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SOME SPECIES OF VIBURNUM

BENJAMIN FRANKLIN BUSH

After reading the admirable paper of Blake's on some species of *Viburnum*¹, it would seem that all the collector had to do was to collect his specimens and refer them to one or the other of the species he recognizes therein. But a careful and painstaking study of the species found in the middle United States has convinced me that Blake did not fully account for all the forms that occur in this part of the country, at least two of which had been referred to one of the principal species treated by him, and which are readily distinguished.

Perhaps the most important part of Blake's paper is the showing that *V. affine hypomalacum* is the plant that has been passing for *V. pubescens* with all authors, and that the species Britton described as *V. venosum* is really the *V. pubescens* of Pursh. However, there were collections from Pennsylvania, Ohio, Indiana and Kentucky, that Blake seems to have entirely overlooked, and these collections show two quite distinct forms, so much distinct from the *V. venosum* Britton, of the eastern States, that I placed both of them with *V. scabrellum* Chapman, of the Southern States and let them rest there until the past few months.

¹ Blake, Some Species of *Viburnum*, *Rhodora* 20: 11, 1918. Britton in the Manual of 1905, says of *V. molle* Michx., "Kentucky, Missouri and Iowa." This species undoubtedly occurs in Kentucky, but I doubt very much if it has ever been found in Iowa. Robinson and Fernald in the Manual in 1907, say of *V. molle*, "Kentucky (and probably Ohio) Missouri and Iowa." I have seen no specimens from so far east as Ohio, and the Iowa citation is certainly wrong.

Britton and Brown in the Illustrated Flora in 1913 merely follow Britton's Manual in citing Kentucky, Missouri and Iowa for this species.

In a list of the native shrubs of Iowa,² Pammel cites the Robinson and Fernald Manual as authority for including *V. molle* in his list, and adds that it occurs in Southern Iowa. He says of this species "leaves narrower than those of the preceding species (*V. pubescens*, i.e. *V. affine hypomalacum*), with slender petioles." This agrees quite well with *V. affine*, but does not describe *V. molle* at all, which has very wide round leaves.

Blake in this same paper,³ says in a footnote of *V. molle*, "the name *Viburnum pubescens petiolum* (sic) Fitzpatrick (T. J. & M. M. F. L.) Proc. Iowa Acad. 7: 198, 1900, refers very clearly to *V. molle* Michx. (*V. Demetronis* Deane and Robinson)." I have Fitzpatrick's description of *V. pubescens petiolum* before me as I write this, and also his type material, which is precisely *V. affine* Bush, and the description also indicates this species. Blake might have been misled by the citation in the Robinson and Fernald Manual to assume that *V. molle* Michx., really did occur in Iowa. I am informed by Fitzpatrick that his Ms. name for this variety was *petiolatum*, and that one of his pupils changed this to *petiolum*, thinking that the word *petiolatum* was not proper. I have seen specimens in the Deam Herbarium, and some in the Herbarium of the Iowa State College, at Ames, Iowa, collected by Fitzpatrick in 1898 and 1899, that are named *V. pubescens petiolatum*. Blake's reference of *V. molle* to Iowa is clearly shown to be erroneous.⁴

² Pammel, Native shrubs of Iowa, Proc. Iowa State Hort. Soc. 49, 35, 1915.

³ Blake, l. c. 13.

⁴ Two names that have been in common use for the cranberry-tree, *Viburnum americanum* Miller, 1768, *V. Opulus americanum* (Miller) Aiton, 1789, have been shown by Blake to refer to two very different plants, the *V. americanum* Miller, Gard Dict. 1768, which was based in *Hydrangea arborescens* L. and the *V. Opulus americanum* Aiton, the plant which Britton and Brown in the Illustrated Flora in 1913, described as *V. Opulus*. It is quite apparent that Aiton intended

In the following account of some species of *Viburnum*, I recognize eleven species and four varieties, which is some five or six more than are described in the Manuals and Floras, and nine more than are described by Blake in his paper. In order that this paper may be as complete as possible, I have cited all the specimens examined of the species discussed, from Indiana, Illinois, Missouri and Iowa, that the fullest benefit may be derived from my studies, and that other students of their species may know precisely what my understanding of each species and variety was.

For the convenience of those who wish to name specimens of VIBURNUM of the species here considered, I offer the following:

KEY TO THE SPECIES

- A. Outer flowers of the cymes large, radiant; drupes red. B.
- A. None of the flowers radiant. C.
- B. Leaves doubly serrate, pinnately veined.

1. VIBURNUM ALNIFOLIUM.

- B. Leaves 3-lobed, palmately veined.

2. VIBURNUM TRILOBUM.

- C. Leaves palmately veined, 3-lobed. D.
- C. Leaves pinnately veined, coarsely serrate or dentate, the primary veins more or less prominent on the under surfaces of the leaves. E.
- D. Cymes very small, 12-25 mm. broad, the rays short; drupes red.

3. VIBURNUM PAUCIFLORUM.

- D. Cymes larger, 4-7 cm. broad, the rays slender; drupes black.

to take up Miller's species *americanum* and reduce it to a variety under the European *V. Opulus* L., even if he did not mention Miller as the author of the name *americanum*, and this being the case the next available name for this species would be *V. trilobum* Marshall, 1785, and I do not understand why Blake did not use this name in his paper. I am constrained to speak of this now for the reason that I have here before me a book entitled Standardized Plant Names, bearing date of 1923, prepared by a sub-committee, in which the name *Viburnum americanum* is given for this same species, when in fact that name rests on the *Hydrangea arborescens* L.

4. *VIBURNUM ACERIFOLIUM*.

- E. Petioles very short, much less than 5 cm. long; stipules very pronounced; leaves densely pubescent, or almost velvety, beneath; cymes mostly 3-5 cm. broad; drupes oblong-oval, black, about 10 mm. long, edible; eastern.

6A. *VIBURNUM AFFINE HYPOMALACUM*.

- E. Petioles longer, up to 5 cm. long. F.
 F. Leaves glabrous, or merely with tufts of hairs in the axils of the primary veins beneath; stipules lacking; eastern and northern.

7. *VIBURNUM DENTATUM*.

- F. Leaves pubescent beneath, sometimes densely so. G.
 G. Drupes oblong, about 10-15 mm. long; stipules present. H.
 G. Drupes globose-ovoid, about 8 mm. long, inedible; cymes mostly 5-10 cm. broad. J.
 H. Leaves ovate, ovate-oblong, or ovate-lanceolate; cymes mostly 3-5 cm. broad; drupes about 10 mm. long; western and northern.

6. *VIBURNUM AFFINE*.

- H. Leaves round-ovate or nearly orbicular, cordate at the base, very soft; cymes 5-10 cm. broad; drupes about 15 mm. long; southern. I.
 I. Leaves softly pubescent all over the under surfaces.

8. *VIBURNUM MOLLE*.

- I. Leaves glabrous or nearly so between the primary veins beneath; primary veins pubescent.

9A. *VIBURNUM MOLLE FORMA LEIOPHYLLUM*.

- J. Twigs, petioles, peduncles and rays of the cymes more or less fascicled-pubescent or fascicled-tomentose, scarcely or not at all scabrous. K.
 J. Twigs, petioles, peduncles and rays of the cymes more or less scurfy and scabrous; stipules lacking; veins on the lower surfaces of the leaves not very prominent; southern. M.
 K. Lower surfaces of leaves very veiny, the primary veins prominent, the cross-veins conspicuous, roughish-pubescent or fascicled-pubescent beneath; stipules lacking; eastern and northern.

5. VIBURNUM PUBESCENS.

- K. Leaves not very veiny, the primary veins on the under surface of the leaves inconspicuous or scarcely noticeable. L.
- L. Lower surfaces of the leaves densely soft-pubescent or nearly velvety; stipules present.

9. VIBURNUM DEAMII.

- L. Lower surface of the leaves merely pubescent along the primary veins; stipules present, or sometimes rare or lacking. M.
- M. Young branchlets pubescent, rarely a few petioles with stipules.

9A. VIBURNUM DEAMII CANBYI.

- M. Young branchlets glabrous; most of the petioles bearing stipules.

9B. VIBURNUM DEAMII INDIANENSE.

- N. Whole plant very scurfy-scaly; leaves larger and thicker, densely fascicular-pubescent beneath; cymes larger, 7-14 cm. wide, densely fascicular-pubescent; drupes larger.

10. VIBURNUM SCABRELLUM.

- N. Plant nearly glabrous, or but little scurfy-scaly; leaves smaller and thinner, glabrous above and soon glabrous beneath; cymes much smaller, 4-6 cm. wide, soon becoming glabrate; drupes much smaller.

11. VIBURNUM ASHEI.

1. VIBURNUM ALNIFOLIUM Marsh. Arb. Am. 102. 1785.

V. lantanoides Michx. Fl. Bor. Am. 1: 179, 1803.

N. B. to N. Car., Ont. Tenn., and Mich., according to Britton and Brown in Ill. Flora, 1913.

N. B. to Ont., Mich. to Pa., and in the mountains of N. Car., according to Robinson and Fernald in Manual, 1908.

N. B. to Mich. and N. Car., according to Small in Flora, 1913, specimens of this northern species have been examined by me, amongst the several hundred specimens of *Viburnum* examined.

2. VIBURNUM TRILOBUM Marsh. Arb. Am. 162. 1785.

V. americanum of most authors, not *V. americanum* Mil-

ler, 1768, which is said on authority of Blake to be nothing but *Hydrangea arborescens* L.

V. Opulus americanum (Mill.) Ait. Hort. Kew. 1: 373. 1789, obviously based on *V. americanum* Mill., which is only *Hydrangea arborescens* L.

V. Opulus americanum of many authors, not *V. Opulus* L., 1753, which is an European species.

Nfd. to Que. and B. Col. south to N. J., Pa., Mich., Wis., and Ia., according to Robinson and Fernald in Manual, 1908.

Nfd. to B. Col., N. J., Mich., Ia., S. Dak., and Ore., according to Britton and Brown in Ill. Flora, 1913.

SPECIMENS EXAMINED:

INDIANA

Clark Station, *Gamon*, August 20, 1898, D. Herb.; Clear Lake, *Deam* 15857, June 6, 1915, D. Herb.; Lake George, *Burrill*, July 13, 1880; Lake Oliver, *Deam* 15857, D. Herb.; Ontario, *Deam* 15020, August 30, 1914; Wells County, *Deam*, May 13, 1903.

ILLINOIS

Mount Carmel, *Schneck*, June 1865, U. of Ill. Herb.; Peoria, *Brendel*, date not given, U. of Ill. Herb.

IOWA

Fayette, *Fink*, September, 1893; Pierce's Bridge, *Mrs. Tuttle* 10, October, 1913, P. Herb.; Postville, *Pammel* and *Schultz*, June 15, 1913, P. Herb.

3. *VIBURNUM PAUCIFLORUM* Pylaie; T. & G. Fl. N. A. 2: 17 1841.

V. Opulus eradiatum Oakes, Hovey's Mag. 7: 183. 1841.

Nfd. to Alaska, Pa., Col. and Wash., according to Britton and Brown in Ill. Flora. 1913.

Nfd. and Lab. to Alaska, south to the mountains of Cape Breton Island, northern New England, Allegheny County, Pa., northern Mich., Minn., Col., and Washington, according to Robinson and Fernald in Manual, 1908.

No specimens of this high northern species have been seen by me amongst the large number of specimens examined.

4. VIBURNUM ACERIFLORUM L. Sp. Pl. 268. 1753

N. B. to Ga., Ala., Ont., Mich., and Minn., according to Britton and Brown in Ill. Flora, 1913.

N. B. to Ont., Minn., and Ga., according to Small in Flora, 1913. N. B. to Minn., Ky., and Ga., according to Robinson and Fernald in Manual, 1908.

A species of the northeastern States, extending as far southwest as Indiana and Illinois.

INDIANA

Adams Lake, *Deam* 14837, August 27, 1914, D. Herb.; Brazil, *Deam* 38998, July 7, 1923, D. Herb.; Borden, *Deam* 40024, October 11, 1923, D. Herb.; Buffalo, *Deam* 29514, August 24, 1919, D. Herb.; Bloomington, *Deam* 23595, June 9, 1917, D. Herb.; Bloomington, *Deam* 38959, July 4, 1923, D. Herb.; Charleston, *Deam* 17996, July 27, 1919, D. Herb.; Cincinnati, *Deam* 26100, August 10, 1918, D. Herb.; Clear Lake, *Deam* 26408, September 13, 1918, D. Herb.; Clear Lake, *Deam*, June 12, 1904, D. Herb.; Cataract, *Deam* 10295, October 15, 1911, D. Herb.; Delaware, *Deam* 36990, July 22, 1922, D. Herb.; Dune Park, *McDonald*, July 4, 1902, U. of Ill. Herb.; Elizabeth, *Deam* 16383, June 24, 1915, D. Herb.; Fort Wayne, *Deam* 34536, July 31, 1921, D. Herb.; Gilead, *Deam* 31908, July 16, 1920, D. Herb.; Grayford, *Deam* 38593, May 30, 1923, D. Herb.; Hartford City, *Deam* 32058, August 5, 1920, D. Herb.; Helmsburg, *Deam* 6567, June 5, 1910, D. Herb.; Helmsburg, *Deam* 11160, June 1912, D. Herb.; Jackson Township, Wells County, *Deam*, June 1, 1902, D. Herb.; Kendallville, *Deam* 3079, May 31, 1908, D. Herb.; Kent, *Deam* 35282, October 10, 1921, D. Herb.; Knox, *Deam* 19969, June 1, 1916, D. Herb.; Lafayette, *Dorner*, June 8, 1901, D. Herb.; Miller, *Chase* 105, June 14, 1897, U. of Ill. Herb.; Miller, *Chase* 517, August 23, 1897, U. of Ill. Herb.; Miller, *Chase* 1258, October 5, 1899, U. of Ill. Herb.; Miller, *Chase* 1775, May 30, 1902, U. of Ill. Herb.; Mitchell, *Deam* 1725, July 12, 1915, D. Herb.; Mitchell, *Deam* 18501, September 2, 1915, D. Herb.; Morgantown, *Deam* 877, May 23, 1906, D. Herb.; Michigan City, *Deam* 5225, August 16, 1908, D. Herb.; Morgantown, *Deam* 860, May 22, 1906, D. Herb.;

Milford, *Deam* 34474, July 3, 1921, D. Herb.; Metamora, *Deam* 32886, September 17, 1920, D. Herb.; Middlebury, *Deam* 10991, June 4, 1912, D. Herb.; Mudlavia, *Deam* 10008, September 11, 1911, D. Herb.; Mount Etna, *Deam* 31041, June 8, 1920, D. Herb.; Brown County, *John S. Wright*, July 14, 1892, U. of Ill. Herb.; Clark County, *Deam* 38613, June 1, 1923, D. Herb.; Clark County, *Deam* 6466, May 21, 1910, D. Herb.; Adams County, *Deam* 32598, August 31, 1920, D. Herb.; Hancock County, *Deam* 12424, September 19, 1912, D. Herb.; Jennings County, *Deam* 9147, July 9, 1911, D. Herb.; Decatur County, *Deam* 40073, October 15, 1923, D. Herb.; Orange, *Deam* 34048, May 16, 1921, D. Herb.; Pine, *Deam* 2354, July 28, 1907, D. Herb.; Plymouth, *Deam* 15098, Aug. 31, 1914, D. Herb.; Paoli, *Deam* 35631, May 14, 1922, D. Herb.; Pulaski, *Deam* 38849, June 9, 1923, D. Herb.; Round Lake, *Deam* 14545, August 23, 1914, D. Herb.; Russellville, *Grimes* 7736, March 5, 1911, U. of Ill. Herb.; Shoals, *Deam* 12869, May 20, 1913, D. Herb.; Shoals, *Deam* 17204, July 11, 1915, D. Herb.; Saint Joe, *Deam* 32551, August 30, 1920, D. Herb.; South Bend, *Deam* 14207, May 29, 1914, D. Herb.; Salem, *Deam* 20579, June 29, 1916, D. Herb.; Sugar Creek, *Deam* 7248, August 21, 1910, D. Herb.; Terre Haute, *Deam* 30862, September 17, 1920, D. Herb.; Montgomery County, *Deam* 9264, July 23, 1911, D. Herb.; Vallonia, *Deam* 17428, July 15, 1915, D. Herb.; Versailles, *Deam* 16117, June 18, 1915, D. Herb.; Van Buren, *Deam*, June 16, 1907, D. Herb.; Van Buren, *Deam*, July 7, 1907, D. Herb.; Cannelton, *Deam* 33210, October 1, 1920, D. Herb.

ILLINOIS

Calumet Heights, *Gates*, May 30, 1906, U. of Ill. Herb.; Calumet Heights, *Gates*, August 16, 1906, U. of Ill. Herb.; Elgin, *Vasey*, date not given, U. of Ill. Herb.; Ravinia, *Gates* 1699.1, June 22, 1907, U. of Ill. Herb.; River Grove, *Chase* 282, July 14, 1897, U. of Ill. Herb.; Thornton, *Chase* 1080, June 2, 1899, U. of Ill. Herb.

5. *VIBURNUM PUBESCENS* (Aiton) Pursh, Fl. Am. Sept. 1: 202. 1814.

V. dentatum pubescens Ait. Hort. Kew. 1: 372. 1789.

V. venosum Britton, Man ed. 1, 871, 1901.

V. molle of authors in part, not *V. molle* Michx. 1803.

A species of New England, as far south and west as Delaware and eastern Pennsylvania. Martha's Vineyard and Nantucket to Pa. and Del., according to Robinson and Fernald in Manual, 1909.

Eastern Mass. to N. J., Pa. and Va., according to Britton and Brown in Ill. Flora, 1913, the Virginia citation evidently referring to *V. Deamii Canbyi*, which is here included in *V. venosum*.

Eastern Mass. to Pa., and Del., and reappearing in a peculiar form in South Carolina, according to Rehder,⁵ l. c. but the South Carolina specimens must belong to some other species, as *V. pubescens* does not get so far south as that State.

No specimens of this northern species have been seen by me amongst the many specimens examined.

6. VIBURNUM AFFINE Bush, ex Rehder, in Sargent, Trees and Shrubs 1: 135. 1903.

V. pubescens affine (Bush) Rehder, Mitt. Deutsch. Dendrol. 263. 1913.

V. pubescens authors, in small part, not *V. pubescens* Pursh, 1814.

V. pubescens petiolum Fitzpatrick, Proc. Iowa Acad. Sci. 7: 198. 1900, type from Rock Creek, Jefferson County, Iowa, *Fitzpatric*, Fitzpatrick,⁶ l. c., co-type from Jackson County, Iowa, *Fitzpatrick*, Fitzpatrick,⁷ l. c., which he says was referred to *V. dentatum*, along with many other Iowa specimens. Fitzpatrick originally wrote this *petiolatum*, but some one of his pupils changed this to *petiolum*, as being the more proper.

Ontario, Ill., Minn., Ia., Va., and Mo., according to Blake,⁸ l. c., but the Virginia reference must be an error, as I have not seen any specimens from anywhere east of Indiana.

5 Rehder, l. c. 60.

6 Fitzpatrick, l. c. 199.

7 Fitzpatrick, l. c. 199.

8 Blake, l. c. 13.

SPECIMENS EXAMINED:

ILLINOIS

Calumet Heights, *Gates*, May 30, 1906, U. of Ill. Herb.; Carlinville, *Andrews*, June 1, 1891, U. of Ill. Herb.; Fountaindale, *Bebb*, month not given, 1867, U. of Ill. Herb.; Glenwood, *Chase* 54, June 9, 1897, U. of Ill. Herb.; Peoria, *Brendel*, June, year not given, U. of Ill. Herb.; Peoria, *Brendel*, date not given, U. of Ill. Herb.; Peoria, *McDonald*, May, 1884, U. of Ill. Herb.

INDIANA

Bluffton, *Deam*, May 26, 1905, D. Herb.; Bluffton, *Deam*, May 26, 1905, D. Herb.; Broad Ripple, *Deam*, June 3, 1897, D. Herb.; Clear Lake, *Deam*, June 12, 1904, D. Herb.; Garrett, *Deam* 3142, June 30, 1908, D. Herb.; Long Lake, *Kienholz*, May 26, 1918, U. of Ill. Herb.; Michigan City, *Deam*, September 13, 1919, D. Herb.; Miller's, *Deam* 9569, August 14, 1911, D. Herb.; Miller's, *Deam* 32331, August 24, 1920, D. Herb.; Waverly Beach, *Deam* 19995, date not given, D. Herb.

IOWA

Allamakee County, *Shultz*, August, 1914, P. Herb.; Ames, *Ellis* 25, July 20, 1914, P. Herb.; Ames, *Pammel*, May 21, 1901, P. Herb.; Ames, *Sinires*, no month given, 1890, P. Herb.; Boone County, *Pammel*, *Buchanan* and *King* 3965, July 25, 1903, P. Herb.; Boone County, *King*, photograph, no date, P. Herb.; Boone County, *Pammel*, May 1898, P. Herb.; Boone County, *Pammel*, no month given, 1898, P. Herb.; Boone County, *Pammel*, May 21, 1921, P. Herb.; Boone County, *Pammel*, August, 1898, P. Herb.; Backbone Park, *Pammel*, August 23, 1920, P. Herb.; Cherokee, *Pammel*, September 5, 1920, P. Herb.; Decatur County, *Anderson*, May 17, 1902, P. Herb.; Decorah, *Holway*, May 21, 1881, P. Herb.; Delaware County, *Bode*, August, 1919, P. Herb.; Dubuque County, *Pammel* and *Frank*, June 18, 1922, P. Herb.; Clayton County, *Pammel* 12, June 10, 1917, P. Herb.; Estherville, *Pammel*, September 17, 1920, P. Herb.; Estherville, *Wolden* 405, May 29, 1922, P. Herb.; Fayette, collector not given, May 4, 1894, P. Herb.; Iron Springs, collector not given, July 25, 1917, P.

Herb.; Johnson County, *Fitzpatrick*, May 27, 1900, labeled *V. dentatum*, P. Herb.; Johnson County, *Fitzpatrick*, July 31, 1898, labeled *V. petiolatum*, P. Herb.; Lake Mills, *Pammel*, August 22, 1918, P. Herb.; Lamont, *Bode*, August 13, 1919, P. Herb.; Linn Creek, *Pammel*, July 28, 1918, P. Herb.; Mason City, *Pammel*, September 4, 1902, P. Herb.; Moingona, *Pammel* and *Combs*, May 22, 1897, P. Herb.; no locality given, *Pammel* and *Miller*, no month given, 1911, P. Herb.; North McGregor, *Pammel*, July 7, 1891, P. Herb.

MISSOURI

Cole Camp Creek, *Trelease* 3, May 19, 1904, A. A. Herb.; Dumas, *Bush* 5893, May 8, 1909, A. A. Herb.; Dumas, *Bush* 9494, August 29, 1921, A. A. Herb.; Dumas, *Palmer* 21890, September 7, 1922, A. A. Herb.; Eagle Rock, *Bush* 189, June 21, 1897, A. A. Herb.; Galena, *Palmer* 24873, September 24, 1925, A. A. Herb.; Monteer, *Bush* 2815, May 11, 1905, A. A. Herb.; Monteer, *Bush* 3395, September 23, 1905, A. A. Herb.; Monteer, *Bush* 3603, October 8, 1905, A. A. Herb.; Monteer, *Bush* 4746, May 27, 1907, A. A. Herb.; Monteer, *Bush*, October 6, 1920, A. A. Herb.; Monteer, *Palmer* 19360, October 6, 1920, A. A. Herb.; Swan, *Bush* 41, June 5, 1899, A. A. Herb.; Swan, *Bush* 776, October 10, 1899, A. A. Herb.; Swan, *Bush* 4575, May 20, 1907, A. A. Herb.

6A. VIBURNUM AFFINE HYPOMALACUM Blake, *Rhodora* 20: 14, 1918.

V. pubescens, of large part, of most authors, not *V. pubescens*, Pursh, 1814.

V. pubescens Fitzpatrick, Proc. Iowa Acad. Sci. 7: 198, 1900.

V. pubescens Pammel, Proc. Iowa State Hort. Soc. 44, 1915.

Vermont to Ontario, Manitoba, Saskatchewan, south to Indiana, Illinois, Missouri and Iowa.

This northern form has been commonly named *V. pubescens* by authors, but it is clearly distinct from that species.

Vermont and Ontario to Georgia, Michigan and Manitoba, according to Blake l. c. 14, 1918, but I have seen no specimens from any of the southern States.

SPECIMENS EXAMINED:

INDIANA

Adams County, *Deam* 32599, August 31, 1920, D. Herb.; Cedar Creek, *Deam*, 15825, May 31, 1915, D. Herb.; Columbia City, *Deam* 36824, July 10, 1922, D. Herb.; Elkhart, *Deam* 32445, August 27, 1920, D. Herb.; High Lake, *Deam* 32651, June 18, 1917, D. Herb.; Michigan City, *Deam* 38802, June 2, 1923, D. Herb.; Michigan City, *Deam* 36402, June 10, 1922, D. Herb.; Mongo, *Deam* 32474, August 28, 1920, D. Herb.; North Manchester, *Deam* 39554, August 10, 1923, D. Herb.

ILLINOIS

Maywood, *Chase* 21, June 2, 1897, U. of Ill. Herb.; Ringwood, *Vasey*, date not given, U. of Ill. Herb.

MISSOURI

Dumas, *Bush*, September 7, 1922, A. A. Herb.; Dumas, *Palmer* 21845, September 7, 1922, A. A. Herb.

IOWA

Ames, *Carver*, month not given, 1895, P. Herb.; Ames, *Pammel* and *Combs*, month not given, 1897, P. Herb.; Decatur County, *Fitzpatrick*, May 29, 1898, labelled *V. pubescens*, P. Herb.; Decatur County, *Fitzpatrick*, May 29, 1898, P. Herb.; Fort Dodge, *Horton*, May 1912, P. Herb.; Lake Okoboji, *Pammel* 467, July 25, 1914, P. Herb.

7. VIBURNUM DENTATUM L. Sp. Pl. 268. 1753.

New Brunswick and Ontario south to Georgia and western New York, Michigan and Minnesota, according to Britton and Brown in Ill. Flora, 1913, but I have seen no specimens from the southern States.

New Brunswick to northern Georgia, west to western New York and southern Ontario, Robinson and Fernald in Manual, 1908.

New Brunswick to Ontario, Minnesota and Florida, Small in Flora, 1913, but the Florida citation is certainly erroneous, as this species does not reach Florida or any of the southern States.

A species of the northeastern States, extending to Indiana, western Illinois and Iowa.

INDIANA

Henryville, *Deam* 38606, June 1, 1923, D. Herb.; Henryville, *Deam* 38606, October 13, 1923, D. Herb.

ILLINOIS

Olney, *Ridgway*, 1926, September 24, 1922, R. Herb.; Olney, *Ridgway* 2388, May 20, 1925, R. Herb.

IOWA

Decatur County, *Anderson*, date not given, P. Herb.

8. *VIBURNUM MOLLE*, Michx. Fl. Bor. Am. 1:180. 1803.

V. Demetrianis Deam and Robinson, Bot Gaz. 22: 167. 1896.

Kentucky, southern Indiana and southern Missouri.

Kentucky, Missouri and Iowa according to Britton in Manual, 1905, but the Iowa reference must be based on some other species, as no specimens are known of this species from Iowa.

Kentucky (and probably Ohio) Missouri and Iowa, Robinson and Fernald in Manual, 1908, but the Iowa citation must apply to *V. affine*, as no specimens are known of *V. molle* from Iowa, and all evidence points to *V. affine* as the basis of these references to Iowa.

Kentucky, Missouri and Iowa, Britton and Brown in Ill. Flora, 1913, being merely a repetition of the range given by the Britton Manual.

Iowa, according to Pammel in Trans. Iowa State Hort. Soc. 49: 44. 1915, but Pammel's specimens were certainly *V. affine*, for his description "leaves narrower than the preceding species (*V. pubescens*, i. e. *V. affine hypomalacum*) with slender petioles," applies clearly to *V. affine* and not to *V. molle*, which has broad, round, soft leaves.

Iowa, according to Blake, l. c. 13, referring Fitzpatrick's *V. pubescens petiolum* to this species, but Fitzpatrick's variety

is clearly *V. affine* Bush, as shown by both his description and specimens.

Cole Camp Creek and Galena, Missouri, Rehder, l. c. 57, 1904. Boone and Carroll Counties, Indiana, Rehder, l. c. 57, 1904.

SPECIMENS EXAMINED:

INDIANA

Idaville, *Deam* 17764, July 22, 1915,⁹ D. Herb.; Idaville, *Deam* 58344, September 17, 1923, D. Herb.; Idaville, *Deam* 38344, September 17, 1923, D. Herb.; Versailles, *Deam* 38580, May 30, 1923, D. Herb.; Versailles, *Deam* 40064, October 14, 1923, D. Herb.

MISSOURI

Christian County, *Bush* 3480, September 28, 1905,¹⁰ A. A. Herb.; Christian County *Bush* 4625, May 21, 1907, A. A. Herb.; Cole Camp Creek, *Demetrio*, May 27, 1896, TYPE of *V. Demetronis*, A. A. Herb.; Cole Camp Creek, *Trelease* 384, July 17, 1897, A. A. Herb.; Galena, *Palmer* 14361, September 18, 1918, A. A. Herb.; Galena, *Palmer* 23872, September 24, 1923, A. A. Herb.

9 Of this collection, Deam says "this is the outlaw specimen, note shape of fruit," alluding to its dissimilarity to the fruit of *V. Deamii* and *V. Deamii indianense*, which were at that time included in *V. molle* by him, as differing from *V. pubescens*. The piece of bark mounted on this sheet is not from the same plant as the leafing specimen, as it is nearly black, and not exfoliating, while *molle* has yellowish-brown loose exfoliating bark.

10 This species was found on the rocky banks of Billiu Creek, just north of the Taney County line, in Christian County, about five miles North of Swan, Taney County, on Billiu Creek, where *V. molle leiophyllum* is fairly common. It is therefore probable that *V. molle* also occurs in Taney County, and as the Taney County and Christian County localities are only about 25 miles east of Galena, Stone County, it may be said that they are the same general region as the Benton County locality.

8A. *VIBURNAM MOLLE FORMA LEIOPHYLLUM* Rehder,
Journ. Arn. Arboretum 5: 57. 1924.

South central Missouri, apparently very local.

SPECIMENS EXAMINED:

MISSOURI

Cole Camp Creek, *Trelease* 4, May 19, 1904, U. of Ill. Herb.; Cole Camp Creek, collector not given, according to Rehder, l. c., probably based on Trelease's collection; Galena, *Palmer* 17226, April 17, 1920, A. A. Herb.; Galena, *Palmer* 22816, May 23, 1923, A. A. Herb.; Galena, *Palmer* 23872a, September 24, 1923, A. A. Herb.; Galena, *Palmer* 4671, October 15, 1913, A. A. Herb.; Galena, *Palmer* 5671, May 20, 1914, A. A. Herb.; Noel, *Bush* 5531, April 25, 1909, A. A. Herb.; Noel, *Bush* 5763, May 27, 1909, A. A. Herb.; Swan, *Bush*,¹¹ 798, October 9, 1899, A. A. Herb.; Swan, *Sargent*,

9. *VIBURNUM DEAMII* (Rehder) n. sp.

V. pubescens Deamii Rehder, Journ. Arnold Arboretum 5: 58. 1924. A species apparently confined to the Ohio River Basin.

SPECIMENS EXAMINED:

INDIANA

Bloomington, *Deam* 35813, May 20, 1922, D Herb.; Chestnut Ridge, *Deam* 38619, June 18, 1923, D. Herb.; Fairview, *Deam* 40040, October 13, 1923, D. Herb.; Helmsburg, *Deam* 11149, June 16, 1912, D. Herb.; Helmsburg, *Deam* 38950, July 4, 1923, D. Herb.; Helmsburg, *Deam* 11148, June 16, 1912, D. Herb.; Helmsburg, *Deam*, 12217, August 25, 1912, D. Herb.; Helmsburg, *Deam* 1147, June 16, 1912, D. Herb.; October 9, 1899, A. A. Herb.; Swan, *Bush* 3449, September 26, 1905, A. A. Herb.; Swan, *Bush* 4586, May 20, 1907, A. A. Herb.

¹¹ The specific form, *V. molle*, was found along the rocky banks of Billiu Creek, just north of the Taney County line, in Christian County, about five miles north of the locality at Swan, Missouri, and along the same creek where *V. molle leiophyllum* was found.

Henryville, *Deam* 7580, September 24, 1910, D. Herb.; Henryville, *Deam* 12251, August 30, 1912, D. Herb.; Lake, *Deam* 37505, August 10, 1922, D. Herb.; Lake, *Deam* 39951, October 2, 1923, D. Herb.; Lake, *Deam* 39952, October 2, 1923, D. Herb.; Madison, *Deam* 18848, September 9, 1915, D. Herb.; San Jacinto, *Deam* 38595, May 30, 1923, D. Herb.; San Jacinto, *Deam* 38598, May 30, 1923, D. Herb.; San Jacinto, *Deam* 38878, June 16, 1923, D. Herb.; San Jacinto, *Deam* 38107, September 27, 1922, D. Herb.; Saint Meinard, *Deam* 16541, June 28, 1915, D. Herb.; Scipio, *Deam* 12030, August 13, 1912, D. Herb.

9A. VIBURNUM DEAMII CANBYI (Rehder) n. comb.

V. venosum Canbyi Rehder, *Rhodora* 6: 60. 1904.

V. pubescens Canbyi (Rehder) Blake, *Rhodora* 18: 15. 1918.

Eastern Pennsylvania, Delaware and Virginia.

Pennsylvania and Delaware to the mountains of Virginia, according to Robinson and Fernald in *Manual*, 1908, evidently referring to the collections of Canby and Small as cited below. I have not been able to see any authentic specimens of this variety, but it is said to differ from *V. Deamii* Bush, and the variety *indianense*, in having pubescent young branchlets. To this form Rehder refers a specimen collected at Mt. Hope, Pennsylvania, June 24, 1901, by Heller. This specimen may or may not belong to *var. Canbyi*, but I have seen one of Heller's specimens collected at Mt. Hope, Pennsylvania, dated June 24, 1901, in Deam's collection, and I take this to be a good example of *V. Deamii indianense*. If I am right in this, and this collection of Heller's is really *var. Canbyi*, then the name *indianense* becomes a synonym of *Canbyi*.

SPECIMENS CITED:

DELAWARE

Christiana, *Canby*, August 25, 1902, according to Rehder, l. c. 60; New Castle, *Canby*, July 2, 1902, according to Rehder, l. c. 60; Wilmington, *Canby*, July 2, 1902, according to Rehder, l. c. 60; Wilmington, *Canby*, August 22, 1902, according to Rehder, l. c. 60.

PENNSYLVANIA

Mt. Hope, *Heller*, June 24, 1901, according to Rehder, l. c. 61; Westchester, *Canby*, October 8, 1902, according to Rehder, l. c. 61.

VIRGINIA

Southwest Virginia, *Small*, July 16, 1892, according to Rehder, l. c. 61, probably being the form cited by Britton and Brown in Ill. Flora, and by Robinson and Fernald in Manual, under *V. pubescens*.

9B. VIBERNUM DEAMII INDIANENSE (Rehder) n. comb.

V. pubescens indianense Rehder, Journ. Arnold Arboretum 5: 59. 1924.

Said by Rehder to differ from *V. Deamii Canbyi*, in having stipules on most of the petioles, by which character it agrees with *V. Deamii*. It may be distinguished from *V. dentatum* by the presence of stipules, larger inflorescence, and larger short ellipsoid fruit, that species not having stipules on the petioles, and has smaller subglobose fruit and dense smaller inflorescence.

SPECIMENS EXAMINED:

PENNSYLVANIA

Mount Hope, *Heller*, June 24, 1901, D. Herb., apparently the same collection cited by Rehder as belonging to *V. Deamii Canbyi*, but certainly is *V. Deamii indianense*.

INDIANA

Borden, *Deam* 40022, October 11, 1923, D. Herb.; Brazil, *Deam* 38986, July 7, 1923, D. Herb.; Brazil, *Deam* 39002, September 19, 1923, D. Herb.; Clear Springs, *Deam*, 19046, September 14, 1915, D. Herb.; Grantsbury, *Deam*, 27761, June 7, 1919, D. Herb.; Hagerstown, *Deam* 38163, September 24, 1922, D. Herb.; Hillsboro, *Deam* 36020, May 24, 1922, D. Herb.; Mitchell, *Deam* 18517, September 2, 1915, TYPE, D. Herb.; Morris, *Deam* 10558, May 19, 1912, D. Herb.; Osgood, *Deam* 38874, June 15, 1923, D. Herb.; Rockport, *Deam* 39971, October 4, 1923, D. Herb.; Russellville, *Grimes* 582,

August 14, 1911, U. of Ill. Herb.; Versailles, *Deam* 16119, June 19, 1915, D. Herb.; Versailles, *Deam* 18838, September 9, 1915, D. Herb.

ILLINOIS

Olney, *Ridgway* 363, August 14, 1919, R. Herb.; Olney, *Ridgway* 1927, September 24, 1922, R. Herb.; Olney, *Ridgway* 1928, September 24, 1922, R. Herb.

10. VIBURNUM SCRABRELLUM (T. & G.) Chapm. Fl. S. States, 172. 1860.

V. dentatum B ? *scrabellum* T. & G. Fl. N. Am. 2: 16, 1841.

V. dentatum B *semitomentosum* Michx. Fl. Bor. Am. 1: 179. 1903.

V. molle A. Gray, Man. ed. 5, 206. 1867, and authors, not *V. molle* Michx. 1803.

V. molle var. ? *tomentosum* Chapm. Fl. S. States, ed 3, 190. 1897.

V. semitomentosum (Michx.) Rehder, *Rhodora* 6: 59. 1904.

This species ranges from North Carolina to Florida, west to Texas, mostly along the coast.

Pennsylvania, according to Blake, l. c. 1918, but evidently referring to one of the other of Canby's or Heller's collections. This species does not get so far north as Pennsylvania or Indiana, and it is probable that Blake saw specimens of *V. Deamii Canbyi*, or *V. Deamii indianense* and took them to be *V. scabrellum*.

Pennsylvania to Florida and Texas, according to Small in *Flora*, 1913, but evidently referring to the same collections that Blake mentioned.

Rehder states that this species occurs in Kentucky, but no specimens have been seen from so far north as that State.

11. VIBURNUM ASHEI Bush, Am. Mid. Naturalist 9: July, 1924.

Mississippi and probably in adjoining States along the coast. In foliage this species strongly resembles *V. affine* Bush, but is clearly allied to *V. scabrellum* Chapman, by its

fruit, and indeed it may be an extreme form of that species, although the smaller fruit, smaller inflorescence, smaller and thinner leaves and particularly the glabrous twigs, leaves and cymes, seem sufficient to recognize it as a species.

SPECIMENS EXAMINED:

MISSISSIPPI

Little Obolo-Chitto River, Pearl County, TYPE, *Ashe*, A. Herb.; along the Pascagoula River, George County, *Ashe*, A. Herb.; along the Tallahoma River, Jones County, *Ashe*, A. Herb.; along the Chickasawhay River, near Leakesville, Greene County, *Ashe*, A. Herb.