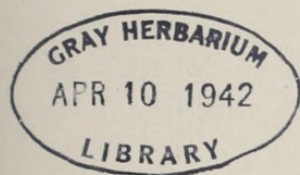


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ASA GRAY AND HIS QUEST FOR *SHORTIA GALACIFOLIA*

THE word bewitched has antipodal meanings. The first, sinister, fearsome, savoring of Salem trials and clouded minds; the second charmed, enchanted, captivated. In this second sense Asa Gray was bewitched. For forty years, the greater part of his productive life, the memory of a fragmentary, dried, incomplete specimen in a neglected herbarium cabinet in France, haunted him. Child of his naming, the assurance of its existence as a living plant and the hope of its rediscovery were with him constantly. A shy, evergreen groundcover with dainty, creamy-white flowers in early spring; cheerful, shiny, bright green leaves in summer; a winter coloring rich and rare—it well deserved his lifelong devotion. When the search was ended and the visible assurance of its existence was placed in Gray's hands, he could well exclaim, as he did: "Now let me sing my *nunc dimittis*."

On November 9, 1838, Gray sailed in the packet ship *Philadelphia* for Europe. He had received appointment to a professorship in the newly planned University of Michigan at Ann Arbor. As the buildings were not ready he was granted a year's leave of absence, a salary of \$1500.00 and \$5000.00 was placed at his disposal to purchase books for the new University library. The main object of his trip, however, was to examine the original sources of American flora as they existed in the principal herbaria of Europe. After a twenty-one day voyage he landed in Liverpool and then began a year crowded with rich cultural and educational experiences. Everywhere he made friends among the botanists and scientists and everywhere he found in the old established herbaria specimens of American plants which had been collected through the past century by a long list of botanists and travellers.

Finding the herbarium specimen in France

By the middle of March Gray had reached Paris where he remained nearly a month. Here he worked over the collections of André Michaux (1746-1802), that indefatigable collector and botanist, who fifty years before had spent eleven years

in the United States, sending home to France great quantities of botanical treasures. Among these in a cabinet of unidentified plants was a faded, incomplete specimen with the label: "Hautes montagnes de Caroline. *An pyrola spec.? An genus novum?*" In his carefully kept Journal André Michaux not only tells of the finding of the plant, but gives careful directions that future botanists might also locate it in the "High Mountains of Carolina."

Michaux's Journal in French, as written, is not readily available, nor is there a translation of the whole Journal for English readers. Through the courtesy of Professor Edith Philips, of the French Department of Swarthmore College, the following translation of that small portion relating to the finding of *Shortia* is here presented. It will give some idea of the hardships borne by the botanist in his travels and covers his experiences on four disagreeable winter days when he came upon the little plant which has intrigued botanists for one hundred and fifty-four years.¹

The roads became more difficult as we approached the headwaters of the Keowee [spelled Kiwi by Michaux] on the 8th of December, 1788. . . . Two miles before arriving there I recognized the *Magnolia montana* which has been named *M. cordata* or *auriculata* by Bartram. There was in this place a little cabin inhabited by a family of Cherokee Indians. We stopped there to camp and I ran off to make some investigations. I gathered a new low woody plant with saw-toothed leaves creeping on the mountain at a short distance from the river. The weather changed and it rained all night. Although we were in the shelter of a great *Strobus* pine our clothing and our covers were soaked. About the middle of the night I went to the cabin of the Indians, which could scarcely hold the family composed of eight persons, men and women. There were besides six big dogs who added to the filth of this apartment and to its inconveniences. The fire was placed in the middle without any opening in the top of the cabin to let the smoke out; there were plenty of holes, however, to let the rain through the roof of this house. An Indian came to take my place by the fire and offered me his bed which was a bear's skin. But finally the rain having stopped and annoyed by the dogs which kept biting each other continually to keep their place by the fire, I returned to the camp.

This place which is called the source of the Keowee is incorrectly so indicated. It is the junction of two other rivers or large torrents which unite at this place and which is known only as the forks of the Keowee.

On December 11 it froze hard and the air was clear and keen. I noticed a chain of high mountains which extended from west to east and where the frost was little felt in places exposed to the sun. I gathered a *Juniperus*

¹ Michaux, F. A. Journal of André Michaux. 1787-1796, with an introduction and notes by Charles Sprague Sargent. Proc. Amer. Philos. Soc. **26**: 1-145. 1889. The introductory part was read before the American Philosophical Society at its meeting on October 19, 1888. The translation here given was made from the printed text, p. 45-46. The priceless original journal has been removed to a place of safety for the "duration."

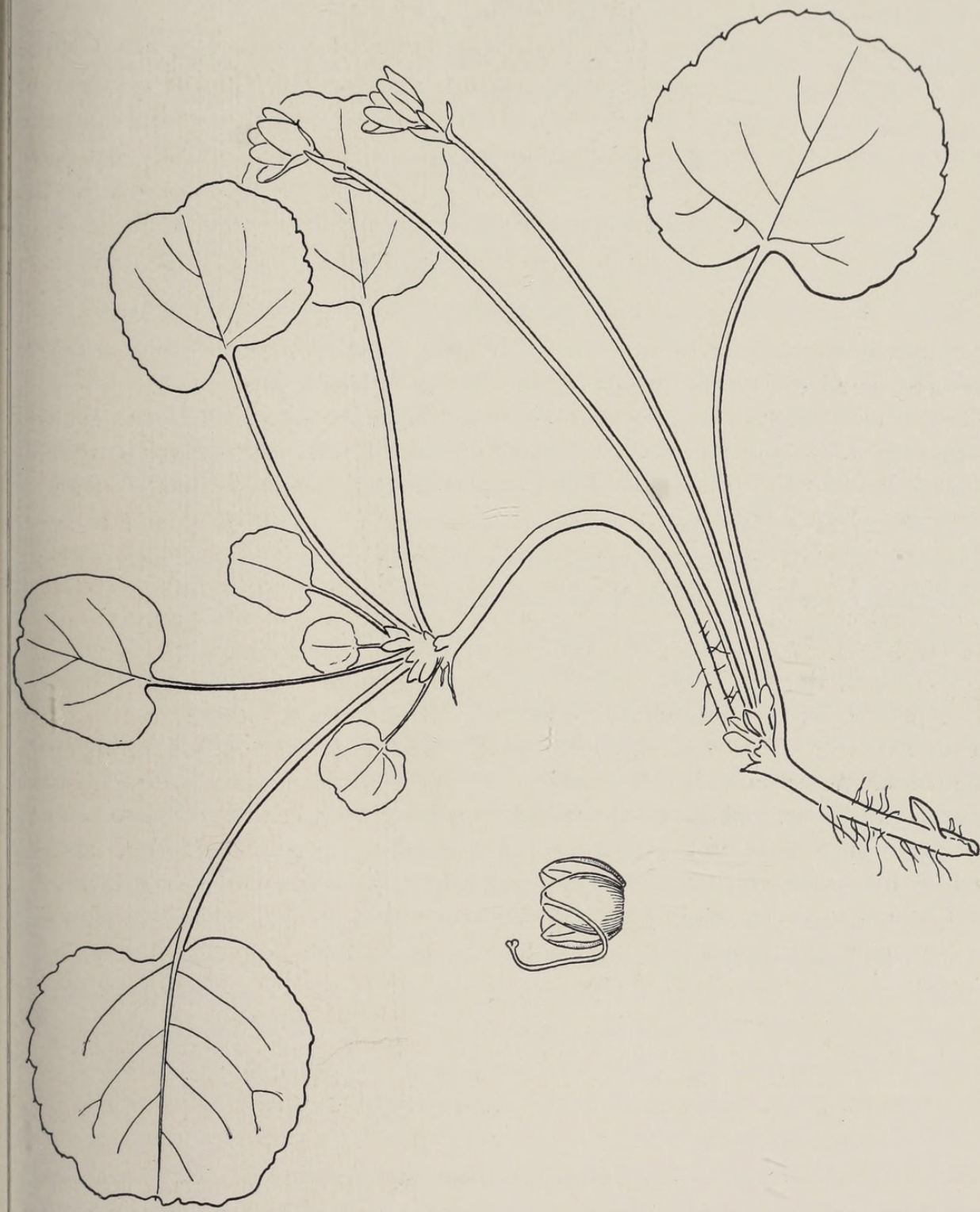


PLATE IV. *Shortia galacifolia*—from original drawing by Decaisne of the type specimen in the Michaux Herbarium, Paris, 1839. (Copied by G. Dillon, Feb., 1942.)

[*repens*] which I had not yet seen in the southern part of the United States but it must be noted that I saw on these mountains several trees of the northern regions such as *Betula nigra*, *Cornus alternifolia*, *Pinus Strobus*, *Abies*, Spruce, etc. We crossed a space of about three miles in the midst of *Rhododendron maximum*. I came back to camp with my guide at the head of the Keowee and gathered a large quantity of the low woody plants with the saw-toothed leaves that I found the day I arrived. I did not see it on any other mountain. The Indians of the place told me that the leaves had a good taste when chewed and the odor was agreeable when they were crushed, which I found to be the case.

Directions for finding this plant

The head of the Keowee is the junction of two torrents of considerable size which flow in cascades from the high mountains. This junction takes place in a small plain where there was once a Cherokee village. On descending from the junction of these two torrents with the river to one's left and the mountains which face north on the right, one finds at about 200-300 feet from the junction, a path formed by the Indian hunters.¹ It leads to a brook where one recognizes the site of an Indian village by the peach trees which still exist in the midst of the underbrush. Continuing on this path one soon reaches the mountains and one finds this plant which covers the ground along with the *Epigaea repens*.

In his journal for April 8, 1839, Gray records the find in the herbarium of the Paris Museum which immediately aroused his interest:

"But I have something better than all this to tell you. I have discovered a new genus in Michaux's herbarium—at the end, among *plantae ignotae*. It is from that great unknown region, the high mountains of North Carolina. We have the fruit, with the persistent calyx and style, but no flowers, and a guess that I made about its affinities has been amply borne out on examination by Decaisne and myself. It is allied to *Galax*, but is 'un très distinct genus,' having axillary one-flowered scapes (the flower large and a style that of a *Pyrola*, long and declined). Indeed I hope it will settle the riddle about the family of *Galax*, and prove Richard to be right when he says *Ordo Ericarum*. I claim the right of a discoverer to affix the name. So I say, as this is a good North American genus and comes from near Kentucky, it shall be christened *Shortia*, to which we will stand as godfathers. So *Shortia galacifolia*, Torr. and Gr., it shall be. I beg you to inform Dr. Short, and to say that we will lay upon him no greater penalty than this necessary thing—that he make a pilgrimage to the mountains of Carolina this coming summer and procure the flowers."

Charles Wilkins Short (1794-1863) and Asa Gray never met. Their friendship was founded on a voluminous correspondence and a mutual respect for the botan-

¹Sargent notes, "This path still exists very much in the same condition, probably, as Michaux found it a hundred years ago." Proc. Am. Philos. Soc. 26: 47. 1889.

ical writings and attainments of each other. Both had been graduated in medicine and both were college instructors in science. Short was Gray's senior by sixteen years. He never saw the dainty little plant so honorably named, nor the dried specimen in the Paris herbarium. This and the few lines in Torrey and Gray's *Flora of North America* were all that were definitely known of it until fourteen years after Dr. Short's death. Apparently the latter never made the penalty pilgrimage to the mountains of Carolina in search of his namesake. His own large collection of dried plants passed to the Academy of Natural Sciences in Philadelphia but his name is still to be found on the twenty-five thousand herbarium specimens he is said to have generously distributed to like-minded enthusiasts throughout the world.

The search of the Carolina mountains

Returning from his trip abroad, Gray reached home early in November, 1839, and immediately plunged into the task of completing the *Flora of North America*. *Shortia*, however, was always in his mind. It was Michaux's incomplete and misleading label "Hautes montagnes de Caroline" on the herbarium specimen in Paris that delayed for nearly forty years the satisfaction he was to have in holding in his hand a living plant. In anticipation of a botanizing trip Dr. Gray now consulted Michaux's journal. But one must read carefully to find the reference, although in all the journal no species location is so faithfully described as in that of *Shortia*, but Gray unfortunately missed the significance of Michaux's directions, or did not realize that the passage reproduced above appertained to the much desired *Shortia*. With two friends, John Carey and James Constable, he started on his first quest late in June, 1841. To the "High Mountains" they went, Roan, Iron, Grandfather, Black and others, all over 5000 feet in height. Michaux had also visited them. He recorded in his journal that on the 30th of August, 1794, standing on the summit of Grandfather, which he thought was the highest peak in all the Appalachians, he and his guide, John Davenport, had chanted the *Marseillaise* and cried "Vive l'Amérique et la République Française, Vive la Liberté!"

The Gray exploring party made its headquarters in the little town of Jefferson, the County seat of Ashe County, North Carolina. None of the party knew that *Shortia* flowered in late March or early April, nor did they know at what altitude it grew. Reporting on his extended trip in a classical account which he wrote for Sir William J. Hooker, Gray says: "We were unsuccessful in our search for a remarkable undescribed plant with a habit of *Pyrola* and the foliage of *Galax*, which was obtained in the high mountains of Carolina. The only specimen extant is among the 'Plantae incognitae' of the Michauxian herbarium, in fruit only; and we were anxious to obtain flowering specimens, that we might complete its history; as I have long wished to dedicate the plant to Professor Short, of Kentucky, whose attainments and eminent services to North American botany are well known and appreciated both at home and abroad."¹ In a footnote from this quoted passage is the first published description of the genus *Shortia* Torrey and Gray.

Two years passed and the position at Michigan having been abandoned, on April 30, 1842, Gray was appointed to the Fisher Professorship of Natural History in Harvard College. Again *Shortia* called him and for nearly three months in 1843, this time with another friend, William S. Sullivant, he herborized in the same general territory, the happy hunting ground of many distinguished botanists, both before and since. But again he was searching in the wrong place and again was disappointed. In neither trip did he come within many miles of where the little plant had been first discovered.²

Dr. John Torrey was the first to suggest as early as 1852, that *Shortia* was probably an early spring plant and further that it might disappear after flowering and perfecting its seed. "One should be pretty early on the ground to find it in flower," he wrote Dr. Short who was anticipating a journey to the Carolina mountains in quest of it. John Carey about the same time was urging Dr. Short to ascertain the name and whereabouts of Michaux's old guide, John Davenport, from whom he might learn his track "in general if not in particular."³

Rediscovery at last!

It was in May, 1877, that seventeen year old George McQueen Hyams (1861-1932) of Statesville, N. C., found *Shortia* growing on the banks of the Catawba River near Marion, the county seat of McDowell County, N. C.,⁴ some seventy miles in a direct line from the site of Michaux's discovery. His father, M. E. Hyams (1819-1891), was an herbalist but did not know the plant and eighteen months later sent a specimen for identification to a friend, Joseph W. Congdon of East Greenwich, R. I. He in turn wrote Dr. Gray telling him he thought he had *Shortia*. The latter wrote "send it on" and at last the search of nearly forty years was at an end. Dr. Gray was triumphant. "No other botanist has the news," he hastened to write, on October 21, 1878, to his close friend and fellow botanist William M. Canby, who was to be the first to share with him the jubila-

¹See **Gray, A.** Notes of a botanical excursion to the mountains of North Carolina, etc. with some remarks on the botany of the higher Alleghany Mountains, in a letter to Sir Wm. J. Hooker. *Am. Jour. Sci.* **42**: 1-49. 1842, also published in *London Jour. Bot.* **1**: 1-14, 217-237. 1842, **2**: 113-125. 1843, **3**: 230-242. 1844; reprinted in *Scientific papers of Asa Gray*, selected by Charles S. Sargent **2**: 22-70. 1889.

²For an account of the second journey see **Gray, A.** Musci Alleghaniensis, sive Spicilegia Muscorum atque Hepaticarum quos in itinere a Marylandia ad Georgiam per tractus montium A. D. MDCCCXLIII, decerpserunt Asa Gray et W. S. Sullivant. . . *Am. Jour. Sci.* **II** **1**: 70-81. 1846 (p. 79-81).

³Letter from John Carey to C. W. Short edited by Prof. W. C. Coker. *Jour. Elisha Mitchell Sci. Soc.* **57**: 122. 1941.

⁴F. M. Crayton for fifty years a well known plantsman and collector of Biltmore, N. C., says all the stations of *Shortia* in McDowell County, where it was rediscovered in 1877, have been destroyed with the exception of one small colony. He has found it in nearby Burke County where it has increased considerably in the last twenty-five years.



PLATE V. Composite drawing made in 1940 from a portrait of Asa Gray made in about 1843.
The microscope shown is the one he used. (Courtesy of the First National Bank of Boston.)

tion over the rediscovery. In the period of forty years of waiting, many deserved honors had come to him, including college degrees and memberships in fifty learned and cultural societies throughout the world. A few months previously he had been elected a member of the Academie des Sciences of the Institut de France, one of the most coveted rewards to a scientific man. Yet the discovery he was communicating to his friend, "has given me," he said, "a hundred times the satisfaction that the election to the Institut did." And then he continues: "If you will come here I can show you what will delight your eyes and cure you effectively of the skeptical spirit you used to have about *Shortia galacifolia*. It is before me with corolla and all from North Carolina! Think of that! My long faith rewarded at last."

Dr. Gray wrote to M. E. Hyams,¹ October 27, 1878, telling him how much immortality had been lost for his son by not sending the specimen when it was found eighteen months before, in order that the description might have been included in the edition of the Flora which had gone to press in the meantime, but promising to make his name famous through an article in "Silliman's Journal pro tem." He also informed M. E. Hyams, that he or Mr. Canby, or both, would be down the following May, call for the boy and ask to be taken to the spot. Mr. Hyams in replying, October 31, tells of the finding of the plants: "We were passing along the road and my attention was called to an elevated hillside that I could not ascend as being at the time rather exhausted, being sixty years old, requested him [his son] to ascend and bring whatever was in flower. I have forgotten the locality, but he is fully known to it, as he lived within two miles of the place for several years."²

Now that a definite station for *Shortia* had been located, Dr. Gray early in the spring of 1879 organized a real excursion to see it growing in the wild. Mrs. Gray and her brother with the latter's wife and their two daughters and his botanical friends, William M. Canby of Wilmington, Del., Dr. Charles S. Sargent of Brookline, Mass., and J. H. Redfield of Philadelphia, Penna., composed the party. The four principals of the party arrived in Statesville, N.C. by train and were entertained by a Mr. Wallace, a leading citizen of the town. Redfield wrote a full account of the trip but only that portion relating to *Shortia* is included here. He says:³ "The recent rediscovery of *Shortia* in North Carolina has created much

¹The interest of M. E. Hyams in botany was lifelong and enthusiastic. A son relates that when he would take his boys walking he would bid one look up and the other look down so they would miss nothing. He was a purchasing agent and collector of medicinal plants for a large Baltimore drug house. His home was in Statesville, N.C. from 1870 until his death in 1891. The botanical fame which Dr. Gray promised George M. Hyams as the rediscoverer of *Shortia* did not materialize. Removed from the influence of his father he lost interest in botany and became the proprietor of a general store and postmaster at Old Fort, N.C. where he was a respected and influential citizen. He died at Old Fort in 1932.

²Original letter in Gray Herbarium.

³Redfield, J. H. Notes of a botanical excursion into North Carolina. Bull. Torrey Bot. Club. 6: 331-339. 1879.

interest among botanists. . . . Searches repeated in the course of many years had proved fruitless, so that to the botanical fraternity and particularly to the author of the genus the recovery was somewhat like that of a long lost child. . . . The object was not only to see *Shortia* but to find more of it if possible and to explore some portions of the mountains which the oldest member of the party [Dr. Gray] had visited in 1841 and 1843. . . .

“A visit to the root and herb warehouse belonging to Wallace Brothers and under the charge of Mr. Hyams, furnished evidence that this branch of industry has reached an extent and importance of which few are aware. The printed catalogue of indigenous plants, dealt in by this house, enumerates about 630 species. . . . These simples find a large market, both in this country and Europe, and the orders come mainly from the wholesale druggists and the manufacturers of patent medicines. Think of a single order for fifteen tons of *Hepatica triloba*! . . .

“Being now in McDowell County, the *Shortia* locality was visited under the guidance of Mr. George M. Hyams the actual discoverer. In the secluded and well protected station, well over-shadowed by Rhododendrons and Magnolias, was seen the little colony of the plant, so long sought and by many so long doubted. Its companions were *Mitchella repens*, *Asarum Virginicum* and *Galax aphylla*. The space over which the plant extended was perhaps 10 feet \times 30 and in all there may have been 50 to 100 plants. As the plant multiplies by stolons it is remarkable that its area should be thus restricted and since in the struggle for life of two allied plants the weaker ‘must go,’ Dr. Gray suggested the possibility that its stronger cousin, the *Galax*, had crowded out the *Shortia*. And here indeed, in what may be the last foothold of the rarity, *Galax* appeared to be actually doing so. Yet the plants, though comparatively few, were vigorous and healthy. Other stations may be looked for; but they must be hard to find. When we consider the long search which has been made for this plant, how all the mountain region of the Carolinas and Tennessee has been examined by the sharp optics of Buckley, Rugel, M. A. Curtis, Dr. Gray, Canby, Le Roy and Ruger, the Vaseys, elder and younger, Chickering and others, it is very certain that if there be other localities they must be ‘few and far between.’ ”¹

Asa Gray never saw *Shortia* in bloom in its native mountains, nor did he ever visit the forks of the Keowee. Shortly after his return to Cambridge he wrote to Dr. Short’s daughter:

Botanic Garden, Cambridge, Mass.

Aug. 5, 1879

Hon. and dear Madam:

I respond at once to your letter of Aug. 1st, and send you the announcement in Silliman’s Journal, on which (& on a later) notice the article in the “Garden” must have been founded.

¹See also Gray’s account of the rediscovery of *Shortia*. **Gray, A.** *Shortia galacifolia* rediscovered. *Am. Jour. Sci.* III. **16**: 483-485. 1878.

Year after year have I hunted for that plant! And I grew sorrowful at having named after Dr. Short a plant that nobody could find. So conspicuous for its absence had this rarity become, that friends of ours botanizing in the mountains two years ago, were accosted with the question—"Found *Shortia* yet?"—from people who had seen our anxious search for it. After all, the rediscovery was accidental, and by one not a botanist. Few botanical events excited more interest at home and abroad; and your honored father is commemorated by perhaps the most interesting flower in N. America, with a counterpart in Japan.

Well my wife and I with three other botanists, passed the month of June 1 in a visit to the discovered locality—a small patch, at the foot of the mountains, and in a diligent search for more—as it no doubt belongs higher up in the mountains. *We did not find more of it.* But I am not yet 69 years old, and I hope to try once more, having now narrowed the region in which the search should be made with some confidence.

But we had a delightful journey. When your memorial is printed please let me have a copy of it. Consider I have an interest in the subject of it next to his descendants.

Excuse hurried line from a very busy man, & poor writer, and believe me to be always,

Yours very sincerely,
Asa Gray

(P.S.) I have had more or less to do with the naming (besides the genus) of several species for Dr. Short. Among them *Carex Shortii*, *Viscaria Shortii* [now *Lesquerella globosa* in Gray 7th ed.], *Aster Shortii*, *Solidago Shortii*.

A.G

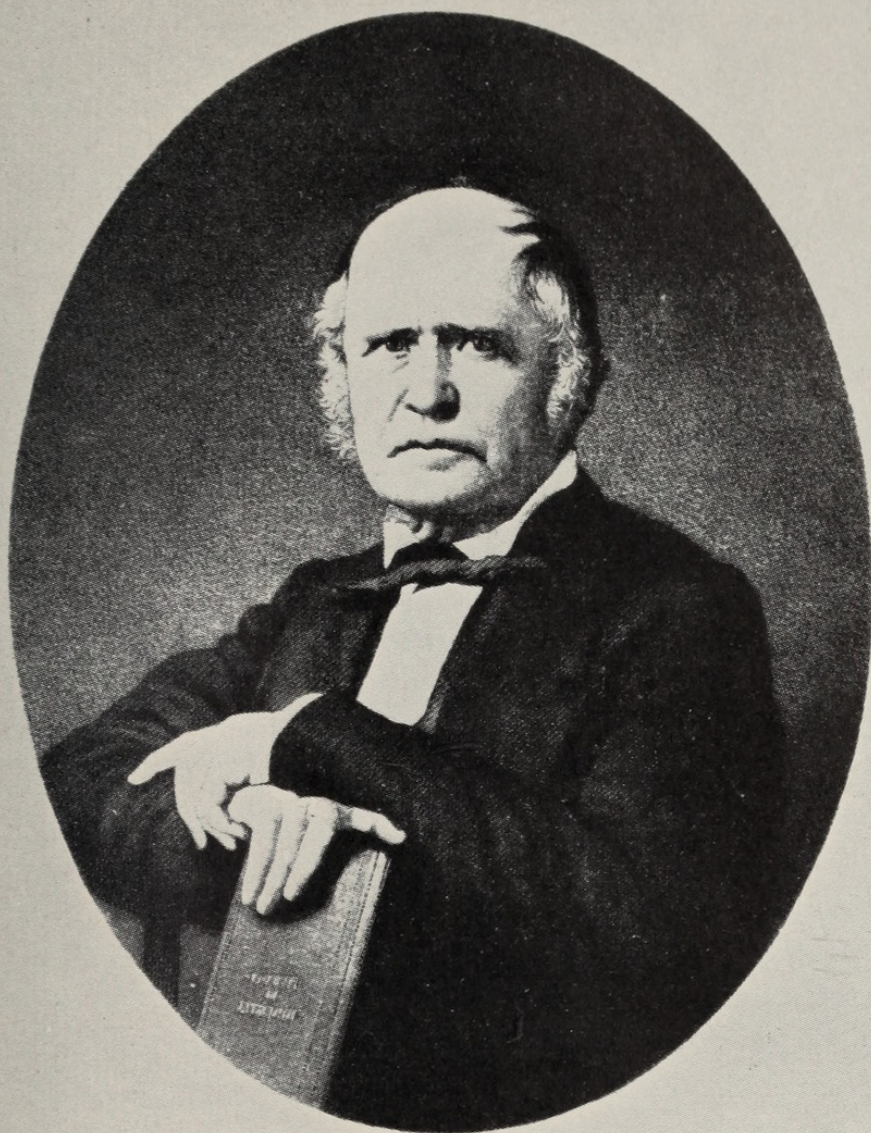
(P.S.) The flowering specimens are left in the hands of Mr. Hyams who is a plant dealer—Statesville, N. C. They have been gathered scantily not to endanger the stock. Next year you shall have a dried specimen, or better a plant to flower for yourself. A pretty but modest thing.

A.G.¹

Dr. Sargent finds *Shortia*

Dr. Sargent was not satisfied with the meagre results of the search for *Shortia* in 1879 and again visited the Carolinas in the early autumn of 1886 hunting for *Magnolia cordata*, mentioned by Michaux. At Sapphire, Transylvania County, N.C., he and Mr. Stiles who accompanied him, were met by Frank E. Boynton of Highlands. One evening after a botanizing trip Dr. Sargent produced a leaf and asked what it was. Mr. Boynton thought it might be *Galax* but examining it more closely said he did not know. Mr. Stiles jokingly said: "That is *Shortia*," and it turned out so to be. It was a coincidence that in the evening mail the following letter arrived from Dr. Gray:

¹ Letter in a collection of Dr. Short's letters at the University of North Carolina. Published in the Jour. Elisha Mitchell Sci. Soc. 57: 167. 1941.



C. W. Short

PLATE VI. Copied from an engraving of Dr. Charles Wilkins Short owned by the American Philosophical Society; there is also a copy of this in the Jane Loring Gray collection of portraits of botanists at the Gray Herbarium.

September 17, 1886.

My dear Sargent:

Would I were with you. I can only say crown yourself with glory by discovering a habitat—the original habitat of *Shortia* which we will believe Michaux found near where *Magnolia cordata* came from in that first expedition.

Yours, ever,
Asa Gray

Unfortunately Dr. Sargent could not recall where he had found the *Shortia* leaf. He and his party had travelled all day over rough mountain country searching for *Magnolia cordata*. So the two Boynton brothers were sent back to locate the growing plants from which the leaf had been plucked. Frank Boynton remembered that Dr. Sargent and he had passed through Bear Camp, a small settlement on Bear Camp Creek, a little stream flowing into the Horse Pasture River, which in turn enters the Keowee. Here they found *Shortia* and gathered a small amount and it was one of these living plants which Dr. Sargent placed in Dr. Gray's hands as coming from the Michaux land "the headwaters of the Keowee," for it was at this place that Michaux first found it on December 8, 1788.

Two reports from Frank E. Boynton¹ associated with Dr. Sargent in his botanical excursion in search of *Shortia* and *Magnolia cordata*, aroused the enthusiasms of botanists two generations ago. Mr. Boynton's home was in Highlands, N.C. near the South Carolina line, which town boasts of being the highest incorporated town east of the Mississippi River. The following is a quotation from his letter to Professor Sargent, November 7, 1886.

"Several days ago I went to Cashiers Valley to get seed of the *Rhododendron Vaseyi* for you. After getting it I could not withstand the temptation to go down through the country and look up *Shortia*. I made a sort of calculation as to the direction in which the forks of the Toxaway and Horse Pasture were from me, and started on through the woods. I went through some rough country and finally came to a little settlement called Bear Camp way down in a deep cove. Here I found *Ilex mollis*. . . . A small stream called Bear Camp Creek runs through the little valley. I followed the br. down from several miles and finally came to a bank with *Shortia*. There was rods covered with it just as *Galax* covers places about here."

Frank E. Boynton accompanied by his brother Charles L. Boynton made a trip in the spring of 1889, from their home in Highlands, N.C., to the headwaters of the Keowee. The account will aid other botanists who may wish to ascertain if *Shortia* still grows in the great profusion and in the location described. He writes:²

¹From Boynton's original letter in the Gray Herbarium, Cambridge, as Dr. Sargent sent Boynton's letter to Asa Gray.

²**Boynton, F. E.** The home of *Shortia*. Gard. & Forest 2: 214-215. 1889. Frank E. Boynton is still living, in poor health, at Old Fort, N.C. His brother Charles L. Boynton is living in Lodi, California.

“We camped the first night at the White Water Falls, which alone are worth a considerable journey to see. The Jocassee Valley, our destination, is at the mouth of White Water Creek or rather at the Junction of White Water and Devil Fork. I wished to see if *Shortia* was growing as high up in the mountains as these Falls, which are at least 1000 feet above Jocassee. No *Shortia* was found, however, until we reached the valley, which has an altitude of about 1200 feet and here it grows by the acre. Every little brooklet is lined with it. Most of these little water courses are in deep narrow gorges where the sun hardly penetrates, except during the middle of the day. All these steep banks are literally covered with *Shortia*. What is comforting to the botanist is that it can hardly be exterminated. It is on land too steep to be cultivated and there is such an abundance that no amount of collecting can ever effect it strenuously. Our party took away bushels of it, and no one could tell that a plant had been disturbed, so thickly it is growing. No idea of the beauty of this plant can be formed until it has been seen in its native home. The mass of glossy green and white, once seen, can never be forgotten.

“The home of *Shortia* is a strange mixture of North and South. As a rule it grows under the shade of rhododendrons and tall kalmias. Hemlock and white pine of splendid dimensions are very common. . . . To see *Shortia* in blossom and in its glory one must get there about the 20th of March, not later than March 25.”

Another later botanist, Professor Henry J. Oosting, of Duke University, tells of herborizing in 1936 in another nearby region. He says, “the *Shortia* in Toxaway Gorge is scattered along the low banks of a stream for perhaps a half mile, as I recall. It grows in dense mats two to six feet in diameter. The locality is rather inaccessible for, as the guide remarked, ‘it’s five miles down into the gorge and fifteen miles out.’ I saw it in the rain and got no satisfactory pictures.”

Recent searches for the plant

An examination of specimens in thirty one of the leading herbaria in the United States discloses ninety-eight sheets of *Shortia*. Of these forty-four were collected along the banks of the Whitewater River in Oconee County, S.C. Fourteen more are listed as coming from the Jocassee Valley, also in Oconee County. Thirteen were found in McDowell County, N. C. more definite locations not being given. Eight were found in the Toxaway Gorge in Transylvania County, N. C., three along the Bear Camp Creek and two along the Horse Pasture River, both locations in Transylvania County. One each from “the mountains of N. W. Carolina,” “4 miles N.W. Salem, S.C.” and “Macon Co., N.C.” The remainder are specimens with labels giving no definite locality or come from cultivated plants. The Biltmore herbarium was very generous in distributing specimens, a number of sheets bearing their imprint.

The Savannah River and its tributary, the Tugaloo, form the boundary between South Carolina and Georgia. The Tugaloo and the Seneca form the Savannah. The Seneca is made by the Little River and the Keowee and the latter in turn is

formed by the Whitewater and the Toxaway. The junction of these two latter streams lies in Oconee, the northwesternmost county of South Carolina where this state joins Georgia and North Carolina. The rocky gorges of these tumbling streams are the native haunts of the little plant with the serrate leaves and is the wilderness first botanically explored by the intrepid Michaux.

The North and South Carolina state line runs directly through the *Shortia* hiding places and it is doubtful whether the early botanists knew in which state they were collecting. All the known *Shortia* land is now included in two great national forests. The Natchala National Forest embraces the five western counties of North Carolina and includes in its limits the Joyce Kilmer Memorial Park. The Sumter National Forest, which immediately adjoins it on the south within the State of South Carolina, embraces a large part of Oconee County.

In 1940-1 the Forest authorities, as reported by Mr. Ralph M. Nelson, Acting Director, made a search for colonies of *Shortia* on national forest land. They reported "no colonies were found." Whether foresters are the best searchers for a shy, little ground cover, is a question for they have been trained to follow Edward Everett Hales' injunction "look up and not down." But much of the area within the limits of the forests has not yet been acquired by the Government and *Shortia* colonies may occur on privately owned land where the rangers did not search. It is incredible that a species that may have occurred in "acres and acres" which has been searched by keen-eyed botanists and collectors has been entirely exterminated. To the casual observer, except when they are in bloom, *Shortia* resembles *Galax* and it is difficult to distinguish from it. Undoubtedly *Shortia* can still be found in abundance in many an unfrequented gorge along the tributaries of the Keowee.

Growing *Shortia* in the North

Shortia plants may be obtained from a number of nurserymen and collectors who specialize in the flora of the Carolina mountains. An authority writing for Bailey's Encyclopedia of Horticulture, says that it fails to set seed as the stem withers before the seed matures. Apparently no plants are propagated in this way. It would be well for botanists and growers to note whether this condition generally prevails. *Shortia* was grown successfully in the Arnold Arboretum without special care for twenty-five years (it has recently disappeared, however, but is now being re-established) and may be found in many wild gardens throughout the country. It is hardy up to the White Mountains of New Hampshire where the thermometer goes forty degrees below zero. It has been successfully grown for fifteen years on the estate of F. Cleveland Morgan some twenty miles northwest of Montreal, Canada, and has been reported as cultivated at Grand Metis, on the Gaspé Peninsula, one hundred and fifty miles further north than Montreal. There are numerous reports of failure, however, as it often lives for a while and then pines away and disappears. These failures are probably due to the soil and location and not the climate.

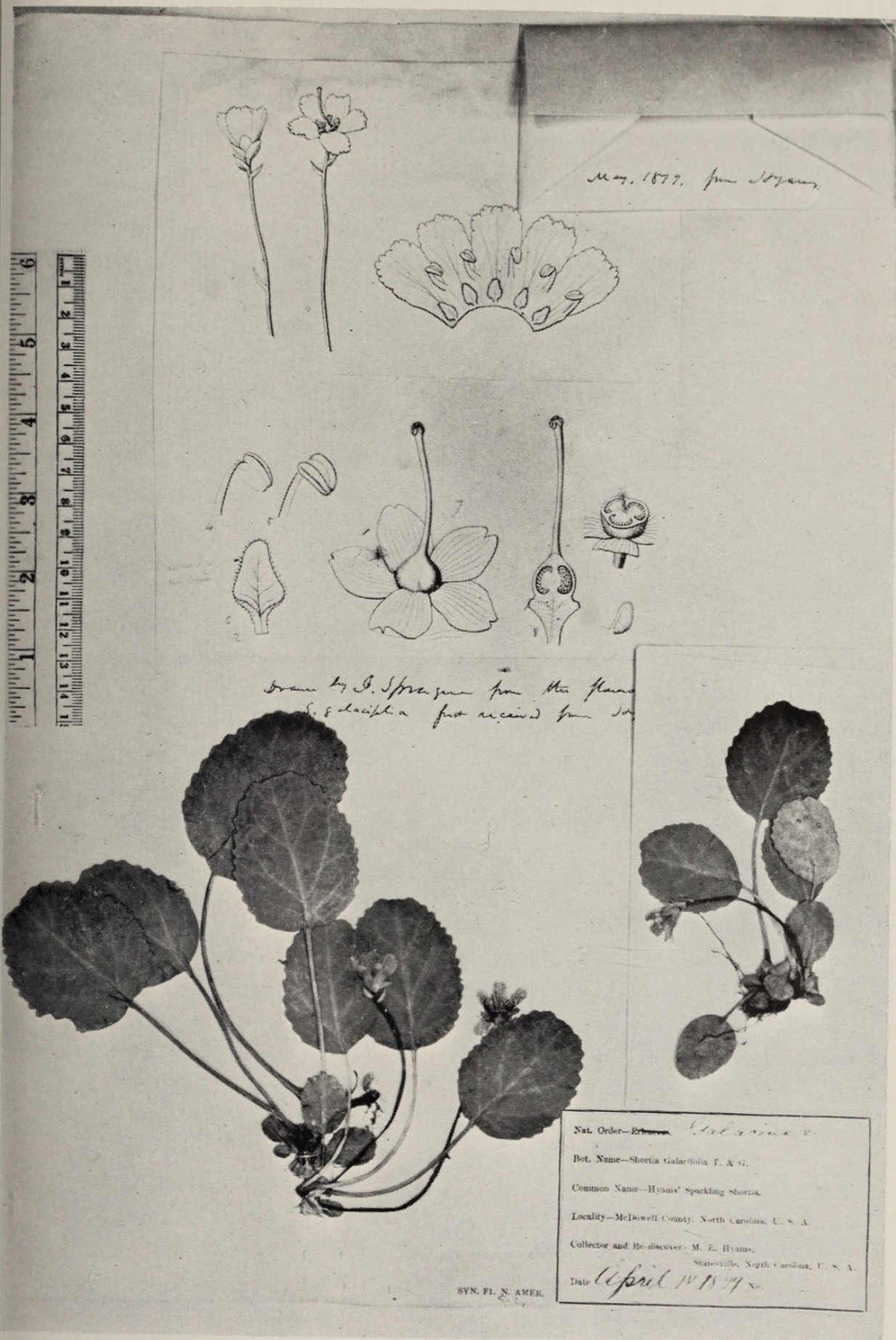


PLATE VII. The Hyams *Shortia* specimens in the Gray Herbarium. The detailed drawing is by Isaac Sprague.

It has been growing at the Hemlock Arboretum in Philadelphia for several years. A six inch bed of oak leaf mold was prepared, under and near a clump of hemlocks, where it gets the sun but an hour or two in the middle of the day. One clump, however, planted under a dense, low-growing dogwood, where it had no sun at all, did better than its fellows. In the autumn the oak leaves, as they fall, nestle down and cover the bed. In the spring these are removed and sieved leaf mold is scattered over the clumps and worked down under the leaves. Again in the summer a light application of peat moss is given in the same way.

Dr. Frederick P. Lord of Hanover, N.H. thinks his success in growing *Shortia* is due to applications of a mixture of cottonseed meal, superphosphate and potassium sulphate, but after disastrous experiences trying to help *Epigaea repens* along, we, at the Hemlock Arboretum, having been afraid to use commercial fertilizer of any kind for ericaceous plants. Dr. Lord also waters his stands rather regularly during the summer but here again we are afraid to use the city water, with its supercharge of bacteria-destroying chemicals. Our plants could not do better if growing in their pristine mountain homes, as they have a healthy leafage and an abundance of flowers. Observations of two successful plantings show that in these *Shortia* does better on a slope than when grown on level ground. This may be due to better drainage or less direct exposure to the sun.

On the herbarium specimens which the Hyams prepared and distributed extensively in 1878, "Hyams' Sparkling Shortia" was given its common name, but this was extremely local in its use. Alice Lounsberry in her book "Southern Wild Flowers and Trees," (1901) says "*Shortia's* common name was Little Colt's Foot," a dainty and descriptive designation. In 1923, the editors of Standardized Plant Names, called it Oconee Bells and this now is the name generally used in the nursery trade. The significance, of course, is it having been first found in the wilderness of what is now Oconee County, S.C.

As has been stated up to the time of the rediscovery of *Shortia* Dr. Gray had received fifty honorary degrees and memberships in learned societies. Twenty-one more were to come to him before his death, which occurred January 30, 1888. He was buried in Mount Auburn Cemetery, Cambridge, Mass., where a simple stone bearing a cross marks his last resting place. It may not be too late to suggest that, with the soil properly prepared, there might be planted on his grave an ever green and ever beautiful blanket of the little flower which he so loved and which he pronounced "perhaps the most interesting plant in North America."

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Jenkins, Charles F. 1942. "Asa Gray and His Quest for *Shortia galacifolia*." *Arnoldia* 2(3-4), 13-28.

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