

Vernonia noveboracensis L. Iron-weed.

Serratula noveboracensis Linnæus, Sp. Pl. 818. 1753 [New York, etc.].

Vernonia noveboracensis Knieskern 17.—Willis 29.—Britton 128.

In open swamps and meadows, common, except in the Pine Barrens, where it is found only on the intruding strips of coast flora which follow up the tidewater streams.

The purple blossoms of the Iron-weed always recall the meadow pastures of Pennsylvania, where clumps of this plant, as

¹ *Eclipta*. Apparently entirely a weed in New Jersey.

² Yarrow.

³ May Weed.

⁴ Ox-eye Daisy. Common weeds of fields, etc.

well as the White and Purple Verbena, Thistle and *Asclepias incarnata* (or *pulchra*), stand out here and there on the close cropped grass, untouched by the cattle which have long since devoured the more succulent and delicate plants. In the wetter spots, where tussocks of *Carex stricta* replace the sod, they are associated with Boneset, Joe Pye Weed, Sunflowers, Asters, Goldenrods, Cardinals and Snakehead, and contribute their share to the riot of color which floods such spots in early autumn.

Precisely similar associations are found in pasture lands of portions of the Middle district of South Jersey and in the coastal swamps, but are entirely absent from the Pine Barrens.

Fl.—Late July to mid-September.

Middle District.—New Egypt, Fish House (S), Camden (P), Oaklyn (S). Lawnside (S), Lindenwold (S), Washington Park, Swedesboro, Pennsgrove, Salem (S), Beaver Dam, Dividing Creek.

Coast Strip.—Forked River, Manahawkin, Opp. Crowleystown (S), Pleasant Mills, Absecon (S), Beesley's Pt. (S), Palermo (S), Mays Landing (S), Cape May Court House, Seaville (S), Cape May (S), Dias Creek, Green Creek (S), South Dennis (S).

SCLEROLEPIS Cassini.

Sclerolepis uniflora (Walt.). *Sclerolepis*.

Ethulia uniflora Walter, Fl. Car. 195. 1788 [Carolina].

Sclerolepis verticillata Willis 29.

Sclerolepis uniflora Britton 128.—Keller and Brown 317.

Sparganophorus verticillatus Pursh, Fl. Am. Sept. II. 518. 1814.

In wet bogs, usually in the water; locally in the Pine Barrens and Cape May peninsula.

This is one of the most interesting composites of the Pines, but so little known that it has apparently never been honored with a popular name. It is a plant of remote wet bogs, the round pink heads reminding one at a distance of English Daisies, while the remainder of the plant would seem to belong to some submerged aquatic.

I well remember my first acquaintance with *Sclerolepis*. It was one of those sultry August days, and we were following the railroad from Woodbine to Belleplain, gaining access in this way to the interior of swamps that would otherwise have been unattainable. The cleared strip on either side of the road-bed was about the limit of our wanderings as the thickets covering

the swamps were with difficulty penetrated. There was an abundance, however, to occupy our attention, for all the choice species seemed to have established themselves in the open. We waded through thick, knee-high vegetation, now splashing through water, now sinking deep into oozing muck. There were beds of white-fringed Orchids and the smaller orange species (*cristata*), Orange and Pink Polygalas, Rhexias from pale pink to deepest magenta, and hosts of sedges, grasses and rushes of perhaps more interest than their more brilliant associates. And in the shallow pools among the shorter sedges grew the *Sclerolepis*, rank upon rank of pink button-like heads, standing clear of the water and supported upon stems whorled with slender leaves, recalling the sterile stem of some *Equisetum*.

Fl.—Mid-July to early September.

Pine Barrens.—Quaker Bridge, Batsto, Hammonton, Egg Harbor City, Woodbine.

Cape May.—Bennett, Cold Spring, Green Creek.

EUPATORIUM L.

Key to the Species.

- a. Flowers blue. *E. coelestinum*, p. 738
- aa. Flowers pink.
 - b. Leaves nearly smooth, inflorescence pyramidal. *E. purpureum*, p. 738
 - bb. Leaves very rugose, inflorescence depressed, flowers usually deeper pink. *E. maculatum*, p. 733
- aaa. Flowers white, leaves usually opposite.
 - b. Bracts of the involucre in 1 or 2 series, all of equal length or nearly so.
 - c. Leaves 50–120 mm. long, sharply dentate. *E. ageratoides*, p. 738
 - cc. Leaves 20–50 mm. long, blunt toothed. *E. aromaticum*, p. 738
 - bb. Bracts imbricated in two or more series, the outer ones shorter.
 - c. Leaves clasping or connate-perfoliate at the base.
 - d. Leaves perfoliate, bracts acute. *E. perfoliatum*, p. 737
 - dd. Leaves clasping, bracts obtuse. *E. resinosum*, p. 737
 - cc. Leaves not clasping nor perfoliate.
 - d. Leaves narrowed at the base.
 - e. Bracts of the involucre acute.
 - f. Leaves linear-lanceolate, sparingly toothed, 4–12 mm. wide. *E. leucolepis*, p. 734
 - ff. Leaves oblong or lanceolate, prominently toothed, 10–40 mm. wide, bracts white, cuspidate.
 - g. Leaves not markedly 3-nerved, teeth coarse. *E. album*, p. 734
 - gg. Leaves 3-nerved, teeth smaller and more regular. *E. album subvenosum*, p. 735

- ee. Bracts of the involucre obtuse. Leaves linear, crowded usually entire, obtuse. *E. hyssopifolium*, p. 735
- dd. Leaves rounded, obtuse or truncate at the base.
- e. Plant glabrous, leaves lanceolate, long acuminate. *E. sessilifolium*, p. 736
- ee. Plants pubescent, leaves ovate or oblong, acute or obtuse.
- f. Leaves ovate-oblong to lanceolate, mostly rounded at the base, usually obtuse, roughish pubescent. *E. verbenæfolium*, p. 735
- ff. Leaves roundish ovate, obtuse, truncate at base, downy pubescent, crenate dentate. *E. rotundifolium*, p. 736
- fff. Leaves ovate, acute, strongly serrate, pubescent. *E. pubescens*, p. 736

Eupatorium purpureum L. Joe-pye Weed.

Eupatorium purpureum Linnæus, Sp. Pl. 838. 1753 [North America].—Knieskern 17.—Britton 128.

Frequent in low open ground and thickets in the northern counties and less common southward in the Middle and Coast districts.

This is the common Joe-pye weed of the uplands of southeastern Pennsylvania. The typical plant is tall, 6–10 feet, with narrower, often falcate, leaves; crenate, glabrous above and but little veined below, stem glaucous, inflorescence high and rounded on top, flowers pale pink.

The following species, by far the commoner in our region, is low, averaging 3–4 feet; leaves coarsely dentate, shorter and much broader, scabrous above, very strongly veined beneath, inflorescence flat-topped, flowers deep crimson. Specimens growing in shade have the leaves smooth, or nearly so, and are thus intermediate. Possibly the two should be regarded as only subspecifically different, but the extremes are easily separable and the non-typical character of most herbarium material makes it difficult to draw conclusions from it.

Fl.—Mid-August through September.

Middle District.—Hartford, Mouth of Coopers Creek, W. Deptford, Blackwood, Medford (S), Beaver Dam.

Coast Strip.—Palermo.

Eupatorium maculatum L. Spotted Joe-pye Weed.

Eupatorium maculatum Linnæus, Amoen. Acad. IV. 288. 1755 [North America].

Eupatorium purpureum var. *maculatum* Britton 128.

Common in open low ground throughout the State, except in the Pine Barrens.

Fl.—Mid-August through September.

Middle District.—Burlington, Delanco (S), Medford (S), Lindenwold (S), Oaklyn (S), Springdale (S), Lawnside (S), Pennsgrove.

Pine Barrens.—Landisville.

Coast Strip.—Surf City (L), Barnegat City (L), Absecon (S), Atlantic City (T).

Eupatorium leucolepis T. & G. White-bracted Boneset.

Eupatorium leucolepis Torrey and Gray, Fl. N. A. II. 84. 1841 [Pine Barrens, N. J.—La.].—Willis 30.—Britton 129.—Keller and Brown 318.

Frequent in open bogs and swamps of the Pine Barrens and Cape May district and rare on the coast.

Fl.—Early August into September.

Pine Barrens.—Forked River (KB), Manchester (C), Tuckerton (KB) Quaker Bridge, Speedwell (S), Cedar Grove (S), Atco (KB), Cedar Lake, Main Road Sta., Winslow (S), Batsto (S), Pleasant Mills, Hammonton, Egg Harbor City, Woodbine, Belleplain (S).

Coast Strip.—Sherburn's (L).

Cape May.—Sluice Creek (S), Bennett, Cold Spring (S).

Eupatorium album L. White Boneset.

Pl. CXXIII., Fig. 1.

Eupatorium album Linnæus, Mant. III. 1767 ["Pennsylvania—Barthram" obviously = New Jersey].—Knieskern 17.—Britton 129.—Keller and Brown 319.

Eupatorium glandulosum Barton Fl. Phila. II. 98. 1818.

Eupatorium lanceolatum Barton Fl. Phila., II. 99. 1818.

Common in dry sandy open ground in the Pine Barren, Coast and Cape May districts and occasional in "Pine Barren islands" in the Middle district, occurring north of our limits at South Amboy and South River, Middlesex County.

Fl.—Early August into September.

Middle District.—Atlantic Highlands (C), Keyport (C), New Egypt, Lindenwold, Medford (S), Griffith's Swamp, Bridgeton.

Pine Barrens.—Farmingdale (NB), N. Spring Lake (NB), Bamber, Island H'ts Jnc., Speedwell, Quaker Bridge (S), Atsion, Atco, Berlin, Clementon, Albion, Winslow (S), Landisville, Egg Harbor City, Weymouth, Mays Landing (NB), Tuckahoe (S), Woodbine.

Coast Strip.—Forked River (NB), Brant Beach (L), Ship Bottom (L), Holgate's (L), Atlantic City (S), Ocean City (S).

Cape May.—Dennisville, Court House (S).

Eupatorium album subvenosum Gray. Few-veined Boneset.

Eupatorium album var. *subvenosum* Gray, Syn. Fl. I. pt. 2, 98. 1884 [Long Island and New Jersey].—Britton 129.—Keller and Brown 319.

Pine Barrens; not common.

Fl.—Similar to the last.

Pine Barrens.—Atsion (KB), Pleasant Mills (NB), Egg Harbor City.

Eupatorium hyssopifolium L. Hyssop-leaved Boneset.

Eupatorium hyssopifolium Linnæus, Sp. Pl. 836. 1753 [Virginia].—Pursh Fl. Am. Sept. II. 512, 1814. Barton Fl. Phila. II. 98. 1818.—Britton 128.—Keller and Brown 319.

Frequent throughout our region, though more or less local in the Middle district. Not reported in the State from north of our limits.

Fl.—Early August into September.

Middle District.—Keyport (C), Clarksburg (C), New Egypt, Florence, Camden, Lindenwold, Washington Park, Ashland.

Pine Barrens.—Long Branch, Seabright (NB), Forked River, West Creek (S), New Lisbon, Parkdale (S), Atco, Pen Bryn (S), Albion, Clementon, Landisville, Richland, Absecon, Petersburg (S), Tuckahoe (S), Dennisville (S).

Coast Strip.—N. Beach Haven (L), Holgate's (L), Atlantic City (S), Ocean City (S), Piermont (S).

Cape May.—Cold Spring.

Eupatorium verbenæfolium Michx. Rough Boneset.

Eupatorium verbenæfolium Michaux, Fl. Bor. Am. II. 98. 1803 [Carolina].—Keller and Brown 319.

Eupatorium teucrifolium Barton, Fl. Phila. II. 99. 1818.—Willis 30.—Britton 129.

Frequent in low grounds throughout our region and at a few stations in the northern counties.

Fl.—Early August into September.

Middle District.—Keyport (NB), Hartford, Medford, Orchard (S), Westmont (S), Lawnside (S), Lindenwold, Westville, Mickleton, Tomlin, Swedesboro, Dividing Creek.

Pine Barrens.—Pt. Pleasant (NB), Forked River, West Creek, Woodmansie, Speedwell (S), Quaker Bridge, Clementon (S), Bear Swamp (S), Cedar Brook, Landisville, Winslow (S), Hammonton (S), Batsto, Egg Harbor City, Mays Landing (S), Petersburg (S), Tuckahoe (S), Dennisville (S).

Coast Strip.—Spray Beach (L), Atlantic City, Five-Mile Beach.

Cape May.—Bennett (S).

Eupatorium sessilifolium L. Upland Boneset.

Eupatorium sessilifolium Linnæus, Sp. Pl. 837. 1753 [Virginia].—Barton, Fl. Phila. II. 9. 1818.

This species is recorded by Barton from "rocky thickets half a mile east of Woodbury; rare." There seems to be no question about the identity, as his description is clear. The species is frequent in rocky woods of the northern counties.

Eupatorium rotundifolium L. Round-leaved Boneset.

Eupatorium rotundifolium Linnæus, Sp. Pl. 837. 1753 [Virginia and Canada].—Barton, Fl. Phila. II. 99. 1818.—Knieskern 17.—Willis 30.—Britton 129.—Keller and Brown 319.

Dry open sandy ground; rather common throughout our region and reported from Franklin, Essex County.

Fl.—Early August into September.

Middle District.—New Egypt, Burlington, Kaighns Pt., Medford (S), Lawnside (S), Lindenwold, Tomlin, Swedesboro.

Pine Barrens.—Long Branch, Forked River, Cain's Mill, Clementon, Landisville, Batsto, Egg Harbor City.

Coast Strip.—Seaside Park, Holgate's (L), Sherburn's (L).

Cape May.—Cold Spring.

Eupatorium pubescens Muhl. Hairy Boneset.

Eupatorium pubescens Muhlenberg and Willdenow, Sp. Pl. III. 1755. 1804 [North America].—Pursh, Fl. Am. Sept. II. 514. 1814.—Willis 30.—Keller and Brown 319.

Eupatorium rotundifolium var. *pubescens* Britton 129.

Eupatorium melissoidis Barton, Fl. Phila. II. 99. 1818.

Dry sandy ground; common throughout our region, not reported from the State north of our limits.

Fl.—Early August into September.

Middle District.—Keyport (NB), Burlington, Hainesport, Moorestown (KB), Medford, Lindenwold, Westville, W. Deptford, Tomlin, Mickleton, Swedesboro (CDL), Jericho (T), Dividing Creek.

Pine Barrens.—Sea Girt (C), Toms River (KB), Atsion (Leeds), Clementon (KB), Pen Bryn (S), Landisville (T), New Germany (KB), Hammonton (KB), Egg Harbor City, Tuckahoe (S), Mays Landing (NB), Dennisville (S).

Coast Strip.—Sea Girt (T), Sea Bright (NB), Surf City (L), St. Albans (L), Atlantic City (S), Ocean City (S), Sea Isle City (S), Holly Beach, Anglesea.

Cape May.—Bennett (S).

Eupatorium perfoliatum L. Common Boneset.**Pl. CXXIV.**

Eupatorium perfoliatum Linnæus, Sp. Pl. 838. 1753 [Virginia].—Barton, Fl. Phila. II. 101. 1818.—Knieskern 17.—Britton 130.

Low, open grounds, meadows etc.; common except in the Pine Barrens, where it is not found, except as an introduction.

This is a close associate of the Iron-weed and other plants mentioned under that species.

Fl.—Mid-August through September.

Middle District.—New Egypt, Delair, Lawnside (S), Springdale (S), Oaklyn (S), Washington Park.

Pine Barrens.—Landisville (T) (introduced).

Coast Strip.—Sandy Hook (NB), Forked River, Surf City (L), Manahawkin, Ocean City (S), Sea Isle City (S), Wildwood (UP.)

Cape May.—Cold Spring.

Eupatorium resinosum Torr. Resinous Boneset.

Eupatorium resinosum Torrey in D. C. Prodr. V. 176. 1836 [New Jersey].—Knieskern 17.—Willis 30.—Britton 130.—Keller and Brown 320.

Wet bogs of the Pine Barrens.

This is a species which does not associate with the other white Bonesets, unless it be with *E. leucolepis*. It is strictly a Pine Barren species frequenting the great natural bogs in the heart of the region where grow *Xyris congdoni*, *X. fimbriata*, *Eriocaulon decangulare*, *Gyrostachys præcox*, *Helianthus angustifolius*, *Lobelia canbyi*, etc., and is not known to occur outside of New Jersey.

At Manahawkin, where the Pine Barren swamps come well out to the coast and the range of this species meets that of *E. perfoliatum*, Mr. Bayard Long has discovered an interesting hybrid between the two.

Fl.—Mid-August into September.

Pine Barrens.—Ocean Beach (C), Manchester (NB), Lakehurst, Forked River, Hornerstown, Toms River, Manahawkin, Whittings (C), Cedar Grove (S), Brown's Mills (KB), Quaker Bridge, Parkdale, Speedwell (S), Atsion, Atco, Malaga (C), Blue Anchor, Ancora (CDL), Bear Swamp (S), Hammononton, Batsto, Pleasant Mills, Hospitality Branch, Twelfth St., New Germany (KB), Egg Harbor City, Mays Landing, Absecon.

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Eupatorium ageratoides L. f. White Sanicle.

Eupatorium ageratoides Linnæus, Fil. Suppl. 355. 1781 [Canada and Virginia].—Britton 130.

Frequent in rocky woods of the northern counties, rare southward in the Middle district, within our limits.

Fl.—Late August into October.

Middle District.—New Egypt, Vincentown (C), Cooper's Creek (CP), Little Timber Creek (P), Mickleton (C), Swedesboro (CDL).

Eupatorium aromaticum Linn. Smaller White Sanicle.

Eupatorium aromaticum Linnæus Sp. Pl. 839. 1753 [Virginia].—Knieskern 17.—Willis 30.—Britton 130.—Keller and Brown 320.

? *Eupatorium verbenafolium* Barton, II. 101. 1818.

Sandy woodland of the Middle and Cape May districts, local. Not reported from north of our limits.

Fl.—Early August into September.

Middle District.—Freehold (C), Squan (C), Burlington, Pemberton (C), Ashland (NB), Medford (S), Swedesboro (CDL).

Pine Barrens.—Landisville.

Cape May.—Cape May (S).

Eupatorium cœlestinum L. Mist Flower.

Eupatorium cœlestinum Linnæus, Sp. Pl. 838. 1753 [Carolina and Virginia].—Britton 130.—Keller and Brown 320.

Conoclinium cœlestinum Knieskern 17.

Frequent in open, sandy ground in the Cape May district, and local in the lower Middle district.

This is one of the plants which gives a distinctive character to the flora of Cape May. Nowhere have I seen it so abundant as on the great stretches of open swamp land extending from the city westward to Cape May point, a region where fresh and salt marsh mingle and which is to a great extent ditched and drained to make possible the cutting of the "salt hay," which grows luxuriantly. The haymaking is often in progress in midwinter and forms a rather striking picture for Christmas time.

In late summer these grassy stretches are covered with the pink *Sabatia stellaris*, the purple *Gerardia purpurea*, and the blue misty heads of the present species, making a fine display of color. This plant is often cultivated under the name of *Ageratum*.

Fl.—Early August into September.

Middle District.—Swedesboro.

Cape May.—Court House, Cold Spring, Cape May, Cape May Pt. (S).

WILLUGBÆYA Necker.

Willugbæya scandens (L.). Climbing Boneset.

Pl. CXXII., Fig. 2.

Eupatorium scandens Linnæus, Sp. Pl. 836. 1753 [Virginia].

Mikania scandens Barton, Fl. Phila. II. 102. 1818.—Knieskern 17.—Britton 130.

Frequent in sandy swamps of the Middle, Coast and Cape May districts and at Swartswood Lake, Sussex County, and on the Ramapo River, Bergen Co. Absent from the Pine Barrens, except as a coast intrusion along the large streams.

This is our only trailing composite and is found climbing over low shrubs, its stems twisting tightly around their twigs and branches. The foliage reminds one somewhat of the bind-weeds (*Polygonum*).

Fl.—Early August to late September.

Middle District.—New Egypt, Delaire, Lindenwold, Springdale (S), Medford (S), Blackwood, E. Clementon (S), Kaighns Pt., Camden, Willow Grove.

Pine Barrens?—Landisville.

Coast Strip.—Spring Lake, Barnegat, Cox's, Barnegat City (L), Surf City (L), Mays Landing (S), Ocean City (S), Palermo (S), Piermont, Wildwood.

Cape May.—Green Creek, Cold Spring (S), Court House, Cape May (S).

KUHNIA L.

Kuhnia eupatorioides L. False Boneset.

Kuhnia eupatorioides Linnæus, Sp. Pl. Ed. 2. 1662. 1763 [Pennsylvania].—Willis 30.—Britton 130.—Keller and Brown 320.

Limestone rocks on the upper Delaware and in sandy woods near New Brunswick, and at several stations in the Middle district within our limits.

Fl.—Early August to mid-September.

Middle District.—Birmingham (NB), Medford, Locust Grove (S).

LACINARIA Hill.*

Lacinaria spicata (L.). Button Snakeroot.

Serratula spicata Linnæus, Sp. Pl. 819. 1753 [North America].

Liatris spicata Knieskern 17.—Willis 29.—Britton 131.

Lacinaria spicata Keller and Brown 321.

Frequent; open moist ground in the northern counties and occasional in the Middle district within our limits. Rare on the Coast strip.

The statement in Keller and Brown's List that this species is common in the Pine Barrens is an error, as we have no record from that district. The species of that region is the following.

Fl.—Mid-August to late September.

Middle District.—Squan (C), New Egypt, Griffith's Swamp (C), Gloucester Co., Mickleton (C).

Coast Strip.—Bay Head, Pt. Pleasant (C), Manahawkin.

Lacinaria graminifolia pilosa (Ait.). Hairy Button Snakeroot.

Serratula pilosa Aiton, Hort. Kew. III. 138. 1789 [North America].

Liatris pilosa Pursh, Fl. Am. Sept. II. 508. 1814.

Liatris graminifolia dubia Knieskern 17.—Willis 29.—Britton 131.

Lacinaria graminifolia pilosa Keller and Brown 321.

Common in sandy ground in the Pine Barrens, Coast Strip and Cape May peninsula, and locally in the Middle district in so-called "Pine Barren islands." The true *graminifolia* does not occur in the State, and the contrary statements in Willis' and Britton's Catalogues prove to be erroneous.

The wand-like spikes of purple blossoms of the Button Snake root are to be seen on every hand in the Pine Barrens in late summer and early autumn. The general resemblance to the spikes of *Aster concolor* is rather striking.

Fl.—Early August to late September.

Middle District.—Clementon, Lindenwold.

Pine Barrens.—Forked River, Manchester, Brown's Mills (T), Whittings (S), Jones' Mill (S), Speedwell (S), Taunton, Clementon, Atco, Atsion,

* *Lacinaria scariosa* (*Serratula scariosa* Linn., Sp. Pl. 818—Virginia) is recorded in Britton's Catalogue from Keyport and near Newfoundland "evidently rare." There are no specimens in the State herbarium, and I know of no further evidence of the plant occurring in New Jersey.

The record for Hammonton in Keller and Brown's list was an error.

Albion, Winslow, Landisville, Malaga (S), Hammonton, Batsto, Quaker Bridge (S), Egg Harbor City, Absecon, Tuckahoe (S), Dennisville (S).

Coast Strip.—Beach Haven Terrace (L), West Creek (S), Atlantic City (S), Piermont, Anglesea.

Cape May.—Bennett, Cape Pt. (S).

CHRYSOPSIS Nuttall.

Chrysopsis falcata (Pursh.). Sick-leaved Golden Aster.

Inula falcata Pursh, Fl. Am. Sept. 532. 1814 [New Jersey].

Inula (Chrysopsis) mariana b. *falcata* Nuttall, Gen. II. 151. 1818.

Chrysopsis falcata Knieskern 18.—Willis 32.—Britton 131.—Keller and Brown 321.

Locally in dry sands of the Pine Barrens; not common.

This plant prefers bare open stretches of white sand, where *Arenaria caroliniana*, *Lechea racemulosa* and *Hudsonia ericoides* are found. Many such areas around the sites of former forges or wayside inns are now appropriated by these plants, such as at Quaker Bridge, Speedwell, etc.

Fl.—Early July to early September.

Pine Barrens.—Toms River, Speedwell, Atsion, Quaker Bridge, Batsto, Hammonton.*

Chrysopsis mariana (L.). Golden Aster.

Inula Mariana Linnæus, Sp. Pl. Ed. 2. 1240. 1763 [North America].—Pursh,

Fl. Am. Sept. II. 531. 1814.

Chrysopsis mariana Knieskern 18.—Britton 132.

Dry sandy ground; common in the Pine Barrens and Cape May district and locally in the Middle district, occurring north of our limits only at a few stations in Mercer and Middlesex Counties and near Morristown.

Fl.—Early August to early September.

Middle District.—New Egypt, Hartford, Medford (S), Locust Grove (S), Westville, W. Deptford, Camden, Beaver Dam, Dividing Creek.

Pine Barrens.—Long Branch, Forked River, Cedar Grove (S), Clementon, Pen Bryn (S), Ashland, Albion, Atco, Cedar Brook, Kenilworth (S), Landisville (T), Quaker Bridge, Batsto, Pleasant Mills, Tuckahoe, Egg Harbor City, Dennisville (S).

Cape May.—Cape May.

* The record given in Keller and Brown's list for Atlantic City is an error, there is no such specimen in the Botanical Club collection.

CHONDROPHORA Nuttall.

Chondrophora nudata (Michx.). Rayless Goldenrod.

Chrysocoma nudata Michaux, Fl. Bor. Am. II. 101. 1803 [Carolina].

Chrysocoma virgata Nuttall, Gen. II. 137. 1818 [New Jersey].

Bigelovia nudata Willis 32.—Britton 133.

Bigelovia nudata var. *virgata* Britton 132.

The occurrence of this species in the State seems to be based upon the statement of Willis that it is found at Blue Bell, Monmouth Co., and of Gray that it occurs in "low pine barrens." Both are based in all probability upon Nuttall's record of *C. virgata*, which they regarded as identical with *nudata*.

The form known as *virgata* was described by Nuttall from "the borders of swamps in New Jersey near the sea coast." He adds that it is "nearly allied to *C. nudata*, but distinct, and resembles more *Solidago tenuifolia*, with which it might easily be confounded." Notwithstanding the fact that New Jersey is the type locality for *virgata*—in fact the only locality mentioned—the name is used, probably rightly, for a southern plant in Britton and Brown's Illustrated Flora and other works. The type labelled "New Jersey" is still preserved in the herbarium of the Philadelphia Academy, but doubtless the label is the result of a slip of memory on Nuttall's part. For a further discussion of the probability of Nuttall's type coming from elsewhere cf. Harper Torrey 1911, 92.

SOLIDAGO L.

Key to the Species.

- a. Tips of the involucre bracts erect and appressed.
 - b. Heads in axillary clusters, or also in a terminal spike-like thyrsus (usually simple, rarely branched).
 - c. Heads chiefly in axillary clusters, achenes pubescent.
 - d. Leaves lanceolate or oblong. *S. casia*, p. 744
 - dd. Leaves broadly oval, contracted into margined petioles. *S. flexicaulis*, p. 744
 - cc. Heads chiefly in a terminal, spike-like thyrsus, achenes glabrous or nearly so.
 - d. Rays white, stem pubescent. *S. bicolor*, p. 744
 - dd. Rays yellow, stem glabrous or nearly so. *S. erecta*, p. 745
 - bb. Heads entirely in a terminal simple, or branched, spike-like thyrsus.
 - c. Bracts of the involucre acute. *S. puberula*, p. 745
 - cc. Bracts obtuse.

- d. Upper leaves abruptly smaller and appressed. *S. stricta*, p. 746
 dd. Upper leaves becoming gradually smaller, not appressed.

S. speciosa

- bbb. Heads in a terminal, usually large panicle; secund on its spreading or recurved branches.

- c. Plant maritime, leaves thick, fleshy, entire. *S. sempervirens*, p. 746
 cc. Plants not maritime, leaves not fleshy.

- d. Leaves pinnately veined, not triple nerved.

- e. Leaves all entire, thin and glabrous, lanceolate.

S. odora, p. 747

- ee. Leaves, at least the lower ones, dentate or serrate.

- f. Stem densely pubescent, leaves more or less so.

- g. Leaves rugose, veiny, sharply serrate.

S. rugosa, p. 747

- gg. Leaves not rugose, only sparingly dentate, some entire.

S. fistulosa, p. 748

- ff. Stem glabrous, puberulent, or pubescent only above.

- g. Leaves very scabrous on the upper surface, serrulate.

S. patula, p. 748

- gg. Leaves smooth, or minutely pubescent on the upper surface.

- h. Racemes few, very slender, widely divergent.

S. ulmifolia, p. 748

- hh. Racemes numerous, spreading, recurved or ascending.

- i. Leaves all oblong or oblong lanceolate, sessile.

S. elliotii, p. 748

- ii. Lower leaves, at least, petioled; lanceolate or ovate lanceolate.

- j. Leaves thin, lower cauline and basal leaves abruptly narrowed to the petioled base. Heads 5-7 mm. high.

S. arguta, p. 750

- jj. Leaves firm, lanceolate or ovate lanceolate, tapering gradually to the base.

- k. Panicle usually as broad as high, rays 8-12.

S. juncea, p. 750

- kk. Panicle usually longer than broad.

- l. Plant more robust, leaves broader, rays 3-8.

S. neglecta, p. 749

- ll. Plant slender, leaves narrower, rays 2-5.

S. uniligulata, p. 750

- dd. Leaves triple nerved (i. e., a pair of lateral veins stronger than the others).

- e. Lower leaves much longer than the reduced upper ones, leaves firm, whole plant whitish with close puberulence.

S. nemoralis, p. 751

- ee. Leaves essentially uniform from base to summit, lanceolate, not whitish.

f. Involucre 2-2.8 mm. long, stem glabrous below, pubescent above, leaves glabrous above, pubescent on the veins beneath, mostly sharply serrate.

S. canadensis, p. 751

ff. Involucre 3.2-5 mm. long.

g. Stem closely and minutely pubescent throughout, leaves minutely pubescent above, short pilose beneath, toothed.

S. altissima, p. 751

gg. Stem glabrous throughout (sometimes pubescent in the inflorescence).

h. Leaves quite smooth on both sides.

S. serotina, p. 750

hh. Leaves slightly pubescent beneath, especially on the nerves.

S. serotina gigantea, p. 750

Solidago cæsia* L. Blue-stemmed Goldenrod.

Solidago cæsia Linnæus, Sp. Pl. 879. 1753 [North America].—Willis 31.—Britton 132.

In woods; frequent in the northern counties, much less common southward in the Middle and Cape May districts only.

Fl.—Late August to early October.

Middle District.—New Egypt, Westmont (S), Mickleton (NB), Swedesboro.

Cape May.—Cape May (S).

***Solidago flexicaulis* L. Zig-zag Goldenrod.**

Solidago flexicaulis Linnæus, Sp. Pl. 879. 1753 [Canada].

Solidago latifolia Willis 31.—Britton 132.

In woods; frequent in the northern counties, very rare within our limits and confined to the Middle district.

Fl.—Late August to early October.

Middle District.—New Egypt, Camden Co. (C).

***Solidago bicolor* L. White Goldenrod.**

Solidago bicolor Linnæus, Mantissa 114. 1767 [North America].—Knieskern 18.—Britton 132.

Dry woods and open sandy ground; frequent throughout the State. The only white Goldenrod.

Fl.—Late August to early October.

*The record of *S. squarrosa* for Westville (KB) was an error for Westtown, Pa.

Middle District.—New Egypt, Orchard (S), Haddonfield.

Pine Barrens.—Forked River, Cedar Brook, Malaga, Landisville (T), Egg Harbor City, Absecon, Dennisville (S).

Cape May.—Bennett (S).

***Solidago erecta* Pursh. Slender Goldenrod.**

Solidago erecta Pursh., Fl. Am. Sept. 542. 1814 [North America].—Keller and Brown 323.

Solidago speciosa var. *angustata* Britton 133.

Frequent in the Pine Barrens and Cape May peninsula, rare and local in the Middle district.

This species has been very generally confused with *S. hispida* Muhl (= *S. bicolor* var. *concolor* T. and G.) and the records given for that species in the several lists of southern New Jersey plants really refer to this, as shown by many of the actual specimens upon which the records were based. *S. hispida* does not occur within our limits so far as I have been able to ascertain.

Solidago erecta is often associated with and resembles in general way *S. puberula*, but can readily be distinguished by the blunt bracts of the involucre, which contrast with the acute bracts of the latter species.

Fl.—Early August to late September.

Middle District.—Lindenwold.

Pine Barrens.—Forked River, West Creek (S), Taunton (S), Atsion (C), Clementon, Malaga (S), Albion, Winslow (P), Pen Bryn (S), Middletown, Hammonton, Egg Harbor City, Mays Landing (S), Palermo (S), Seaville (S).

Cape May.—Court House (S), Bennett (S).

***Solidago puberula* Nutt. Downy Goldenrod.**

Solidago puberula Nuttall, Gen. II. 162. 1818 [near Amboy, N. J.].—Willis 31.—Britton 133.—Keller and Brown 323.

Frequent in the Pine Barrens and Cape May peninsula, and occasional in the Middle district.

Fl.—Early September to early October.

Middle District.—Keyport (Bassett), New Egypt, Pemberton (KB), Mantua (KB), Lindenwold, Dividing Creek (S).

Pine Barrens.—Toms River (KB), West Creek (S), Woodmansie, Browns Mills Inc. (KB), Atsion, Whitings (S), Clementon, Taunton, Jackson, New Germany (KB), Landisville, Hammonton (S), Egg Harbor City, Absecon (KB), Mays Landing (KB), Tuckahoe.

Cape May.—Bennett (S).*

* Lippincott's record for Angelsea (KB) proves to belong to *S. fistulosa*.

Solidago stricta Ait. Wand-like Goldenrod.

Solidago stricta Aiton, Hort. Kew III. 216. 1787 [North America].—Pursh, Fl. Am. Sept. II. 540. 1814.—Britton 133.—Keller and Brown 323.

Damp, sandy spots in the Pine Barrens, finding here the northern limit of its range.

A species of the east central or most typical portion of the Pine Barrens coming down in some spots, as at West Creek, quite to the edge of the salt marshes.

Fl.—Mid-August to late September.

Pine Barrens.—Forked River, West Creek (S), Cox's, Woodmansie (KB), Jones Mill (S), Atsion (C), Quaker Bridge (P), Winslow (C), Hammon-ton, Egg Harbor City.*

Solidago sempervirens L. Sea-side Goldenrod.

Pl. CXXII., Fig. 1.

Solidago sempervirens Linnaeus, Sp. Pl. 878. 1753 [New York and Canada].—Knieskern 18.—Willis 31.—Britton 133.—Keller and Brown 324.

Common along the salt marshes of the coast and up the Delaware, casually to Camden; also along the tidewater creeks for some miles back into the Pine Barrens. Occasionally introduced inland along railroads.

This great fleshy-leaved Goldenrod is probably the handsomest species of the genus. It abounds in all sorts of situations along the coast and is one of the most conspicuous of the autumnal flowers. I have found some sprays still in bloom on 'Thanks-giving Day.

Fl.—Early September to early October, sporadically later.

Maritime.—Sandy Hook, Seaside Park, Barnegat Pier, Island Heights Inc., Spray Beach (L), Barnegat, West Creek (S), Absecon, Atlantic City, Ocean City, Palermo (S), Sea Isle Inc. (S), Anglesea, Wildwood, Cold Spring (S), Bennett, Cape May, Cape May Pt. (S), Dennisville (S).

Middle District.—Camden.

Pine Barrens.—Whitings, Landisville, Richland (T), Winslow (T), Pleasant Mills.

* The record given by Keller and Brown on authority of the late U. C. Smith for Anglesea cannot be verified, and seems extremely unlikely.

***Solidago odora* Ait. Fragrant Goldenrod.**

Pl. CXXVI.

Solidago odora Aiton, Hort. Kew. III. 214. 1789 [N. America].—Barton, Fl. Phila. II. 121. 1818.—Knieskern 18.—Britton 135.

In dry woods; frequent throughout our region, especially in the Pine Barrens and occasional in the northern counties.

This species, *S. fistula*, *rugosa*, *neglecta*, *erecta* and *puberula* are the most generally distributed Goldenrods of the Pine Barrens, although none of them are restricted to the region, as is the more local *S. stricta*.

S. odora is the first to bloom and is found in dry, open, swampy woods, associated with *Helianthus divaricatus*, *Ionactis linariifolius*, *Sericocarpus asteroides*, *S. linifolius*, etc.

The natives were accustomed in old days to make a very pleasant "tea" from the leaves.

Fl.—Mid-July to late August.

Middle District.—New Egypt, Burlington, Wenonah, Clementon, Mickleton (NB), Dividing Creek.

Pine Barrens.—Quaker Bridge (NB), Bear Swamp (S), Waterford, Winslow (S), Landisville, Egg Harbor City, Mays Landing, Tuckahoe (S), Manumuskin (S).

Coast Strip.—Barnegat City (L), Surf City (L), N. Beach Haven (L).

Cape May.—Cold Spring (S), Bennett.

***Solidago rugosa* Mill. Wrinkle-leaved Goldenrod.**

Solidago rugosa Miller, Gard. Dict. Ed. 8. No. 25. 1768 [Cultivated plant].—Barton, Fl. Phila. II. 123. 1818.—Britton 134.

Fields and thickets; common throughout the State, except in the Pine Barrens, where it is only occasional.

Prof. Fernald has identified specimens from Mickleton and Egg Harbor City as *S. aspera* Ait, but I cannot regard the characters cited in the New Gray's Manual as of sufficient constancy or weight to warrant the separation of this form from *S. rugosa*, even as a subspecies.

Fl.—Late August to late September.

Middle District.—Farmingdale, New Egypt, New Lisbon (P), Brown's Mills (P), Delanco (S), Medford (S), Clementon (S), Lawnside (S), Washington Park, Mickleton, Salem (S), Beaver Dam, Dividing Creek.

Coast Strip.—Forked River, Manahawkin, Barnegat City (L), Ship Bottom (L), Atlantic City (S), Wildwood, Tuckahoe (S).

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Cape May.—Fishing Creek (OHB), Cold Spring (S), Bennett.

Pine Barrens.—Landisville, Egg Harbor City.

***Solidago fistulosa* Mill. Pine Barren Goldenrod.**

Solidago fistulosa Miller, Gard. Dict. Ed. 8. No. 19. 1768 [North America].—

Keller and Brown 324.

Solidago pilosa Britton 135.

Frequent in swamps of the Pine Barren, Coast and Cape May districts, and occasional in the lower Middle district.

Fl.—Late August to late September.

Middle District.—Haddonfield (KB), Clarksboro, Mickleton (KB), Swedesboro, Beaver Dam.

Pine Barrens.—Bay Head (C), Toms River (NB), Forked River, West Creek (S), Woodmansie (KB), Atsion, Cedar Grove (S), Landisville, Eighth St. Hospitality Br., Malaga (P), Hammonton (KB), Egg Harbor City, Palermo, Tuckahoe, Sea Isle Jnc. (S).

Coast Strip.—Seaside Park, Barnegat Pier, Brant Beach (L), Barnegat City (L), Peahala (L), Holgate's (L), Ocean City (S), Piermont (S), Anglesea, Cape May (S).

***Solidago patula* Muhl. Rough-leaved Goldenrod.**

Solidago patula "Muhlenberg" Willdenow, Sp. Pl. III. 2059. 1804 [Pennsylvania].—Willis 31.—Britton 134.—Keller and Brown 324.

In swampy ground; locally in the northern counties, but very rare within our limits and confined to the Middle district.

Middle District.—Freehold (C), Mickleton (NB).

***Solidago ulmifolia* Muhl. Elm-leaved Goldenrod.**

Solidago ulmifolia "Muhlenberg" Willdenow, Sp. Pl. III. 2060. 1804 [Pennsylvania].—Barton, Fl. Phila. II. 120. 1818.—Knieskern 18.—Britton 134.

In woods and thickets; frequent in the northern counties, but apparently rare within our limits and confined to the Middle and Coast districts.

Fl.—Mid-August to late September.

Middle District.—Griffith's Swamp.

Coast Strip.—Cox's, Manahawkin.

***Solidago elliotii* T. & G. Elliott's Goldenrod.**

Solidago Elliottii Torrey and Gray, Fl. N. A. II. 218. 1841 [Cape Fear River, N. C., to Ga.].—Britton 135.—Keller and Brown 324.

Rare and local; mainly confined to the coast region, but obtained by Parker at Brown's Mills and reported by Britton

from Mercer, Bergen and Hudson Counties. I have examined Parker's specimen and confirmed his identification, but the other records given by Britton I have been unable to verify.

Fl.—Early September to early October.

Middle District.—Brown's Mills (P), Gloucester County.

Pine Barrens?—Landisville.

Coast Strip.—Manahawkin.

Cape May.—North Cape May.

***Solidago neglecta* T. & G. Swamp Goldenrod.**

Solidago neglecta Torrey and Gray, Fl. N. A. II. 213. 1841 [Mass. and N. Y. to N. C. and Ind.].—Britton 133.—Keller and Brown 324.

Frequent in bogs and swamps of the Pine Barren and Cape May districts, more especially near the coast and occasional in the Middle district; reported from a few stations in Middlesex, Bergen and Morris Counties north of our limits.

This is the most common Goldenrod in swamps and bogs of the Pine Barrens and is subject to considerable variation. On the one hand it seems to pass by almost imperceptible gradations into the slender few rayed form that has been identified as *S. uniligulata*, while on the other it shows a tendency to *S. speciosa*. All records of the latter from our region prove to be *S. neglecta*, where specimens are extant, but it is possible that *S. speciosa* does grow in some of the bogs of the Middle district.

Indeed Nuttall's original specimens of *S. speciosa* came from "sandy woods, banks of the Schuylkill, also in New Jersey, but rare," and Barton gives "*S. petiolaris* (=speciosa Nutt) one mile east of Woodbury, seven feet high."

At Lindenwold I have collected specimens with spike-like racemes not at all one-sided, but side by side with them was typical secund *S. neglecta*, absolutely identical in all other respects. In the same neighborhood, too, I collected a hybrid *Solidago*, in which the *S. neglecta* strain is apparently present.

Fl.—Late August to early October.

Middle District.—Lindenwold, Mickleton, Swedesboro.

Pine Barrens.—Waretown, Browns Mills (KB), Clementon, Barnegat, Manahawkin, West Creek (S), Tuckerton (KB), Quaker Bridge (KB), Cedar Brook, Hammonton (S), Eighth St., Hospitality Br., Petersburg (S), Tuckahoe (S).

Cape May.—Ocean City Inc. (S), Goshen (S), Cape May (OHB).

***Solidago uniligulata* (D.C.). Few-rayed Goldenrod.**

Bigelovia (?) *uniligulata* D. C. Prodr. V. 329. 1836 [New Jersey and Virginia to Carolina].

Solidago neglecta var. *uniligulata* Britton 133.

Pine Barren swamps near the coast and at one station in the Middle district.

This species is not clearly separable from *S. neglecta*, so far as I can judge, from rather scanty material, and seems to form one extreme of a series with typical *neglecta* at the other.

Fl.—Early September to mid-October, apparently.

Middle District.—Two mi. N. W. of Mickleton.

Pine Barrens.—Ferago (L), Toms River (P), Forked River, Waretown, Tuckahoe (S).

***Solidago juncea* Ait. Early Goldenrod.**

Solidago juncea Aiton, Hort. Kew. III., 213. 1789 [North America.]—Britton 134.

Very scarce in our limits, more common northward.

Fl.—Mid-July to early September.

Middle District.—Two miles North of Mickleton, Lindenwold.

***Solidago arguta* Ait. Cut-leaved Goldenrod.**

Solidago arguta Aiton, Hort. Kew. III., 213. 1789 [North America.]—Britton 134.—Keller and Brown 325.

Frequent or occasional in woods of the northern counties and very rare southward in the Middle district.

Middle District.—Two miles N. W. Mullica Hill (NB).

A beautiful tall Goldenrod with large heads and open inflorescence growing plentifully in a strip of woodland below Atlantic City, where I collected it September 4, 1908, seems different from anything else that I have seen. Prof. Fernald suggests a hybrid between *S. arguta* and *S. neglecta*, but unfortunately neither is present on the island.

***Solidago serotina* Ait. Late Goldenrod.**

Solidago serotina Aiton, Hort. Kew. III. 211. 1789 [North America.]—Knieskern 18.—Britton 135.

Frequent in rich soil in thickets, etc., in the Northern, Middle and Coast districts. Some are referable to *S. s. gigantea*, which is doubtfully separable.

Fl.—Early August to late September.

Middle District.—Delanco, Kaighn's Pt., Fish House, Washington Park, Mickleton, Swedesboro.

Coast Strip.—Island Heights Inc., Pleasant Mills.

***Solidago altissima* L.* Tall Goldenrod.**

Solidago albissima Linnæus, Sp. Pl. 878. 1753 [N. America].—Knieskern 18.

Solidago canadensis Britton 135 (in part).

Frequent in the northern counties, occasional on the Coast strip, and probably in the Middle district. Apparently all our material is *altissima*. All specimens labelled *canadensis* that we have examined prove to be this.

Fl.—Late August to early October.

Middle District.—New Egypt, Mickleton, Swedesboro.

Coast Strip.—Manahawkin, Spray Beach (L), Cold Spring (S), Anglesea (OHB), Cape May (OHB).

***Solidago nemoralis* Ait.† Field Goldenrod.**

Solidago nemoralis Aiton Hort. Kew. III. 213. 1789 [North America].—

Knieskern 18.—Britton 135.

Dry, open ground; frequent throughout the State.

This species, more than any other of Goldenrod, shows a tendency to become a weed, and old fields and abandoned garden patches are often largely grown up with this *Solidago* associated especially with *Gnaphalium obtusifolium*.

Fl.—Mid-August to late September.

Middle District.—New Egypt, Haddonfield, Lawnside (S), Mickleton, Swedesboro, Salem (S), Beaver Dam.

Pine Barrens.—Forked River, Albion, Cedar Brook, Atco, Landisville, Egg Harbor City.

Coast Strip.—Manahawkin, Barnegat City (L), Spray Beach (L), Surf City (L), Ship Bottom (L), Atlantic City (S), Seaville (S), Wildwood, Cold Spring (S).

EUTHAMIA Nuttall.

***Euthamia graminifolia* (L.). Bushy Goldenrod.**

Chrysocoma graminifolia Linnæus, Sp. Pl. 841. 1753 [Canada].

Solidago lanceolata Britton 325.

* Cf. Fernald *Rhodora* 1908, 91, for a discussion of this species.

† The record of *S. rigida* at Egg Harbor City, given by Keller and Brown, on authority of C. S. Williamson, I am informed by Mr. Williamson was an error.

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In moist open ground along the coast and perhaps common northward.

Fl.—Late August to early October.

Coast Strip.—Sandy Hook, Sea Girt, Spray Beach (L), Ship Bottom (L), Surf City (L), Beach Haven (L), Atlantic City (S), Tuckahoe (S).

***Euthamia graminifolia nuttallii* (Greene). Nuttall's Goldenrod.**

Euthamia Nuttallii Greene, Pittonia V: 73. 1902 [Potomac Valley, Va., and Md.].

Moist, open ground; apparently common, except in the Pine Barrens and Coast Strip.

Fl.—Late August to early October.

Middle District.—New Egypt, Hartford, Delair, Washington Park, Lawnside (S), Pennsgrove, Mickleton (NB), Beaver Dam, Dividing Creek.

Pine Barrens.—Landisville.

Cape May.—Bennett, Cold Spring (S), Cape May.

Euthamia floribunda Greene, Pittonia V., 74, 1902, was described from an apparently unique specimen obtained by J. H. Holmes at Pt. Norris, N. J., and was renamed *polycephala* by Fernald, Rhodera 1908: 92. Extremes of this plant, which has been since found at several stations, seem rather distinct, but others are intermediate and it is probably an individual variation of the last. A typical specimen is in the Philadelphia Academy collection from New Egypt, collected by J. H. Grove.

***Euthamia tenuifolia* (Pursh.). Slender Bushy Goldenrod.**

Solidago tenuifolia Pursh, Fl. Am. Sept. II. 540. 1814 [Pine Barrens, N. J.-Carolina].—Nuttall, Gen. II. 162. 1818.—Barton, Fl. Phila. II. 122. 1818.—Knieskern 18.

Solidago Caroliniensis Britton 135.

Euthamia Caroliniana Keller and Brown 325.

Frequent throughout our region, and at New Durham, Hudson Co., and Trenton, Mercer Co., north of our limits.

A beautifully delicate species, especially abundant along the coast and conspicuous in the flower show of early autumn.

Fl.—Late August to early October.

Middle District.—Delanco (S), Kaighns Pt., Camden, Ashland, Mickleton, Medford (S).

Pine Barrens.—Island Heights Inc., West Creek (S), Quaker Bridge, Clementon, Albion, Hammonton (S), Landisville, Egg Harbor City, Tuckahoe (S).

Coast Strip.—Barnegat, Cox's, Surf City (L), Ship Bottom (L), Barnegat City (L), Spray Beach (L), Atlantic City (S), Avalon, Wildwood.

Cape May.—Bennett, Cold Spring (S), Cape May.

BOLTONIA L'Heritier.

Boltonia asteroides (L.). Aster-like *Boltonia*.

Matricaria asteroides Linnæus, Mantissa 116. 1767 [Pennsylvania "Barthram"].

Boltonia asterioides Long, Torrey 1908, 16.

Open swamps in the southwestern part of the Cape May peninsula. First discovered in a swamp west of Bennett by Mr. Bayard Long July 24, 1907, and later found by the writer near Green Creek. Like many other plants peculiar to the Cape May region, it pushes up the Susquehanna Valley into Pennsylvania.

Fl.—Mid-August to mid-September.

Cape May.—Bennett, Green Creek.

SERICOCARPUS Nees.

Sericocarpus linifolius (L.). Narrow-leaved White-top Aster.

Conyza linifolia Linnæus Sp. Pl. 861. 1753 [North America].

Aster Solidaginoides Barton, Fl. Phila. II. 109. 1818.

Sericocarpus solidagineus Knieskern 17.—Willis 30.

Sericocarpus linifolius Britton 136.—Keller and Brown 326.

Frequent in dry sandy woods of the Pine Barrens, also occasional in similar situations in the Cape May and Coast districts, and locally in the Middle district, ranging north of our limits to a few stations in Bergen, Middlesex, Hunterdon and Mercer Counties.

Fl.—Mid-June to mid-August.

Middle District.—Shark River, Farmingdale (S), Mickleton (C).

Pine Barrens.—Brindletown, Bamber, Manahawkin, Chatsworth, Speedwell (S), Atsion, Cedar Brook, Inskip, Folsom, Landisville, Richland (NB), Hammonton (C), Egg Harbor City, Tuckahoe (S).

Coast Strip.—Anglesea.

Cape May.—Fishing Creek.

Sericocarpus asteroides (L.). White-top Aster.

Conyza Asteroides Linnæus, Sp. Pl. 861. 1753 [North America].

Aster conyzoides Barton, Fl. Phila. II. 109. 1818.

Aster conyzoides var. *plantaginifolius* Nuttall Gen. II. 158. 1818.

Sericocarpus conyzoides, Knieskern 17.

Sericocarpus asteroides Britton 326.

Common in dry woods throughout the State.

Fl.—Late June to early August.

Middle District.—Farmingdale, New Egypt, Arney's Mt. (S), Haddonfield (S), Swedesboro.

Pine Barrens.—New Lisbon, Clementon, Cedar Brook, Winslow (S), Inskip, Landisville.

Coast Strip.—Ship Bottom (L), Atlantic City (S).

Cape May.—Cape May (S).

ASTER L.

Key to the Species.

- a. Basal and some of the lower stem leaves cordate and slender petioled.
 - b. None of the stem leaves cordate clasping.
 - c. Rays white, plant not glandular. *Aster divaricatus*, p. 755
 - cc. Rays violet, plant glandular. *A. macrophyllus*, p. 755
 - ccc. Rays blue or purple, plant not glandular. *A. cordifolius*, p. 755
 - bb. Stem leaves, or some of them, cordate, clasping, rays violet or pale blue. *A. undulatus*, p. 756
- aa. No cordate and petioled leaves, but some at least of the stem leaves with more or less cordate or auricled clasping bases.
 - b. Stem rough or hirsute pubescent.
 - c. Leaves entire, oblong, linear or lanceolate.
 - d. Stem rough, leaves oblong to oval. *A. patens*, p. 756
 - dd. Stem hirsute, leaves lanceolate, clasping by an auriculate base. *A. novæ-angliæ*, p. 756
 - cc. Leaves, at least the lower, serrate, stem hispid pubescent. *A. puniceus*, p. 757
 - bb. Stem glabrous.
 - c. Leaves sharply serrate, lanceolate to oblong-lanceolate sessile. *A. lævis*, p. 757
 - cc. Leaves entire or nearly so. *A. novi-belgii*, p. 757
- aaa. Leaves not at all clasping.
 - b. Leaves silvery canescent on both sides, heads in a narrow raceme. *A. concolor*, p. 757
 - bb. Leaves not silvery canescent.
 - c. Rays blue, pink or purple, head more than 20 mm. broad (except *gracilis*).
 - d. Tips of the involucre bracts widely spreading.
 - e. Heads 25 mm. broad. *A. spectabilis*, p. 758
 - ee. Heads 12–18 mm. broad. *A. gracilis*, p. 758
 - dd. Tips of the involucre bracts erect and appressed; heads 25–35 mm. broad.
 - e. Bracts coriaceous, oblong-spatulate, or oblong, leaves sessile, oblong lanceolate, rough above, somewhat pubescent beneath, sharply serrate, broad. *A. radula*, p. 759
 - ee. Bracts linear, subulate, membranaceous, acute; leaves sessile, membranaceous, oblong lanceolate, puberulent, dentate or entire. *A. nemoralis*, p. 759

cc. Rays white (pink or bluish in *dumosus*), heads not over 20 mm. broad.

d. Heads solitary at the ends of slender branchlets.

A. dumosus, p. 760

dd. Heads paniculate or racemose.

e. Paniculate, not in one-sided racemes, plants nearly glabrous.

f. Leaves lanceolate, somewhat serrate in the middle; heads 16-20 mm. broad. *A. paniculatus*, p. 760

ff. Leaves linear lanceolate to subulate, entire or mostly so; heads 8-12 mm. broad. *A. ericoides*, p. 760

ec. Heads racemose, one-sided on the branches.

f. Stem leaves oval, oblong or lanceolate serrate or chiefly so; stem pubescent or glabrate.

A. lateriflorus, p. 761

ff. Stem leaves linear lanceolate to linear, nearly entire, stem glabrate.

A. vimineus, p. 761

aaaa. Leaves fleshy, narrow, entire, maritime plants.

b. Heads 12-25 mm. broad.

A. tenuifolius, p. 761

b. Heads 6-10 mm. broad.

A. subulatus, p. 761

Aster divaricatus L. White Wood Aster.

Aster divaricatus Linnæus, Sp. Pl. 873. 1753 [Virginia].

Aster corymbosus Willis 30.—Britton 136.

Common in rich woods of the northern counties and occasional or locally frequent in the Middle district.

Fl.—Late August to early October.

Middle District.—New Egypt, Pemberton (C), Medford (S), Oaklyn (S), Springdale (S), Little Timber Creek (P), Mickleton (C), Swedesboro.

Aster macrophyllus L. Large-leaved Aster.

Aster macrophyllus Linnæus Sp. Pl. Ed. 2. 1232. 1763 [North America].—

Willis 30.—Britton 136.—Keller and Brown 328.

Frequent in rich woods of the northern counties, but rare within our limits in the upper Middle and Cape May districts.

Fl.—Early August to late September, probably.

Middle District.—Colt's Neck, Mon. Co. (C), Timber Creek (P).

Cape May.—Rio Grande (OHB).

Aster cordifolius L. Blue Wood Aster.

Aster cordifolius Linnæus, Sp. Pl. 875 [America].—Knieskern 17.—Britton 137.

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Common in rich woods of the northern counties, rare within our limits and confined to the upper part of the Middle district.

Fl.—Mid-September to mid-October.

Middle District.—New Egypt.

Aster undulatus L. Wavy-leaved Aster.

Aster undulatus Linnæus, Sp. Pl. 875 [North America], Britton 137.

Dry woods; common throughout the State.

Fl.—Early September to mid-October.

Middle District.—Birmingham, W. Deptford, Swedesboro, Merchantville (P).

Pine Barrens.—Manahawkin, Atco, Cedar Brook, Malaga, Landisville, Egg Harbor City.

Cape May.—Bennett (S).

Aster patens Ait. Late Purple Aster.

Aster patens Aiton, Hort. Kew. III. 201. 1789 [Virginia].—Barton, Fl. Phila. I. 113. 1818.—Knieskern 17.—Britton 137.

Dry soil; apparently common throughout the State.

Fl.—Mid-August to early October.

Middle District.—New Egypt, Medford (S), Orchard (S), Blackwood, Ashland, W. Deptford.

Pine Barrens.—Barnegat, Whitings (S), Atsion (S), Taunton (S), Cedar Brook, Newtonville, Landisville (T), Vineland (S), Hammonton, Batsto, Egg Harbor City (S), Weymouth (T), Mays Landing (S), Seaville (S).

Aster novæ-angliæ L. New England Aster.

Aster novæ-angliæ Linnæus, Sp. Pl. 875 [New England].—Britton 139.—Keller and Brown 329.

Common in the northern district, but rare within our limits, occurring only in the Middle, Coast and Cape May districts, escaping from cultivation in some localities.

Fl.—Early September to mid-October.

Middle District.—New Lisbon (C), Pemberton (C), Mannington (C), Daretown (C), Camden (CP).

Pine Barrens.—Toms River (P), Ancora (CP), (Escapes?).

Cape May.—Rio Grande (OHB).

Cape Strip.—Wildwood (UP).

* *A. phlogifolius* has been reported from Atco by Britton on authority of Parker, but there is no specimen in his herbarium, and I can find no evidence of the occurrence of the species within our limits.

Aster puniceus L. Purple-stemmed Aster.

Aster puniceus Linnæus, Sp. Pl. 875. 1753 [North America].—Britton 139.

Common in swamps of the northern counties and locally frequent in the Middle and Cape May districts, also occasional on the coast.

Fl.—Late August to early October.

Middle District.—New Egypt, Washington Park, Mickleton, Swedesboro.

Coast Strip.—Below Mays Landing.

Cape May.—Cold Spring (S).

Aster lævis L. Smooth Aster.

Aster lævis Linnæus, Sp. Pl. 876. 1753 [N. America].—Britton 139.

Frequent in the northern counties, very rare within our limits and known from but one locality.

Fl.—Early September to early October.

Middle District.—Camden (P).

Aster novi-belgii L. New York Aster.

Aster novi-belgii Linnæus, Sp. Pl. 877 [Virginia and Penna.].—Britton 138.

Aster novi-belgii var. *elodes* Britton 139.—Keller and Brown 330.

Aster novi-belgii var. *litoreus* Britton 138.

Frequent throughout the State; most abundant on the coast, so far as southern New Jersey is concerned.

I fail to distinguish the so-called varieties of this Aster; they seem to be simply individual forms of a variable species, with little or no constancy.

Fl.—Early September to late October.

Middle District.—Keyport (NB), Farmingdale (S), New Egypt, Crosswicks, Swedesboro.

Pine Barrens.—Toms River (S), Island Heights Inc., Chatsworth, Kenilworth (S), Clementon, Cedar Brook, Malaga (P), Atsion (P), Absecon, Hammonton (S), Pleasant Mills, Egg Harbor City, Sea Isle Inc. (S), Ocean City Inc. (S).

Coast Strip.—Seaside Park (S), Barnegat, West Creek (S), Barnegat City (L), N. Beach Haven (L), Surf City (L), Beach Haven Crest (L), Atlantic City (P), Palermo (S), Piermont (S), Wildwood.

Cape May.—Cold Spring (OHB), Cape May (OHB).

Aster concolor L. Silvery Aster.

Aster concolor Linnæus, Sp. Pl. Ed. 2. 1228. 1763 [Virginia].—Pursh, Fl. Am. Sept. II. 548. 1814.—Barton Fl. Phila. II. 110. 1818.—Knieskern 17.—Willis 30.—Britton 137.—Keller and Brown 330.

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Frequent in dry sandy ground in the Pine Barrens and locally in the Middle and Cape May districts.

Fl.—Late August to early October.

Middle District.—Burlington, Southburg (C), Medford, Ashland, Lindenwold, Mickleton (C), Jericho (C), W. Deptford.

Pine Barrens.—Prosper town, Manchester (NB), Whitings (S), Staffordville, Speedwell (S), Jones Mill (S), Atsion, Clementon, Albion, Cedar Brook, Atco, Berlin, Malaga (S), Taunton (S), Landisville, Quaker Bridge (S), Hammonton, Batsto (P), Mays Landing, Elwood (P).

Cape May.—Cape May (S).

Aster spectabilis Ait. Showy Aster.

Aster spectabilis Aiton, Hort. Kew. III. 209. 1789 [North America].—Nuttall, Gen. II. 157. 1818.—Barton, Fl. Phila. II. 117. 1818.—Knieskern 17.—Willis 30.—Britton 137.—Keller and Brown 330.

Aster surculosus Britton 137.—Keller and Brown 330.—Robinson and Fernald, Rhodora 1909. 58.

Common in dry sandy ground in the Pine Barrens and Cape May peninsula, and locally in the Middle district, occurring at only three stations north of our limits in Morris, Mercer and Middlesex Counties.

The most showy Aster of our region, with flower heads often 35 mm. in diameter.

Robinson and Fernald have disposed of the original New Jersey record of *Aster surculosus* by showing that it was based upon a specimen of *A. spectabilis*, and all specimens of alleged *surculosus* that I have examined prove to be the same thing.

Fl.—Late July to late September.

Middle District.—Medford, Ashland, Haddonfield, Westmont (S), Woodbury (P), Mickleton.

Pine Barrens.—Asbury Park (NB), Deal, Brindletown, Brown's Mills (P), Forked River, Pasadena, Manchester (NB), Bamber, Whitings, Speedwell, Chatsworth, Taunton (S), Jackson, Clementon, Bear Swamp (S), Albion, Pen Bryn (S), Atco, Winslow (S), Landisville, Newfield, Hammonton, Quaker Bridge (P), Pleasant Mills, Folsom, Egg Harbor City, Dennisville.

Cape May.—Cold Spring (OHB).

Aster gracilis Nutt. Slender Aster.

Aster gracilis Nuttall, Gen. II. 158. 1818 [Kentucky and Tennessee].—Britton 137.—Keller and Brown 330.

Common in dry sandy woods of the Pine Barrens and Cape May peninsula, and occasional in the southern part of the Middle district and the Coast Strip.

Fl.—Late July to early September.

Middle District.—Dividing Creek, Bridgeton.

Pine Barrens.—Forked River (NB), Manahawkin, Bamber, Chatsworth, Winslow Jnc., Waterford, Landisville, Hammonton, Pancoast (NB), Quaker Bridge, Pleasant Mills (P), Egg Harbor City, Tuckahoe (S), Dennisville (S).

Coast Strip.—Ocean City (S).

Cape May.—Court House, Bennett.

***Aster radula* Ait. Low Rough Aster.**

Aster Radula Aiton, Hort. Kew. III. 210. 1789 [Nova Scotia].—Willis 30.—Britton 136.—Keller and Brown 330.

Bogs of the Middle district, rare; also one record for the edge of the Pine Barrens and one for Morris County.

Fl.—Early August to early September.

Middle District.—Southburg (C), Bricksburg (NB), Merchantville (P), Griffith's Swamp, Mickleton (BH), Swedesboro (CDL).*

***Aster nemoralis* Ait. Bog Aster.**

Aster nemoralis Aiton, Hort. Kew. III. 198. 1789 [Nova Scotia].—Knieskern 17.—Willis 31.—Britton 139.—Keller and Brown 330.

Frequent in Cedar Swamps of the Pine Barrens reaching here the southern limit of its distribution.

This is distinctly the *Aster* of the Cedar Swamps and cold bogs, where most of the other stragglers from the north find congenial surroundings. It does not range farther south than the Pine Barrens of New Jersey, and Absecon seems to be our southernmost record, although it no doubt extends farther, certainly to Mays Landing.†

Fl.—Mid-August to late September.

* Mr. U. C. Smith's record in Keller and Brown's list for Egg Harbor City cannot be verified, and is, without much doubt, due to a misidentification, inasmuch as a number of his specimens of this genus are wrongly named.

† The record for Swedesboro (KB) should have been Atco according to Mr. Lippincott's herbarium.

Nuttall (Gen II. 155) records *Aster paludosus* "from Cape May County, New Jersey, to Florida on the margins of open swamps," but there is nothing to substantiate the record.

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Pine Barrens.—Toms River (S), Forked River, Waretown, Pasadena, West Creek (S), Tuckerton, Bamber, Jones' Mill (S), Speedwell, Chatsworth, Atsion (P), Parkdale (S), Kenilworth (S), Brown's Mills (KB), Cedar Brook, Hammonton, New Germany, Eighth St., Pleasant Mills, Egg Harbor City, Absecon (S).

Aster dumosus L. Bushy Aster.

Aster dumosus Linnæus, Sp. Pl. 873. 1753 [North America].—Britton 138.

Sandy woods, etc.; frequent in the Pine Barren, Coast and Cape May districts and locally in the Middle district, also in Sussex County.

Much of our material, especially from the Pines, is referable to the form *coridifolius*, but all sorts of variations occur.

Fl.—Late August to early October.

Middle District.—Medford (S), Ashland, W. Deptford, Swedesboro.

Pine Barrens.—Forked River, Island Heights Inc., West Creek (S), Whitings (S), Cedar Grove (S), Speedwell (S), Taunton (S), Clementon (S), Atco, Waterford, Cedar Brook, Pen Bryn (S), Landisville, Batsto, Belleplain (S).

Coast Strip.—Seaside Park, Surf City (L), Ship Bottom (L), Beach Haven (L).

Cape May.—Dennisville (S), Court House (S), Bennett.

Aster paniculatus Lam. White-panicled Aster.

Aster paniculatus Lamarck, Encycl. I: 306. 1783 [N. America].—Britton 138.
—Keller and Brown 331.

Common throughout the northern counties in low ground, occasional southward in the Middle district.

Fl.—Early September to late October.

Middle District.—Fancy Hill, Washington Park, Mickleton (KB), Swedesboro.

Pine Barrens.—Landisville, Mays Landing (C) probably introduced.

Aster ericoides L. Heath Aster.

Aster ericoides Linnæus, Sp. Pl. 875. 1753 [North America].—Britton 138.

In dry open ground; common throughout the northern counties, less common southward, but does not occur in the Pine Barrens, except as a weed in cleared or cultivated ground.

Fl.—Late August to mid-October.

Middle District.—New Egypt, Swedesboro.

Pine Barrens.—Landisville (as a weed).

Coast Strip.—Manahawkin, Absecon.

Cape May.—Cold Spring (S), Cape May (OHB).

Aster lateriflorus (L.). Starved Aster.

Solidago lateriflorus Linnæus, Sp. Pl. 879. 1753 [North America].

Aster lateriflorus Britton 138.

Aster lateriflorus thyrsoides Keller and Brown 331.

Common in various situations in the northern counties and on the coast, locally elsewhere, except in the Pine Barrens, where it does not occur.

Mr. Long thinks our coastal material is probably referable to var. *thyrsoides*. It is low, with a dense inflorescence, but very variable.

Fl.—Early September to mid-October.

Middle District.—Birmingham.

Coast Strip.—Waretown, Barnegat City (L), Surf City (L), Ship Bottom (L), Sea Isle City, Wildwood.

Cape May.—Cold Spring (S), Cape May (OHB).

Aster vimineus Lam. Small White Aster.

Aster vimineus Lamarek, Encycl. I. 306. 1783 [Canada].—Keller and Brown 332.

Frequent throughout our region, except in the Pine Barrens, where it is absent; also occasional in the northern counties.

Fl.—Late August to mid-October.

Middle District.—Locust Grove (S), Lindenwold, Camden, W. Deptford, Riddleton.

Pine Barrens.—Landisville (as a weed).

Coast Strip.—Como, Barnegat City (L), Wildwood.

Cape May.—Cold Spring (S), Town Bank (OHB).

Aster tenuifolius L. Large-flowered Salt Marsh Aster.

Aster tenuifolius Linnæus, Sp. Pl. 873. 1753 [North America].—Britton 139.—Keller and Brown 332.

Aster flexuosus Nuttall, Gen. II. 154 [Salt Marshes of N. J. and N. Y.].—Knieskern 18.—Willis 31.

Salt marshes of the coast and lower Delaware Bay frequent.

Fl.—Early September to early October.

Maritime.—Pt. Pleasant (S), Seaside Park (S), Barnegat Pier, Forked River, Ship Bottom (L), Beach Haven (L), Absecon, Atlantic City, Ocean City, Palermo (S), Avalon, Wildwood, Anglesea, Cape May.

Aster subulatus Michx. Small-flowered Salt Marsh Aster.

Aster subulatus Michaux, Fl. Bor. Am. II. 111 [Maritime Swamps, Penna. and Carolina].—Nuttall, Gen. II. 155. 1818.—Britton 139.—Keller and Brown 332.

Common in salt marshes of the coast and lower Delaware Bay.

This and the preceding are typical salt marsh species and occur in about equal numbers all along the coast.*

Fl.—Early September to early October.

Maritime.—Long Branch, Sea Girt, Seaside Park, Island Heights Inc., Spray Beach (L), Barnegat City Inc. (L), Ocean City, Palermo (S), Absecon, Atlantic City, Wildwood, Holly Beach, Cold Spring (S), Cape May, So. Dennis (S).

ERIGERON L.

Erigeron pulchellus Michx. Robin's Plantain.

Erigeron pulchellum Michaux, Fl. Bor. Am. II. 124. 1803 [Canada, Pennsylvania and Mts. of Carolina].

Erigeron bellidifolius Britton 140.

Frequent in open woods and fields in the Northern and Middle districts, rare in the Cape May peninsula.

Fl.—Early May to early June.

Middle District.—New Egypt, Birmingham, Medford (S), Sewell (S), Camden (C), Gloucester, Mickleton, Swedesboro, Downtown (T).

Cape May.—Cold Spring (OHB).

Erigeron annuus (L.). Daisy Fleabane.

Aster annuus Linnæus, Sp. Pl. 875. 1753 [Canada].

Erigeron annuus Britton 140.

Fields and roadsides throughout the State; so completely a weed that its original distribution cannot now be ascertained. Certainly not native of the Pine Barrens, however.

Fl.—Early June into July, sporadically much later.

Middle District.—Pemberton (NB), Buckshutem.

Coast Strip.—Tucker's (L).

Erigeron ramosus (Walt.). Slender Daisy Fleabane.

Doronicum ramosum Walter, Fl. Car. 205. 1788 [Carolina].

Erigeron ramosus Britton 140.

Common in fields and roadsides throughout the State. Certainly not native of the Pine Barrens, but now so much of a weed

* *Aster longifolius*, *A. concinnus* and *A. tradescanti* have been recorded in the New Jersey lists as occurring within our range, but no herbarium specimens are extant, and our field researches have failed to detect them. These facts, together with the general difficulty in correctly naming species of this genus, are, I think, sufficient excuse for ignoring them for the present.

that its original distribution elsewhere cannot be determined.

Fl.—Early June into July.

Middle District.—New Egypt, Westville, Swedesboro, Husted (S).

Pine Barrens.—Landisville, Hammonton.

Coast Strip.—Surf City (L), Barnegat City (L), Spray Beach (L).

LEPTILON Rafinesque.

Leptilon canadense (L.). Horse Weed.

Erigeron canadense Linnæus, Sp. Pl. 863. 1753 [Canada, Virginia].—Knieskern 18.—Britton 140.

Common in waste and cultivated ground throughout the State; everywhere a weed. Original distribution not now ascertainable, but certainly not native in the Pine Barrens.

Fl.—Late July into October.

Middle District.—New Egypt, Kaighns Pt., Swedesboro.

Coast Strip.—Spray Beach (L), Atlantic City (S), Ocean City (S), Avalon.

Cape May.—Cold Spring (S).

DÖELLINGERIA Nees.

Döellingeria umbellata (Mill.). Tall Flat-top Aster.

Aster umbellata Miller, Gard. Dist. Ed. 8. No. 22. 1768 [no locality].—Barton, Fl. Phila. II. 111. 1818.—Britton 140.

? *Diplopappus amygdalinus* Knieskern 18.

Döellingeria umbellata Keller and Brown 333.

Frequent in the Northern and Middle districts and along the Coast Strip in moist ground.

Fl.—Mid-August to mid-September.

Middle District.—New Egypt, Pemberton (C), Lindenwold, Camden, Atco, Sumner (S), Mickleton, Swedesboro.

Coast Strip.—Belmar, Forked River, Manumuskin, Sea Isle Jnc. (S).

Cape May.—Bennett (S), Cold Spring (S).

Döellingeria umbellata humilis (Willd.). Pine Barren Flat-top Aster.

Aster humilis Willdenow, Sp. Pl. III. 2038. 1804 [Pennsylvania].

Döellingeria humilis Keller and Brown 333.

Aster umbellatus var. *humilis* Britton 140.

Open swamps in the Pine Barrens; not common.

Fl.—Mid-August to mid-September, probably.

Pine Barrens.—Ocean and Monmouth Counties (Kn), Egg Harbor City, Mays Landing (NB).

Dœllingeria infirma (Michx.). Cornel-leaved Aster.

Aster infirmus Michaux, Fl. Bor. Am. II. 109. 1803 [Canada to Carolina in the mountains].

Diplopappus cornifolius Knieskern 18.

Aster cornifolius Britton 140.

Dœllingeria infirma Keller and Brown 333.

Frequent in the northern counties, rare within our limits, occurring only in the Middle district.

Fl.—Late July to late August.

Middle District.—Ocean and Monmouth Counties (Kn), Mickleton (C), Swedesboro.

IONACTIS Greene.

***Ionactis linariifolius* (L.). Stiff-leaved Aster.**

Pl. CXXV.

Aster linariifolius Linnæus, Sp. Pl. 874. 1753 [North America].—Barton, Fl. Phila. II. 110. 1818.—Britton 139.

Diplopappus linariifolius Knieskern 18.

Dry, sandy ground; frequent or occasional throughout the State.

Fl.—Early September to mid-October.

Middle District.—Farmingdale, New Egypt, Medford (S), Clementon, W. Deptford.

Pine Barrens.—Manahawkin, Barnegat, Whitings (S), Jones' Mill (S), Atsion (S), Taunton (S), Malaga (S), Albion, Cedar Brook, Atco, Landisville, Vineland (S), Pleasant Mills, Egg Harbor City.

Cape May.—Cold Spring (OHB).

BACCHARIS L.

***Baccharis halimifolia* L. Groundsel Bush.**

Pl. CXXI., Fig. 1.

Baccharis halimifolia Linnæus, Sp. Pl. 860. 1753 [Virginia].—Knieskern 18.—Willis 32.—Britton 141.—Keller and Brown 333.

Common along the edges of the salt marshes on the coast and up the larger streams. Rarely in the interior.

A conspicuous shrub along the thoroughfares and borders of the salt marshes, especially in September, when the seeds are ripe and the bright tufts of silvery white pappus stand out in strong relief against the dark foliage.

Fl.—Late August to late September. *Fr.*—Late September to late October.

Middle District.—Burlington, Westville.

Pine Barrens.—Landisville.

Coast Strip.—Sandy Hook, Long Branch, Spring Lake (NB), Seaside Park, Forked River, Waretown, Ship Bottom (L), Cedar Bonnet (L), Absecon, Atlantic City, Ocean City (S), Avalon, Wildwood, Cape May, Dennisville (S), Salem.

PLUCHEA Cassini.

Flowering and Fruiting Data.—In all the *Inuleæ*—*Pluchea*, *Antennaria*, *Anaphalis* and *Gnaphalium*—the season noted includes from the beginning of the flowering period to the time of full maturity, when the heads break up.

Pluchea foetida (L.). Viscid Marsh Fleabane.

Baccharis foetida Linnæus, Sp. Pl. 861. 1753 [Virginia].

Pluchea foetida Britton 141.—Keller and Brown 334.

Rare and confined to the lower part of the Cape May peninsula.

This southern species was first discovered in the State by Mr. Isaac C. Martindale in the vicinity of Cape May, August 23d, 1877, and subsequently by Mr. C. F. Parker, July 24th, 1880. It was not collected again until August 11, 1909, when Mr. Stewardson Brown, in company with several other members of the Philadelphia Botanical Club, found a considerable patch of it in a meadow along Dias Creek a mile or more from the bay shore.

Fl. and Fr.—Full bloom August 11, 1909.

Cape May.—Dias Creek, Cape May (NB, CP and P).

Pluchea camphorata (L.). Salt Marsh Fleabane.

Erigeron camphorata Linnæus Sp. Pl. Ed. 2. 1212. 1763 [Virginia].

Pluchea camphorata Knieskern 18.—Willis 32.—Britton 141.—Keller and Brown 334.

Salt marshes along the coast and lower Delaware Bay; common.

One of the most generally distributed of our maritime plants.

Fl. and Fr.—Late August to late October.

Maritime.—Sandy Hook, Long Branch, Pt. Pleasant, Island Heights Inc., Barnegat Pier, Seaside Park, Forked River, Spray Beach (L), Atlantic City, Ocean City, Avalon, Piermont, Wildwood, Cold Spring (S), Cape May, Dias Creek (S), Dennisville (S).

ANTENNARIA Gaertner.

Antennaria neodioica Greene. **Smaller Mouse-ear Everlasting**

Antennaria neodioica Greene, Pittonia III. 184. 1897 [Stroudsburg and Bushkill, Pa.].

Frequent in the northern counties, less common and local farther south in the Middle and Coast districts.

Fl. and Fr.—Late April to late May.

Middle District.—Delanco, Wenonah, Sewell (S), Quinton, Riddleton, Tomlin, Hainesport, Millville.

Coast Strip.—Manahawkin, Cape May.

Antennaria neglecta Greene. **Field Mouse-ear.**

Antennaria neglecta Greene, Pittonia III. 173. 1897 [Washington, D. C.].

Frequent in dry ground in the Northern, Middle and Coast districts.

Fl. and Fr.—Mid-April to mid-May.

Middle District.—New Egypt, Delanco, Kinkora, Medford, Quinton, Riddleton.

Pine Barrens.—Williamstown Jnc. (S).

Coast Strip.—Surf City (L), Manahawkin, Palermo, Cape May.

Antennaria plantaginifolia (L.). **Plantain-leaved Mouse-ear.**

Pl. CXXI., Fig. 2.

Gnaphalium plantaginifolia Linnæus, Sp. Pl. 850. 1753 [Virginia].

Antennaria plantaginifolia Knieskern 19.—Britton 141.

Frequent in dry ground in the Northern, Middle and Cape May districts.

Fl. and Fr.—Late April to late May.

Middle District.—Bordentown, Beverly, Medford (S), Mantua, Sewell (S), Swedesboro, Riddleton, Quinton, Bridgeton.

Pine Barrens.—Landisville, Palermo.

Cape May.—Court House.

Antennaria fallax Greene. **Tall Mouse-ear.**

Antennaria fallax Greene, Pittonia III. 321. 1898 [Washington, D. C.].

Occasional in the Middle district in dry, open ground, probably also in the northern counties.

Fl. and Fr.—Late April to late May.

Middle District.—Bordentown, Hainesport, Woodbury, Millville, Medford, Mantua, Glassboro (S), Mickleton, Swedesboro, Quinton.

Antennaria parlinii Fernald. **Parlin's Mouse-ear.**

Antennaria Parlinii Fernald, Garden and Forrest X. 284. July, 1897 [N. Berwick, Me.].

Frequent or occasional in open woods in the Middle, Coast and Cape May districts.

Fl. and Fr.—Late April to late May.

Middle District.—Medford (S), Millville, Sewell (S), Riddleton, Woodbury Hts.

Pine Barrens.—Williamstown Jnc. (S), Albion.

Coast Strip.—Waretown, Barnegat, Staffordville.

Cape May.—Court House (S), Bennett, Cape May.

ANAPHALIS DC.**Anaphalis margaritacea** (L.). **Pearly Everlasting.**

Gnaphalium margaritaceum Linnæus, Sp. Pl. 850. 1753 [North America].

Antennaria margaritacea Knieskern 19.

Anaphalis margaritacea Britton 141.

Dry ground and clearings of the northern counties, occasional southward in all the districts.

Fl. and Fr.—Mid-July to late August.

Middle District.—Keyport (C), New Egypt, Camden, Jackson, Mickleton, Swedesboro, Sandy Hook (C).

Coast Strip.—Sandy Hook (C), Long Branch, N. Spring Lake (C), Manahawkin, Spray Beach (L), Barnegat City (L), Ship Bottom (L), Beach Haven Terrace (L).

Pine Barrens.—Chatsworth (C), Penbryn (S), Atco (C), Landisville.

GNAPHALIUM L.**Gnaphalium obtusifolium** L. **White Everlasting.**

Gnaphalium obtusifolium Linnæus, Sp. Pl. 851. 1753 [Virginia and Pennsylvania].—Britton 142.

Gnaphalium polycephalum Knieskern 19.

Common in dry open ground throughout the State, especially plentiful along the coast.

Fl. and Fr.—Late August to late September.

Middle District.—Medford (S), Albion, Washington Park, Mickleton.

Pine Barrens.—Speedwell (S), Tuckahoe (S).

Coast Strip.—Sandy Hook (T), Ship Bottom (L), Surf City (L), Spray Beach (L), Atlantic City (S), Avalon.

Cape May.—Dennisville (S), Cold Spring (S), Bennett (S).

Gnaphalium uliginosum L. Low Cud-weed.

Gnaphalium uliginosum Linnæus, Sp. Pl. 856. 1753 [Europe].—Knieskern 19.—Britton 142.

Northern and Middle districts; probably always a weed in our region, where it is only occasionally found.

Fl. and Fr.—Apparently late June into October.

Middle District.—Mickleton.

Gnaphalium purpureum L. Purplish Cud-weed.

Gnaphalium purpureum Linnæus, Sp. Pl. 854. 1753 [Carolina, Virginia and Pennsylvania].—Barton, Fl. Phila. II. 105. 1818.—Knieskern 19.—Britton 142

Frequent in dry open sandy ground throughout our region, and ranging north occasionally to Union, Bergen and Morris Counties.

Especially common in open sandy tracts about deserted houses, abandoned fields, etc., where it takes on somewhat the character of a weed.

Fl. and Fr.—Late May to early July, and sporadically through summer or even into autumn.

Middle District.—New Egypt (NB), Mantua, Mickleton, Swedesboro, Rid-dleton.

Pine Barrens.—Cedar Brook, Winslow Jnc., Quaker Bridge (NB), Landis-ville, Mays Landing (NB), Tuckahoe.

Coast Strip.—Surf City (L), Spray Beach (L), Beach Haven (L), Stone Harbor, Anglesea.

Cape May.—Cape May, Cape May Pt. (S).

HELIOPSIS Persoon.

***Heliopsis helianthoides* (L.). Ox-eye.**

Bupthalinum Helianthoides Linnæus, Sp. Pl. 904. 1753 [North America].

Heliopsis laevis Barton, Fl. Phila. II. 127. 1818.—Knieskern 18.

Heliopsis helianthoides Britton 143.—Keller and Brown 336.

Frequent along streams and edges of woods in the northern counties; rare within our limits in the Middle district.

Fl.—Early July to early September.

Middle District.—Ocean and Monmouth Cos. (Kn), Crosswicks (C), Cam-den, Westville.

RUDBECKIA L.

Rudbeckia laciniata L. Tall Cone-flower.*Rudbeckia laciniata* Linnæus, Sp. Pl. 906. 1753 [Virginia and Canada].—Knieskern 18.—Britton 144.

Low damp thickets or along streams; frequent in the northern counties and less common southward in the Middle district, especially along the Delaware.

Fl.—Late July to late September.

Middle District.—Monmouth and Ocean Cos. (Kn), New Egypt, Delair, Crosswicks (C), Kaighns Pt., Mickleton, Swedesboro.

HELIANTHUS L.

Key to the Species.

- a. Disc purple or brownish.
 - b. Leaves linear. *H. angustifolius*, p. 769
 - bb. Leaves broad, ovate. [*H. annuus*]*
- aa. Dish yellow or yellowish.
 - b. Leaves prevailingl lanceolate, scabrous at least above.
 - c. Stem scabrous at least above, leaves sessile or nearly so, hirsute beneath. *H. giganteus*, p. 770
 - cc. Stem glabrous, leaves sessile by a truncate base. *H. divaricatus*, p. 770
 - bb. Leaves prevailingl ovate or oblong.
 - c. Sessile, stem glabrous. *H. divaricatus*, p. 770
 - cc. Petioled.
 - d. Stem puberulent or glabrous.
 - e. Leaves membranaceous, regularly serrate. *H. decapetalus*, p. 770
 - ee. Leaves firmer, less serrate or entire. *H. strumosus*, p. 771
 - dd. Stem hispid. [*H. tuberosus*]*†

Helianthus angustifolius Linnæus. Narrow-leaved Sunflower.

Helianthus angustifolius Linnæus, Sp. Pl. 906. 1753 [Virginia].—Pursh, Fl. Am. Sept. II. 572. 1814.—Knieskern 18.—Willis 33.—Britton 145.—Keller and Brown 337.

Frequent in swamps of the Pine Barrens and Cape May peninsula, also rarely in "Pine Barren islands" in the Middle district and on the coast. Recorded but once north of our limits, near Trenton.

* Common Sunflower, escaped from gardens.

† Jerusalem Artichoke, escaped from cultivation.

This is the most widely distributed Sunflower of the Pines, but always a bog plant, often growing in shallow water. The only other Pine Barren species, *H. divaricatus*, is a dry ground plant.

Fl.—Early August to late September.

Middle District.—Griffith's Swamp, Mickleton (C), Swedesboro.

Pine Barrens.—Como, Seabright (C), Asbury Park (KB), Pt. Pleasant (KB), Toms River, Island Hts. Inc., Forked River, Seaside Park, Barnegat, Manahawkin, West Creek (S), Speedwell (S), Parkdale (S), Atsion, Landisville (T), Winslow, Quaker Bridge, Pleasant Mills, Hammonton, Egg Harbor City, Petersburg, Palermo, Mays Landing (S), Millville (KB).

Coast Strip.—Barnegat City (L).

Cape May.—Court House (S), Bennett, Cape May Pt. (S).

***Helianthus giganteus* L. Tall Sunflower.**

Helianthus giganteus Linnæus, Sp. Pl. 905. 1753 [Virginia and Canada].—Britton 145.

H. giganteus var. *ambiguus* Britton 145.

Frequent in open swampy ground of the Northern and Middle districts and especially along the coast southward to Cape May.

Fl.—Early August to late September.

Middle District.—Lindenwold, Mickleton (NB), Swedesboro.

Coast Strip.—Surf City (L), Cedar Bonnet (L), Atlantic City (S), Ocean City (S).

***Helianthus divaricatus* L. Rough Wood Sunflower.**

Helianthus divaricatus Linnæus, Sp. Pl. 906. 1753 [North America].—Knieskern 18.—Britton 145.

Frequent in dry woods or clearings in the Northern and Middle districts, occasionally or locally common in the Pine Barrens and Cape May peninsula.

Fl.—Mid-July to early September.

Middle District.—New Egypt, Camden, Lindenwold, Swedesboro.

Pine Barrens.—Pen Bryn (S), Iona (S), Berlin (S), Landisville (T), Hammonton (T), Weymouth (T).

Cape May.—Cape May.

***Helianthus decapetalus* Linn. Thin-leaved Sunflower.**

Helianthus decapetalus Linnæus, Sp. Pl. 905. 1753 [Canada].—Barton, Fl. Phila. II. 129. 1818.—Britton 145.

Edges of rich woodland; frequent in the northern counties and occasional within our limits in the upper Middle district.

Fl.—Late July to early September.

Middle District.—New Egypt, Riverton (C), Mullica Hill (C), South of Woodstown.

***Helianthus strumosus* Linn. Pale-leaved Sunflower.**

Helianthus strumosus Linnæus, Sp. Pl. 905. 1753 [Canada].—Britton 145.

Dry woods; frequent in the northern counties and occasional southward in the Middle district.

Fl.—Mid-August to late September.

Middle District.—Keyport (C), New Egypt, Locust Grove (S), Camden (P), Blackwood, Mickleton (C), Atco (C).

VERBESINA L.

***Verbesina alternifolia* (L.). Actinomeris.**

Coreopsis alternifolia Linnæus, Sp. Pl. 909. 1753 [Virginia and Canada].

Actinomeris alternifolia Britton 145.

Verbesina alternifolia Keller and Brown 338.

In part introduced, but probably rarely native along the Delaware River, where it occurs locally and where it reaches the northern limit of its range in the east. No specimen seen.

Fl.—Early August to late September, probably.

Middle District.—Below Burlington (C), Kaighns Pt. (KB).

COREOPSIS L.

***Coreopsis rosea* Nutt. Rose-colored Tickseed.**

Coreopsis rosea Nuttall, Gen. II. 179. 1818 [New Jersey to Georgia].—Britton 146.—Keller and Brown 338.

Sandy swamps of the Pine Barrens; local, also in a few similar situations in the Middle district.

Fl.—Early July to early September.

Middle District.—Freehold (C), Burlington, Florence, Delanco, Clayton (NB).

Pine Barrens.—Forked River, Brown's Mills, Franklinville (P), Willow Grove (S), Vineland (C), Main Road Sta., Atco, Hammonton (KB), Egg Harbor City.

BIDENS L.

Key to the Species.

- a. Leaves lanceolate, serrate, undivided.
 - b. Rays large and conspicuous, twice as long as the disc or longer. *B. laevis*, p. 772
 - bb. Rays not more than twice as long as the disc; very short or wanting.
 - c. Heads nodding after flowering. *B. cernua*, p. 772
 - cc. Heads always erect.
 - d. Pappus awns downwardly barbed. *B. connata*, p. 773
 - dd. Pappus awns upwardly barbed. *B. bidentoides*, p. 773
- aa. Leaves, some or all of them, pinnately 1-3 parted.
 - b. Rays rudimentary or wanting.
 - c. Achenes flat.
 - d. Outer involucre bracts 4-8 mm.; achenes nearly black. *B. frondosa*, p. 773
 - dd. Outer bracts 10-16 mm.; achenes brown. *B. vulgata*, p. 773
 - cc. Achenes linear. *B. bipinnata*, p. 774
 - bb. Rays large and conspicuous.
 - c. Segments of the leaves lanceolate. *B. trichosperma*, p. 774
 - cc. Segments of the leaves linear lanceolate. *B. trichosperma tenuiloba*, p. 774

Bidens laevis (L.). Large Bur-Marigold.

Helianthus laevis Linnæus, Sp. Pl. 906. 1753 [Virginia].

Bidens laevis Britton 147.

Bidens chrysanthemoides Knieskern 19.

Swamps, especially bordering rivers and large streams. Middle and Cape May districts, frequent, also in the northern counties and occasional on the coast.

A particularly characteristic plant of the Delaware river shores and tidal marshes, its large flowers closely resembling those of *Helianthus* or *Rudbeckia*.

Fl. and Fr.—Mid-August into October.

Middle District.—Delair, Fish House, Washington Park, W. Deptford, Center Square, Cooper's Creek, Swedesboro.

Coast Strip.—Tuckahoe (S), Five-Mile Beach.

Cape May.—Cape May.

Bidens cernua L. Nodding Bur-Marigold.

Bidens cernua Linnæus, Sp. Pl. 832. 1753 [Europe].—Britton 147.

Wet, open swamps; frequent in the northern counties and apparently rare southward in the Middle district.

Fl. and Fr.—Mid-August into October.

Middle District.—New Egypt, Pemberton (C), Swimming River (C), Medford (S).

Bidens connata Muhl. **Purple-stemmed Beggar-ticks.**

Bidens connata "Muhlenberg" Willdenow, Sp. Pl. III. 1718. 1804 [North America].—Knieskern 19.—Britton 147.

Common in swamps throughout the State, except in the Pine Barrens and Cape May peninsula, though it will probably be found in the latter district.

Fl. and Fr.—Early September into October.

Middle District.—Delanco (S), Washington Park (S), Swedesboro.

Coastal Strip.—Sea Girt, Seaside Park (S), Surf City (L), Barnegat City (L), Spray Beach (L), Atlantic City (S), Palermo.

Pine Barrens.—Landisville, Egg Harbor City (introduced ?).

Bidens bidentoides (Nutt.). **Swamp Beggar-ticks.**

Diodonta bidentoides Nuttall, Tr. Amer. Phil. Soc. (II.) 7:361. 1841 [Vicinity of Philadelphia].

Coreopsis bidentoides Britton 146.

Bidens bidentoides Keller and Brown 339.

Muddy shores of the Delaware River and Bay from Bordentown southward and up the tidewater streams of southwestern New Jersey, also occurs up the Susquehanna to Havre de Grace.

Fl. and Fr.—Early September into October.

Middle District.—Bordentown, Delair, Fish House, Camden, Westville, Washington Park, Bridgeport (C), Salem Co. on the Delaware (C), Millville.

Bidens frondosa L. **Black Beggar-ticks.**

Bidens frondosa Linnæus, Sp. Pl. 832. 1753 [North America].—Knieskern 18.—Britton 146.

Damp situations; frequent in the northern counties and southward in the Middle and Coast districts.

Fl. and Fr.—Early September into October.

Middle District.—New Egypt, Fish House (S), Delanco (S), Lawnside (S).

Coast Strip.—Spray Beach (L), Atlantic City (S), Five-Mile Beach.

Bidens vulgata Greene. **Tall Beggar-ticks.**

Bidens vulgata Greene, Pittonia IV, 72. 1899 [E. and Middle States].

Probably common in the northern counties, but only one record within our limits, though it no doubt occurs elsewhere.

Fl. and Fr.—Early September into October.

Pine Barrens?—Landisville (introduced).

Bidens bipinnata L. Spanish Needles.

Bidens bipinnata Linnæus, Sp. Pl. 832. 1753 [Virginia].—Britton 147.

In damp soil and as a weed in cultivated and waste ground; frequent in the Northern and Middle districts, and occasional on the coast.

Fl. and Fr.—Mid-August into October.

Middle District.—New Egypt, Florence Heights, Fancy Hill, Washington Park.

Coast Strip.—Barnegat City (L), Atlantic City (S).

Pine Barrens.—Pleasant Mills (introduced).

Bidens trichosperma (Michx.) Tick-seed Sunflower.

Coreopsis trichosperma Michaux, Fl. Bor. Am. II. 139. 1803 [Upper Carolina].—Pursh, Fl. Am. Sept. II. 568. 1814.—Britton 146.

Bidens trichosperma Keller and Brown 339.

Swamps; common in the Middle Coast and Cape May districts and at a few stations in Sussex, Morris, Bergen, Hudson and Mercer counties north of our limits.

Fl. and Fr.—Late August into October.

Middle District.—New Egypt, Hartford, Burlington, Delanco (S), Hadonfield, Springdale (S), Lawnside (S), Washington Park, W. Deptford, Camden, Swedesboro, Salem (S).

Coast Strip.—Forked River, Seaside Park, Manahawkin, Beach Haven (L) Mouth of Batsto, Mays Landing (S), Palermo.

Cape May.—Dennisville (S), Cold Spring (S).

Bidens trichosperma tenuiloba (Gray). Slender-leaved Tick-seed Sunflower.

Coreopsis trichosperma var. *tenuiloba* Gray, Syn. Fl. I. pt. 2. 295. 1884 [Peat Bogs of Indiana and Illinois].

Bidens trichosperma tenuiloba.—Keller and Brown 340.

Swamps of the Pine Barrens and Coast Strip frequent.

Fl. and Fr.—Late August into October.

Pine Barrens.—Forked River, Atsion (S), Parkdale (S), Atco, Kenilworth (S), Jackson, Hammonton (S), Landisville, Downstown.

Coast Strip.—Seaside Park, W. Creek (S), Manahawkin, Palermo (S), Piermont (S), Ocean View (S).

Cape May.—So. Seaville, Cold Spring, Cape May.

HELENIUM L.**Helenium autumnale L. Sneezeweed.**

Helenium autumnale Linnæus, Sp. Pl. 886. 1753 [North America].—Britton 147.

Swamps and river banks; frequent in the northern counties and down the coast to Cape May; less common in the Middle district, mainly restricted to the vicinity of the Delaware River.

The distribution of this plant is one of the most striking examples of the extension of the range of certain boreal species down both sides of the State, which are entirely absent from the central portion. On the west it follows the river all the way to Salem, never straying from its immediate vicinity except to follow up some tributary, while on the east it is plentiful along the narrow coastal strip and outlying islands all the way to Cape May and up the rivers to the head of tidewater. On the Delaware we are accustomed to regard such occurrences as the result of seed washed down from higher up, but no such theory will answer for the coastal strip, and it may be that its presence there is due to some earlier geological phenomenon. Certain it is that the cold waters from melting glacial ice must have made favorable conditions for a boreal flora both along the Delaware and the coast, but it is presumptuous, perhaps, to claim any direct relationship between this and present plant distribution.

Fl.—Mid-August to mid-September.

Middle District.—Fish House, Kaighns Pt., Coopers Creek, Washington Park, Center Square, Swedesboro, Pennsgrove, Salem (S).

Coast Strip.—Toms River, Forked River, West Creek (S), Barnegat City (L), Peahala (L), Absecon (S), Atlantic City (S), Crowleystown, Pleasant Mills (T), Bæesley's Pt. (S), Palermo, Seaville (S), Mays Landing, Sea Isle City (S).

Cape May.—Cold Spring (S).

ARTEMISIA L.

Artemisia caudata Michx. Wild Wormwood.

Artemesia caudata Michaux, Fl. Bor. Am. II. 129. 1803 [Missouri River].

—Nuttall, Gen. II. 144. 1818.—Knieskern 19.—Willis 34.—Britton 148.

—Keller and Brown 341.

Reported locally from Middlesex to Cumberland counties in the Middle district but apparently rare, as recent collectors have not found it. It is frequent, however, about Manasquan and Point Pleasant, and is reported from Sandy Hook. The statements of Britton and of Keller and Brown, to the effect that it is frequent in the Pine Barrens seem to be incorrect, as there are no

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records to substantiate them. The plant, moreover, does not occur on the sea beaches south of Point Pleasant so far as I can ascertain, though Nuttall recorded it from "Islands of Egg Harbor."

Fl.—Late July to late August.

Middle District.—Keyport (C), Shark River (P), Burlington, Beverly, Pemberton (P), Mt. Holly (C), Berkeley, Two miles from Mickleton, Woodbury, Bridgeton (P).

Coast Strip.—Sandy Hook, Manasquan, Pt. Pleasant (S).

ERECHTITES Rafinesque.

Erechtites hieracifolia (L.). White Fireweed.

Senecio hieracifolia Linnæus, Sp. Pl. 866. 1753 [North America].

Erechtites hieracifolia Knieskern 19.—Britton 149.

In low grounds, and as a weed in clearings; frequent throughout the State, but original distribution not now ascertainable. Apparently not native in the Pine Barrens.

Fl.—Late July into September.

MESADENIA Rafinesque.

Mesadenia reniformis (Muhl.). Great Indian Plantain.

Cacalia reniformis "Mulhenberg" Willdenow, Sp. Pl. III. 1735. 1804 [Pennsylvania].—Britton 150.

Mesadenia reniformis Keller and Brown 342.

Only recorded from the vicinity of Camden on the Delaware.

Fl.—Probably late June to mid-July.

Middle District.—Camden.

Mesadenia atriplicifolia (L.). Pale Indian Plantain.

Cacalia atriplicifolia Linnæus, Sp. Pl. 835 [Virginia and Canada].—Britton 150.

Locally on the edges of woods in the Middle district and northward along the Delaware.

Fl.—Mid-July to late August.

Middle District.—Waterford (NB), New Egypt, Riverton, Palmyra (NB), Haddonfield (P), Locust Grove (S), Kaighns Pt., Blackwood, Swedesboro.

SYNOSMA Rafinesque.

Synosma suaveolans (L.). Sweet-scented Indian Plantain.

Cacalia suaveolans Linnæus, Sp. Pl. 835 [Virginia and Canada].—Willis 34. Britton 150.

Synosma suaveolans Keller and Brown 342.

Reported only from Trenton and Freehold in Britton's Catalogue. No specimens seen from our region.

SENECIO L.

Senecio tomentosus Michx. Woolly Squaw-weed.

Senecio tomentosus Michaux, Fl. Bor. Am. II. 119. 1803 [Flat Rock, Carolina].—Britton 150.—Keller and Brown 343.

Low swampy ground near the coast marshes, mainly of Cape May County, north on the Atlantic side to West Creek and on the bay side to Dias Creek.

The discovery of this species in New Jersey seems to date from June 4, 1882, when the late Isaac Burk found it at Cape May Point. Curiously enough, it was obtained on June 30 of the same year by Mr. Albert Commons at Ocean View.

Fl.—Early May to early June.

Coast Strip.—West Creek, Ocean View (NB), Cold Spring, Cape May, Cape May Pt., Green Creek, Dias Creek.

Pine Barrens.—Landisville (T), Egg Harbor City (KB), Friendship (T), all apparently introductions from the coast.

Senecio crawfordii Britton. Crawford's Squaw-weed.

Senecio Crawfordii Britton, Torreyia I. 21. [Tullytown, Pa.].—Keller and Brown 343.

?*Senecio aureus obovatus* Britton 150.

Damp meadows or bogs in the Middle district, near to the Delaware River, local and not common. There is a specimen of this plant in the Philadelphia Academy herbarium collected by Read many years ago, labelled "S. heterophylla, N. J." It seems likely also that Parker's record of "S. obovatus" from "River swamp, Camden Co.," refers to this form. I doubt if it has any close affinity with *S. balsamitæ* as claimed by some recent writers.*

Fl.—Early May to early June.

Middle District.—Between Orchard and Springdale (S).

Senecio aureus L. Golden Ragwort or Squaw-weed.

Senecio aureus Linnæus, Sp. Pl. 870. 1753 [Virginia and Canada].—Britton 150.

* Cf. *Rhodora* 1908, p. 69.

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Frequent in low, usually open ground, in the Northern and Middle districts and rare in the lower Cape May peninsula.

Fl.—Early May to early June.

Middle District.—New Egypt, Delair, Birmingham (C), Camden (P), Haddonfield (S), Lindenwold (S), Glassboro, Atco (C), Washington Park, Mickleton, Swedesboro.

Pine Barrens?—Cedar Lake (C).

Cape May.—Cold Spring (OHB).

CARDUUS L.

Key to the Species.

- a. Bracts of the involucre more or less strongly prickly pointed.
 - b. Leaves tomentous beneath.
 - c. All the bracts prickly pointed. [*C. lanceolatus*]¹
 - cc. Outer bracts only, prickly pointed. *C. discolor*, p. 778
 - bb. Leaves green on both sides. *C. pumilus*, p. 778
- aa. Bracts not at all prickly pointed or scarcely so.
 - b. Heads large, few, 30–100 mm. broad.
 - c. Heads closely subtended by the upper very spiny leaves, flowers usually yellow. *C. spinosissimus*, p. 779
 - cc. Heads peduncled, naked, flowers purple, involucre viscid. *C. muticus*, p. 779
 - bb. Heads small, numerous, 25 mm. broad or less. [*C. arvensis*]²

Carduus discolor (Muhl.). **Field Thistle.**

Cnicus discolor "Muhlenberg" Willdenow, Sp. Pl. III. 1670. 1804 [North America].—Barton, Fl. Phila. II. 95. 1818.—Nuttall Gen. II. 1230. 1818.

Cnicus altissimus Britton 151.

Cirsium altissimum Knieskern 19.

Common in swamps and meadows in the northern counties and rather frequent down the Coast Strip to Cape May, and locally in the Middle district.

Fl.—Mid-August to late September, occasionally into October.

Middle District.—New Egypt, Lawnside (S), Riddleton.

Coast Strip.—West Creek (S), Palermo, Seaville (S), Cold Spring (S).

Carduus pumilus (Nutt.). **Pasture Thistle.**

Cnicus pumilus Nuttall, Gen. II. 130. 1818 [New Jersey and New York].

Cnicus odoratus Barton, Fl. Phila. II. 95. 1818.—Britton 151.

¹ Common Thistle a familiar weed.

² Canada Thistle a bad weed, occurring in waste ground or locally in fields.

In meadows frequent northward and occasional southward in the Middle district.

Fl.—Late June to late July.

Middle District.—New Egypt (NB), Burlington, Fairton (S).

Pine Barrens.—Landisville (T), (introduced?).

***Carduus spinosissimus* Walt. Yellow Thistle.**

Carduus spinosissimus Walter, Fl. Car. 194. 1788 [Carolina].—Keller and Brown 344.

Cnicus horridulus Barton, Fl. Phila. II. 95. 1818.

Cirsium horridulum Knieskern 19.—Willis 35.

Cnicus spinosissimus Britton 151.

Frequent in open swamps of the Middle district and along the edge of the coast marshes south to Cape May.

Fl.—Mid-May to late June.

Middle District.—Farmingdale, New Egypt, Burlington, Pemberton (C), Moorestown (KB), Grenloch, Lindenwold (S), Sewell (S), Clementon (KB), Mickleton (KB), Swedesboro, Bucksblutem (S).

Coast Strip.—Pt. Pleasant, Seaside Park (KB), Forked River, Manahawkin, Tuckerton, Beach Haven (L), Spray Beach (L), Beach Haven Crest (L), Absecon (KB), Atlantic City (KB), Piermont (S), Wildwood, Cold Spring, Cape May (KB).

***Carduus muticus* (Michx.). Glutinous Thistle.**

Cirsium muticum Michaux, Fl. Bor. Am. II. 89. 1803 [Mountains of Carolina].

Cnicus muticus Britton 151.

Carduus muticus Keller and Brown 345.

Frequent in swamps in the northern counties, less common southward in the Middle and Coast districts.

Fl.—Mid-August to late September, occasionally into October.

Middle District.—New Egypt, Springdale (S), Lindenwold, Mullica Hill (C), Mickleton, Woodstown (KB), Swedesboro.

Coast Strip.—Forked River (KB), Cape May Court House, Cold Spring, Cape May (OHB).

BIBLIOGRAPHY.

It is a difficult matter to trace the original discoverer of a given species of plant. We generally credit the man who is the author of the specific name which the plant bears, but there is frequently an earlier writer who described the plant under a vernacular name or a technical name already in use, or made some other nomenclatural blunder which invalidated his name and often cast his discovery into oblivion. Again there is the actual discoverer of the plant, who may have sent it to the author with explanations as to its probable relationships, and back of him, perhaps, is the backwoodsman who has long known the plant by a vernacular name of his own, but who never heard of scientific nomenclature or the importance of publication. For practical purposes we are usually forced to follow custom and consider the author of the name as the discoverer of the plant.

Examining the preceding pages we find that Linnæus* was acquainted with no less than 570 of the species here treated. He never visited America, but acquired his knowledge of our plants from the collections or publications of Dillenius, Gronovius, Plukenet, Catesby, Kalm, Colden, etc., and to living plants grown in European botanic gardens. Being the originator of the binomial system of nomenclature, his specific names are the earliest, and are, therefore, still in use for all the plants known to him, although most of his genera have since been subdivided. Many of the New Jersey plants that bear his names are boreal species, known also from Europe; but the large number of truly American Coastal Plain plants which he named shows how thorough was the work of the early botanists who traveled in this region. Comparatively few of these plants were discovered in New Jersey, most of them being described from Virginia or Carolina.

* Cf. Jour. N. Y. Bot. Garden, June, 1907, for sketch of Linnæus and his relation to American botany, by P. A. Rydberg.

John Bartram, however, transmitted quite a number of specimens to Linnæus, which, although usually credited to Pennsylvania, must have come from across the Delaware in New Jersey.

The first American botanist to name and describe additional species on the plan established by Linnæus was Thomas Walter,* who, in 1788, published a volume on the Plants of Carolina, in which appear forty New Jersey species with which Linnæus was unacquainted. After him came Andre Michaux,† the French botanist, who, after Linnæus, was the author of the largest number of our New Jersey plant names. Michaux traveled widely in America, and in his *Flora* (1803) are published 117 species of New Jersey plants unknown to Linnæus or Walter. Apparently none of these, however, was discovered within our limits.

Rev. Henry Muhlenberg, of Lancaster, Pennsylvania, probably the most learned American botanist of his time, is authority for 42 of the species mentioned in the preceding pages. These were mainly published in a posthumous work on Grasses and Sedges or in Willdenow's *Species Plantarum*, from specimens sent him by Muhlenberg. The latter published a Catalogue of North American Plants in 1813, but as descriptions are lacking and as death prevented him from publishing the full descriptive work that he had contemplated, most of the names here proposed rest as mere *nomina nuda*, with no place in scientific nomenclature.

Of the early botanists who did more or less actual collecting in the Coastal Plain of New Jersey, Pursh is responsible for 33 of our species; Nuttall for 29; Rafinesque for 17 and Torrey (sometimes in conjunction with Gray) for 37.

Only 100 of the 1401‡ species listed in the foregoing pages were originally described from southern New Jersey, which emphasizes the fact that most of the early American botanical works were based upon collections made in other States—especially in Virginia and the Carolinas. Furthermore, although many botanists have explored the New Jersey Pine Barrens in subsequent years and many collections have been made, there has

* Cf. Brainerd Bull. Charleston (S. C.) Mus. III. 33, for biography.

† Cf. Bot. Gazette VIII, 187 for biography.

‡ Cf. Bottom of p. 806.

been comparatively little published concerning the plant life of the region. The following bibliography, while it does not profess to be complete, contains most of the publications which deal exclusively or mainly with the plants of this region. Various general works and papers, many of which are cited in synonymy or foot notes on the preceding pages, and a few of which are included here, also contain matter relative to the flora of Southern New Jersey.

- 1753-61. KALM, PETER.* *En Risa til Norra America*. Stockholm, III Vols., 484 pps.

Kalm spent some time at Philadelphia and at the Swedish settlements on the New Jersey side of the Delaware some miles below. Among the plants that he submitted to Linnaeus on his return to Sweden were a number from this vicinity.

1813. MUHLENBERG, HENRY, D.D.† *Catalogus Plantarum Americæ Septentrionalis huc usque Cognitarum Indigenarum et Cicurum*; or a Catalogue of the Hitherto Known Native and Naturalized Plants of North America, arranged according to the Sexual System of Linnaeus. pp. I-IV + I—II2. Lancaster, Pa., 1813.

Contains southern New Jersey species, but in the absence of descriptions the names have no application.

1817. MUHLENBERG, HENRY, D.D. *Descriptio Uberior Graminum et Plantarum Calamiarum Americæ Septentrionalis Indigenarum et Cicurum*. pp. i-ii + 1-295. Philadelphia, 1817.

A posthumous work comprising the grasses and sedges of a proposed flora of North America, of which the Catalogue 1813 was a preliminary outline.

1814. PURSH, FREDERICK.‡ *Flora Americæ Septentrionalis*; or a Systematic Arrangement and Description of the Plants of North America. London, 2 Vols., pp. I-XXXVI + 1-751, 24 plates.

* Cf. Darlington, *Memorials of Bartram and Marshall*, p. 367, 1849, for biographical sketch.

† Cf. *Pop. Sci. Mo.* XLV 689.

‡ Cf. *Bot. Gazette* VII, 141 for biography.

A classic work, in which the flora of southern New Jersey figured not a little, as Pursh was located at Philadelphia 1802-1805, and apparently spent a good deal of time in exploring the wilds of New Jersey.

1818. NUTTALL, THOMAS.† The Genera of North American plants, and a Catalogue of the Species to the Year 1817. Philadelphia, 2 Vols., I. i-viii + 1-312. II. 1-254.

Nuttall was in Philadelphia 1809-1818, and many of the new species described in his classic work were discovered on his numerous trips through southern New Jersey.

1818. BARTON, WILLIAM P. C.‡ Compendium Florae Philadelphiae, containing a description of the indigenous and naturalized plants found within a circuit of ten miles around Philadelphia. Philadelphia, 2 vols. 1-251, 1-234 pp.

This is the first local flora covering any part of our region. It included the shores of the Delaware from Paulsboro to Delanco, and inland as far as Moorestown and Blackwood.

This work has been freely consulted in the following pages, and synonymy cited wherever New Jersey is explicitly mentioned.

1819. TORREY, JOHN.§ A Catalogue of Plants growing spontaneously within thirty miles of the city of New York. Albany, N. Y., pp. 1-100.

Exact localities are not often mentioned in this work, and most statements of distribution are so broad that it is not always clear whether a species of rather general distribution occurs both in New Jersey and New York or only in the latter. More explicit information is in many cases to be found in the author's later Flora of the United States, 1824, Vol. I (all published).

1828. CONRAD, SOLOMON W.* Description of a new species of *Juncus*. *Jour. Acad. Nat. Sci., Phila.*, VI: 105.

J. viviparus = *J. pelocarpus*.

* Cf. Pop. Sci. Mo. XLVII, p. 257 for biography.

† Cf. Pop. Sci. Mo. XLVI, p. 689, 1895, for biography.

‡ Cf. Harshburger, Botanists of Phila., 159, for biography.

§ Cf. Bot. Gazette VIII, 165, for biography.

1856. KNIESKERN, P. D. A Catalogue of Plants growing without cultivation in the Counties of Monmouth and Ocean. *Ann. Rept. N. J. Geol. Survey*, 1856.

Also reprinted as a pamphlet Trenton, N. J., 1857, pp. 1-41.

This is the most important paper on the Pine Barren flora that was published up to the time of Britton's Catalogue. It is cited in synonymy throughout the present work, the page references being those of the reprint. Dr. Knieskern lived at Manchester, now Lakehurst, and was undoubtedly better informed on the flora of that vicinity than any man of his time. A few species, however, which he included from the upper part of Monmouth County, have not since been collected there, and were probably based upon misidentifications.

1860. DARRACH, JAMES. Plants appearing in Flower in the Neighborhood of Philadelphia.

February-April, p. 145; May, p. 199; June, p. 302; July-October, 511. *Proc. Acad. Nat. Sci. Phila.*, 1860.

1869. REDFIELD, JOHN H.* Note on the First Discovery of *Schizæa pusilla*. *Proc. Acad. Nat. Sci. Phila.*, 1869. 13.

1869. REDFIELD, JOHN H. Search for *Corema Conradii* in Monmouth County, N. J. *Proc. Acad. Nat. Sci. Phila.*, 1869. 91. Also *Amer. Nat.* III., 327.

- . M[ARTINDALE], I. C. To the Lovers of Nature's Beauties.

Apparently a reprinted broadside from a newspaper, describing briefly the flora to be seen along the Camden and Atlantic R. R.

1871. HALL, I. H. [Helonias and other plants at Atco, N. J.] *Torr. Bull.* II. 31. III. 25 and 32.
1873. HALL, I. H. [Rose-colored Water Lilies near Atsion, N. J.] *Torr. Bull.* IV. 8.

1874. WILLIS, O. R., Ph. D.† Catalogue of Plants growing without cultivation in the State of New Jersey. New York, pp. i-xxi + 1-71. Revised edition, same title, New York 1878, pp. i-xxviii + 1-88.

* Cf. *Bull. Torr. Bot. Club*, XX., 162, for biography.

† Cf. *Torreya* II., 80, 1902, for Biographical Notice.

A list with few exact localities, generally referring broadly to the northern, middle or southern counties in stating distribution. All species referred to the last category are included in the synonymy of the present work, page reference being to the revised edition. Some very doubtful records originate in this list which have not been verified, and, so far as our territory is concerned, it contains few additions to the list of Dr. Knieskern.

1876. REDFIELD, J. H. Torrey's first trip to the Pines. *Torr. Bull.* VI. 82-83.
1876. MARTINDALE, I. C.* *Opuntia vulgaris* at Haddonfield, N. J. *Torr. Bull.* VI. 105 and 116.
1879. RUSBY, H. H. *Aletris aurea* ? near Aitsion, N. J. *Torr. Bull.* VI., 289.
1880. BRITTON, N. L. On the Northern Extension of the New Jersey Pine Barren Flora on Long and Staten Islands. *Torr. Bull.* VII. 81, also VIII. 48, VII. 98.
1880. BROWN, ADDISON. Notes on the New Jersey Flora. *Torr. Bull.* VII. 115.
1881. BRITTON, N. L. Notes on the Middlesex County, New Jersey, Flora. *Torr. Bull.* VIII. 7.
1880. MARTINDALE, I. C. Notes on the Bartram Oak *Quercus Heterophylla* Michx. Privately printed. pp. 1-24.
1881. BRITTON, N. L. List of New Jersey Floras and Lists. *Torr. Bull.* VIII. 81.
1881. PORTER, T. C.† *Helonias* at Dover, Morris County. *Torr. Bull.* VIII. 91.

* Cf. *Torr. Bot. Club*, XX., 98, for biography.

† Cf. Harshberger *Botanists of Philadelphia and their work*, p. 236, for biography.

1881. BRITTON, N. L. A Preliminary Catalogue of the Flora of New Jersey—New Brunswick, N. J. pp. 1-233.

Merely preliminary to the Catalogue of 1884. Printed on one side of the paper for the purpose of reporting information for the later work.

1884. GROSS, C. A. Notes on New Jersey Plants. *Torr. Bull.* XI., p. 32.

1884. BRITTON, N. L. Range of *Phorodendron* in New Jersey. *Torr. Bull.* XI., 77, also S. Lockwood, p. 87.

1884. REDFIELD, J. H. *Corema conradii* and its Localities. *Torr. Bull.* XI., 97, also XII, 93. and XI, 117.

1886. LIGHTHIPE, L. H. Notes on the New Jersey Flora. *Torr. Bull.* XIII. 4.

1888. NORTHRUP, J. I. *Helonias* at Bridgeton. *Torr. Bull.* XV., 175.

1888. BRITTON, N. L. Plants at Seabright, New Jersey. *Torr. Bull.* XV, 193.

1889. BRITTON, N. L. Catalogue of Plants found in New Jersey. Final Report of the State Geologist, Vol. II, pt. 1. Trenton. pp. 1-642.

A carefully compiled work, with exact localities and authorities for all the rarer or restricted species. This Catalogue and the List of Keller and Brown served as a basis for the present work. Many of the records given are substantiated by specimens in the State Herbarium at New Brunswick, but by no means all, and Dr. Britton informs me that certain data submitted to the Geological Survey were incorporated at the request of the authorities without any specimens having been seen. So, also, records submitted by botanists of recognized standing were often included simply upon their authority. For the present work the effort has been made to verify all such records by the examination of an actual specimen, but there was not time to complete the work. The State Herbarium, and those of C. E. Smith, C. F. Parker, Benj. Heritage, I. C. Martindale, Isaac Burk, F. L. Bassett, Dr. Jos. Stokes, C. A. Gross and the Torrey Botanical Club have been consulted and many other records substantiated by subsequent collections in the Philadelphia Academy Herbarium. The records unverified are few and usually unimportant. They are marked (C) in the lists of localities. Dr. Britton's catalogue is quoted throughout in the synonymy.

1889. REDFIELD, J. H. *Corema* in New Jersey. *Torr. Bull.* XVI, 193.
1888. BRITTON, N. L. *Viola tenella* at Bridgeton, New Jersey. *Torr. Bull.* XV, 176.
1889. REDFIELD, JOHN H. Rediscovery of *Corema Conradii* in Monmouth County, New Jersey. *Proc. Acad. Nat. Sci.* Philadelphia, 1889. 135.
1890. BRITTON, N. L. *Nymphaea odorata rosea* at Cape May. *Torr. Bull.* XVII, 121.
1890. SMITH, J. B. Cranberry Culture in New Jersey. *Garden and Forest.* 1890, 535.
- 1890-1897. TREAT, MARY. A series of popular accounts of the Pine Barren Flora about Vineland, New Jersey, at various seasons. *Garden and Forest.* III. 442, 463, 524, 534, 546. IV. 14, 188, 351. V. 220, 292, 363, 400, 435, 567. VI. 141, 314, 382, 443. VII. 102, 142, 212, 245, 302, 458, 482. VIII. 3, 103, 203, 262, 362, 452, 492. IX. 332, 412. X. 313, 411, 471.
- These short sketches are marred by a certain amount of error in identification and by a lack of clearness as to just which plants are wild and which are growing in a wild garden, transplanted from elsewhere.
- Such plants, also, as *Thuja occidentalis*, *Dalibarda repens*, *Coreopsis grandiflora*, *Gerardia auriculata*, *Smilax tamnoides* and *Nyssa aquatica* are casually mentioned as familiar Pine Barren species, none of which are known from the region. Certain other species are referred to in a way that would lead one to think they occurred near Vineland, while, in reality, they are found only on the coast or in West Jersey, not in the Pines.
1892. HARSHBERGER, J. W. Flora of the Barnegat Peninsula. *Garden and Forest.* 1892, 45.
1893. PETERS, JOHN E. Notes on the Flora of Southern New Jersey. *Bull. Torrey Bot. Club* XX, 294, 295.

1897. BERRY, E. W. The Pine Barren Plants of New Jersey. *Asa Gray Bull.* V., No. 2 and No. 5.
1898. SAUNDERS, C. F. Some Pine Barren Carices. *Asa Gray Bull.* VI., No. 2.
1899. VERMEULE, C. C. The Pine Belt of Southern New Jersey. *Ann. Rept. State Geol.* 1898. 185-193.
1900. VERMEULE, C. C. and PINCHOT, GIFFORD. The Forests of New Jersey. *Report on Forests, Ann. Rept. State Geol.* 1899, 13-172.
1900. HARSHBERGER, J. W. An Ecological Study of the New Jersey Strand Flora. *Proc. Acad. Nat. Sci., Phila.* 1900. pp. 623-671.
- A number of the records contained in this paper are based upon misidentifications, while others from Cape May are not strand plants at all, the name having been used by the collectors to cover the country north of Cape May City, which is very different from the beach and salt meadows. The same is true of other localities as well.
1900. HOLLICK, ARTHUR. Relation between Forestry and Geology. *Report on Forests, Ann. Rept. State Geol.* 1899. 175-201.
1900. GIFFORD, JOHN. Forestal Conditions and Silvicultural Prospects of the Coastal Plain of New Jersey. *Report on Forests, Ann. Rept. State Geol.* 1899. 235-327.
1900. SAUNDERS, C. F. The Pine Barrens of New Jersey. *Proc. Acad. Nat. Sci., Phila.*, 1900. pp. 544-549.
1901. JELLETT, E. C. The Woodstown Lilies. *Amer. Botanist.* 190.
1902. HARSHBERGER, J. W. Additional Observations on the Strand Flora of New Jersey. *Proc. Acad. Nat. Sci.* 1902. 642-669.

1902. BERRY, E. W. Notes on the Local Flora. *Torreyia* II. 103.
1903. KAUFMAN, P. Gleanings from Sea and Mountain (Ocean Grove and Avon). *Amer. Botanist* 1903. 85-86.
1903. LIGHTHIPE, L. H. Flora of the Pine Barrens of New Jersey. *Torreyia* III. 79.
1903. HARSHBERGER, J. W. Forest Growth at Wildwood, New Jersey. *Forest Leaves* IX. 40.
1903. STONE, W. *Arisaema pusillum* in Pennsylvania and New Jersey. *Torreyia* 1903, p. 171.
1903. ROBINSON, B. L. A Hitherto Undescribed Pipewort from New Jersey. *Rhodora* V. 175.
1904. HARSHBERGER, J. W. The Comparative Age of the Different Floristic Elements of Eastern North America. *Proc. Acad. Nat. Sci. Phila.* 1904, 601-615.
1905. HARPER, R. M. Genus *Xyris*. *Torreyia* V. 128.
1905. KELLER, IDA A. AND BROWN, STEWARDSON. Handbook of the Flora of Philadelphia and Vicinity. Philadelphia, Pennsylvania, pp. i-viii and 1-360.

This work follows the plan of Britton's Catalogue and, so far as the New Jersey counties are concerned, is primarily based upon it with the addition of much valuable data furnished by members of the Philadelphia Botanical Club. Most of this is substantiated by specimens in the Club Herbarium. These I have examined and in addition have consulted the Herbaria of Stewardson Brown, Joseph Crawford, Thos. S. Githens, John W. Harshberger, Ida A. Keller, M. and A. Leeds, Chas. D. Lippincott, Benj. Heritage, Alex. McElwee, Benj. H. Smith, Chas. S. Williamson and Witmer Stone, so that only a few records originating in this work remain unverified. These are marked (KB) in the lists of localities under the various species, while records that have been found to be based upon misidentifications are referred to in foot-notes.

1907. HARPER, R. M. Centers of Distribution of Coastal Plain Plants. *Torreya* VII. 42.
1907. MACKENZIE, K. K. Range of *Vaccinium virgatum*. *Torreya* VII.
1907. ————— The Pine Barrens of New Jersey (reprint from New York Tribune). *Amer. Botanist* 1907, 103-108.
1907. STONE, W. The Life Areas of Southern New Jersey. *Proc. Acad. Nat. Sci. Phila.* 1907, 452-459.
1907. MACKENZIE, K. K. The Pine Barren Bellwort. *Torreya* VII. 13.
1907. LONG, BAYARD. *Gymnadeniopsis nivea* in New Jersey. *Torreya*, VII. 16.
1907. STONE, WITMER. *Rhynchospora rariflora* in New Jersey. *Torreya*, VII. 16.
1908. KAUFMAN, P. The Pine Barrens of Lakehurst, New Jersey. *American Botanist*, 1908, 104-106.
1908. HARPER, R. M. Pine Barrens of Long Island. *Torreya* VIII. 1.
1908. STONE, W. Recent Additions to our Knowledge of the Flora of Southern New Jersey. *Proc. Acad. Nat. Sci. Phila.* 1908, 457-459.
1909. BARTRAM, E. B. An Interesting Addition to the Flora of New Jersey. *Bassia hirsuta* (L.). *Rhodora* XI. p. 121.
1909. BROWN, O. H. [Some Cape May Records.] *Bartonia* I. 25.

1909. CRAWFORD, J. Some Sand Dune Plants from Longport, New Jersey. *Bartonia* I. 18-19.
1909. HARSHBERGER, J. W. The Vegetation of the Salt Marshes and of the Salt and Fresh Water Ponds of Northern Coastal New Jersey. *Proc. Acad. Nat. Sci. Phila.* 1909, 373-400.
1909. HARSHBERGER, J. W. The Comparative Leaf Structure of the Strand Plants of New Jersey. *Proc. Amer. Phila. Soc.* XLVIII. 1909. 72-88.
1909. MACKENZIE, K. K. Notes on *Sagittaria*. *Torreya* IX. 30.
1909. STONE, W. The Coastal Strip of New Jersey and the Rediscovery of *Lilaeopsis*. *Bartonia* I. 20-24.
1909. TAYLOR, NORMAN. Local Flora Notes. *Torreya* IX. 203, 257; X 80, 145.
1910. HARPER, R. M. A Quantitative Study of the More Conspicuous Vegetation of Certain Natural Divisions of the Coastal Plain as Observed in Traveling [by train] from Georgia to New York. *Torr. Bull.* XXXVII. 405.
1910. HARSHBERGER, J. W. Vegetation of the Navesink Highlands. *Torreya* X. 1.
1910. LONG, BAYARD. Range Extension of *Scirpus Smithii* var. *setosus*. *Rhodora* XII. 155.
1910. LONG, B. *Pinus serotina* Michx. in New Jersey and Other Local Notes. *Bartonia* II. 17-21.
1910. STONE, W. New Plants for Southern New Jersey. *Bartonia* II. 27.

1910. STONE, W. *Brachiaria digitarioides* from New Jersey. *Bartonia* II. 26.
1910. MACKENZIE, K. K. A new species of Blueberry from New Jersey. *Torreya* X. 228
1911. BROWN, S. *Helonias bullata*. *Bartonia* III. 1.
1911. LAWALL, C. H. Botanical Notes from Longport, New Jersey. *Bartonia* III. 12-21.
1911. STONE, W. *Corema Conradii* in Ocean County, New Jersey, East of the Plains. *Bartonia* III. 26.
1911. BROWN, O. H. *Galium hispidulum* in Cape May County, New Jersey. *Bartonia* III. 26.
1911. VAN PELT, S. S. [Southern New Jersey plants.] *Bartonia* III. 29.
1911. LONG, B., and BROWN, S. [Flora of Farmingdale, N. J.] *Bartonia* III. 30-31.
1911. PENNELL, FRANCIS W. A new *Gerardia* from New Jersey. *Torreya* II. 15.

LIST OF LOCALITIES

From Which Specimens Are Recorded in the Preceding Pages.

Immediately following the name is reference to the accompanying map, which will indicate in which section the station is located. Only the principal localities are printed on the map, but most of the others can readily be found on the State Geological Survey Maps from the indication here given.

At the end of the line opposite each name are given the initials of the botanical district of southern New Jersey in which the station is located. Sometimes several districts may be represented in the immediately surrounding country, when the station is near the line of separation.

M = Middle District. PB = Pine Barrens. C = Coast District. CM = Cape May District.

Localities on the coast islands are marked 'island.'

Absecon, E 9.	PB + C.
Albion, C 6.	M + PB.
The Middle District flora indents the Pine Barrens at this point.	
Allaire, F 3.	PB.
Alloway, A 8.	M.
Almonesson, B 6.	M.
Ancora, C 7.	PB.
Andrews, C 7.	PB + M.
Anglesea, C 12.	C (island).
Anglesea Inc., C 12.	CM + C
Apple-pie Hill, D 6.	PB.
Arneys Mt., D 5.	M.
Asbury, B 6.	M.
Asbury Park, F 3.	C

The northern extremity of the Pine Barrens lies just back of Asbury Park, and some elements of this flora are recorded from there.

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- Ashland, B 6. M.
- Atlantic City, E 9. C (island).
- Atlantic Highlands, F 1. M.
- Atco, C 6. PB.
 An indentation of the Middle District flora below Clementon reaches
 nearly or quite to Atco.
- Atsion, D 7. PB.
 A few Middle District species follow up the stream all the way to
 Atsion.
- Avalon, D 12. C (island).
- Avon, F 3. C + M.
- Ballinger's Mill, C 6. PB.
 Close to the western edge.
- Bamber, E 5. PB.
 Formerly Ferago, now Cedar Crest.
- Barnegat, F 6. PB + C.
- Barnegat City, F 6. C (island).
- Barnegat Pier, F 5. C + PB.
- Barrel Island, E 8. C.
- Batsto, D 7. PB.
- Bayhead, F 4. PB + C.
- Bayside, A 9. M + C.
- Beaver Dam, B 10. M.
- Belmar, F 3. C + M.
- Bennett, C 13. CM.
- Berlin, C 6. PB.
 Close to the western edge.
- Beach Haven North, F 8. C (island).
 Now Brant Beach.
- Beach Haven North = Brant Beach.
- Beach Haven Terrace, F 8. C (island).

Beverly, C 4.	M.
Blackwood, B 6.	M.
Birmingham, D 3.	M.
Bradway, A 6.	M.
Bridgeton, B 9.	M
Bridgeport, A 6.	M.
Bordentown, D 3.	M.
Brielle, F 4.	C + M.
Browns Mills, D 5.	PB + M.
Apparently close to the boundary line.	
Brant Beach, F 8.	C (island).
Buckshutem, B 10.	M.
Burleigh, C 12.	CM.
Burlington, C 4.	M.
Camden, B 5.	M.
Cape May, C 13.	CM + C.
Bear Swamp, C 5.	PB.
Beesleys Pt., B 10.	C.
Belleplaine, C 10.	PB.
Buena, or Buena Vista, C 8.	PB?
Apparently there is a strong Middle District element running up the streams at this point.	
Cape May Court House, C 12.	CM.
There are certain Pine Barren elements here and there in the vicinity, while many coast plants from the marshes a mile to the east are recorded as from Court House.	
Cape May Point, C 13.	CM + C.
Cassville, E 4.	PB?
Cedar Bridge, E 6.	PB.
Cedar Bonnet, E 8.	C.
Cedar Brook, E 7.	PB.

Cedar Crest, E 5.	PB.
Same as Bamber and Ferago.	
Cedar Grove, E 7.	PB.
Cedar Lake, C 8,	PB.
Centerton, B 8.	M.
Center Square, A 6.	M.
Chatsworth, D 6.	PB.
Formerly called Shamong.	
Cinnaminson, C 5.	M.
Clarksboro, B 6.	M.
Clarksburg, E 3.	M.
Clementon, B 6.	M + PB.
The Pine Barrens begin right below the station.	
Clermont, C 11,	CM + C.
Collier's Mill, E 4.	M + PB
Collingswood, B 5.	M.
Cologne, D 5.	PB.
Como, F 3.	C + M?
Coopers Creek and Coopers Ferry, B 5.	M.
Court House = Cape May Court House.	
Crosswicks, D 3.	M.
Crowleytown, D 8.	PB + C.
The Coast Strip follows up the Egg Harbor river.	
Cox's, E 7.	C + PB.
Cold Spring, C 13.	CM + C.
Davenport, E 5.	PB.
Deal, F 3.	C + M?
Delair, B 5.	M.
Daretown, A 8.	M.
Delanco, C 4.	M.

Dennisville, C 11.	CM + C.
Dias Creek, C 12.	CM + C.
Dividing Creek, B 10.	M + C.
Double Trouble, F 5.	PB.
Dover Forge, E 5.	PB.
Downstown, C 8.	PB (M?)
Eatontown, F 2.	M.
Egg Harbor of old authors = Beesley's Point.	
Egg Harbor City, D 8.	PB.
Eighth Street, C 8.	PB.
Part of a large settlement tract of which Hammonton was a part.
This is a wild spot where the extension of "Eighth St." crosses Hospitality Branch.	
Elmer, B 8.	M.
Elsinboro Twp., A 8.	M.
Elwood, D 8.	PB.
Englishtown, E 2.	M.
Ewansville, D 5.	M.
Fairton, B 9.	M.
Fairview, B 6.	M.
Farmingdale, F 3.	M + PB.
Several Pine Barren tongues pass on either side of the town.	
Ferago, E 5.	PB.
Old name for Bamber, now Cedarcrest.	
Fish House, B 5.	M.
Florence or Florence Heights, C 4.	M.
Folsom, C 8.	PB.
Forked River, F 6.	PB + C.
Franklinville, B 8.	M.
Freehold, E 2.	M.
Glassboro, B 7.	M.

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Gloucester, B 5.	M.
Goshen, C 11.	CM.
Grenloch, B 6.	M.
Green Creek, C 12.	CM + C.
Green Bank, D 8.	PB + C.
Griffith's Swamp, B 5. near Lawnside.	
A curious Pine Barren "island," now completely destroyed.	
Haddonfield, B 5.	M.
Halfway House, below Bonds, E 8.	C (island).
Hainesport, C 5.	M.
Haleyville, B 10.	M.
Hammonton, C 8.	PB.
There are a number of Middle District plants in the neighborhood, largely due, no doubt, to the long settlement of the place, but apparently partly intruders from the coast via Hammonton creek.	
Hanover, E 5.	PB.
Hartford, C 5.	M.
Harvey Cedars, F 7.	C (island).
Herman, D 8.	PB + C.
High Bridge, E 6.	PB.
Holgates, F 8.	C (island).
Holly Beach, C 13.	C (island).
Holmdel, F 2.	M.
Hornerstown, D 4.	M.
Hospitality Bridge, E 6.	PB.
Same as Eighth St.	
Husted, B 8.	M.
Inskip, C 7.	PB.
Iona, B 8.	PB.
Island Heights and I. H. Junction, F 5.	PB + C.
Jackson, C 6.	PB.

Jericho,	M.
Joe's (or Job's) Bridge, D 7.	PB.
Jones Mill, D 6.	PB.
Jumbo,	M.
Kaighn's Point, B 5.	M.
Kenilworth, C 6.	PB.
Keyport, F 1,	M.
Kinkora, C 4.	M.
Kirkwood, B 6.	M.
Lacy, E 6.	PB.
Lakehurst, E 4.	PB.
Formerly Manchester.	
Lakewood, F 4.	PB.
Landisville, C 8.	PB.
The same prevalence of Middle district species as at Hammonton—
mainly due, I think, to long settlement, but <i>see</i> Buena.	
Little Timber Creek, B 5.	M.
Longacoming = Berlin.	
Long Branch, G 1.	C + M.
There is also a slight PB element a little to the west.	
Long Causway, E 6.	PB.
Longport, B 10.	C (island).
Lucaston, C 6.	PB.
Lumberton, D 5.	M.
Lawnside, B 5,	M.
Lindenwold, C 6.	M.
A bog with a curious mixture of M and PB species.	
Locust Grove, C 5.	M.
Magnolia, B 6.	M.
Malaga, B 8.	M + PB
About on the line.	

Manahawkin, E 7.PB + C

Manasquan, F 4.C + M.
Cf. Pt. Pleasant.

Manchester = Lakehurst.

Mantoloking, F 4.C (island).

Mantua, B 6.M.

Manumuskin, C 10.PB + C.

Masonville, C 5.M.

Mayetta, E 7.C + PB.

Matawan, F 1,M.

Mays' Landing, D 9.PB + C.
The Coast Strip flora comes up the river to the Mays Landing dam.

Mannington, A 8.M.

Medford, C 5.M.

Merchantville, B 5.M.

Mickleton, A 6.M.

Middletown, F 2.M.

Millville, B 9.PB + M.

Moorestown, C 5.M.

Morris, B 5.M.

Mount Ephraim, B 5.M.

Mount Holly, C 5.M.

Mullica Hill, B 7.M.

Munyon Field, E 8.PB.

Navesink, F 1.M.

Newfield, B 8.PB.

New Egypt, E 4.M.

New England, C 13.CM + C.

New Germany, C 8.PB.

New Lisbon, D 5.	PB + M.
On the line.	
Newport, B 10.	M.
Newtonville, C 8.	PB.
North Beach Haven, F 8.	C (island).
Oaklyn, B 5.	M.
Ocean Beach = Belmar.	
Ocean City, D 10.	C (island).
Ocean Grove, F 3.	C.
Cf. Asbury Park.	
Ocean View, D 11.	C.
Orchard, B 5.	M.
Palatine, B 8.	M.
Palermo, D 11.	PB + C.
Pancoast, C 8.	PB
Parkdale, C 7.	PB.
Pasadena, E 5.	PB.
Paulsboro, B 6.	M.
Piermont, D 12.	C (island)
Peahala, F 8.	C (island).
Pemberton, D 5.	M.
Penbryn, C 6.	PB.
Pensauken, C 5.	M.
Pennsgrove, A 7.	M.
Petersburg, D 10.	PB.
Phalanx, F 2.	M.
Pipers Corner, C 6.	PB.
Pitman, B 7.	M.
Plains, E 6, E 7.	PB.
Pleasant Mills, D 8.	PB.

Point Pleasant, F 4.C + M + PB.

A curious mixture in this vicinity, an arm of PB from the west and one of M to the north.

Prosperatown, E 4.M.

Port Elizabeth, C 10.M (C + PB?).

Quaker Bridge, D 7.PB.

Quinton, A 8.M.

Rancocas, C 4.M.

Redbank, B 5.M.

Red Bank, F 2.*M.

Repaupo, B 6.M.

Riddleton, A 8.M.

Riverside, C 4.M.

Riverton, C 4.M.

Rio Grande, C 12.CM.

Salem, A 8.M.

Sandy Hook, F 1,C + M.

Sea Breeze, A 10.C.

Seabright, G 2.C + M.

Sea Girt, F 4.C + M (+ PB?).

Sea Haven, F 8.C (island).

Seaside Park, F 5.C (island).

Sea Isle City, D 11.C (island).

Sewell, B 6.M.

Sharpstown, A 7,M.

Sicklerville, C. 7.M.

Shark River, F 3.M.

Smithville, C 5.M.

* While the different capitalization here shown may not have been consistently followed in the text, the Redbank in Monmouth Co. is always near the beginning of the list of localities, as they are arranged from north to south.

Somer's Point, D 10.	C (+ PB?)
Speedwell, D 6.	PB.
Spray Beach, F 8.	C (island).
Springdale, C 5.	M.
Spring Garden, C 7.	PB.
Spring Lake, F 3.	C + M.
Stafford Forge, E 7.	PB.
Swedesboro, A 7.	M.
Swimming River, F 2,	M.
Stoe Creek, A 8.	M.
Stone Harbor, C 12.	C (island).
Sumner, C 6.	PB + M.
Nearly on the line.	
Tabernacle, D 6.	PB.
Much cleared away.	
Taunton, C 6.	PB + M.
About on the line.	
Timber Creek, B 5.	M.
Tomlin, B 6.	M.
Toms River, F 5.	PB + C.
Tuckahoe, C 10.	PB + C.
Tuckers, F 8.	C (island).
Tuckerton, E 8.	PB + C.
Twelfth St., C 8.	PB.
At Hospitality Branch cf. "Eighth St."	
Union Grove, B 8.	M.
Ventnor, E 10.	C (island).
Vincentown, D 5.	M.
Vineland, B 9.	PB.
Very much cleared and long settled, which accounts at least in part
for the Middle District element. Cf. Hammonton, Landisville and
Buena.	
Waretown, F 6.	PB.

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Washington Park, B 5.	M.
Waterford, C 7.	PB.
Weekstown, D 8.	PB.
Wenonah, B 6.	M.
West Creek, E 7.	C + PB.
West Deptford, B 5.	M.
Apparently mainly in the vicinity of Washington Park.	
Westmont, B 5.	M.
Westville, B 5.	M.
Weymouth, C 8.	PB.
Whiskey Road, B 5.	M.
White House, D 6.	PB.
Whitesboro, C 12.	CM.
Whitings, E 5.	PB.
Williamstown Junction, C 7.	PB.
Willow Grove, B 8.	PB.
Winslow and Winslow Jnc., C 7.	PB.
Woodbine, C 11.	PB.
Woodbury, B 6.	M.
Woodstown, A 7.	M.
Woodmansie, E 6.	PB.
Wildwood, C 13.	C (island).
Wildwood Jnc., C 13.	CM.
Yorktown, A 8.	M.

ACTUAL NUMBER OF SPECIES LISTED.

Ferns, etc.,	50
Conifers,	10
Grasses,	165
Sedges,	165
Other Monocotyledons,	161
Dicotyledons (Polypetalae),	461
(Gamopetalae),	389
Total,	1,401

GLOSSARY.

Acaulescent. Stemless.

Achene. A small dry, one-seeded, non-splitting fruit.

Acuminate. Tapering at the end.

Amplexicaul. Clasping the stem.

Annual. Lasting but one year.

Anther. Terminal part of the stamen, bearing the pollen.

Apetalous. Without petals.

Arachnoid. Like cobwebs.

Aril. An appendage growing at the point of attachment of the seed.

Aristate. Awned, or provided with bristles.

Awn. A bristle-like appendage.

Axil. Juncture of a leaf or branch with the stem.

Blade. The flat part of a leaf.

Bract. A modified leaf, usually subtending a flower.

Calyx. The outer part of the perianth of a flower; composed of the sepals.

Campanulate. Bell shaped.

Canescent. Gray-hairy.

Capitate. In heads.

Capsule. A dry non-splitting fruit of more than one carpel.

Cauline. Belonging to the stem.

Circumcissile. Splitting by a transverse circular line of division.

Cleistogamous. Fertilized in the bud, without the flower opening.

Coriaceous. Leathery.

Corolla. The inner part of the perianth, composed of the petals.

Corymb. A flat-topped flower cluster, the marginal flowers blooming first.

Cotyledons. The first leaves of the embryo as found in the seed.

Crenate. Dentate with rounded teeth.

Cyme. A flat-topped flower cluster, with the central or terminal flowers blooming first.

Dentate. Toothed.

Dichotomous. Forking regularly by pairs.

Dioecious. Staminate and pistillate flowers on separate plants.

Drupe. A fleshy fruit, with a hard, usually one-seeded "stone" (inner pericarp).

Emarginate. With a slight terminal notch.

Entire. Without teeth or divisions.

Exserted. Projecting beyond a surrounding covering, calyx, etc.

Falcate. Scythe-shaped.

Floret. A small flower; one of a cluster.

Gamopetalous. Having the petals of the corolla united.

Glabrate. Somewhat glabrous.

Glabrous. Smooth.

- Glume*. A chaff-like bract. In grasses, one of the two empty bracts at the base of a spikelet.
- Hastate*. Arrow shaped.
- Hirsute*. Coarsely or stiffly pubescent.
- Hispid*. With bristly hairs.
- Included*. Not protruding, opposite of exserted.
- Inflorescence*. The flowering portion of a plant.
- Innovation*. An offshoot from the stem.
- Involucre*. A circle of bracts, surrounding a flower or head of flowers.
- Leaflet*. One component of a compound leaf.
- Legume*. A pod-like fruit.
- Lemna*. The lower bract inclosing the flower in grasses.
- Ligule*. A flat strap-shaped corolla, as the ray flowers of a sunflower, also a scarious margin to the sheath of grasses.
- Loculicidal*. Splitting or opening by a slit on the top or back of a cell or pod.
- Monoecious*. Stamens and pistils in separate flowers on the same plant.
- Ocrea*. A tubular stipule.
- Palea*. The upper bract enclosing the flower of a grass.
- Panicle*. An irregular branching inflorescence, with the individual flowers pedicelled.
- Papilionaceous*. Having a pea-shaped blossom.
- Pappus*. A tuft usually of down or bristles at the summit of the seeds of Compositae; in reality part of the calyx.
- Peltate*. A shield-shaped leaf, etc., attached by the middle of the lower surface.
- Perianth*. The calyx and corolla of a flower.
- Perigynium*. The inflated covering of the seed in *Carex*.
- Persistent*. Remaining attached.
- Petal*. One of the divisions of the corolla.
- Petiole*. A leaf stem.
- Pinna*. One of the primary divisions of a fern frond, or a compound leaf.
- Pinnatifid*. Cut or divided into pinnæ.
- Pistil*. The seed-bearing organ of the flower, consisting of the ovary, stigma and style.
- Pollen*. The fertilizing powder contained on the anthers.
- Puberulent*. Minutely pubescent.
- Pubescent*. Covered with soft, or downy hairs.
- Raceme*. An elongate, simple inflorescence, with the flowers pedicelled.
- Ray*. Marginal flowers in Compositae; or the branch of an umbel.
- Receptacle*. The broadened tip of a stem, pedicel, etc., which bears the flower parts (or the flowers of a head).
- Rhachis*. The central stem, etc., of a spike or compound leaf.
- Samara*. A non-splitting winged fruit.
- Scabrous*. Rough and harsh.
- Scape*. A stem arising from the ground bearing only flowers.
- Sepal*. One of the divisions of the calyx.
- Serrate*. With sharp teeth directed forward.
- Sessile*. Without a stem of any sort.
- Sheath*. A tubular covering, such as the lower part of a grass leaf.

Sinus. A cleft between two lobes.

Spatha. A sheath-like bract covering an inflorescence.

Spadix. A fleshy spike stem or axis.

Spatulate. Gradually narrowed from a rounded terminal portion.

Spike. An elongate simple inflorescence, with the flowers sessile or nearly so.

Spikelet. A small spike; in grasses, one of the individual flowers or flower clusters with its bracts.

Stamen. One of the pollen bearing organs of the flower; the terminal portion is the anther.

Stipe. The stalk of the pistil, or leaf stalk of a fern.

Stipule. An appendage growing at the base of a petiole.

Stolon. A runner, which roots.

Terete. Circular in cross section.

Ternate. In threes.

Thyrse. A contracted, cylindrical panicle.

Tomentose. Densely wooly.

Umbel. An inflorescence in which the several branches spring from the same point.

Utricle. A small bladder-like body.

Viscid. Glutinous.

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PLATES

1.

Lycopodium alopecuroides.

2.

L. chapmanii.

3.

L. carolinianum.

Photos by S. Brown.

CLUB MOSSES.

x.5.

Original Photo.

1 and 2. PITCH PINE. *Pinus rigida*.

3 and 4. OLD-FIELD PINE. *P. taeda*.

x.6.

1

2

3

4

Original Photo.

Nat. size.

- 1 and 2. YELLOW PINE. *P. echinata*.
3. JERSEY PINE. *P. virginiana*.
4. POND PINE. *P. serotina*.

Original Photo.

PINE LEAVES.

x.8.

1. *Pinus tæda*.
2. *P. serotina*.
- 3 and 4. *P. rigida*.

5. *P. strobus*.
6. *P. virginiana*.
- 7 and 8. *P. echinata*.

Photos by E. Long.

1. SEA-BEACH SANDWORT. *Ammodenia peploides maritima*.
2. SEA SAND REED. *Ammophila arenaria*.

Original Photo.

Nat. size.

GRASSES.

1. *Tripsacum dactyloides*.
2. *Cœlorachis rugosa*.

3. *Stipa avenacea*.
4. *Andropogon corymbosus abbreviatus*.

Original Photo.

Nat. size.

GRASSES.

1. <i>Deschampsia flexuosa</i> .	4. <i>Homalocenchrus oryzoides</i> .
2. <i>Poa pratensis</i> .	5. <i>Panicum longifolium</i> .
3. <i>Muhlenbergia sylvatica</i> .	6. <i>Syntherisma filiformis</i> .

Original Photo.

Nat. size.

GRASSES.

1. <i>Amphicarpum amphicarpon</i> .	4. <i>Aristida gracilis</i> .	7. <i>Alopecurus geniculatus</i> .
2. <i>Distychlis spicata</i> .	5. <i>Danthonia spicata</i> .	8. <i>Andropogon virginicus</i> .
3. <i>Triplasis purpurea</i> .	6. <i>Andropogon scoparius</i> .	9. <i>Aristida dichotoma</i> .

Original Photo.

GRASSES.

x.6.

1. <i>Panicum dichotomum</i> .	4. <i>Panicularia septentrionalis</i> .
2. <i>P. virgatum</i> (part of panicle).	5. <i>Eragrostis pectinacea</i> (part of panicle).
3. <i>P. capillare</i> .	6. <i>Gymnopogon ambiguus</i> .

Original Photo.

Nat. size.

GRASSES.

1. <i>Calamagrostis cinnoides</i> .	3. <i>Phalaris arundinacea</i> .	5. <i>Brachyelytrum erectum</i> .
2. <i>Dactylis glomeratus</i> .	4. <i>Holcus lanatus</i> .	

Original Photo.

GRASSES.

x.6.

1. <i>Sorghastrum nutans.</i>	4. <i>Elymus striatus.</i>
2. <i>Phragmites phragmites.</i>	5. <i>Chaetocloa imberbis.</i>
3. <i>Echinocloa walteri.</i>	6. <i>Elymus virginicus.</i>

Original Photo.

GRASSES.

x.7.

1. *Panicum condensum*.
2. *Aristida purpurascens*.
3. *Agrostis alba*.

4. *Cinna arundinacea*.
5. *Paspalum læve angustifolium*.
6. *P. glabratum*.

Original Photo.

GRASSES.

1. *Calamovilfa brevipilis*.
2. *Eragrostis pilosa*.

3. *Tridens flavus*.
4. *Sporobolus serotinus*.

x.7.

Original Photo.

Nat. size.

GRASSES.

1. <i>Festuca octoflora</i> .	4. <i>S. clandestinus</i> .
2. <i>F. elatior</i> .	5. <i>Sphenopholis pallens</i> .
3. <i>Sporobolus vaginæflorus</i> .	6. <i>Uniola laxa</i> .

Original Photo.

x.6.

GRASSES.

1. <i>Spartina cynosuroides</i> .	4. <i>P. obtusa</i> .
2. <i>Erianthus saccharoides</i> .	5. <i>Spartina patens</i> .
3. <i>Panicularia canadensis</i> .	6. <i>Cenchrus carolinensis</i> .

Original Photo.

Nat. size.

SEDGES.

1. *Cyperus lancastricensis*; 2. *C. hystricinus*; 3. *C. cylindricus*; 4. *C. ovularis*; 5. *C. fil. macilentus*; 6. *C. grayi*; 7. *C. pseudovegetus* (single cluster of heads); 8. *C. dentatus*; 9. *C. flavescens*; 10. *C. strigosus* (single head from large inflorescence); 11. *C. speciosus* (single head); 12. *C. erythrorhizos* (single head); 13. *C. rivularis*; 14. *C. diandrus*; 15. *C. nuttalli*; 16. *C. esculentus* (single head).

Original Photo.

SEDGES AND SPIKE-RUSHES.

Nat. size.

1. *Fimbristylis castaneus*; 2. *F. autumnalis*; 3. *Stenophylis capillacea*; 4. *Dulichium arundinaceum*; 5. *Eleocharis interstincta*; 6. *E. quadrangulata*; 7. *E. robbinsii*; 8. *E. tuberculosa*; 9. *E. melanocarpa*; 10. *E. trichostata*; 11. *E. glaucescens*; 12. *E. rostellata*; 13. *E. tortilis*; 14. *E. ocreata*; 15. *E. acicularis*; 16. *E. torreyana*; 17. *E. obtusa*; 18. *E. tenuis*.

Original Photo.

Nat. size.

BEAKED-RUSHES.

1. *Rynchospora macrostachya* (part of inflorescence); 2. *R. knieskernii*; 3. *R. cymosa*; 4. *R. rariflora*; 5. *R. torreyana*; 6. *R. fusca*; 7. *R. glomerata*; 8. *R. axillaris*; 9. *R. oligantha*; 10. *R. pallida* and *R. alba*.

Original Photo.

Nat. size.

COTTON-GRASS, NUT-RUSHES, ETC.

1. *Eriophorum virginicum*.
2. *Cladium mariscoides*.
3. *Scleria verticillata*.

4. *Fuirena hispida*.
5. *Eriophorum tenellum*.
6. *Scleria triglomerata*.

7. *S. ret. torreyana*.

Original Photo.

Nat. size.

SEDGES.

1. *Scirpus validus*; 2. *S. planifolius*; 3. *S. nanus*; 4. *S. debilis*; 5. *S. torreyanus*; 6. *S. subterminalis*; 7. *S. americanus*; 8. *S. olneyi*; 9. *S. atrovirens* (portion only); 10. *S. lineatus* (portion only); 11. *S. longii* (portion only); 12. *S. eriophorum* (portion only); 13. *S. cyperinus* (portion only).

Original Photo.

SEDGES.

Nat. size.

1. *Carex stipata*.
2. *C. vulpinoidea*.
3. *C. muhlenbergii*.
4. *C. cephalophora*.

5. *C. canescens disjuncta*.
6. *C. crinita*.
7. *Scirpus robustus*.
8. *S. fluviatilis* (portion only).

Original Photo.

SEDGES.

Nat. size.

1. *Carex lupulina.*
2. *C. bullata.*
3. *C. collinsii.*

4. *C. folliculata.*
5. *C. intumescens.*

Original Photo.

Nat. size.

SEDGES.

1. *Carex lurida.*
2. *C. comosa.*
3. *C. lanuginosa.*

4. *C. barrattii.*
5. *C. limosa.*
6. *C. lacustris.*

7. *C. walteriana.*

Original Photo.

Nat. size.

SEDGES.

1. <i>Carex livida.</i>	4. <i>C. tetanica.</i>	7. <i>C. styloflexa.</i>
2. <i>C. grisea.</i>	5. <i>C. granularis.</i>	8. <i>C. abscondita.</i>
3. <i>C. lax. patulifolia.</i>	6. <i>C. laxiculmis.</i>	

Original Photo.

SEDGES.

Nat. size.

1. *Carex stricta*.
2. *C. triceps*.
3. *C. oblita*.

4. *C. buxbaumii*.
5. *C. trichocarpa*.
6. *C. swanii*

7. *C. vestita*.

Original Photo.

Nat. size.

SEDGES.

1. *Carex scoparia*; 2. *C. tribuloides*; 3. *C. silicia*; 4. *C. hormathodes*;
 5. *C. alata*; 6. *C. albolutescens*; 7. *C. straminea*; 8. *C. festucacea brevior*;
 9. *C. varia emmonsii*; 10. *C. interior*; 11. *C. atlantica*; 12. *C. pennsylvanica*;
 13. *C. exilis*; 14. *C. leptalea harperi*; 15. *C. umbellata*.

Photos by S. Brown.

PICKEREL WEED. *Pondetia cordata*.

GREEN ARROW ARUM. *Peltandra virginica*.

1.
Eriocaulon septangulare.

2.
E. decangulare.

PIPEWORTS.

Photos by B. Long.

1. PRICKLY PEAR. *Opuntia opuntia*.
2. SKUNK CABBAGE. *Spathyema foetida*.

From Painting by H. E. Stone.

SKUNK CABBAGE. *Spathyema foetida*.

Original Photo.

Nat. size.

RUSHES.

1. *Juncus tenuis*.
2. *J. buffonius*.
3. *J. gerardi*.

4. *J. effusus*.
5. *J. marginatus*.
6. *J. aristulatus*.

7. *J. dichotomus*.
8. *J. setaceus*.

Original Photo.

RUSHES.

Nat. size.

1. *Juncus acuminatus*.
2. *J. canadensis*.
3. *J. scirpoides*.

4. *J. militaris*.
5. *J. caesariensis*.
6. *J. pelocarpus*.

Photos by W. Stone.

1

2

3

4

5

1. VISCID ASPHODEL. *Tofieldia racemosa*.
2-3. BOG ASPHODEL. *Abama americana*.

4-5. GRASS PINK. *Limodorum tuberosum*.

Photos by W. Stone.

1. PYXIE. *Pyxidanthera barbulata*.

2. GOLD-CREST. *Lophiola americana*.

Photo by H. A. Pilsbry and W. Stone.

TURKEY-BEARD. *Xerophyllum asphodeloides*.

From Painting by H. E. Stone.

SWAMP PINK. *Helonias bullata*.

Photos by B. Long.

1. BLUE FLAG. *Iris versicolor*.
2. BLUE LUPINE. *Lupinus perennis*.

Photos by S. Brown.

1. FALSE LILY-OF-THE-VALLEY. *Unifolium canadense*.
2. ROUND-LEAVED WINTERGREEN. *Pyrola americana*.

1.
YELLOW LILY. *Lilium canadense*.

2.
JACK-IN-THE-PULPIT. *Arisaema triphyllum*.

Photos by B. Long.

From Painting by H. E. Stone.

'DOG-TOOTHED VIOLET.' *Erythronium americanum*.

Photos by B. Long.

1. 'DOG-TOOTHED VIOLET.' *Erythronium americanum*.
2. BLOOD ROOT. *Sanguinaria canadensis*.

From Painting by H. E. Stone.

MOCCASIN-FLOWER. *Cypripedium acaule*.

From Painting by H. E. Stone.

TWAY-BLADE. *Leptorchis liliifolia*.

From Painting by H. E. Stone.

SHOWY ORCHIS. *Galearis spectabilis.*

From Painting by H. E. Stone.

ORANGE FRINGED ORCHIS. *Blephariglottis ciliaris.*

From Painting by H. E. Stone.

GREEN FRINGED ORCHIS. *Blephariglottis lacera*.

From Painting by H. E. Stone.

SNOWY ORCHIS. *Gymnadeniopsis nivea*.

From Painting by H. E. Stone.

ROSE POGONIA. *Pogonia ophioglossoides.*

From Painting by H. E. Stone.

WHORLED POGONIA. *Isotria verticillata*.

From Painting by H. E. Stone.

RATTLESNAKE PLANTAIN. *Peramium pubescens.*

From Painting by H. E. Stone.

SLENDER LADIES' TRESSES. *Gyrostachys gracilis*.

From Painting by H. E. Stone.

NODDING LADIES' TRESSES. *Gyrostachys cernua*.

From Painting by H. E. Stone.

CORAL ROOT. *Corallorhiza odontorhiza*.

Photos by S. Brown.
SPOTTED-STEM PHLOX. *Phlox maculata*.

"SWEET FERN." *Comptonia asplenifolia*.

Photos by S. Brown.

1. SLENDER GLASSWORT. *Salicornia europaea*.
2. BIGELOW'S GLASSWORT. *S. bigelovii*.
3. SEA-BEACH SANDWORT. *Ammodenia pep. maritima*.

Photos by S. Brown.

1. SEA ROCKET. *Cakile edentula*.

2. SEA BLIGHT. *Dondia maritima*.

Photos by S. Brown.

1. HALBERT-LEAVED ORACHE. *Atriplex hastata*.
2. SALTWORT. *Salsola kali*.

Photos by W. Stone.

1. PINE BARREN SANDWORT. *Arenaria caroliniana*.
2. WHITE AZALEA. *Azalea viscosa*.

From Painting by H. E. Stone.

WHITE WATER LILY. *Castalia odorata*.

From Painting by H. E. Stone.

SWAMP MAGNOLIA. *Magnolia virginiana.*

Photos by B. Long.

TULIP POPLAR. *Liriodendron tulipifera*.
PARTRIDGE-BERRY. *Mitchella repens*.

Photos by S. Brown.

1.

KIDNEY-LEAVED CROWFOOT.
Ranunculus abortivus.

2.

WILD COLUMBINE.
Aquilegia canadensis.

From Painting by H. E. Stone.

PITCHER PLANT. *Sarracenia purpurea*.

LAUREL.
Kalmia latifolia.

Photos by W. Stone.

PITCHER PLANT. *Sarracenia purpurea*.
and
PIPEWORT. *Eriocaulon compressum*.

From Painting by H. E. Stone.

LONG-LEAVED SUNDEW. *Drosera longifolia*.

Photos by S. Brown.
1.
CURLY GRASS.
Schizaea pusilla.

2.
THREAD-LEAVED SUNDEW.
Drosera filiformis.

3.
VIRGINIA SNAKE-ROOT.
Aristolochia serpentaria.

Photos by S. Brown.
CHOKE-BERRY. *Aronia nigra*.

BURNET. *Sanguisorba canadensis*.

Photos by S. Brown.

1. WILD INDIGO. *Baptisia tinctoria*.
2. PENCIL FLOWER. *Stylosanthes biflora*.

From Painting by H. E. Stone.

LUPINE. *Lupinus perennis.*

Photos by S. Brown.

1. WAND-LIKE BUSH CLOVER. *Lespedeza frutescens*.

2. HAIRY BUSH CLOVER. *L. hirta*.

From Painting by H. E. Stone.

RED CLOVER. *Trifolium pratense.*

Photos by S. Brown.

1. PINK WILD BEAN. *Strophostyles umbellata*.

2. GROUND-NUT. *Apios apios*.

From Painting by H. E. Stone.

CROSS-LEAVED MILKWORT. *Polygala cruciata*.

Drawings by H. E. Stone.

1. LOOSE-SPIKED MILKWORT. *Polygala ambigua*.
2. NUTTALL'S MILKWORT. *P. nuttallii*.
3. WHORLED MILKWORT. *P. verticillata*.

Drawings by H. E. Stone.

1. PINK MILKWORT. *Polygala incarnata*.
2. RACEMED MILKWORT. *P. polygama*.

Drawings by H. E. Stone.

1. SHORT-LEAVED MILKWORT. *Polygala brevifolia*.
2. FLOWERING WINTERGREEN. *P. paucifolia*.

Drawing by H. E. Stone.

ORANGE MILKWORT. *Polygala lutea*.

Drawings by H. E. Stone.

1. MARYLAND MILKWORT. *Polygala mariana*.
2. PURPLE MILKWORT. *P. viridescens*.

Photos by W. Stone.

CONRAD'S CROW-BERRY. *Corema Conradii*.

Photos by S. Brown.

1. POISON IVY. *Rhus radicans*.

2. VIRGINIA CREEPER. *Pseuderacemata quinquefolia*.

From Painting by H. E. Stone.

ROSE MALLOW. *Hibiscus moscheutos.*

Photos by S. Brown.

1. ORANGE GRASS. *Sarthra gentianoides*.
2. RATTLESNAKE MASTER. *Eryngium aquaticum*.

Original Photo.

Nat. size.

PINWEEDS.

1. <i>Lechea villosa</i> .	3. <i>L. minor</i> .
2. <i>L. racemulosa</i> .	4. <i>L. maritimum</i> .
5. <i>L. leggetii</i> .	

Photos by B. Long.

1. BLUE MARSH VIOLET. *Viola cucullata*.
2. SPRING BEAUTY. *Claytonia virginica*.

From Painting by H. E. Stone.

BIRD-FOOT VIOLET. *Viola pedata lineariloba.*

From Painting by H. E. Stone.

OVATE-LEAVED VIOLET. *Viola fimbriatula*.

From Painting by H. E. Stone.

ARROW-LEAVED VIOLET. *Viola sagittata*.

1. PRIMROSE-LEAVED VIOLET. *Viola primulifolia*.
2. LANCE-LEAVED VIOLET. *V. lanceolata*.

3. THREAD-LEAVED SUNDEW. *Drosera filiformis*.
Showing insects attached to glands.

Photos by W. Stone.

From Painting by H. E. Stone.

SWEET WHITE VIOLET. *Viola pallens*.

Drawings by H. E. Stone.

1. MUDWORT. *Limosella tenuifolia*.
2. UMBELLATE PENNYWORT. *Hydrocotyle umbellata*.
3. LILAEOPSIS. *Lilaeopsis lineata*.

From Painting by H. E. Stone.

SPOTTED WINTERGREEN. *Chimaphila maculata*.

Photos by S. Brown.

1. CASSANDRA. *Chamaedaphne calyculata*.
2. SWEET PEPPER-BUSH. *Clethra alnifolia*.

Photos by B. Long.

1. WITCH HAZEL. *Hamamelis virginiana*.
2. INDIAN PIPE. *Monotropa uniflora*.
- WINTERGREEN. *Gaultheria procumbens*.

Photos by P. Long.
RHODODENDRON, *Rhododendron maximum*.

WILD HYDRANGEA, *Hydrangea arborescens*.

From Painting by H. E. Stone.

PINK AZALEA. *Azalea nudiflora*.

Photos by S. Brown.

1. **BUTTON-BUSH.** *Cephalanthus occidentalis.*
2. **SAND MYRTLE.** *Dendrium buxifolium.*

Photos by S. Brown.

1. WINTERGREEN. *Gaultheria procumbens*.

2. CRANBERRY. *Oxycoccus macrocarpus*.

From Painting by H. E. Stone.

ARBUTUS. *Epigaea repens*.

From Painting by H. E. Stone.

BEAR BERRY. *Arctostaphylos uva-ursi*.

1. SWAMP LEUCOTHOE. *Leucothoe racemosa*.
2. CASSANDRA. *Chamaedaphne calyculata*.
3. BEAR-BERRY. *Arctostaphylos uva-ursi*.

Drawings by H. E. Stone.

1. TALL BLUEBERRY. *Vaccinium corymbosum*.
2. NARROW-LEAVED BLUEBERRY. *V. pennsylvanicum*.
3. LOW BLUEBERRY. *V. vacillans*.

1. BLUE HUCKLEBERRY. *Gaylussacia frondosa*.
2. BLACK HUCKLEBERRY. *G. baccata*.
3. LEAFY-BRACTED HUCKLEBERRY. *G. dumosa*.

Drawings by H. E. Stone.

From Painting by H. E. Stone.

FRINGED GENTIAN. *Gentiana crinita*.

From Painting by H. E. Stone.

PINE BARREN GENTIAN. *Gentiana porphyrio*.

From Painting by H. E. Stone.

CLOSED GENTIAN. *Gentiana andrewsii.*

Photos by S. Brown.

1. SQUARE-STEMMED CENTAURY. *Sabatia angularis*.
2. LARGE MARSH CENTAURY. *S. dodecandra*.
3. SEA PINK. *S. stellaris*.

Photos by S. Brown.

1. PURPLE FOXGLOVE. *Gerardia purpurea*.
2. BARTONIA. *Bartonia virginica*.

Photos by S. Brown.
SWAMP LOOSESTRIFE. *Decodon verticillatus*.

BUTTERFLY-WEED. *Asclepias tuberosa*.

Photos by S. Brown.

HAIRY MILKWEED.
Asclepias pulchra.

SMOOTH ORANGE MILKWEED.
Asclepias lanceolata.

From Painting by H. E. Stone.

HORSE MINT. *Monarda punctata*.

From Painting by H. E. Stone.

SNAKE HEAD. *Chelone glabra*.

Drawings by H. E. Stone.

Nat. size.

BLADDERWORTS.

1. *Utricularia intermedia*.
2. *U. purpurea*.

3. *U. cornuta*.
4. *U. juncea*.

4
Drawings by H. E. Stone.

Nat. size. 5

BLADDERWORTS.

1. *Utricularia virgatula*.
2. *U. clandestina*.

3. *U. subulata*.
4. *U. cleistogama*.
5. *U. gibba*.

Drawing by H. E. Stone.

BLADDERWORTS.

1. *Utricularia fibrosa*.

2. *U. inflata*.

Drawings by H. E. Stone.

HAIRY RUELLIA. *Ruellia ciliosa*.

Drawings by H. E. Stone.

1. CLEAVERS. *Galium aparine*.

2. COAST BEDSTRAW. *G. hispidulum*.

Drawings by H. E. Stone.

1. *Galium circaeazans*.

2. *G. asprellum*.

BEDSTRAWS.

3. *G. triflorum*.

Drawings by H. E. Stone.

1. *Galium pilosum*.

2

BEDSTRAWS.

2. *G. tinctorium*.

Photos by S. Brown.
CARDINAL LOBELIA. *Lobelia cardinalis.*

MONKEY FLOWER. *Mimulus ringens.*

From Painting by H. E. Stone.

DOWNY LOBELIA. *Lobelia puberula*.

Photos by S. Brown. 1. GROUNDSEL-BUSH.
Baccharis halimifolia.

2. MOUSE-EAR EVERLASTING.
Antennaria plantaginifolia.

Photos by S. Brown.

1. SEASHORE GOLDENROD. *Solidago sempervirens*.

2. CLIMBING BONESET. *Willugbaeya scandens*.

Photos by S. Brown.

1. PINE BARREN BONESET. *Eupatorium album*.

2. WILD SAGE. *Salvia lyrata*.

From Painting by H. E. Stone.

BONESET. *Eupatorium perfoliatum*.

From Painting by H. E. Stone.

STIFF-LEAVED ASTER. *Ionactis linariifolius*.

From Painting by H. E. Stone.

SWEET-SCENTED GOLDENROD. *Solidago odora.*

Photos by T. M. Lightfoot and W. Stone.

1. CEDAR SWAMP.
2. DRY PINE WOODS.

Photos by T. M. Lightfoot.

VIEWS OF THE WEST PLAINS.
LAUREL IN BLOOM.

Photos by W. Stone and T. M. Lightfoot.

1. FLOODED CRANBERRY BOG, WITH ROADWAY ON THE DYKE. STAFFORD'S FORGE.
2. SAND DUNES, AND BURIED FOREST. BELOW PIERMONT.

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