HYDRANGEA ARBORESCENS VAR. STERILIS TORR. AND GRAY AS AN ORNAMENTAL PLANT.

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From time to time during the past twenty years, members of the botanical staff of Indiana University have pointed out to students the very showy and conspicuous specimens of the sterile form of *Hydrangea arborescens* L., to be found occasionally among the fertile plants of the species which grow abundantly on rocky banks, in shaded ravines and along streams in Monroe County, Indiana. These sterile specimens are very conspicuous because of the large, showy, snow-white flower clusters, in which not a single fruit is developed. Upon plants in their native habitat in the woods, the clusters of cymes often attain, in thrifty individuals, a diameter of from six to eight inches. Owing to their promising character as ornamental plants, and because of hardiness, specimens of sterile individuals were transplanted to the grounds of a local gardener near the university, where they have been under cultivation for a number of years. The plant is easily propagated from stem cuttings, and, in the second year, if pruned to a single cane or two, the clusters of flowers may attain a diameter of from fourteen to sixteen inches. For this reason, and because of the fact that sterile forms of *Hydrangea arborescens* are listed and offered for sale by florists under other names than *Hydrangea arborescens var. sterilis* Torr and Gray, the writer

Fig. 1.—Hydrangea arborescens var. sterilis. A clump transplanted when small from the woods to a blue grass lawn. It is three feet in diameter at the ground and bears about sixty-five large heads of flowers. (Courtesy of Mr. Hugh Hinkle.)

became interested in the probable origin of the sterile form as it occurs in this vicinity, and to know whether the plant advertised under other names

may not have been obtained from the variety *sterilis* Torr. and Gray, taken into cultivation from some other part of its range, which, according to the manuals, extends from southern New York to Florida and west to Iowa and Missouri.

Fig. 1 is a photograph of a large clump of *H. arborescence var. sterilis* Torr. and Gray, which was transplanted from the woods to a blue grass lawn in the open sunshine. When transplanted from the woods, fourteen years ago, it consisted of a small plant with two or three canes. It has had no cultivation save an occasional watering in dry weather. At the present time the clump is three feet in diameter at the ground, and this summer bore sixty-five large heads of snowy-white flowers.

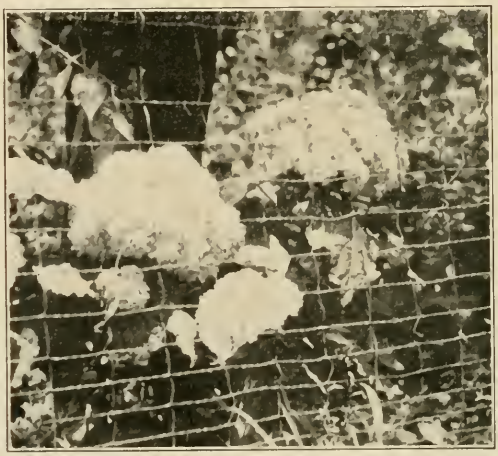

Fig. 2.—Hydrangea arborescens var. sterilis. Two flower clusters fourteen inches in diameter, borne by a plant two years old from a cutting.

Fig. 2 represents two flower clusters fourteen inches in diameter borne upon a plant two years old from a cutting.

Torrey and Gray[1] (Flora of North America, vol. 1, page 591) recognized four varieties of *Hydrangea arborescens* L. described as follows:

"a. *Vulgaris:* leaves ovate, obtuse at the base; flowers commonly all fertile.—H. *arborescens*, L.! (pl. gronov!) H. *vulgaris*, Michx.! etc.

"b. *Cordata:* leaves broadly ovate, more or less cordate, large; a few of the marginal flowers radiate, sterile.—H. cordata, Pursh.! l.c.; DC. l.c..

"c. *Oblonga:* leaves ovate—oblong, mostly acute at the base; a few of the marginal flowers radiate, sterile.

"d. *Sterilis:* flowers all sterile and radiate. The specimens upon which the description of this variety was based was collected at Wysox, Penna., by Mr. John Carey."

In the later manuals (Gray and Britton and Brown) no varieties of *Hydrangea arborescens* L. are recognized. In both the sixth and seventh editions of Gray's Manual reference is made in the description of *H. arborescens* L. to the rare occurrance of radiant flowers thus: "flowers often all fertile, rarely all radiant, like the *Garden Hydrangea*." In the seventh edition the expression, "like the *Garden Hydrangea*", is omitted.

In Britton and Brown's Illustrated Flora (2nd edition) we find: "marginal sterile flowers usually few or none, but sometimes numerous, or forming the entire inflorescence."

In Bailey's Encyclopedia of Horticulture (Vol. 3, p. 1622, 1915.) three varieties of *H. arborescens* are listed as follows: "Var. *cordata*, Torr. and Gray, has the leaves broadly ovate and cordate. Var. *sterilis*, Torr. and Gray. A form with all the flowers sterile, sepals broadly oval, rounded or mucronate at the apex; leaves oval to oblong ovate, rounded or abruptly contracted at the base. It is doubtful whether this form is still in cultivation. Var. *grandiflora*, Rehd. A form of variety *cordata* with all the flowers sterile: heads 5-7 inches across; flowers ¾-inch across with ovate acute sepals; leaves ovate to ovate-elliptic; cordate or rounded at the base."

From the foregoing it is clear that Bailey regards var. *grandiflora* Rehder as a form of var. *cordata* Torr. and Gray, and expresses doubt as to whether var. *sterilis* Torr. and Gray is still in cultivation. He does not state when and where this variety had been in cultivation, nor are we told how var. *grandiflora* originated from var. *cordata*. Torrey and Gray (l. c. p. 591.) make no reference to the flowers being even occasionally all sterile in var. *cordata*.

The following remarks pertain to the wild specimens in the woods and to those transplanted to the lawn as stated in the foregoing, and not to plants propagated from those and subjected to cultivation. The native plants of *H. arborescens* L. growing in this vicinity agree with the descriptions in the manuals with the exceptions of the leaves. In Gray's manual the leaves are described as ovate, rarely heartshaped, while Britton and Brown refer to them as rounded, cordate, or rarely broadly cuneate at the base. In Torrey and Gray, the leaves are ovate or cordate, mostly acuminate, serrately toothed, puberulent or nearly glabrous.

In the plants observed by myself the leaves were generally heartshaped, although there may be a wide variation in different plants and upon different stems of the same clump. These gradations range from a broad, deeply cordate, truncate, to rounded and narrowly tapering bases. The smaller leaves near the inflorescence are frequently narrow with narrow tapering bases.

Variety *sterilis* possesses the same stem and leaf characters as the fertile species. The flowers, however, are all radiant, snowy-white, from 1½-3 cm. in diameter, very much larger in cultivated specimens; sepals broadly oval, rounded or obovate, somewhat pointed or rounded at the apex, but not mucronate; in most of the flowers stamens and pistil present, the latter

becoming abortive, forming no seeds; in the rest of the flowers stamens and pistils rudimentary or none, or so rudimentary as to appear absent. It should be remembered that the radiant flowers of the fertile plants frequently bear stamens and pistils, the latter aborting.

Plants under consideration originated in nature from the fertile species, probably as a seed mutant or bud sport. They did not originate in cultivation.

If certain forms or varieties of *Hydrangea arborescens* merit the name "Hills of Snow," var. *sterilis* should be known in the garden as "Mountains of Snow."

In the near future a closer study will be made of the species in its natural habitat, along with the sterile variety. Owing to the conspicuous appearance of var. *sterilis* among the fertile species, the occasional specimens are readily found by plant lovers and removed to cultivation. As a result this variety is very rare in this vicinity at present. In the opinion of the writer the form or forms advertised by florists as *Hydrangea grandiflora* may probably be cultivated specimens of var. *sterilis*.