

HUMPHRY MARSHALL'S BOTANIC GARDEN:
LIVING COLLECTIONS 1773-1813

By

Robert R. Gutowski

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Robert R. Gutowski

Approved: _____

James E. Swasey, Ph.D.
Professor in charge of thesis

Approved: _____

James E. Swasey, Ph.D.
Coordinator of the Longwood Graduate Program in
Public Horticulture Administration

Approved: _____

Carol E. Hoffeecker, Ph.D.
Acting Associate Provost for Graduate Studies

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NOMENCLATURE

Botanical nomenclature and provenance for native and naturalized plants is consistent with Gleason and Cronquist, Manual of Vascular Plants of Northeastern United States and Adjacent Canada (1961). Hortus III (1976) is the reference for exotic plants and cultivars. Secondary references include: Fernald, Gray's Manual of Botany, Eighth Edition (1950); Radford, Ahles, and Bell, Manual of the Vascular Flora of the Carolinas (1964); and Rehder, Manual of Cultivated Trees and Shrubs, Second Edition (1940).

Strausbaugh and Core, Flora of West Virginia (1977) and Wherry, Fogg, and Wahl, Atlas of the Flora of Pennsylvania, (1979) confirm distributions within the collecting range of the Marshalls.

Reference is made to: Barton, Compendium Florae Philadelphicae (1818); Darlington, Flora Cestrica (1839, 1853); Michaux, Flora Boreali-Americana (1803) and North American Silva (1817-19); Nuttall, Genera of North American Plants (1818); Pursh, Plants of North America (1814);

Stone, Flora of Chester County (1945) and Wherry, Fogg, and Wahl, Atlas of the Flora of Pennsylvania (1979) when it is necessary to establish that the occurrence of taxa in the garden are not accidental intrusions of the local flora, and to establish for other native species that they were not yet known.

Synonymy is a puzzle in which all of the above works serve. Period works in botany and horticulture, in addition to the works mentioned above, are invaluable:

Bartram, Catalogue of American Trees, Shrubs and Herbaceous Plants (1783); Castiglioni, Travels in the United States of North America (1790); Curtis and Sims, The Botanical Magazine vols. 1 to 52 (1795 to 1825); Hooker and Jackson, Index Kewensis (1895); Marshall, Arbustum Americanum (1785); Mawe and Abercrombie, The Universal Gardener and Botanist (1797); Miller, The Gardeners Dictionary (1754 and 1765); M'Mahon, The American Gardener's Calendar (1806); Linnaeus, Species Plantarum (1753); Sargent, Silva of North America (1890-1902); Walter, Flora Caroliniana (1788); and Woodville, Medical Botany (1790-93).

Dates of introduction are based on cited references in the above publications unless otherwise noted.

This thesis style follows Turabian, A Manual for Writers, Fourth Edition (1973). This thesis uses the Author-date citation system described in "The University of Delaware Office of Graduate Studies Thesis Manual," Revised Edition (1987).

ABSTRACT

Humphry Marshall (1722-1801), author of the first American botanical imprint, Arbustum Americanum: The American Grove... (Philadelphia, 1785), established at his Chester County, Pennsylvania home what is generally regarded as the second botanic garden in America. Aiding Marshall was his nephew, Dr. Moses Marshall (1758-1813). Since the Chester County Historical Society acquisition of Marshall's house and garden site in 1982, information about the landscape is important to conserve and interpret this property. The period 1773-1813 represents the tenure of Humphry and Moses Marshall, encompassing the significant period of botanical and horticultural activity.

This study records the existing plantings, documents plantings surviving from the Marshalls' tenure, and documents 136 plants as a partial catalog of the Marshalls' living collection. The annotated catalog in Chapter 2 demonstrates great diversity in species, provenance, and use. The catalog confirms intensive cultivation and the international scope of the garden. Site analysis and

historical research indicated garden elements existing during the Marshalls' lifetimes.

The common view of Marshall's garden, solely as an arboretum of native forest trees, is expanded by the collection documented, which includes: greenhouse plants, herbaceous perennials, plants of the Materia Medica, economic plants, exotics, plants for kitchen garden and pleasure ground. Some were new introductions.

The living collection reflected the garden's significance in developing national and international plant exchange and trade, as an herbarium viva, plant introduction station, medicinal garden, and pleasure ground. The collection helped to develop American botany and horticulture during the Colonial and Early Republic eras, contributing to the recognition of a national character at home and abroad. Marshall's Botanic Garden, the culmination of the "curious gentleman's" garden in America, appears as a precursor of the modern, academically based, American botanic garden and arboretum: an interdisciplinary center whose primary feature is the teaching collection and whose primary functions are research and instruction.

Chapter 1

INTRODUCTION

What plants were grown in Marshall's Botanic Garden? Only scattered and fragmentary information has been available. The lack of information has led to some misconceptions about the intent, significance, and nature of the site, which may have contributed to its poor management over the years.

This thesis begins to document the living collections. It is the most complete record yet developed and confirms the definition of the site as a botanic garden. The introduction of several plants is documented for the first time. The annotated catalog, in Chapter 2, of documented plants makes possible a more complete interpretation of the ideas central to the garden's development and can support its possible management and restoration. Information on the original appearance of the garden is presented here and analyzed in light of the current landscape and the history of the landscape. Plantings are documented which date to the period of the

Marshalls, 1772-1813, and as such comprise America's oldest surviving botanical garden plantings.

Humphry Marshall (1722-1801) is generally credited with having established the second botanic garden in America, on land purchased in 1772 in West Bradford, now Marshallton, Chester County, Pennsylvania. While living at and developing this garden, he wrote the first American botanic imprint, Arbustum Americanum, published in 1785. Stafleu (1971, p. 202) noted that this was

the first significant taxonomic publication to have appeared in North America itself... [and] constituted the modest beginning of the penetration of Linnaeus' ideas into American botanical literature.

The garden has been described as one of three which influenced the development of science in the young Republic (Greene 1984; Hindle 1974). Through this garden, plants and information of the New World were disseminated to the royal botanic gardens, university gardens, nurseries, and curious gardens of the Old World, serving plantsmen, politicians, and physicians on both sides of the Atlantic (Darlington 1849; Belden 1965).

Marshall's Garden at Marshallton is generally recognized as the second American botanical garden, after that of his cousin, John Bartram (1699-1777). The

Marshallton garden was begun when Humphry Marshall was fifty-one years of age, following his practice as stonemason, farmer, miller, landowner, public servant and a devout Quaker. Although largely self-educated, he was widely respected as a naturalist. Marshall's friend, Benjamin Franklin, presented Marshall's "Observations on the Spots of the Sun" to the Royal Society in London. Marshall was elected to the American Philosophical Society (APS) and in 1768 was a member of the APS forerunner, the American Society held at Philadelphia for Promoting Useful Knowledge. He was also elected to the Society for the Promotion of Agriculture. Despite his rural location, he was well acquainted with and respected by the scientific members of the Philadelphia community which in Marshall's time was the most important center of natural history in the New World. John and William Bartram, Marshall's kinsmen, were the hub around which the natural history of the New World revolved throughout most of the eighteenth century (Ewan 1969).

Marshall's Botanic Garden was long considered a mecca for the botanist and regional historian. It is still a unique landscape of national significance in which the garden's scientific and political-economic intent is foremost. While predictions of its physical decline through neglect and intrusion (Sargent 1893; Hoopes 1868,

p. 416) have been largely borne out, the aesthetic character of the landscape, the arrangement of plants and spaces, is not its most compelling feature. We can only speculate how the Botanic Garden looked during its active era. The uniqueness of this "plantation" is generally considered to be its contribution as a botanical garden to science and nationalism in the emergent republic of Washington, Adams, and Jefferson. That uniqueness can be better understood when we consider the living plant collection.

The Botanic Garden Idea

The living collection is the critical element in a botanic garden. "A botanical garden is a collection of living plants, properly identified and documented, ... of value for research and teaching" (Steiner 1978, p. 1). A similar definition, adopted in this thesis, was proposed by botanic garden historian C. Stuart Gager in 1914 and later reaffirmed by Lawrence's (1969, p. 36) definition, "A botanic garden is a collection of plants; the primary purpose of which is the advancement and diffusion of botanical knowledge."

Precursors of the modern botanic garden were established in 1545 at the University of Padua and in 1543 at the University of Pisa. They were intended to provide

living collections for the use of medical students and researchers. These early gardens provided facilities to grow and study the taxonomy and economic uses of new plants being rapidly introduced from around the world, including North America.

Humphry Marshall had some contact with these early gardens when he sent live plants to Abbe Felice Fontana, Professor of Natural History at the University of Pisa, and received a box of seeds from the Botanic Garden there (Darlington 1849, p. 535).

In both historical and contemporary contexts Marshall's garden is best described as a botanic garden. Many North American species were cultivated and/or described here for the first time, among them: Acer saccharum, Aesculus glabra, Aesculus octandra, Carya illinoensis, Franklinia alatamaha, Prunus americana, and Quercus stellata. Medicinal plants, including Digitalis, then newly investigated, were grown and distributed. The first American botanical imprint was written there to contribute, as Marshall wrote in his introduction, to a "knowledge of Botany." The living plants collected together there, often after much effort and hardship, were cultivated, described, distributed in America and abroad, enjoyed, identified, propagated, studied, and used by

Humphry Marshall, his nephew Dr. Moses Marshall (1758-1813) and their contemporaries.

The following partial list of American and European notables who exchanged visits, plants and/or letters concerning botanical matters with the Marshalls further confirms the garden's role in diffusion of knowledge. It includes: William Aiton, Sir Joseph Banks, Dr. Benjamin Smith Barton, Dr. William Baldwin, David and Robert Barclay, John and William Bartram, Owen Biddle, Dr. Thomas Bond, Dr. William Darlington, John Dickinson, Felice Fontana, Dr. John Fothergill, Benjamin Franklin, Louis Gerard, James Gibbons, William Hamilton, Baron Itzenplitz, Samuel Kramsch, John Lettson, Dr. George Logan, Monsieur Marbois, James Mease, Andre Michaux, Dr. Morris, Dr. Henry Muhlenberg, Marshal Noailles, Mary Norris, Dr. Thomas Parke, Timothy Pickering, Frederick Pursh, C. S. Rafinesque, Jean Reichart, Samuel Vaughan, and Caspar Wistar.

Many of these contemporaries of Marshall were, like Marshall, members of the American Philosophical Society and other learned societies which were then a principle means of exchanging scientific knowlege.

Nomen Locus

The place name, Marshall's Botanic Garden, was used by Rafinesque (1836) in describing his 1802 "excursion ... taken with with Col. F. [Forrest, of Germantown] to see Marshall's Botanic Garden," "Botanic Garden" was the term used in 1828 to describe the Marshallton site (Hazards 1828, 1: p.302). Darlington's often cited essay, "Progress of Botany in North America" described Marshall's garden as "the second botanical garden within the British Provinces of North America" (1849, p. 22). Darlington, a friend of Dr. Moses Marshall "passed many pleasant instructive hours with him, investigating the plants in the Marshallton Botanic Garden" (Darlington 1849, p. 546). Darlington, in describing the "Botanic Garden, at Marshallton," makes note of the "many curious exotics" and "a numerous collection of our native herbaceous plants" (1849, p. 488).

A change in perceptions of the site from botanic garden to arboretum began in the late nineteenth century. Sargent (1880) wrote an article entitled "Notes on Trees in the Arboretum of Humphry Marshall." Sargent (1893, p. 461) later wrote that Marshall "planted an arboretum" and described Marshall as the "Father of American Dendrology" while suggesting "the Marshall Arboretum" as a monument for

education in the forestry movement. A memorial tablet erected at the site in 1913 by the Chester County Historical Society still stands with the inscription "The Home and Arboretum of Humphry Marshall." Subsequent accounts by Baxter (1925) and Harshberger (1920) echoed this description. The perception of the site as an arboretum is understandable given that Humphry Marshall is principally noted for his book on forest trees and shrubs, and that after years of neglect and even grazing, the sun demanding herbaceous plantings were overcome by the maturing, densely planted trees and shrubs. Pursh (1814, 1: p. vii) ended his description of an early instructive visit to Humphry Marshall with the later observation that "only a few old established trees [remain] of what formerly deserved the name of a respectable botanic garden." A century later, accounts describe the loss of "flowers" (Kennett News Advertiser 1897) and how, according to the older residents of the town, by 1850 the trees "shut the sunlight away from the flowers and shrubs and the lawn mower did the rest" (West Chester Local 1907).

Previous Studies and Sources

The seminal work on Humphry Marshall is Darlington's Memorials of John Bartram and Humphry Marshall (1849) which has been reprinted with a very useful introduction by

Joseph Ewan (1967). Here, in Darlington's essays and footnotes, and most importantly in the correspondence transcribed, is the best single study of the Marshalls with many indications of the living collection. Most surveys which include the garden or the Marshall's are based on this record. Ewan (1967) also introduced a reprint of Marshall's Arbustum (1785), an essential primary source for collection information and for Marshall's introductory essay.

The Dreer Collection, Marshall Correspondence, at the Historical Society of Pennsylvania (HSP), Philadelphia contains many of the letters quoted by Darlington and others which have never been published. There is a wealth of information and few, but critical, garden references not cited by Darlington. There is further indication of the individuals, some of them medical doctors, who collected for Humphry Marshall or sought medicinal plants from him. There are frequent references to the value of herbaceous plants for the Materia Medica.

Manuscript Collections and Marshall papers at the Chester County Historical Society (CCHS) and the Chester County Archives contain letters, journals, clippings, ephemera, and maps essential to the Marshall scholar. The public records in the Chester County Court House contain

the deeds, wills, court records, and unpublished surveys essential in determining the extent of the property and road changes.

Of primary importance is the Darlington Herbarium at West Chester State University, which contains many specimens from the Marshallton garden with notes made by Darlington and Townsend. Also there are catalogs of the herbarium with references to collections from the garden.

General biographical and historical works which are next in importance to Darlington's in revealing the life and times of the Marshalls are Belden's "Humphry Marshall's trade in plants of the New World for gardens and forests of the Old World" (1965) and her earlier, unpublished thesis, "Humphry Marshall, American Quaker Botanist" (1958). The latter is biographical and expansive in scope. These two works discussed but did not focus on documenting the collections or the garden.

Sharpless (1895) presented a little known essay on Moses Marshall, including his botanical and horticultural activities, which expanded on Darlington's biographical material and complements Moses Marshall's surviving letters, journals and account books at the CCHS.

Harshberger, in his Botanists of Philadelphia (1899)

drew on several sources for essays on the Marshalls and descriptions of the garden, including Redfield's 1884 photographic view. The author's copy, with notes and additions, is in the Archives of the University of Pennsylvania. Harshberger's (1920) report on Marshall's garden, and photographic essay, described notable plants. Another important work by Harshberger (1929) was the publishing and analysis of additional letters of Humphry and Moses Marshall, focusing on the plant trade. Many of Harshberger's observations are quoted in this thesis. Original notes from the 1920 visit are in the Archives of the Morris Arboretum of the University of Pennsylvania.

Meehan (1853) recorded and measured many trees on the site comparing them to plants in Bartram's Garden and elsewhere. Sargent (1880) reported tree measurements he took at the garden and in his later essay (1893) promoting Marshall as the "Father of American Dendrology" made observations in the garden. Baxter (1925) measured many trees in the garden during a visit there and published a brief article. Measurements and observations by these experts in tree studies were used in comparative studies of growth rates and plantings in this thesis.

Acquisition of the property by the CCHS in 1982 led to a number of recent studies, including this thesis.

Gutowski (1985) documented the boxwood plantings in detail. An unpublished, illustrated report to the CCHS (Gutowski 1984) evaluated the living collections and offered management and conservation recommendations. Gutowski (1984) prepared a series of three property maps, depositing copies with the CCHS. Schooler (1985) compiled a preliminary architectural/historical study which should be a point of departure for future physical studies. Clarke (1985) prepared an unpublished evaluation of the property for the CCHS with recommendations for future use. Gutowski (1986) published the first extensive documented listing of plants grown by Marshall, revised here in Appendix A.

There may be significant private collections of Marshall material which have yet to be studied. One letter, for example, made available from the collection of bookseller and Marshallton historian William Baldwin, confirmed the regular collection of seeds and plants, circa 1830, from the Marshallton Botanic Garden for Peirces Arboretum, now part of Longwood Gardens, Kennett Square, PA. Additional diaries of Moses Marshall, certain letters, and Humphry Marshall's "almanac" were cited by earlier researchers but were not located during this author's search of public collections.

Marshall's Botanic Garden, 1773 - 1813

Various dates (1772, 1773, and 1774) are given by writers for the establishment of the Botanic Garden at Marshallton. Its active period of plant distribution and exploration seems to have peaked in the 1790s and ended in 1813.

The original 30.25 acre purchase from Sarah Arnold, dated December 2, 1772, of the Mansion site and property had many-cornered property lines extending across the present day Strasburg Road, between buildings and by Martin's kitchen [See Figure 1]. The deed mentions a "small hickory marked for a corner" and a boundary along the "Great road leading from Bradford meeting house to the Great Valley" (Deed Book 72:30, p. 387). While Marshall was extensively involved in botanical activities at home and abroad, it is unlikely that planting occurred on the property in the last month of 1772.

Marshall, a practicing stone mason in his early years, began construction of the Mansion House in the summer of 1773 but did not move with his wife from Northbrook until 1774. Darlington (1849, p. 487), in what is the most often repeated phrasing, stated, "The Botanic Garden at Marshallton, was planned and commenced in the year 1773." The Chester County Cabinet of Natural Science

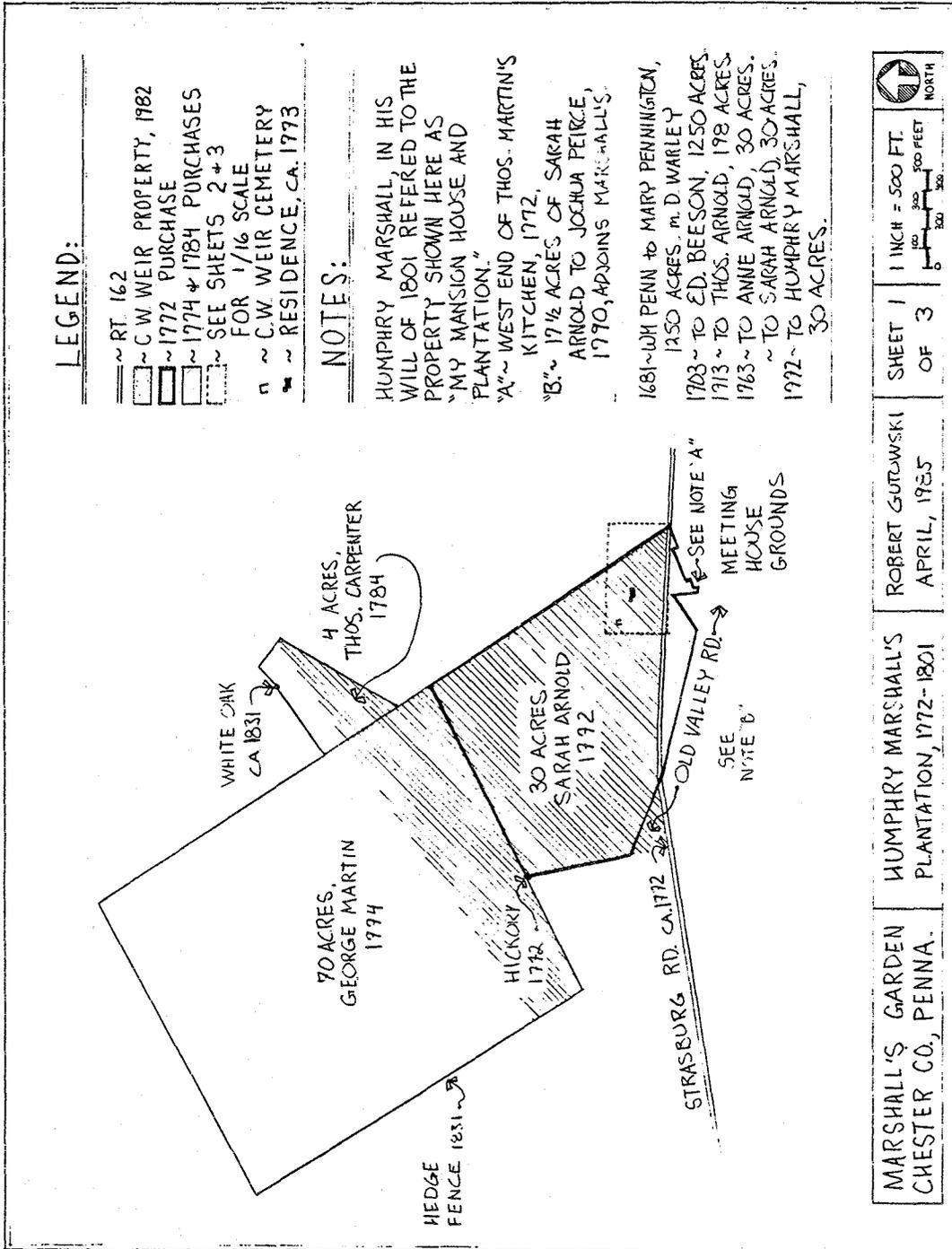


Figure 1. Humphry Marshall's Plantation, 1772-1801, was composed of several purchases. The current property owned by CCHS is smaller.

(Hazard 1828, 1: p. 302) reported." [In] 1774, the late Humphry Marshall established his Botanic Garden, at Marshallton" Williams (1913, p. 23) reported

In an almanac for 1773, Humphry wrote as follows: 'built my new house this summer, and in 1774, Set the Post of my garden by the gate adjoining the new road [Strasburg Road], 22 feet 9 inches from the middle thereof as laid out.'

The Marshallton section of the Strasburg Road was completed about 1790. The almanac quoted by Williams was referred to by later authors but not located. Darlington's date of 1773 appears to be the most reliable date for the beginning of the Botanical Garden.

In terms of garden practice, planning and cultivation would have begun in the spring, summer, or fall of 1773. There was certainly activity on the site with the construction of the house's south-facing plant room heated by the Dutch style flue, popular in eighteenth century stove houses.

Humphry Marshall died in 1801, bequeathing to his wife Margaret (?-1823), during her widowhood, and afterwards to his nephew Moses Marshall

all that my mansion House and plantation that I now lives in and occupes that I purchased of Sarah Arnold ... except that what is cut of by the Strausburgh road ... (Will Book, pp. 277-86).

Dr. Moses Marshall (1758-1813) and his wife Alice

Pennock (1770-1841), and Humphry Marshall's cousin Mary Bailey were among those living at the site when Humphry died. Moses Marshall continued to reside there until his death. Botanists, such as Baldwin, Collins, Darlington, Pursh and Rafinesque, continued to visit. Moses Marshall, whose work is not generally recognized, was an important botanist in his own right. He is credited with the expansion of Marshall's trade after 1784, recommended for what became the Lewis and Clark expedition, and commemorated in the genus Marshallia through the work of his friend Muhlenberg. An obituary by "D" [most likely Darlington] credited Moses Marshall for his plant exploration and contributions towards "rendering the American character more respectable abroad" through his significant work in Arbustum and noted

The result of his persevering labors was a large and interesting collection of American shrubbery, and other plants whose perennial verdure still subsists as a monument of his laudable industry (D. 1813).

After Moses Marshall died, his family continued to live on the property but the "Botany of the place" was abandoned (Hazard 1828, p.302) with the exception of visiting botanists and plantsmen who both collected and studied the plants there. Many accounts echo the observations of Darlington who wrote

The editor had the happiness to know him well, and passed many pleasant instructive hours with him,

investigating the plants in the Marshallton Botanic Garden. Dr. Marshall discontinued the business of sending plants and seeds to Europe, soon after his uncle's death, and the garden, in consequence, has ever since been almost wholly neglected (1849, p.546).

Because Moses Marshall's contribution to the "Botany of the place" included the development of the collection, it is reasonable to include his tenure with the botanic garden's active period. However, as his family, business and civic obligations increased, his botanical activity and any further development of the garden greatly decreased.

As to the agriculture of the place, Moses Marshall's Day Books (CCHS Ms 636, 1802-03) note Marshall selling "pink root" [Spigelia marylandica]; May 15th, "plowing for corn 5 days;" June 12th, paying J. Woodward "by 4 days work this week harrowing in lime & repairing fences about wheatfield;" sowing corn and oats; buying "10 sheep for \$17;...Haysowing, B. wheat, Pulling Flax;" in September, paying for "5 days this week plowing up & sowing Rye in buckwheat ground, a basket of potatoes." Moses also built a new house at this time with 297 panes of glass and 600 feet of White Oak board for the floor. The saw mill was active in the summer sawing "yellow pine, ash, black oak, white oak."

Generally speaking, the garden history has several

periods based on ownership and tenure which are summarized below.

Pre-settlement: Native Americans prior to and during settlement in this region were members of the Leni Lenapes, a peaceful woodland tribe, which practiced hunting, fishing, gathering and agriculture. They grew fields of maize, beans, pomions [pumpkins], tobacco and squonter-squash. The wild American Plum [Prunus Americanum] was known as the Indian Plum and frequently planted about settlements. Schoepf (1783-4) reported Lene Lenape orchards in Pennsylvania of 1,500 fruit trees and corn fields yielding 160,000 bushels. Like the Indian Plum, the wild grape was known as the Indian Grape as Europeans learned to use and cultivate the vegetable productions of the New World. The Leni Lenape extracted oil from sunflower seeds and cultivated peaches which were introduced through trading routes extending into the more southern Spanish settlements. Penn wrote in 1683

There are very good peaches, and in great abundance; not an Indian plantation without them...one may have them by bushells for little; they make a pleasant Drink and I think not inferior to any Peach you have in England (Lockwood 1931, p.331).

In Chester County, their last treaties maintained fishing and hunting rights along the Brandywine. This arrangement brought a certain amount of conflict with those

settlers interested in harnessing the water power for mills. Humphry Marshall's father, Abraham Marshall, peacefully purchased his land at the forks in the Brandywine, now Northbrook, from the Leni Lenape. Humphry befriended the last local representatives of the tribe, including the last survivor, Indian Hannah, who often was welcome to his Marshallton home, and was said to share her knowlege of useful plants with him.

Colonial/agricultural 1681-1772: This period included William Penn's indenture of release to Mary Pennington through the sale by Sarah Arnold to Humphry Marshall. The land was cultivated, grazed and in wood lot. There does not appear to have been any buildings in the area now considered the Botanical Garden.

Marshall's Botanic Garden 1773-1813: This era included the tenures of Humphry and Moses Marshall, expansion of plantation holdings, agricultural development and building, and development of the Marshallton Botanic Garden. Also included is the first designation, 1805, of Marshallton Township as a post office, formerly known as West Bradford, Martin's Tavern, and West Bradford Meeting.

Marshall Heirs Tenure 1813-1880: An Orphan's Court division of property among his children was necessary after Moses Marshall died intestate. The property across

Strasburg Road was divided. Agricultural/residential use continued throughout family ownership with new buildings and some family disputes as to property rights. The Botanical Garden declined, although it was still used for study and collection of seeds, plants and herbarium specimens through the middle of the century.

Lilley, 1881-1932, and Hathaway, 1932-46, Family

Tenures: This period included rehabilitation of mansion house and clearing of garden, agricultural/residential use, and a renewed public interest in the "old trees." The garden began to be described as a grove or arboretum. It was used for various community functions.

Wier Tenure 1946-1982: The house was altered and renovated, the surrounding grounds landscaped, fields leased and limited animal husbandry practiced.

Chester County Historical Society, 1982 - Present:

The Historical Society received the property through the will of Mr. Weir. The house and fifty acres were rented. There appeared to be no restrictions on use or sale, and several planning studies were initiated.

In general, the Marshallton Botanic Garden and its living collections steadily declined in diversity and number of plants from 1813 to present. The few survivors,

remarkable for their age and history, are in very poor condition. Descriptions of the garden from the nineteenth and early twentieth century comment on the remarkable shrubs and trees in the grove and the degree of neglect in the gardens. While the property boundaries, with the exception of the part cut off by Strasburg Road, remain intact; and while the house maintains a good degree of historical integrity, the landscape and plants are a shadow of the former Botanical Garden. They are, however, significant culturally and historically as one of only two surviving colonial botanical gardens and especially for the activities which occurred there between 1773 and 1813.

The Garden Along the Brandywine

The Marshallton Garden was not Marshall's first garden. Darlington (1849) noted that as early as 1748 he pursued his favorite activity when he commenced the collection and culture of the more curious and interesting indigenous plants upon assuming responsibility for his father's farm along the west branch of the Brandywine.

That Marshall acquired books such as Gerard's Herbal, Cole's Latin Dictionary and Quincy's Medical Lexicon as early as 1753 shows an interest in the medical application of Botany and reminds us that Botany and medicine were not distinct disciplines at that time.

Marshall also built a greenhouse, the first in the county, at his father's farm in 1764 using brick manufactured by his own hand. Humphry may have used that greenhouse to nurture seeds which were sent him in 1762 from near the frontier Pittsburgh settlement ("Journal of James Kenny").

Humphry took notice of the plants he encountered while on a 1770 journey to visit Quaker families through Pennsylvania, Virginia, and Maryland. "Native black current...pulmonaria, herb Paris and a sort of Lark spur" were among those recorded before he was suddenly called back to the homestead. (Belden 1985, p. 24). Perhaps some of these made their way to the garden in Marshall's saddlebag. Dr. John Fothergill, a correspondent of Bartram and reported to have assembled at "Upton" the most remarkable collection of American plants in England, began corresponding with Marshall in 1767. He thanked Marshall for "the box of seeds," sent Miller's Gardener's Dictionary and requested

I should be glad if thou would proceed to collect the seeds of other American shrubs and plants...and if thou meets with any curious plant of shrub, transplant it at a proper time into thy garden, let it grow there a year or two; it may taken up in autumn,...and laid in a coarse box, just made close enough to keep out mice. (Darlington 1849, p. 496).

Dr. Fothergill's interests were broad, but he repeatedly requested plants "known by experience to be

useful in the cure of disease." Fothergill often recommended the cultivation of transplants and seedlings into Marshall's garden for several seasons before shipping:

plants thus raised by seed at home, might be removed from the bed they were sown on, the second autumn, or spring, so as to arrive here in the third or fourth month. (Darlington 1849, p. 496).

Fothergill requested and received reptiles, insects, birds (both live and "guttled and dried, filling them with tow and tobacco dust"). Ferns, water plants, herbaceous and bulbus plants, shrubs and trees were all provided in good condition as seeds or transplants. It was Fothergill who did more than any other foreign correspondent to draw Marshall into the international circle of naturalists (Fox 1919).

John Bartram, the earliest known Botanical correspondent of Humphry, wrote to his cousin in 1760, requesting seeds of the black ash. Bartram (Darlington 1849, p. 494) also requested "that plant so like ye mediola that I hardly know ye difference" (probably Pogonia verticillata, Nutt). Bartram wrote of exchanging garden visits and described his garden as making "a glorious appearance with ye Virginia and Carolina flowers." Bartram was undoubtedly influential in supporting the younger Marshall's botanical interests.

The pattern for the Botanic Garden at Marshallton was established at Marshall's garden along the Brandywine. The collection at the earlier garden was gathered through correspondence as well as by Marshall's own hand. There was a diverse mixture of plants in species as well as habit: forest trees, simple ferns, orchids, and showy flowering shrubs. Medicinal plants were of special interest, as were plants which might prove useful resources in promoting independence for the developing New World economy. The garden was used as a nursery and for plant evaluation. The garden-laboratory was supplied with a botanical library and also with a microscope of superior quality, a rare item in colonial America.

The Brandywine garden at the paternal homestead was essentially a private garden, albeit a remarkable one. It was described by Darlington (1849, p. 22) as the product of Humphry "indulging his taste, and employing his leisure time in collecting and cultivating useful ornamental plants."

By the time Marshall moved to the Marshallton site he was already established as part of the natural history circle through his correspondence and exchange with leading plantmen and naturalists both at home and abroad. The Chester County Cabinet of Natural Science reported in 1828

that "before [Humphry Marshall] established his botanic garden, at Marshallton, he had cultivated one on a smaller scale, on the plantation now occupied by Joshua Marshall" (Hazard, p. 302). His major contribution and recognition, however, would come only after establishing the botanic garden at Marshallton where he had the time to pursue his interest more fully and the able assistance of his nephew Dr. Moses Marshall.

Darlington (1849, p. 487) related that Humphry, when he took charge of his father's farm

commenced the collection and culture of the more curious and interesting indigenous plants. A number of ornamental trees and shrubs, in the vicinity of the paternal mansions, still attest his predilection for the beauties of the vegetable kingdom.

Some of these plantings persisted into this century in situ. Others, we may presume, were removed to the garden at Marshallton and formed the basis of the botanic garden established there.



Chapter 2

LIVING COLLECTIONS 1773 - 1813

Most of the plants included in this catalog were recorded by botanists and plantsmen who observed them growing in the Marshallton Botanic Garden. These observers directly associated the plants described with Humphry Marshall or his nephew Moses Marshall during their tenure in the garden, 1773-1813. A few plants are also included with discussion where an important group or genus, such as "Firs" and "plants from Botany Bay," were recorded in the garden without species designation.

Many more plants grew in the garden than are documented here. The catalog does not include all of the plants described in Arbustrum although many of those were undoubtedly present. Nor does the catalog include all of the species requested from the Marshalls by nurserymen and other curious gentlemen.

Documentation is based on reliable reports from letters and manuscripts by the Marshalls and their contemporaries, herbarium specimens collected from the

garden in the early nineteenth century, published reports by botanists and deorologists, including tree measurements, between 1850 and 1925, site analysis by this author, including tree ring dating, soil analysis, comparative measurements and comparative photography, and secondary evidence such as newspaper descriptions of the garden and recorded availability or association.

No distinction is made among the plants as to whether they were garden plants or nursery plants. Available evidence does not justify such as distinction.

There is no intent to infer that all of the plants listed here were present simultaneously in the garden. With the few exceptions for conjecture noted, each was present at some time between 1773 and 1813, and most were likely present prior to 1801.

The catalog is annotated. In citing references from contemporary accounts the nomenclature is presented as given in the account. Current nomenclature and this author's comments are in brackets, [], when necessary for clarity. Synonyms, [syn.], are included when necessary.

The catalog follows Arbustum, as well as popular convention in our time, by listing the plants alphabetically by genus. The current binomial is followed by

common name and family. Text begins with descriptions of availability, importance, introduction, nomenclature, or other details as needed. Documentary references are generally presented chronologically.

Abies balsamea Mill.

Balsam Fir

Pinaceae

"Abies" and "Firs" were observed in Marshall's garden and associated with him, but no species were identified. Two species are suggested here as highly likely: Abies balsamea (L.) Mill., Balsam Fir, introduced to Europe from America by 1697, and widely cultivated; and A. alba Mill., Silver Fir, a long cultivated European fir.

Humphry Marshall (1785, p. 102) described Pinus-Abies Balsamea. Balm of Gilead Fir Tree [Abies balsamea (L.) Mill.] and noted

The trunk is almost covered with small bladders, or risings in the cuticle of bark, which are filled with a clear balsam or turpentine.

There are two native firs in Eastern North America: Abies balsamea (L.) Mill., in cultivation before 1700; and A. fraseri (Pursh) Poir., discovered and introduced by John Fraser (1750-1811). A. fraseri, not described until 1814, is not a likely species to have been in Marshall's garden.

Balsam fir was recognized as an ornamental and economic plant. M'Mahon (1806, p. 597) recommended and offered Pinus Balsamea, Balm of Gilead Fir, in 1806. Thomas Meehan (1853, p. 165) recorded a 63 foot tall Balsam Fir in Bartram's Garden in 1853, and noted it as "A well known and widely cultivated species." Hoopes (1868, pp. 198-99) remarked

The Balsam Fir was first described by Humphry Marshall, the pioneer in American botanical authorship. ... It has been so long a popular ornamental tree in many parts of this country, that it appears like turning our backs upon an old friend to denounce it; but there are so many better species [available now] ...

Abies balsamea was available to Marshall, described and offered by him, native to Pennsylvania and within his collecting area, grown and sold by Bartram and other contemporaries. Balsam fir was considered a common fir when "firs" and "Abies" were observed in Marshall's garden. It has the capacity to have survived from Marshall's era until the dates of record. While not recorded as a species, it is reasonable to conclude it was present.

Of the exotic firs, only one could have been present before 1813 in Marshall's garden. Abies alba (L.) Mill., Silver Fir, was recommended and offered by M'Mahon (1806, p. 597) in 1806 as Pinus Picea, Silver Fir. A plant

ninety-five feet high was recorded at Bartram's in 1853 (Meehan 1853, p. 168). Other notable specimens were recorded by Meehan (1853, pp. 206-07) in: Peirce's Arboretum; Germantown, Pa.; and Montgomery Co., Pennsylvania. The presence of notable specimens in the region and in associates' gardens, the extent of Marshall's foreign correspondence, and the importance of the species makes A. alba a likely plant for Marshall's collection.

The Chester County Cabinet of Science observed that Marshall's Botanic Garden "still exhibits many interesting relics, such as pine and Fir trees" (Hazard 1828, p. 302).

William Darlington (Belden 1965, p.111) observed in 1849 "several Species of Pines, Abies, and Larix" still growing in Marshall's garden.

Josiah Hoopes observed that few "specimens of the Coniferae" remained in the garden, and observed that

A few of the commoner species of Pines and Firs are all now that remain; and in a few short years these too will, in all probability be cut for fuel, as this appears to be all the value our country friends see in them (1868, p. 515).

Acanthus spinosissimus Pers.

Bear's Breech

Acanthaceae

Bear's Breech or Thorny Acanthus was a commonly

grown ornamental perennial in eighteenth century Europe. The thick sap of the acanthus was thought to be especially useful in treating burns.

Acanthus is documented in Marshall's garden by herbarium collection and collection records. A well-established planting will persist for years in a sunny location such as existed in the garden's south-facing slope before the canopy was fully established. Although I found no early records of this plant in America, the importance of this plant would certainly have recommended it to the Marshalls.

Darlington collected "Acanthus spinosus Ex. Herb. William Darlington, August 6, 1828" from Marshall's garden (Herbarium).

Moses Marshall is cited in an herbarium catalog as the collector for "Acanthus spinosus Hort. Marshall; Moses Marshall" (Darlington, 1834). Darlington (1842) later cataloged "Acanthus spinosus, Hort. Marshall: M. Marshall."

Acer platanoides L.

Norway Maple

Aceraceae

Norway Maple is one of the most common shade trees in Eastern North America. There is only circumstantial

evidence of its presence in Marshall's garden. However, there are several interesting notes concerning its introduction and rarity at the time when Marshall was very active.

Bartram requested Norway Maple from Philip Miller in 1756 and received "two or three" live plants which he gave to Dr. Bond to care for (Darlington 1849, pp. 380-81). Dr. Bond was also a close friend of Marshall. Norway Maple was requested of Bartram by George Washington in 1792 (Leighton 1976, p. 388). William Hamilton, Bartram's neighbor, is said to have introduced it to America along with the Lombardy poplar about 1784 (Hedrick, 1950 p.146). M'Mahon, however, does not list it as available in 1806. Darlington observed street plantings of Norway Maple in 1853 and commented "this tree has been but recently introduced" (Darlington 1853, p. 45). At about the same time, Meehan (1853, p. 62) noted a large plant in Bartram's garden and a "fine specimen near eight feet in circumference" in Peirce's arboretum. The Peirces collected seeds of many sorts from Marshall's garden. The one-foot diameter plant in the grove at Marshallton today and the two-foot diameter plant in the woods near by could have been seedlings from any number of plants in town. These accounts, and others uncited, indicate that Norway Maple was a plant for the "curious" in America during

Marshall's time, present in the gardens of his associates, but not widely distributed until a later date.

Most interesting is the letter from Baron de Bertoff, Chester County, to Humphry Marshall, dated October 12th, 1791, "I am very much oblige to you for the maple and lombardy poplar trees, which you sent forward to me by the negro man" (Dreer Collection, 175:20). Linking the maples with the poplars, both plants lately introduced by Marshall's friend Hamilton, is at least an interesting note. Baron deBeelen Bertholf was sent to America by Emperor Joseph II to promote trade between the two countries. He was a botanist and maintained extensive gardens (Andes 1938). Perhaps the Baron, who was just setting up his fashionable home, wished to impart a European look to the gardens of his estate.

Marshall had earlier provided a "small box of seeds to Baron Belin" lately arrived in 1783. The seeds were intended for the German Emperor's sister at Brussels (HSP, Dreer Collection 174:10).

Not until 1920 is Acer platanoides specifically observed in Marshall's garden as a "noteworthy plant" (Harshberger 1920, p. 139).

Acer psuedoplatanus L.

Sycamore Maple

Aceraceae

Sycamore Maple is a large Old World tree, cultivated for centuries. Its introduction date to America is unknown, however, M'Mahon offered it in 1806 and there were trees in Peirce's Park early in the nineteenth century. Browne (1857, p. 91) claims it was introduced before 1810. Its presence in this list is based on a observations of an exceptionally sized plant in Marshall's garden.

In 1920, Harshberger (1920, p. 139) observed "noteworthy...Acer psuedoplatanus."

Baxter (1925) observed five years later

The tallest...Sycamore Maple (Acer pseudo
platanus) that we have seen, if not the largest in girth, is 8 ft. 6 in. [at one foot] and 6 ft. 8 in. [at five feet] in girth; there are two smaller specimens.

Acer saccharum Marsh.

Sugar Maple

Aceraceae

Sugar Maple, one of the best loved shade trees in North America, was an important economic plant to Native Americans and settlers within its range. It also was in great demand for planting in Europe. Stone (1945, p. 885)

considered Sugar Maple "rather rare" in Chester County but noted an herbarium collection by Baldwin from near Marshall's paternal homestead at the "forks of the Brandywine." It is here documented in the garden on the basis of observations, availability, and ring dating.

Marshall (1785, p. 4) published the first botanical description of Acer saccharum, the Sugar Maple, as distinct from other maples, and noted the "back inhabitants make a pretty good sugar, and in considerable quantity, of the sap of this and the Silver-leaved Maple [A. saccharinum L.]."

As one indication of the significance of this plant, Michaux devoted eleven pages to describe its use, including potash export to Europe, and noted "sugar from the Maple is a valuable resource in a country where all classes of society daily make use of tea and coffee" (Michaux 1818, 1:p. 228). Observations on its cultivation are frequent in American periodicals and other publications at the turn of the century.

Shortly after Arbustum was published, visiting Italian naturalist Luigi Castiglioni, used Marshall's work in preparing for his countrymen an account of useful plants

in America. Castiglioni, elected as a foreign member of the American Philosophical Society in 1786, gave an extensive account on the uses of Sugar Maple, including a description from Philadelphia of "an excellent wine in every respect equal to delicate European wines" (Castiglioni 1790, p. 348).

The first record in Marshall's garden was in 1925. Baxter (1925) observed that "an old Sugar Maple (Acer saccharum) is 12 feet 10 inches, and 8 feet 9 inches in girth one foot and 5 feet respectively above the ground." That tree was approximately 2 feet 9.5 inches diameter breast height (DBH). To have dated to Marshall's time, say 1785, it would have been 140 years old and averaged an annual increase of 0.24 inches in DBH.

In 1984, this author recorded Sugar Maple and Kentucky Coffee Tree as co-dominates in the old grove, probably begun as a seedling generation of the original plantings. The largest Sugar Maple, located 125 feet east of the house and near the driveway, was 54 inches DBH and was later removed because of deterioration.

Using DBH comparison, the 1984 observation could be the tree observed in 1925. Growth rate data from other trees on the site indicate that the large Sugar Maple could have dated to the Marshall period. Tree ring dating of

four storm-thrown Sugar Maples in the grove, ranging from 18 to 30 inches DBH, dated the oldest to 1827, and the youngest to 1852. These were typical in DBH of the Maples in the grove. Only the large Maple described above was over 32 inches DBH. Average annual diameter increments for the storm-thrown maples ranged from 0.12 inches/year to 0.25 inches/year. Using these growth rates, the large maple could have dated to the Marshall period. No sound wood was available to confirm this from the plant itself.

Acteae alba (L.) Mill.

White Baneberry

Ranunculaceae

White Baneberry is an erect herbaceous perennial of the rich woods, rather rare in Chester County. A single berry was said to be instant death to poultry and other birds (Mawe and Abercrombie 1797). This was important information at a time when poultry commonly ran free in the garden. In the eighteenth century, White Baneberry, known as Christopheriana Americana to John Bartram, was grown in the "curious gardens" and was considered a New World variety of Herb-Christopher, a common element in the English flower and medicinal gardens.

In 1799, William Hamilton requested "Acteae Spicata Alba" seed from plants seen in the garden "a year ago"

(HSP, Dreer Collection 175:52).

Aesculus L.

Buckeye, Horse-chestnut

Hippocastanceae

Buckeyes and Horse chestnuts were reported in the garden with and without species being indicated. Field observations and collections by Moses Marshall were recorded. Descriptions of two documented species and two likely species follow these non-specific references.

Aesculus includes one esculent species among the plants of economic importance in Marshall's era. The group is still of considerable importance as ornamental plants. European Horse chestnut was long included in the Materia Medica.

In 1790 Moses Marshall observed "Buckeye, vulgarly so called, 4 feet in diameter" on the eastern Appalachian Mountains. He noted

There is here a Little Eng. Gentleman by name of George Mappingberd, very curious in taking notice of plants & he promises to send me anything I may require, address George Mappingberg at Mr. Jn Liggs, Fredericksburg Virginia (Moses Marshall 1790).

In 1828, the Chester County Cabinet of Science reported survival of the buckeye planted by Marshall (Hazard 1828, p. 302). Samuel Peirce, of Peirce's Arboretum, regularly collected "Horse-chestnuts" from the

Marshallton garden before 1830 (Westchester). A newspaper account noted in 1874,

One horsechestnut of the common order which measures in circumference 8 ft. 7 inches at 2 feet. Another horsechestnut of the European species measures 10 feet 8 inches (West Chester Daily News 1874).

Fifty years later, Baxter (1925) recorded "a Buckeye 13 ft. 2 in. and 9 ft. at one foot and 5 ft. above the ground respectively."

Aesculus glabra Willd.

Ohio-buckeye

Hippocastanaceae

Moses Marshall's collection of Horse chestnut from western Pennsylvania in 1784 raises the possibility of Ohio-buckeye having been introduced into Marshall's garden, and into cultivation, earlier than the 1809 date generally given. Moses Marshall described in his travel journal that he collected Horse chestnut while collecting in Western Pennsylvania (Sharpless 1895, p. 27). This was either Aesculus octandra Marsh., which was first described for science by Marshall in 1785, or possibly A. glabra Willd., which had not been recorded in cultivation before 1809. I suggest that Marshall collected the latter, as its fruit is echinate, a characteristic which distinguished the "Horse chestnuts" from the smooth-fruited "buckeyes."

Most suggestive of its presence is the request from William Hamilton in 1799 (HSP, Dreer Collection 175:52) for seed of "Aesculus capsuli echinata" in a list which includes plants he mentions having seen in the garden. Hamilton had easy access to the other known echinate-fruited species, Common Horse chestnut, as Bartram's neighbor and as a European traveler.

Aesculus hippocastanum L.

Common or European Horse-chestnut

Hippocastanaceae

The first notice of Common Horse-chestnut in the garden, in 1874, notes its large size but the identification is questionable. The availability and interest in this species, with reliable notices of the plant, in 1920, indicate that it is a likely plant to have been included by Marshall. The species is long lived.

John Tradescant cultivated it in England by 1633, and by Marshall's time it had become the subject of several publications describing it as a "medicine of great efficacy" (Woodville 1792, pp. 349-52). This species is said to have been introduced into America in the seventeenth century by the founder of Phillipsburgh, New York (Browne 1857, p. 112). John Bartram had flowering trees in his garden by 1763, from seed sent by Peter Collinson

(Darlington 1849, p. 253). M'Mahon offered it in Philadelphia by 1806 (M'Mahon 1806, p. 588). Meehan reported in 1853 that

The old specimens planted by John Bartram, not being on congenial soil, are not remarkable; the largest being but 50 feet high and 7 feet, 5 inches in circumference (Meehan 1853, p. 67)

An 1874 newspaper account recorded a European "horsechestnut" at Marshall's measuring 10 feet 8 inches [circumference at two feet]" (West Chester Daily News 1874).

In 1920, Harshberger (1920, p. 138) observed a "noteworthy...large Horsechestnut (Aesculus Hippocastanum), full of flowers."

Arborists in 1982 removed a "dead Horsechestnut, left/front of property, level[ed] stump above soil surface" (Bartlett 1982).

Aesculus octandra Marsh.

Sweet Buckeye

Hippocastanaceae

Sweet Buckeye, introduced into Britain in 1764, was first described by Humphry Marshall in Arbustum. This species is well-documented in the grove. Plants present today appear to date to Marshall's time. These plants,

with others described in this thesis, constitute the oldest botanical garden planting in America. In addition to the general references to "buckeye" in the garden, the following observations establish Sweet Buckeye as part of the collection.

Marshall (1785, p. 4) described "Aesculus octandra, New River Horse Chesnut" for the first time.

In 1859, Darlington (Belden 1965, p. 111) recalled Aesculus flava Ait. [syn.] planted by Marshall in the garden.

Sargent observed before 1900 that some Yellow Buckeyes seem to date to Marshall's time (1893, p. 461). In an account drawn from Sargent, Harshberger (1899, p. 85) reported yellow buckeyes left from Marshall's time. In 1920, Harshberger (1920, p. 138) observed noteworthy "Buckeye (Aesculus octandra)."

Hedrick (1950, p. 92) reported, without citation, that Humphry Marshall found the sweet buckeye, Aesculus octandra, in the Allegheny Mountains.

Swartley (et al. 1969, p. 4) reported Aesculus octandra at the Humphry Marshall Homestead measured thirty eight inches DBH, the largest Sweet Buckeye then known in the Philadelphia area.

In 1984, this author recorded three A. octandra present. The largest, near the grove center, was hollow stemmed and measured 39.2 inches DBH (10 feet 3 inches girth). A fourth plant, removed from the western edge of the grove following a storm, measured 30.0 inches diameter at the base and ring-dated to 1855. A stump section from this base averaged 0.23 inches/annual ring. Using this figure as a benchmark, the larger of the surviving buckeyes, which measured over 72 inches across the base, would require a basal diameter of 42.0 inches to date to 1801. This same tree appears as a large plant in photographs over eighty years old. Also supporting the conclusion that this tree dates to Marshall's time is a slower expected growth rate (inches/annual ring) for a plant in poor vigor and under extreme competition.

Aesculus pavia L.

Red Buckeye

Hippocastanaceae

Red Buckeye is a small American tree with reddish flowers recommended for the "front of the ornamental plantation [where] their scarlet flowers will effect an agreeable variety" (Mawe and Abercrombie 1797).

Marshall (1785, p.5) described "Aesculus pavia, Scarlet flowering Horsechesnut ... this is but of Humble

growth, seldom rising more than ten or twelve feet."

In a letter to Marshall dated 1796, Hamilton acknowledged the receipt of Pavia seed from Marshall (Darlington 1849, p.578).

Darlington reported Aesculus pavia, L. planted by Marshall yet survived (Belden 1965, p. 111). Darlington planned to collect Aesculus pavia at Marshall's. In the front page of Darlington's copy of Michaux's Flora Boreali Americana he included Aesculus pavia in a memorandum list of plants "to be got at Marshall's next spring, 1811" (Darlington 1811).

Ailanthus altissima Swingle

Tree-of-Heaven

Simabouraceae

Tree-of-Heaven is an exotic large tree, which owes its introduction from China into England to Peter Collinson, and owes its introduction into America, 1784, to William Hamilton. If Tree-of-Heaven's success as a naturalized citizen of our towns and roadsides were credited, the debt owed these plantsmen would be considerable.

Sargent (1893, p. 461) described in Marshall's garden "a very large Ailanthus, which must have been one of

the first specimens planted in America." The next two descriptions appear based on this observation.

The Philadelphia Times (1894) reported "four or five very large and fine ailanthus trees, which must have been among the first specimens of this tree planted in America."

Harshberger (1899, p. 84) reported "four or five very large and fine ailanthus tree, which must have been among the first specimens of this tree planted in America." Harshberger (1920, p. 138) later recorded "noteworthy Tree-of-Heaven (Ailanthus glandulosus)."

Belden (1958, p. 133) observed an "Ailanthus glandulosa (Tree-of-Heaven) stump, ... large enough to have been planted in the eighteenth century."

Althea cannabina L.

Hemp-leaved Hungarian Mallow

Malvaceae

Hungarian Mallow is an erect fibrous rooted perennial. This Old World plant is uncommon in late eighteenth-century English gardens, retained only in the gardens of the curious.

Darlington (1842), catalogued in the herbarium

"Althea cannabina; Hort. Marshall; M. Marshall."

Althea officinalis L.

Marsh Mallow

Malvaceae

Marsh Mallow is a perennial herb. Its specific name, *officinalis*, meaning of the shops, indicates that its use was medicinal. The roots yield the original non-synthetic marshmallow-paste. Marsh Mallows were common in the marshy areas of Britain and "are also admitted in gardens by way of variety" (Mawe and Abercrombie 1797).

Darlington collected "Althea taurinensis? DC, A. officinalis var. B Wild? Aug. 18, 1828; Flowers purple; or is it A. cannabina, dc?, Ex. Herb. William Darlington" (Herbarium). This plant is Althea officinalis.

Amorpha fruticosa L.

Bastard Indigo

Leguminosea

Bastard Indigo is a large hardy shrub. It offered the Colonial Americans "an inferior sort of indigo." Seeds shipped to England provided plants for the "large shrubberies" (Mawe and Abercombie 1797).

An Herbarium collection was made, June 5, 1829, from

Marshall's Garden (Herbarium).

Aralia hispida L.

Bristly Sasparilla

Araliaceae

Bristly sasparilla is a somewhat shrubby North American perennial.

Hamilton wrote to Humphry Marshall, 1796, requesting a plant of the "Aralia hispida seen earlier" (Darlington 1849, p. 578).

Aristolochia durior J. Hill

Duchman's Pipe

Aristolochiaceae

Duchman's Pipe is a deciduous, rapid growing woody climber found in eastern North America and once widely used as a screen for porches.

Marshall (1785, pp. 12-13) described "Aristolochia frutescens [A. durior], Pennsylvania Shrubby Birthwort" offering a functional ornamental use and alluded to curative properties as a remedy for rattlesnake bite.

This grows naturally near Pittsburgh, in a rich soil and shaded situation...This from its twining stems and large leaves affords a fine shady covering for an arbour. The roots have an aromatic penetrating favor, and are supposed to be equal in medical virtues to the small Virginian Snake-root [A. serpentaria].

Barton, 1789, noted in his Collections that
 The Aristolochia Sipho [A. durior] of L'Hertia
 grows in the neighborhood of Pittsburgh...and for
 certain purposes is perhaps preferable to the
 common snake-root (Barton 1810).

Darlington collected "Aristolochia sipho Marshall's
 Garden; May 31st, 1821; ex. herb. William Darlington."
 (Herbarium). Again, in 1827, Darlington collected
 "Aristolochia sipho, Willd., hort. Marshall" (Herbarium).
 Darlington (1842) catalogued "Aristolochia sipho, Hort.
 Marshall, Moses Marshall."

Ascyrum hypericoides L. var.

Villose St. Peter's Wort

Guttiferae

Villose St. Peter's Wort, of Marshall, may be one of
 the descriptions which prompted the sometimes critical
 Benjamin Smith Barton to remark in a letter to Sir Joseph
 Banks

you have rightly remarked that it is not easy to
 'comprehend' our American Botanists, and Marshall
 is, undoubtedly, supreme in the obscure and
 unintelligible (Barton Papers, HSP, p. 12).

St. Peter's Wort, Ascyrum, is often classified as a
 species of St. John's Wort, Hypericum spp. The genus, or
 two, if you prefer, is described in one flora as "a
 polymorphic complex with many intergrading taxa" (Radford

et al. 1964, p. 14).

Ascyrum hypericoides and its varieties occur in Chester and surrounding counties. Marshall describes two species of Ascyrum: A. hypericoides. St. Peter's Wort [which I take to be A. stans Michx.] and A. villosum, villose St. Peter's Wort [which I suggest, on the basis of Marshall's written description, is a variety of A. hypericoides L.]

The synonym usually offered for A. villosum L. is H. setosum L. (H. pilosum Walt., H. simplex Mx.). However, A. villosum Marsh. is described as having only four petals, a characteristic of the Ascyrum complex, rather than the five petals typical of the Hypericum complex.

Marshall (1785, p. 14) described "Ascyrum villosum, Villose St. Peter's Wort."

This rises to the height of about three feet, with erect stalks. The leaves are oblong and hairy. The flowers are produced at the tops of the stalks, resembling those of St. John's Wort but have only four petals.

Banks wrote to H. Marshall, 1789, requesting plants for "Mr. Aiton" including Ascyrum villosum and A. hypericoides. These plants arrived safe and in good condition to be planted in "his Majesty's Garden" (Darlington 1842, pp. 562-63).

William Hamilton, 1799, requested seeds of Ascyrum villosum in a letter to Marshall (HSP, Dreer Collection 175-52).

Asimina triloba Dunal

Pawpaw

Annonaceae

Pawpaw or Custard Apple is a small, suckering deciduous tree native from New York to Texas but rare in Chester County. Stone (1945, p. 631) notes only three stations, all along streams. Its fleshy fruit is edible, although the taste is variable. Pawpaw was frequently mentioned in descriptions of the grove.

Darlington (1811) noted Anona [Asimina] to be got at Marshall's.

Meehan (1853, p. 74) observed "There are some very healthy luxurious specimens of Anona glabra in Marshall's Garden in Chester County, Pennsylvania."

The Daily Local News (1907) reported "fine pawpaws of various sizes near two American mahogany trees [Gymnocladus dioica] close by the house."

Harshberger (1920, p. 138) observed "Pawpaw (Asimina triloba) in full flower with its chocolate colored petals

...among the secondary trees."

This author recorded Asimina triloba in a shrub bed east of and close by the house in 1985.

Aruncus dioicus Fern.

Goat's Beard

Rosaceae

Goat's Beard is a tall, erect, rhizomatous perennial herb. Goat's Beard is found in moist, open woods, along road cuts in most of the central and southeastern states. Goat's Beard's European relative, A. sylvestris, is used in Old World, eighteenth-century flower gardens.

Darlington (1842) catalogued "Spiraea aruncus [Aruncus dioicus]; Hort. Marshall; M. Marshall."

Atriplex hortensis L.

Garden Orach

Chenopodiaceae

Garden Orach is a six-foot-tall Asian herb which has become established in this country and in Europe. Its introduction is due to its ornamental and culinary properties; the leaves are eaten for greens.

Darlington (1842) cataloged "Atriplex hortensis L.; Hort. Marshall; Wm. Darlington."

Baccharis halmifolia L.

Sea Myrtle

Asteraceae

See Myrtle, or Groundsel-tree, is a shrub native to open woods, thickets and borders of salt-marshes along the coast from Massachusetts to Mexico. It is introduced in Pennsylvania. This was collected by John Bartram near Cape May, New Jersey in 1740 and sent to Lord Petre. Collinson Noted in 1741 that [it] "is a plant that we have long had in our gardens by the name of Senecio arborescens, or Groundsel Tree" (Darlington 1849, p. 146).

Marshall, in Arbustum, referred to the genus as "Plowman's Spikenard." This name was used earlier by William Miller in his Gardener's Dictionary, a book used by Marshall. Miller (1754, p. 172) noted that it is commonly called the Virginia Groundsel-tree, and comments that it

is pretty common [1754] in the Nurseries about London, where it is usually called the Groundsel-tree: ... the flowers are white, and not very beautiful; but the leaves continuing green thro' the year, has occasioned this shrub to be admitted into many curious gardens.

Stone (1944, p. 1363) commented that although Baccharis halimifolia was collected from a hillside north of Malvern,

This shrub, so common on the salt-marsh tracts

along the New Jersey coast, can scarcely be included in the flora of our County. Its presence in the locality above mentioned is hard to understand.

Marshall (1785, p. 16) described "Baccharris halimifolia, Virginian Groundsel tree."

In 1799, Hamilton (HSP, Dreer Collection 175-52) asked Humphry Marshall for Baccharris Ivafolia [syn.] seed among a list which included plants Hamilton had seen in the garden in 1798.

Baptisia alba Venten

False Indigo

Leguminosae

False Indigo is a perennial herb which is native from Virginia to Florida, well adapted to flower borders and wild gardens. White pea-like blossoms top this three foot-tall plant in mid-June.

On June 5, 1829, Baptisia alba was collected from Marshall's garden (Herbarium).

Betula lenta L.

Cherry Birch, Sweet Birch, Black Birch

Betulaceae

Cherry Birch is a large forest tree native from

Maine to Alabama, preferring moist woods. The bark is close, dark and shining, resembling cherry bark. The hard, dark, dense wood was so useful in manufacturing wooden articles that it earned the name Mountain Mahogany. The young twigs and bark are the main source of oil of wintergreen, and the sap and roots provide the "birch beer" flavor. Cherry Birch is frequent in the northern and hilly parts of Chester County.

Marshall (1785, p. 19) described "Betula lenta, Red Birch." Red Birch may refer to the color of the bark or the color of the hard dense wood when cut. Linneaus gave the species name "lenta," meaning flexible or tough. Marshall also notes in his description "This grows to a pretty large size, spreading into many slender pliable branches."

Sargent (1893, p. 461) observed "some large Black Birches which seem to date from the time of Marshall." Harshberger (1920, p. 138) recorded "Black Birch (Betula lenta) among the "noteworthy trees of the planted ground in front of the house." Baxter (1925, p. 504) measured "A towering Birch Betula lenta that is 11 feet 6 inches and 8 feet 10 inches in girth."

Another species described by Marshall, Betula nigra, River Birch, existed in 1984 as very old plants along the

pond north of the house. Stone (1945, p.484) noted that it was rather rare in Chester County.

Buxus sempervirens L.

Boxwood

Buxaceae

There are three kinds of boxwood growing on the site today in plantings which can be attributed to Humphry and Moses Marshall and which constitute some of the most significant plantings at the site. They give what may be the most important indications about the design of the garden in Marshall's time, yet have been largely overlooked. There are also recent plantings of boxwood which have no historical significance and are not dealt with here.

Documenting these plantings required site recording and analysis, manuscript and herbarium research, site comparisons, soil samples, ring dating, and photographic analysis. This author (Gutowski 1985) detailed the results of this research in a previous publication and so will only summarize here some of the design implications. The plantings are shown in Figure 2. The current site plan (Figure 3) was used with comparative photos such as Figures 4 and 5.

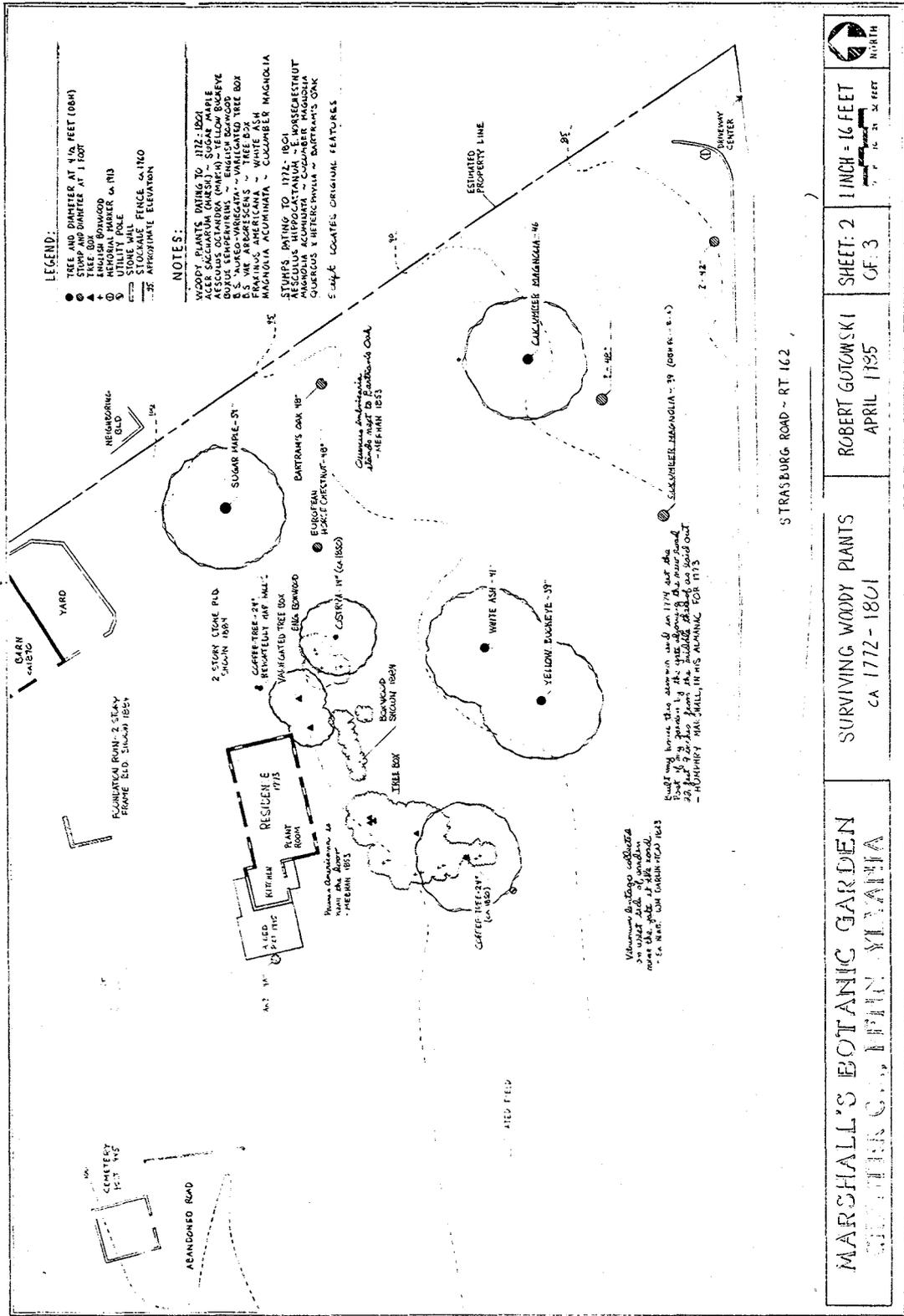


Figure 2. Surviving Woody Plants dated to 1772-1801 comprise America's oldest original botanical garden plantings.



Figure 4. Photograph (Redfield 1884) of Marshall's House. It shows several mature plants which also appear in 1984: (A) Buxus, Boxwood; (B) Ostrya virginiana, Hop-hornbeam; and (C) Gymnocladus dioica, Kentucky coffee-tree. (A) can be attributed to Marshall's planting; (B) and (C) are of a subsequent generation from trees planted by Marshall.

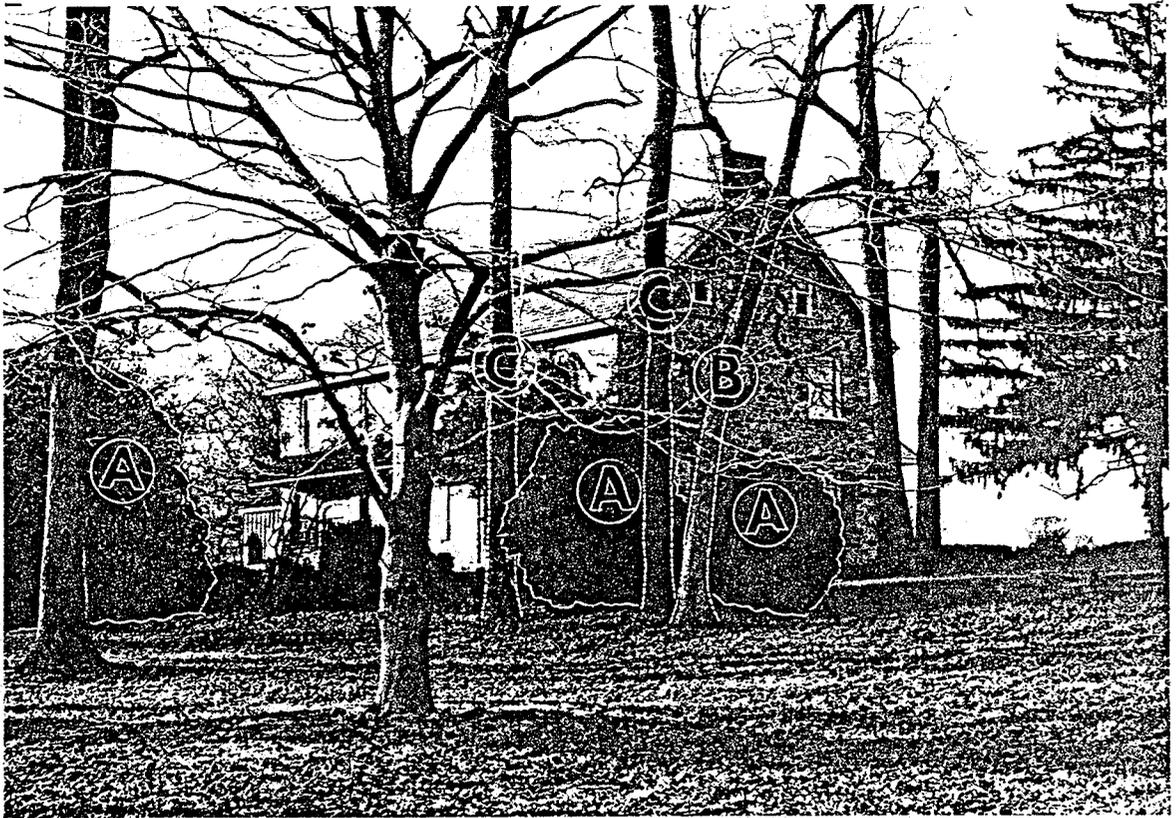


Figure 5. Photograph (Gutowski 1984) of Marshall's House. Compare with Figure 4 on preceding page for key and description.

Buxus sempervirens

Common Boxwood, English Box

Buxaceae

Common Boxwood is represented by two plantings. The largest stem in these multi-stemmed plants measured 7.8 inches diameter at one-foot in 1984. An average of the eight plants is 5.6 inches at one-foot. All of the plants are in linear arrangements which follow the house orientation. The planting at the west edge of the grove follows the line of the pre-1801 kitchen wall.

Buxus sempervirens var. arborescens

Tree Box or American Box

Buxaceae

Tree Box is represented by three plants with stem diameters greater than ten inches at one-foot. There are also many layers of the central plants. The tallest Tree Box was twenty-two feet tall in 1984.

Buxus sempervirens 'Aureo-variegata'

Gold Striped Tree Box

Buxaceae

Gold Striped Box is represented by two plants. The largest was seventeen feet tall and measured 10.3 inches in diameter at one-foot in 1984.

These three kinds of boxwood are well documented. Darlington (Herbarium) collected "Buxus, fruit matures beginning of August, 1819; flowers April 21, 1819" On the same sheet is another collection labeled "Buxus arborescens (cum Fructi) ..., Marshallton, May 20 Ex. Herb., Dr. Wm. Darlington." This second plant is B. s. 'Aureo-variegata'. A later collection of the same two varieties is labeled "Buxus sempervirens, Marshall's garden, April 23, 1829." These collections matched collections taken from the garden by this author in 1984.

While boxwood was available to Marshall and commonly featured in accounts of Philadelphia gardens in this period, there are no mentions of boxwood at Marshall's before these collections. However, Darlington (1849), The Chester County Cabinet of Science (Hazard 1828), and others make the point that there were no "improvements" to the garden after 1801 and that botanical activity ceased after Moses Marshall's death in 1813. This suggests that boxwood plantings of Marshall's were the source of the herbarium collections.

Common Boxwood was often featured in Marshall's time as an edging for beds and walks, and Tree Box used a specimen and hedge. Darlington, who botanized with Moses Marshall in the garden, offered an account of Marshall's

last years in the garden which mentions walks.

His sight was never no entirely lost but that he could discern the walks in his garden, examine his trees, and recognize the localities of his favorite plants. In tracing those walks with his friends, pointing out the botanical curiosities, and reciting their history, he took the greatest delight to the last (Darlington 1849, pp. 490-91).

In mid-century, when the trees had matured and presented a forest-like appearance suggesting an early introduction. Meehan remarked on the stature of Marshall's plantings

Those who have seen this plant only as an edging to garden-walks, can have no conception of the beauty of the tree varieties ... some at Marshall's excell anything in beauty I have seen in its native Box-hill in England (Meehan 1853, p. 82).

Meehan also noted "golden-striped" Tree Box at Bartram's. Perhaps Marshall and his cousin shared cuttings of these plants.

Sargent (1893) reported "some venerable box trees" among the plants which seemed to date from the time of the garden's founder and which had survived the clearing away of plant growth after the family sold the property in 1880.

A photograph (Redfield) dated 1884 shows two plantings which appear to be the same boxwood plantings present in 1984 [see Figures 4 and 5.] Although more

boxwood is evident in the early view, the same plantings appear, in location and size, in comparison photographs taken in 1984. Included are the English Box southwest of the house, and the Tree Box south of the kitchen. Other early views show the Gold-striped Treebox and other box in the same location, and about the same size as in 1984.

A newspaper account (Daily Local News 1907)

mentioned box-bordered walks.

The garden is one no longer. Old residents can remember it as it was when the past century had not yet passed its meridian, but the growth of the trees long since shut the sunlight away from the flowers and shrubs, and the lawnmower did the rest. Once, an orderly arrangement of box bordered the walks between well kept beds of flowers.

This story is supported by the herbarium collections of boxwood and over twenty-five species of herbaceous plants between 1819 and 1835 including: Canna; Rudbeckia; Lavertera; Helleborus; Phlox; Coreopsis; and others.

All together, there is a chain of evidence from present day to the eighteenth century indicating that boxwood was used as an enclosing or edging feature, a use which is compatable with the existing arrangement of boxwood and with botanic garden designs of the period.

Cacalia suaveolens

Sweet-scented Indian Plantain

Asteraceae

Sweet-scented Indian Plantain, found throughout most of the eastern states, is not listed in the Chester County floras. It is a two to six-foot tall herbaceous perennial closely related to Petasites, Senecio and Tussilago.

Cacalia atriplexifolia, Pale Indian Plantain, is an esculent herb frequently found in the open moist woods and thickets of Chester County. Muhlenberg wrote to William Bartram in 1792

We have 2 Cacalias; but none is, by the smell suaveolens. The one has very glaucous leaves; the other [probably C. muhlenbergii] grows along the shores of the Pequea, and is more white. The first I take to be atriplexifolia (Darlington 1849, p.468).

Darlington collected "August 10, 1819, Cacalia suaveolens, Mx a syngeneous plant from Marshallton garden, not quite in flower. Leaves remarkably triangular, or hastate and acute" (Herbarium).

Darlington catalogued (1842) "Cacalia suaveolens, Hort. Marshall, William Darlington."

Calycanthus floridus L.

Sweet Shrub, Carolina Allspice

Calycanthaceae

Carolina Allspice is a deciduous North American shrub which carries very aromatic and curious appearing brownish-red flowers at the tips of short branchlets. It is easily cultivated and much used as an ornamental shrub both for its fragrant flowers, appearing in late summer, and the trim appearance of its glossy leaves. It is found, with its varieties, in rich woodlands from Pennsylvania to Florida. There is discussion among gardeners whether the scent is that of strawberries, pineapple or ripe banana. Castiglioni commented in his Viaggio that

Calycanthus, one of the most charming and highly prized shrubs of the southern United States...is completely covered with dark red flowers that give off a very pleasing fragrance very like that of strawberries, or rather pineapple...The wood and leaves have an aromatic fragrance, and since it is a shrub of beautiful foliage, it is used in South Carolina to form hedges in the little alleys of gardens (Castiglioni, 1790, p. 366).

Both Marshall and Castiglioni clearly refer to C. floridus, and not C. fertilis. The former is distinguished by its oval leaves and more aromatic scent, characteristics noted by both authors.

Marshall (1785, p. 24) described "Calycanthus floridus, Carolina Allspice" whose

flowers are...of a sullen or dark purple color, and when somewhat expanded, diffuse to a considerable distance, a very agreeable scent, scarcely distinguishable from that of ripe strawberries.

Hamilton observed Calycanthus in the garden, and in a 1796 letter to Marshall wrote

When I was at your house, a year ago, I observed several matters in the gardening way, different from any in my possession...I should also be obliged to you for a few seeds of your Calycanthus (Darlington 1849, p. 578).

. Hamilton observed and requested "sour Calycanthus" in 1799.

You will permit me, also, to remind you of your promise to spare me a plant or two of the White Persimon, one of the Azalea coccinea, and of the sour Calycanthus (Darlington 1849, p. 580).

Camellia sinensis O. Kuntze

Tea Plant, Tea Tree

Theaceae

The Tea Tree of commerce is a variable tree or shrub species introduced to English gardens from southeastern Asia about 1768 by John Ellis as a curiosity for variety and ornament. It was grown in the greenhouse and in the ground. Tea [Thea bohea, T. viridis] was, as a popular English garden book of the time said

universally famous for producing the leaves of which is made, by infusion, that well known domestic article Tea...shipped in lead lined chests from China...in amazing quantities,

supplying millions of people as one of the daily articles of food in its peculiar preparation (Mawe and Abercrombie 1797).

Calling to mind the celebrated Boston Tea Party may give some indication of the value of this plant to the colonists in Humphry Marshall's time. Marshall (1785, pp. v-vi) wrote in the introduction to Arbustum

Those who are conversant in trade well know the continual enormous expense we are at in purchasing Tea, Drugs, Dye-stuffs, &c. The diminution of this ought to be the care and concern of every friend to his country's welfare...the most eligible and obvious means of obtaining this...will be by a proper attention and application to Horticulture and Botany.

Marshall also recommended "discovering the qualities and uses of our own native Vegetable productions." There would be, he stated, great advantage in discovering a plant as useful as "the Potato, Tobacco, or Ginseng; or good substitutes for Tea, Coffee and Peruvian Bark".

In 1773, Dr. Fothergill enthusiastically wrote to Humphry Marshall

We have got the true Tea Plant, at length, in England. We are endeavouring to propagate it, and hope we shall succeed, not so as to raise it as a commodity, but merely, in this country, as a curious article. It would thrive in Virginia and Maryland extremely well. I propose to send thee a pretty good account of it, wrote by an acquaintance of mine (Darlington 1849, p. 511).

By 1775 Dr. Fothergill was able to send Marshall his

own account.

I have...a fine young Tea tree. It is now, my gardener writes me word, seven feet and a half high, extending its branches in proportion. It flowered the last year, in autumn, and will do so this. It is in the natural ground, but sheltered in winter by a glass and covered at night with a mat. It is the finest Tea tree in Europe. We are endeavoring to increase it, both by cuttings and layers (Darlington 1849, p. 513).

Attempts to establish Tea plantations in the Southern States failed, but the popularity of the Tea Tree as a curiosity continued, and in 1829 it was featured in the first, and many subsequent exhibitions of the Pennsylvania Horticultural Society (Boyd 1929, p. 45). Marshall, aware of the tenderness of the plant, would have brought it into his plantroom in winter.

William Hamilton sent a Tea Tree to Humphry Marshall, May 3rd, 1799, and noted

I have not until this time been able to comply with my promise of sending you a Tea Tree. I now take the opportunity of forwarding you, by the stage, a very healthy one, as well as several of other kinds, which I believe are not already in your collection (Darlington 1949, p. 579).

Canna L.

Canna

Cannaceae

Cannas are tall herbaceous perennials from the tropics and sub-tropics of the New World whose bold leaf

texture and exotic, orchid-like flowers endeared them to the Victorians for use in bedding out. Canna, however, were well known to Marshall and his contemporaries. Walter (1788, p.59) described three species in Flora Caroliniana, a book received by Marshall from Lettsom in 1789 (Darlington 1849, p. 549). Pursh (1813, 2: p.585) described two. Nuttall (1818) described a species of the southeast, Canna flaccida Salisb., "with splendid flowers." This species was cultivated in England at least by 1750. William Bartram, traveling in the 1774, described C. indica in Louisiana and C. lutea [C. flaccida] at Lake Dexter, Florida in 1774,

what can equal the rich golden flowers of the Cana lutea, which ornament the banks of yon serpentine rivulet, meandering on the meadows (Harper 1958, p. 463).

A letter dated September 24, 1813, from Dr. William Baldwin to Dr. Henry Muhlenberg infers that Muhlenberg grew C. flaccida in Lancaster

Mr. Oemcers plants, which you have mentioned to me as flourishing in your garden, are, I believe, all exotics... the canna glauca is called in Florida, "Wild Sago" the root to this plant has been substituted for "Arrow Root" (Maranta arundinaceae) (Darlington 1843, p.112).

Darlington lists Canna as one of the plants he planned to collect from Marshall's garden "next spring" (Darlington 1811).

Carya illinoensis (Wang.) K. Koch

Pecan

Juglandaceae

The Pecan may be the largest hickory, reaching a height of 160 feet in the floodplain forests of the Mississippi. The value of the nuts and lumber has long been known. John Bartram, while in Pittsburgh, in 1761 received Hickory nuts from Col. Bouquet who had them from the country of the Illinois but did not expect them to sprout.

Marshall (1785, p. 69) described "Juglans pecan, the Pecan or Illinois Hickery, said to grow plenty in the neighborhood of the Illinois river." Marshall may have raised them before 1785, as he noted, "the young plants raised from these nuts much resemble our young Pig-nut Hickerys."

Hamilton wrote to Marshall after the "truly long and severe winter" of 1798-99 and lamented

the only one I had of Juglans Pecane, or Illinois Hickory, which I raised twenty five years ago from seed is entirely killed (Darlington 1849, p. 580).

Darlington, in 1849, recalled that "Carya olivoformis (Mx) Nutt." planted by Marshall still grew in Marshall's garden (Belden 1965, p. 112).

Castanea dentata (Marsh.) Borkh.

American Chestnut

Fagaceae

American Chestnut, a forest dominant which supplied food, fuel, and shelter, almost vanished in the last fifty years due to the ravages of the chestnut blight. A plant in front of Marshall house, in 1984, showed the characteristic cankers of this disease. Chestnut has survived in the forest because it has the ability to send up new shoots from below ground after the main stem has succumbed to the blight fungus, Endothia parasitica.

Marshall (1785, p. 46-47) described "Fagus-castanea dentata, American Chestnut Tree" and noted that

The timber is used much for rails, splitting free and out-lasting most of our Oaks. The kernel of the nuts are dried and used by some as a substitute for Coffee. The wood is also burnt into coals for the use of blacksmiths, &c ...

Harshberger (1920, p. 138) listed "Chestnut (Castanea dentata)" among the "noteworthy trees of the planted ground" in Marshall's garden.

Castanea pumila (L.) Mill.

Chinquapin

Fagaceae

The Chinquapin, rare in Chester County, is a shrubby, small fruited American species found in dry woods and thickets. The sweet tasting nut was introduced to Europe before 1700. Chinquapin was often requested from Marshall by Europeans (Harshberger 1929, p. 275). Castiglioni observed, 1785-87, that

They serve as fodder for pig and other animals. Whenever they are put on the table they are eaten raw, being in fact sweet and very tasty. Catsbey says the Indians stocked them for winter (Castiglioni 1790, p. 380).

David Townsend collected Castanea Pumila from Marshall's Garden in 1830 (Herbarium).

Catalpa bignonioides Walt.

Catalpa

Bignoniaceae

Catalpa's foxglove-like flowers in late summer made it a popular ornamental tree. Introduced to England by Catsbey in 1726, it was well known in Philadelphia in Marshall's era. Nuttal (1818, p. 10) noted that the Catalpa's native range was extended considerably by aborigones. Boyd (1929, p. 28) noted that rows of Catalpa

surrounded "Springettsberry," the home of William Penn's son, Thomas, in 1739. Castiglioni observed, that

A few year ago the Catalpa was common in the gardens of Pennsylvania, but quite a few of them were pulled up when the rumor spread that the negro slaves were using them to poison their companions. However, this plant was wrongfully inculcated as poisonous ... On the other hand, in Japan, according to the testimony of Koempfer and Thunberg, [Flora Japonica] the decoction of the siliques is given to asthmatics, and the leaves are used a a cataplasm in nervous afflictions (Castiglioni 1790, p. 365).

At Fifth and Chestnut was the town home, erected in 1750, of Charles Norris, where Marshall stayed when in Philadelphia (Darlington 1849, p. 533). At that time "a garden fence shaded a long line of remarkably big Catalpa Trees" (Lockwood 1931, p. 341). Catalpa of large size grew in Bartram's garden about 1853 (Meehan 1853, p. 92).

Marshall (1785, p. 21) described "Bignonia Catalpa. The Catalpa-Tree." Catalpa was commonly ordered from Marshall by Europeans (Harshberger 1929, p. 226).

"Three immense English Catalpas" were reported in the garden September 23, 1907 (Daily Local News). However, this common name is erroneous. There are no English species, and only two other species, C. ovata of China and C. speciosa were introduced before 1850.

Harshberger (1920, p. 138) observed Catalpa among

the secondary trees in the garden.

Celtis occidentalis var. crassifolia A. Gray

Hackberry

Ulmaceae

Hackberry is a tall tree of Eastern North America, frequent in Chester County thickets, fields, and roadsides. It exhibits much variation in habit and morphological characteristics, and in general resembles the Elm. The fruit contains a yellowish fleshy pulp which some consider sweet. The variety crassifolia (Lam.) A. Gray, recognized by some taxonomists, is rare in Chester County, but appears in the garden today. European requests for Hackberry from Marshall are known (Harshberger 1929).

Marshall (1785, p.7) described Celtis occidentalis, American Yellow-fruited Nettle-tree with

hard berries about the size of a small pea, of a yellow color and sweet taste when ripe. The juice of the fruit is said to be astringent and to give ease in violent Dysenteries [Marshall died of this affliction].

Meehan (1853, p. 95) provided the first record of C. o. var. crassifolia in the garden and noted that

This fine tree is very little known in our vicinity; and, where it exists, is taken for [C. occidentalis L.] ... in the garden of Marshall, there is a fine specimen seven feet in circumference, and probably ninety feet high. Its branches spread, and the whole appearance is very much that of an elm.

Sargent (1893, p. 461), in a description repeated in later accounts of the Philadelphia Times (1894) and Harshberger (1899, p. 84), recorded "a tall long-stemmed Celtis of great size ... which seems to date from the time of Marshall."

Harshberger (1920, p. 138) later observed Hackberry (Celtis occidentalis) among "the noteworthy trees of the planted ground ... in a vigorous condition of health." Five years later Baxter (1925) measured

A large Hackberry, also described by Meehan (as Celtis crassifolia, 7ft. in girth and 90ft. high) is now 13ft. around one foot above the ground and 10ft. measured 5ft. above ground [38 in. DBH]; its buttress is 10ft. in diameter.

Belden (1965, p.112) recorded a "venerable Celtis australis (European Hackberry)... in Marshall's grove." C. australis has a leaf similar to C. o. var. crassifolia which could account for this anomolous observation.

Swartly (1969) measured Celtis occidentalis in Marshall's garden with a DBH of 42 inches. If this is the same plant measured by Baxter, the average annual increase in DBH was near 0.18 inches over 44 years.

Gutowski (1984) recorded several young plants of C. o. var. crassifolia along the east side of the grove which ranged from five inches to eleven inches in diameter, but

no larger plant or identifiable stump was found.

Cercis canadensis L.

Redbud

Leguminosae

Redbud is a commonly cultivated large shrub or small tree of Eastern North America. It is rather rare in Chester County, found in rocky woods and on wooded hillsides. Cultivated since 1730, Redbud is a plant desiderata on many orders for plants from Marshall (Harshberger 1929, p. 275).

Marshall (1785, p. 32) described Cercis canadensis, Red-bud, or Judas Tree, whose flowers "make a beautiful appearance."

Darlington recalled, in 1849, observing Cercis canadensis at Marshall's garden (Belden 1965, p. 111).

Chenopodium hybridum L.

Maple-leaved Goose-foot

Chenopodiaceae

Maple-leaved Goose-foot is circumboreal in distribution and closely related to Lambs quarters (C. album). Darlington (1859 p. 242) considered it a rare annual plant, naturalized in Chester County along the

river. Barton (1818, p. 148) in his flora of Philadelphia observed, "This very tall species, frequently attains a height of six feet. In the borders of neglected fields and near the rejectments of gardens, scarce."

Darlington collected "Chenopodium hybridum found in the old botanic garden of Humphry Marshall in this county, Aug. 10, 1819. The plant had no odor" (Herbarium).

Joshua Hoopes collected "Chenopodium, Hort. Marshall, Sep. 1, 1851" (Herbarium). This collection does not appear to be C. hybridum, but could not be identified from the vegetative specimen.

Clematis viorna L.

Leather Flower

Ranunculaceae

Leather Flower is a slender woody vine with attractive nodding bell-like flowers. Rare in Chester County, it was collected in 1828 by William Jackson, the son of Marshall's botanical friend John Jackson, on his farm in London Grove but "not observed elsewhere" in the wild (Herbarium).

Townsend collected Clematis viorna from Marshall's Garden (Herbarium). No date was specified, but Townsend (1787-1858), a founder of the Chester County Cabinet of

Natural Sciences in 1826, made other collections from the garden between 1826 and 1849 for the Cabinet.

Conium maculatum L.

Poison Hemlock

Umbelliferae

Socrates knew the fatal properties of Poison Hemlock. This large branching biennial from Eurasia and Africa is now naturalized in Chester County's meadows and open moist grounds at Shaw's Bridge, Lenape, and elsewhere. It is not unattractive as a planting and has long been cultivated. M'Mahon (1806, p. 584) offered Conium maculatum in his list of "Plants Cultivated for Medicinal Purposes, &c." Barton (1818, 1: p. 139), in his flora of Philadelphia, noted that it was

A well known narcotic medicinal plant, yielding the Cicutia of the pharmacopaeias. Introduced, and sometimes, though rarely found in this neighbourhood, with the appearance of growing wild. Whole plant poisonous. Biennial. June.

Humphry Marshall wrote "Hemlock-202" on the first page of his copy of Urban's Gentlemans Magazine, 1770, (CCHS Ms. 3389) which contained an account of the medical uses, effects, and harvest of Poison Hemlock. "That excellent paper published by Dr. Fothergill" is quoted where he directed the preparation of the extract of Hemlock.

Darlington collected, "Conium maculatum, in fruit, Marshallton Garden, July 30, 1828. Specimens then 10 feet high" (Herbarium).

Coreopsis major var. rigida (Nutt.) Boynton

Wood Tickseed

Asteraceae

Wood Tickseed is an attractive summer blooming perennial found in the dry woods and clearings of the mountains from Virginia to Georgia and certainly within the collecting ranges of Humphry and Moses Marshall.

Darlington recorded with an undated specimen, "Coreopsis **nifolia [letters obscured but the plant is C. var. rigida], var. rigida? I think this was collected in Marshall's Garden. Ex. Herb. David Townsend" (Herbarium).

Corylus cornuta Marsh.

Beaked Hazelnut

Corylaceae

Beaked Hazelnut, introduced to England by 1745, is a deciduous shrub distributed through most of Eastern North America but rather rare in Chester County. The plant has little ornamental merit, but the small-sized nut is eaten by many animals.

Marshall (1785, p. 36) described, "Corylus cornuta, Dwarf Filbert, or Cuckold-nut" for the first time.

Darlington collected two specimens in fruit of, "Corylus cornuta, Hort. Marshall, Sep. 14. 1835. Ex Herb. W.D." (Herbarium). The first wild collection in Chester County was in 1841 from along the Brandywine.

Digitalis purpurea L.

Common Foxglove, Digitalis

Scrophulariaceae

Digitalis is not a part of Pennsylvania's flora except for rare introductions. This popular garden biennial is locally common in other states, such as West Virginia, where it was early cultivated. Bartram noted in Short's Materia Medica that, "this species grows only in curious gardens" (Leighton 1976, p. 416).

Digitalis has long been considered a medicinal plant. However, it contains such a powerful drug that it was considered a "dangerous remedy." Not until Withering's Account of the Foxglove was published in 1785, was it recognized as a diuretic which could be successfully, although sometimes fatally, used in cases of dropsy (Woodville 1790, pp. 70-74). Digitalin, a crystalline steroid glycoside derived from the seeds, is still commonly

used to treat heart disorders, as are other glycosides derived from the leaves.

Caspar Wistar wrote to Humphry and Moses Marshall in October, 1787

With this I send a treatise on the effects of Foxglove, which I mentioned to friend H.M. when he was last in town. Dr. M. will be pleased to find that he is in possession of a plant of such efficacy, and perhaps will cultivate a greater quantity of it...if you have any of the plant to spare, I will be much obliged to you for a few leaves of it, and also a few seeds, with the book, when it is returned (Darlington 1849, p. 568).

Diospyros virginiana L.

Persimmon

Ebenaceae

Persimmon is rather rare in Chester County where it is found as a small tree in open woods, thickets, and along streams. This was one of the plants frequently requested of Marshall (Harshberger 1929, p. 225). Collinson wrote to Bartram in 1739, "we now have plenty of this tree, in some gardens, which is much admired for its beautiful green leaves" (Darlington 1849, p. 133). Cultivated in Europe by 1630, Bartram's garden was said to contain a Persimmon which was the "largest on the globe" in 1857, three feet in diameter and ninety feet tall (Browne 1857, p. 396). Native Americans and European settlers used the inner bark to treat fevers; as described in a passage from Traits of

the Aborigines, "If fever's fervid rage Glow'd in the boiling veins, with care they sought The firm Diospyros" (Browne 1857, p. 396). Darlington (1854) listed it among Chester County's medicinal plants as a "powerfully astrigent; tonic." Michaux (1818, 2: p. 221) described several specialty uses of the wood.

Marshall (1785, pp. 40-41) described "Diospyros Virginiana, Virginian Persimmon Tree" the fruit of which when fully ripe has a sweet agreeable taste. A full grown tree will often yield two bushels or more of fruit, which upon distillation will afford as many gallons of Spirits, allowed to be equal in taste and flavour to West India Rum. Our countrymen have not enough attended to this, but in some places they brew of them a very good Beer.

Hamilton reminded Marshall in 1799 of Marshall's "promise to spare me a plant or two of the White Persimmon" seen in Marshall's garden in 1798 (Darlington 1849, p.580).

Echinacea purpurea (L.) Moench.

Purple Coneflower

Asteraceae

Purple Coneflower is now an often-planted perennial for the meadow and flower garden. It is a native of dry open woods and prairies from Ohio and beyond. It was listed in Bartam's 1807 catalog and by M'Mahon in 1806 as

Rudbeckia purpurea.

Townsend collected, "Rudbeckia purpurea from Marshall's garden, 1828" (Herbarium).

Elephantopus carolinianus Willd.

Elephant's-foot

Asteraceae

Elephant's-foot is a tall, coarse-leafed, branched perennial with clustered heads of smallish purple flowers. Chester County collections have come from dry rocky banks along streams and bottomlands.

Darlington collected "Elephantopus carolineanus; Hort. Marshall; Flowers Pale Leadен purple, Aug. 24, 1833" (Herbarium). Darlington (1842) cataloged "Elephantopus carolinianus, Hort. Marshall."

Eranthus hyemalis Salisb.

Winter Aconite

Ranunculaceae

Winter Aconite is a low-growing, tuberous perennial herb native to Europe and Asia. It has long been cultivated. In Marshall's garden, each spring is greeted by an acre or so of this cheerful yellow flower, often blooming through a mantle of snow. This display is one of

the garden wonders of the region.

"Eranthus hyemalis; Marshall's Hort.; April 23, 1829" was collected at the garden (Herbarium).

In May, 1919 Harshberger (1920, p. 138) observed "Winter Aconite (Eranthis hyemalis) in fruit" and conjectured, "The winter Aconite was probably introduced originally from Bartram's garden as at one time it grew plentifully on the lawn there."

"Ferns"

Ferns

Stone (1945) described forty-one fern species in Chester County. Ferns are not mentioned in Marshall's garden, and their existence there today indicates little of their origin. Fothergill, however, seems to have been at the forefront of the next century's ferncraze. Fothergill's correspondence with Marshall, and repeated requests for ferns, shows that ferns were at least collected for him by Marshall. If Fothergill's enthusiasm for their beauty did not inspire Marshall, then their medical properties, which created sufficient demand to import ferns into England, would have been inducement enough.

Woodville (1790, p. 136) described the use of

powdered root of Polypodium Felix mas, Male Fern, as a vermifuge. He also described syrup "frequently to be met with in our shops" made from Asplenium Trichomanes, Common maidenhair, and used to treat "disorders of the breath" (1792, p. 565).

Maidenhair Fern, Adiantum americanum, was, said Miller (1754, p. 39), used medicinally and "preserved by curious persons in their Gardens." And he noted (p. 1110) that there are several American species of Polypodium "some of which are preserved in some curious Botanic Gardens for variety, but ... rarely cultivated in other gardens." Miller also commented that "several sorts" of American Osmunda are known but seldom kept in gardens (p. 991). Castiglioni (1790, p. 425) noted that Osmunda virginiana L., Fern Rattlesnake-root [common in Chester County] was considered an effective herb against snake bite in America. "Ophioglossum vulgatum, Adder's-tongue" [very rare in Chester County] is listed in several lists of medicinal plants, and Miller (1754, p. 972) noted

This is directed to be used in Medicine by the College of Physicians, in their Dispensatory; but it is seldom found in Gardens, being difficult to transplant.

Dr. Fothergill noted in a letter of requests to Marshall, March 15, 1770, "Ferns and Polypodiums of many kinds, are yet to be found among you; ... Look carefully

after some ferns for me" (Darlington 1849, p. 501).

With the next year's spring order Fothergill told Marshall "A curious Fern is as acceptable to me as the most showy plant" (Darlington 1849, p. 506).

Marshall was reminded by Fothergill in a letter February 6, 1773, "Don't forget the fern tribe. This is a very pleasing part of the Creation" (Darlington 1849, p. 511).

When Marshall had moved to West Bradford, he received a letter from Fothergill dated June 28, 1774

Look carefully after your Ferns. You have a great variety. I have more American Ferns than most of my acquaintance; but I know you must have more, and various Polypodies, likewise. I am reckoned to have the best collection of North American Plants of any private person in the neighborhood. I am obliged to you for many of them (Darlington 1849, p. 512).

In August of 1775, Fothergill reported on turtles received and thanked his "Esteemed Friend" Marshall for "some new Ferns, and a few other rare plants." Fothergill, in this his last letter to Marshall, expressed concern for lost communication during the war, and offered some cultivation advice to keep plants through the time

all intercourse between America and Britain will be cut off, and I am afraid for a long time. Be attentive, however, to increase thy collection at home, by putting every rare plant thou meets with in a little garden, and as much like their natural situation, as to shade, dryness or moisture, as

possible. For instance, most of the Ferns like shade and moisture: these may be planted on some north border, where the sun shines but little except in the morning (Darlington 1849, p. 513).

Sir Joseph Banks wrote to Marshall in May 1789 and requested "Ferns" for William Aiton. This order, shipped that fall, was reported to have arrived in good condition (Darlington 1849, pp. 562-63).

Filipendula rubra Robinson

Queen-of-the-Prairie

Rosaceae

Queen-of-the-Prairie is an erect herbaceous perennial blooming light pink in mid-summer meadows and prairies from Pennsylvania to Georgia and the mid-west. Its scattered natural range in Pennsylvania does not include Chester County. It has escaped from cultivation over much of Eastern North America.

Darlington (1842) cataloged "Spiraea lobata Murr. [Filipendula rubra Robinson]; Hort. Marshall."

Filipendula vulgaris Moench. cv. Flore Pleno

Double Flowered Dropwort

Rosaceae

Double Flowered Dropwort was cultivated as a form of the Common Dropwort prior to 1727 (Miller 1754, p. 512).

The single form, now naturalized here, grows wild in pastures of Europe and Asia. The roots of this plant appeared to herbalists as beads, or drops, on a string and were administered in powder form to "ease blockages."

Hamilton, in 1799, sent Marshall "Spireae filipendula flo:pleno" with "plants in ye box directed for Mr. Marshall" (HSP, Dreer Collection 175-52).

Floerkea proserpinacoides Willd.

False Mermaid

Limnaceae

False Mermaid is a low-growing tender annual, frequent in Chester County, often forming conspicuous mats on moist, shaded grounds along streams. This pale green herb blooms late in spring and disappears by mid-summer. False Mermaid is listed here because it helps elucidate botanical activities at the site.

Darlington (1849, p. 547) noted that

Among the Marshall papers [not found by this writer] there is one without date, but apparently [ca. 1788] on which is a sketch of the genus Xanthorhiza; and also an excellent description (with rough drawing) of the Floerkea proserpinacoides, of Willd. From diffidence, or want of opportunity to publish, many of the discoveries, and much of the credit, really due to Bartram, Marshall, and Muhlenberg, have been ascribed to, or appropriated by, European botanists.

Rafinesque (1808, p. 351) alluded to Moses Marshall's discovery of "Floerkea palustris [syn]."

Harshberger (1920) described a May 1919 visit to the garden when "False mermaid-weed (Floerkea proserpinoides) among the Herbaceous plants ... lent an interest to the stroll about the place."

Foeniculum vulgare Mill.

Fennel

Umbelliferae

Fennel is a stout perennial, usually grown as an annual in kitchen gardens and recommended in many herbal preparations. It was long cultivated, and was introduced to America before 1700. M'Mahon (1806) did not list it.

In the Marshall Correspondence (Dreer Collection 175-24) at the Historical Society of Pennsylvania is a letter from Jean Reichart, a regular customer of the Marshalls, and gardener to the Duke of Weimar. In 1792 he enclosed

A catalogue of Kitchen garden Seeds with prices for as if I have sold them to the English this season. ... send copies to some honest seedsman at Philadelphia, New York and Boston. I have no doubt, but they will be very glad of it; as I sell a great deal every year to England ... They will have then twice as cheap from me as from England.

This catalog listed one-hundred-three kinds of seeds

including "fenel" at one shilling per pound.

Darlington collected "Foeniculum dulce, D.C.; Hort Marshall, Sep. 14, 1835" (Herbarium).

Fothergilla gardenii J. Murr.

Fothergilla

Hamamelidaceae

Fothergilla is a deciduous shrub of the southeastern United States with conspicuous clusters of scented flowers born in spring. Fothergilla gardenii commemorates two contemporaries of Marshall who were important members of the natural history circle, Dr. John Fothergill (1712-1780) of England and Alexander Garden (1730-1791) of Charleston, South Carolina. Marshall (1785, p.47) described

Fothergilla Gardeni, Carolinina Fothergilla ... this small but beautiful shrub ... in some late Catalogues, has been called Youngiana, in honor of William Young, Botanist, of Pennsylvania; but by Dr. Linnaeus, Fothergilla in honor of the late Dr. Fothergill of London. It was first sent to Europe, from Carolina, by John Bartram, to his friend P. Collinson, by the title of Gardenia.

In 1793, Moses Marshall (Darlington 1849, p. 580) wrote to a London nursery explaining some shortages in a delivery to them. Collection and shipping had been hampered, in part, by the epidemic of yellow fever, which in three months had carried off a quarter of the city's

population. He also noted that the Fothergilla he had on hand were "to large to send abroad."

Franklinia altamaha (Marshall) Bartram

Franklinia

Theaceae

Franklinia contributes a mysterious chapter in the natural history of North America. It was first cultivated and last seen in the wild during the active period of the Marshallton Botanic Garden. Franklinia, with nine surviving recorded orders, appears to be one of the more frequently requested plants from Marshall's Garden. (Harshberger 1929, p. 226). Orders for bedded out plants included such large quantities as "100 plants" or "all you can get." Collections from the single known wild population along the coast of southeastern Georgia may have contributed to its demise. Franklinia now only grows in gardens, all the plants being descendants of those plants and seeds collected by William Bartram and Moses Marshall (Harper et al. 1937). It was last reported seen in the wild by another Philadelphia based nurseryman, John Lyon, in 1803.

Marshall (1785, pp. 48-50) described Franklinia altamaha, Franklinia citing

(Bartram's Catalogue.) This beautiful flowering, tree-like shrub, rises with an erect trunk to the

height of about twenty feet; dividing into branches, alternately disposed...the flowers are produced towards the extremity of the branches...they are often five inches in diameter when fully expanded; composed of five large, roundish, spreading petals; ornamented in the center with a tuft or crown of gold colored stamina; and possessed with the fragrance of a China Orange. This newly discovered, rare, and elegant flowering shrub, was first observed by John Bartram when on botanical researches on the Altamaha River in Georgia, Anno 1760; but was not brought into Pennsylvania till about fifteen years after, when his son William Bartram, employed in the like pursuits revisited the place...and had the pleasing prospect of beholding it in its native soil, possessed with all its floral charms; and bearing ripe seeds at the same time; some of which he collected and brought home, and raised several plants therefrom, which in four years time flowered, and in one year after perfected ripe seeds.

It seems nearly allied to the Gordonia, to which it has, in some late catalogues been joined; but William Bartram, who first introduced it, believing it to be a new genus, has chosen to honor it with the name of that patron of sciences, and truly great and distinguished character, Dr. Benjamin Franklin. The trivial name is added from the river, where alone it has been observed to grow naturally. It delights in a loose, sandy and moist soil.

Moses Marshall sent *Franklinia* to Lettson, November 4, 1788. The box of plants arrived healthy, February 1, 1789 on the Pigou with "numbers fastened with wire" which Lettson noted, "effectually distinguishes the shrubs" (Darlington 1849, p. 548).

On May 6, 1789, Sir Joseph Banks wrote to Moses Marshall, "The *Franklinia* is, as you conjecture, a species

of Gordonia" (Darlington 1849, p. 562). Moses Marshall apparently differed with his uncle in creating a new genera. The controversy as to the correct genera for the *Franklinia* continued into this century.

In his "Journal" under the date of July 11, 1790, Moses Marshall described collecting *Franklinia* in Georgia. The description transcribed here has not to my knowledge been published before.

Above the Fort [Fort Barrington] is a Cypris Swamp -& below on ye river it is swampy at a little distance. The river is here perhaps 300 Y of fresh water. We found here plenty of peaches nearly ripe upon which I feasted heartily; Where the Fort was or the piece of ground which has been enclosed is overgrown with grass, grapevine and passion vines which latter is so plenty that in walking you crack some of the fruit now nearly ripe almost every step. About half after [11 til ?] we reached here about 60 or 80 perches from ye river going into the left hand I got the glimpse of a *Franklinia* and was much rejoiced upon going near it to find I was not mistaken. I **** a little then went to the river and staid eating peaches and searching for more trees of *Franklinia* about an hour though without success our horses picked grass the while knowing the distance we had to return and the difficult way I could not have time to make a further search. Therefore came back to where I had before observed it. Collected what seeds I could and young plants and searched a considerable distance around but could not find but a single shoot with several stems 15 or 20 feet. We then came on wading along in a walk upon one or two little rising pine barren pieces I found plenty of excellent Whortledberries. These with the peaches

answered in the place of provision. Towards evening we reached Wm. M. Donalds (Marshall 1790).

In 1799, May 3, Hamilton sent "Gordonia pubescens" to Humphry Marshall (Dreer Collection 175-52).

Fraxinus americana L.

White Ash

Oleraceae

White Ash is a large and valuable timber tree of Eastern North America, usually found in rich soils of open woods and fields. It is quick to establish in disturbed soils. White Ash is commonly found in open woods and roadsides of Chester County. Two requests were recorded for this tree from Marshall (Harshberger 1929, p. 276). Marshall (1785, p. 51) described

Fraxinus alba, American White Ash. ... The timber of this is used much by Wheelwright, Chaise-makers &c. for making shafts, rimming of wheels, &c.

He would have had the opportunity to observe this work first hand. Marshall was taxed as one of the first chaise owners in the county. Both a wheelwright and wheelmaker were recorded as freeman occupations in West Bradford [Marshalton] in the County Tax Assesments, 1801.

Reproduced in the Chester County Historical Society Bulletin 13, is a photograph, dated about 1890, showing the

trees in front of Marshall's house. The photograph was compared with a matching view taken in 1984. Location and branching structure of an existing White Ash are matched by a large tree in the hundred-year-old image.

Baxter (1925) recognized the competition on the site when he noted the "failure of these measurements to do justice to the age of the trees." He recorded

An American Ash (Fraxinus Americana) ... 11 ft. 4. in. in circumference, measured 1 ft. above the ground and towers 90 to 100 ft., measuring 40 ft. to the first branch.

The distance to the first branch is matched by the White Ash photographed about 1890 and recorded in 1984.

Belden (1958) measured a White Ash "large enough to have been planted in the eighteenth century ... 9' circumference."

The White Ash shown in 1890, and likely described in 1925 and 1958, was measured in 1984 to be 41.0 inches DBH and 14.7 feet circumference at one foot. When records of 1925 and 1984 are compared, a rate of increase in stem diameter of about 0.22 inches per year is indicated over the last sixty years. An average growth rate of 0.3 inches per year for one hundred forty years would account for a seedling in 1785 reaching the size of the tree measured by Baxter. Considering that the measurements were low on the

stem and that growth rates slow with great age, this is a reasonable rate for this species on this site.

"Geranium"

Geranium

Geraniaceae

Two genera of the Geraniaceae generally go by the name Geranium. They are Geranium and Pelargonium. Linneaus also included Erodium in this group. These include annual and perennial herbs. Geranium is represented by three native and seven introduced species which may have been available to Marshall. Some were supposed to possess medicinal virtues. G. maculatum is the only common native in Chester County, and it was included in the Materia Medica as an astringent (Barton 1817, 1: p. 154).

Pelargonium includes the familiar garden and florist Geraniums. Most of the nearly two hundred eighty species are native to South Africa. John Bartram may have received Pelargonium seed from Collinson who wrote in 1760,

I am pleased thou will build a greenhouse. I will send thee seeds of Geraniums to furnish it. They have a charming variety and make a pretty show in a green-house (Darlington 1849, p. 224).

A painting done in 1801 by Rembrant Peale, "Rubens

Peale with a Geranium," is the earliest conclusive evidence of Pelargaonium in America (Pennsylvania Horticulture Society 1976, p. 24). However, M'Mahon (1806, p. 618) had listed forty-nine species available for Philadelphian's greenhouses in 1806, and gave information on their care and propagation.

John Jackson, whose garden later included plants raised from seed collected by Lewis and Clark, wrote to his friend, and fellow botanist, Humphry Marshall in March, 1789, "I have this request to make, if thou pleases; to save me some seed of the Geranium, when ripe" (Darlington 1849, p. 549). Jackson cultivated a remarkable plant collection a few miles from Marshall's, and begun about the same time as the Marshallton garden. It is an interesting conjecture that Jackson was interested in Pelargonium cultivated by Marshall. To ask the favor of common native seed would not be likely. That Marshall had a greenhouse, and that the request was made at the time M'Mahon (1806, p. 355) would recommend for sowing Pelargonium seed in Philadelphia, helps to support this conjecture.

Gleditsia triacanthos L.

Honey Locust

Leguminosae

Cultivated since 1700, Honey Locust is a tall tree

armed with stout, branched thorns. The long twisting pods contain a sweet pulp between the flattened seeds and are readily eaten by wildlife and livestock. This plant may once have been restricted to the Mississippi Valley but is now widespread. Barton (1818, p. 197) observed that Honey Locust was,

A large and handsome tree, found abundantly along roads in the Neck, and elsewhere, in the vicinity of this city, but always, perhaps, originally planted in such places.

Castilgioni (1790, p. 386) observed "some people use these [legumes] in making beer, and in winter they are sometimes given to sheep, which eat them very eagerly." Marshall, who kept cattle and sheep, only commented on the use of the pods in beer-making. Marshall (1785, p. 54) described "Gleditsia spinosa, Triple-thorned Acacia, or Honey Locust."

Darlington listed in 1849, "Gleditschia triacanthos" planted by Marshall still growing in Marshall's garden (Belden 1965, p. 111). Harshberger (1920) observed Gleditsia triacanthos among the notable trees of the planted ground.

In 1984 there were several Gledtisia triacanthos near the cemetery and along the abandoned road leading west from the house. The largest of these was 15.0 inches DBH.

Gymnocladus dioicus K. Koch.

Kentucky Coffee-tree

Leguminosae

The name of Coffee Tree was given to this vegetable by the early emigrants to Kentucky and Tennessee, who hoped to find in its seeds a substitute for coffee: but the small number of persons who made the experiment abandoned it, as soon as it became easy to obtain from the sea ports the Coffee of the West Indies (Michaux 1817, 1: p. 265).

Kentucky Coffee-tree is a deciduous dioecious tree reaching 100 feet in the low rich bottomlands west of the Appalachians. It has naturalized widely and is thought to have been distributed along river courses by Native Americans prior to European settlement. The boney seeds may have been used in gaming. The pulp in the pod has been used as a sort of soap. Castiglioni (1790, p. 389) thought the tree very rare in North America, only seldom seen in Canada and in the region of Kentucky where "the inhabitants roast its seeds and use them to make a kind of bad coffee." Barton did not mention it in his 1818 flora of the Philadelphia region. M'Mahon (1806, p. 591), however, listed it as Guilandinia dioica, Hardy Bundoc, or Kentucky Coffee-Tree. And in Paris it had been cultivated over fifty years "for the embellishment of parks and picturesque gardens" (Michaux 1817, 1: p. 266).

Marshall (1785, p. 56) described "Guilandina dioica,

Canadian dioicus Bonduc, or Nickar Tree" and what may be the earliest introduction of this plant into this region.

I have lately received several seeds from Kentucky supposed to be of this tree, where it is said to grow plenty, and is called the Coffee or Mahogany tree.

The Chester County Cabinet of Natural Science reported that the garden "still exhibits many interesting relics as the Kentucky nickar tree" (Hazard 1828, p. 302). Darlington listed Gymnocladus canadensis, Lam. among the trees surviving from Marshall in his garden in 1849 (Belden 1965, p. 126).

Meehan (1853, pp. 128-29) described "Gymnocladus canadensis" as

a tree of noble proportions ... the best specimen at Bartrams is ninety-three feet high and six feet in circumference. There is also a very fine specimen in Marshall's garden which is probably as high and seven feet in circumference.

Sargent and Canby (Sargent 1880, p. 17) measured a "Gymnocladus Canadensis. 8 feet 10 inches" at three and one half feet which was then one of Marshall's most remarkable trees. A growth rate of 0.35 inches in diameter per year over ninety five years, 1785-1880, would have resulted in the circumference measured by Sargent, approximately thirty-four inches DBH. The West Chester Local News (1907) reported that

Near the house two graceful American mahogany

trees, raise their heads to the height of about fifty or sixty feet. Though more than a century old, they are not in girth as large as much younger trees. One is not in girth as large as a medium sized man's body.

The 1907 report is of interest because a painting of the house (CCHS) with an attributed date of 1872 shows a graceful pair of trees with high heads and feathery foilage near the east side of the house. And in 1984, a similar pair of "American mahogany" trees, stood near the east side of the house. The larger of the pair had a hollow stem measuring twenty six inches DBH. However, this pair does not show in Redfield's photograph of 1884.

Harshberger (1920) photographed a Kentucky Coffee-tree across the road from the old Marshall house, calling it a fine specimen, "one of the best of its kind." This tree was still standing in 1984 although the crown was severely damaged. This plant may be the "perfect specimen" measured by Baxter (1925) as

11 ft. 2in. and 9 ft. 4 in. around [at five feet]. This is in the open and although not much older than those within the Marshall grove, may not be so old.

Gymnocladus dioica was one of the major canopy trees, along with Sugar Maples, in the grove in 1984. Seven trees were of substantial size with DBH of 14, 16, 17, 19, 24, 24, and 26 inches. Many smaller trees were

recorded. These larger and smaller plants appear to represent two "generations." probably the second and third generations of Marshall's original introduction. The location of several trees near the house in 1984 are matched by individuals in an even-aged stand of young trees pictured in 1884 by Redfield (See Figures 4 and 5).

Halesia carolina L.

Silver-bell Tree

Styraceae

Silver-bell is a small tree growing in the moist deciduous woodlands from Virginia to Florida and west to the Mississippi valley and introduced by 1756.

Marshall (1785, p. 57) described this as "Halesia tetraptera [Ell.], Four-winged fruited Halesia." He also described H. diptera Ell. and commented on the beautiful bark of the genera.

Darlington catalogued (1842) "Halesia tetraptera; Hort. Marshall, collected by Wm. Darlington." Darlington (Belden 1965, p. 111) later recalled that "Halesia tetraptera" was among the plants Marshall planted in Marshall's garden.

Helleborus niger L.

Christmas Rose

Ranunculaceae

Christmas Rose is an evergreen perennial herb with a stout rootstalk. Native to sub-alpine European woods, it was introduced to America in the seventeenth century. Long valued as a winter blooming ornamental plant, old herbals promoted it as useful in treating madness and other ills. Woodville (1790, p.51) included it in his Medical Botany as an alternative treatment.

Townsend (Herbarium) collected "Helleborus niger, Black Hellebore, April 23, 1829" from Marshall's garden. This is mounted on a sheet with Winter Aconite.

Hibiscus coccineus (Medic.) Walt.

Crimson Hibiscus

Malvaceae

This tall perennial herb is native to the coastal swamps of Georgia and Florida, and not hardy north of Philadelphia. M'Mahon (1806, p. 603) recommended it, as H. speciosus, for planting in the "Flower Garden."

In July, 1773, William Bartram viewed it in Florida and was impressed enough to describe it as "the Most stately of all herbaceous plants...embellished with large

expanded crimson flowers" (Harper, p. 104). Muhlenberg later, 1792, identified Hibiscus coccineus among a packet of dried specimens sent him by William Bartram (Darlington 1849, p. 471).

Hamilton listed plants lost in the severe winter of 1799 and requested from Marshall, "the Hibiscus speciosus [Soland., H. coccineus Walt.] which I got from you" (Darlington 1849, p. 580).

Hordeum L.

Barley

Gramineae

Hordeum, Barley, was "early cultivated" in Chester County but by 1840 was little planted. Barley was sown in March or April in dunged fields which had previously yielded Indian corn. The principal use was in malt making with most of the product being sold in Philadelphia (Smith and Cope 1881, pp. 338-39). While there is no observation of Barley in the garden, the date and circumstances warrant its inclusion here. Account Journals of Moses Marshall, now at the Chester County Historical Society, indicate agricultural plantings of barley at the site, and, in the Mill Accounts, indications of the agricultural plantings in the region.

Benjamin Franklin sent Barley, April 20, 1771, to Marshall from London. Marshall and Franklin would both become members of the Society for the Promotion of Agriculture.

I send you, herewith, some of the new Barley lately introduced into this country, and now highly spoken of. I wish it may be found of use with us (Darlington 1849, p. 517).

Barley is listed with other farm crops and products in the 1801 Inventory of Humphry Marshall.

a quantity of corn...78 bushels of wheat ... cider tepels, hogs head and barrel, etc. ... 12 bushels of oats... 16 of Rye... 12 of Barley... 18 tons of hay (Belden 1958, Appendix III).

Barley is also listed with farm crops and products in the October, 1813 Inventory of Moses Marshall.

flaxseed... Timothy seeds... Cyder... apple brandy... rye whisky... wheat... barley... indian corn... buckwheats... oats... flax... 9 acres of wheat in the ground... 2 acres of Rye in the ground (Chester County Orphans Court, File 5946).

Hydrophyllum appendiculatum Mx.

Appendeged Waterleaf :

Hydrophyllaceae

Appendeged Waterleaf is the only biennial species of this North American genera of low herbs, native to rich woods and along stream banks but not recorded as native to Chester County.

Townsend collected "Hydrophyllum appendiculatum from Marshall's garden," June 5, 1829 (Herbarium).

Hydrophyllum canadense L.

Broad-leaved Waterleaf

Hydrophyllaceae

Broad-leaved Waterleaf is a low perennial found chiefly in the higher altitudes and in moist rich woods from Vermont to Georgia and west to Wisconsin and Arkansas. It was not, according to Stone (1945), recorded in Chester County.

Hamilton wrote to Marshall in 1796 requesting plant or seed of "Hydrophyllum canadensis...seen at your house, a year ago" (Darlington 1849, p. 578).

Hydrophyllum virginianum L.

Virginia Waterleaf, Indian-salad

Hydrophyllaceae

Virginia Waterleaf is a perennial herb of moist woodlands in Eastern North America, including Chester County. It has some ornamental value, and the tender shoots were sometimes eaten. It now grows abundantly in Marshall's garden.

Hamilton wrote to Marshall in 1796 requesting plant

or seed of "Hydrophyllum virginianum...seen at your house a year ago" (Darlington 1849, p. 578).

Iva [imbricata Walt.]

Marsh-elder

Asteraceae

Marsh-elder is a shrubby perennial of coastal North America from Virginia to Louisiana; and the Bahamas and Cuba. It was grown in the "shrubby plantations...but set no seed" in England (Mawe and Abercrombie 1778).

Hamilton wrote to Marshall in 1799 about the plants he had seen in Marshall's garden and noted,

I am very curious to know if your Iva, or Hog's Fennel from Carolina produces seed. In that case, I must entreat you for a few of them (Darlington 1849, p. 580).

Jeffersonia diphylla Pers.

American Twin-leaf, Rheumatism Root

Berberidaceae

Groenonius, in Flora Virginica (1739) published the first description, based on Clayton's No. 854, Podophylli vel Nelumbonis. Andre Michaux (1803, 1: p. 237) named the new genus in honor of Thomas Jefferson. Twin leaf is a low growing, white-flowered perennial gracing spring woodlands from New York to Alabama and Minnesota but is nowhere

abundant. Its long-stalked leaf is almost divided in two.

Moses Marshall responded to Joseph Banks in November, 1791, that, "the Podophyllum diphyllum grows in great plenty, about two hundred and fifty mile to the westward, and not nigher, I believe" (Darlington 1849, p. 565).

The following year Muhlenberg wrote to William Bartram after a visit, "Does not the Podophyllum binatum [Barton] alter the number of stamina? I wish I could get a few seeds of it, to observe it closer" (Darlington 1849, p. 469). The stamen number, usually eight, varies as do the number of petals. This distinction was of course critical in the Linnaean system used by Muhlenberg in his catalog. In this same communication Muhlenberg commented on the role of botanical gardens and a national flora.

A true flora of a country is not the work of one man; but hands must be joined. And I prefer descriptions of a particular place, where the same plant can easily be found, and compared with former descriptions. How useful in that respect is a botanical garden! But even there, some plants alter so much, that you hardly know them in a wild state.

Humphry Marshall supplied Hamilton with seeds "of the Podophyllum or Jeffersonia" in 1796 (Darlington 1849, p. 578). Hamilton reported to Marshall in 1799 that,

The plants of Podophyllum Diphyllum which I raised last year from seed which I received from your kindness have I feel been all destroyed and they

have not shown themselves above ground this spring (Darlington 1849, p. 579).

Hamilton also planned to send his man to Redstone, a collecting area of the Marshall's near Pittsburgh, the likely source of Marshall's seed.

Juglans nigra L.

Black Walnut

Juglandaceae

Black Walnut, native to Eastern North America, is found in moist rich soils. It served as an indicator species to settlers in search of fertile agricultural land. While at least six orders requesting plants from Marshall survived (Harshberger 1929), it is frequent in Chester County and Barton (1818) considered it very common. Marshall, in Arbustrum (1785, p. 66) described,

The species, or chiefly varieties according to Weston with us, are Juglans nigra, Round Black Walnut and Juglans nigra oblonga, Black Oblong fruited Walnut [J. n. forma oblonga (Marsh.) Fern.]. ...The timber of both sorts is much used by joiners, &c. in making tables, drawers, book and clock-cases, &c. Coffins are also generally made of it. The bark, and outer coverings of the nuts, are used in dyeing wool, cloth, &c.

Harshberger recorded noteworthy Black Walnut, Juglans nigra, in Marshall's garden (Harshberger 1920). The largest Black Walnut in the garden, 1985, had a fifteen inch DBH.

Laburnum alpinum Bercht. & Prsl.

Scotch Laburnum

Leguminosae

Scotch Laburnum is a small tree, not from Scotland, but from the mountains of Southern Europe and cultivated since the sixteenth century. It is the hardiest of the three Laburnum species. Bartram, Washington and Jefferson all grew this plant between 1792 and 1807 (Leighton, p. 441).

Darlington (1811) listed Laburnum among the plants to be collected from Marshall's garden. Later, Darlington (Herbarium) collected "Cytisus Laburnum L. DC, Cytisus alpinus, Lam. [Laburnum alpinum], from Marshall's Garden, May 20, 1819."

Larix decidua Mill.

European Larch

Pinaceae

Linnaeus described one larch in 1753, Pinus Larix [L. decidua] of Europe. Cultivated in Europe since 1629, European Larch is well-recorded in Marshall's garden. One remarkable specimen "growing near the house" survived until it was thrown over in 1954 by Hurricane Hazel (Belden 1958, p. 134). The mixed-aged group of larch this author

recorded in the woods surrounding the pond north of the house in 1984 may be the progeny of this once venerable matriarch.

Marshall (1785, p. 103) described three varieties of American Larch in Arbustrum, all of which are now considered Larix laricina K.Koch, the only native larch in Eastern North America. Sargent noted that American Larch was reported in the Chelsea Physic Garden as early as 1735 and that settlers in seventeenth century New England were well aware of its virtues as timber and physic described by Josselyn (1898, 12: p. 9). M'Mahon (1806, p. 592) offered in Philadelphia, "Pinus Larix, White Larch; Pinus Larix pendula, Ait, Black Drooping Larch; and Pinus Larix rubra, Red Larch." The first is a synonym of L. decidua, and the latter two of L. laricina. While the properties of both plants are similar, and while both were available to Marshall, only the European larch is explicitly observed in the garden.

Belden (1958, p.133) cited an undated letter to Marshall from a John Custis of Virginia asking for seeds or young plants of the Larch tree which he understood grew in Marshall's garden and "grew rapidly, possessed considerable strength and durability, neither warped or cracked and was scarcely combustible." In Europe, it was being planted in

plantations for timber and turpentine harvesting (Sargent 1898, 12: 8-10). While Marshall's friend, Dr. Fothergill, had reported it "often productive of mischief," its products were commonly used by physicians, including injections of the "Venice turpentine" in treating rheumatism and paralysis (Woodville 1792, p. 578).

Darlington (Belden 1965, p. 111) reported Larix in 1849 of substantial size "still growing in Marshall's garden." He could have been referring to one or more plants, or one or more species. Of the two possible species, Larix decidua Mill. is documented.

Meehan (1853, p. 143) declared that, "In ornamental gardening, few trees come into service oftener than the [European] larch." He noted "several fine specimens both at Bartram and in Marshall's."

Sargent (1893) on a return visit observed "European Larch" in the garden that "seems to date from the time of Marshall." Baxter (1925) later reported, "a huge European Larch (Larix europaea) with a perfect trunk of mottled allegator bark is 9 ft. 4 in. and 6 ft. 7 in. in girth."

Belden (1958, p. 134) reported the "Europaeen larch (Larix decidua) was blown down in 1954 by Hurricane Hazel.

Lavatera thuringiaca L.

Great-flowered Lavatera

Malvaceae

Great-flowered Lavatera is a shrubby perennial herb of central and south eastern Europe growing to four feet or more tall and bearing large purplish-pink flowers in summer. Mawe (1778) recommended this lavatera as a,

Proper ornament for any part of the pleasure ground [and] also good furniture for large borders, and shrubbery compartments...a fresh supply for succession may always be easily raised from seed in the common ground.

Darlington (1842) cataloged "Lavatera thuringiaca; Hort Marshall; Wm. Darlington."

Ledum groenlandicum Oeder.

Labrador-tea

Ericaceae

Labrador-tea is an upright evergreen shrub with small white flowers. This bog-loving shrub is widely distributed in the northern regions of America. Marshall (1785, p. 75) noted its fine bloom and described "Ledum thymifolium [Lam.?.; ... as growing] naturally in the Jerseys, in low moist places." His narrative description matches Ledum groenlandicum, under which all of the North American Ledums are grouped. Hamilton (Darlington 1849, p.

578) requested a plant of "Ledum palustre" [syn.] seen in the garden in 1795.

Liquidambar styraciflua L.

Sweet Gum

Hamamelidaceae

Sweet Gum is well documented in the garden. It is a tall deciduous tree native to North America with remarkable fall color and conspicuous, woody, spiny-globose fruit capsules. It thrives in the rich bottom-land soils of the southern forests. It is extensively cultivated as a shade tree for its ornamental qualities.

Marshall made no comments on its value, other than describing its pyramidal shape. However, a dozen surviving orders requesting Sweet Gum from Marshall (Harshberger 1929) attest to its popularity with his contemporaries.

Mawe (1778) noted that

the seed arrives from America in spring, when it should be sown as soon as possible. ...[Sweet Gum] is well adapted for planting detached as single objects in spacious grass opens to display their fine pyramidal growth; in which they appear very ornamental, and by emitting their odoriferous particles, will perfume the circumambient air in summer.

Michaux (1818, 2: p. 52) described its use "at Philadelphia" in building and in furniture. He notes that it is "preferred for small, oval or round picture frames, which are died black."

Castiglioni (1785, p. 401) believed that the Liquidambar should be propagated in his country, "not so much for [its] beauty and fragrance as for the use that can be made of them in medicine." He reported,

From this tree there oozes, both naturally and by means of incisions, a resin of pleasant odor, bitter taste, aromatic and gray-colored known in apothecaries' shops as Storacis liquidi resina. The Indians of North America use it for fevers and apply it to wounds, which they thereby heal in a short time. Its properties consist in being balsamic and warming, and it is said to be an excellent external remedy for scabies, which it cures by drying up the pustules.

Darlington (Belden 1965, p. 111) recalled Liquidambar styraciflua planted by Marshall, possibly the same "noteworthy...Sweet Gum (Liquidambar styraciflua)" recorded in the open ground of the garden by Harshberger (1920) and recorded by Sargent (1880) as a Marshall tree. Baxter (1925) measured a Sweet Gum in the garden which was then "16 ft. and 9 ft. 10 in. in circumference with a buttress 11 ft. in diameter." This is one of the largest recorded Sweet Gums in the tri-state region. Edward Wildman noted in his book documenting trees dating to William Penn (1933, p. 81) that

at the Marshall homestead are many fine trees well worth seeing, but no Penn Trees...in his garden [Marshall] planted many interesting trees, some of which still live. Note especially the mountain magnolia and sweetgum.

Listera sp.

Twayblade

Orchidaceae

Twayblade is a small slender terrestrial herb with fibrous roots, two opposite leaves and a terminal raceme of greenish or purplish flowers. There are five Eastern North American species, but all more or less rare within the collecting range of the Marshalls. L. australis, for example, found in Chester County in 1850 (Stone, p. 44), has two recorded counties in each Pennsylvania and New Jersey. L. smallii Weiig. (syn. Ophrys hyemalis) is the most likely species.

Joseph Banks wrote to Moses Marshall in 1791,

The enclosed leaf grows here, from one of your plants; but as it does not flower, we have no means of discovering what it is... can you spare a specimen of it with flower... or at least let me know what name it is known by (Darlington 1849, p.564).

Marshall replied to Banks that, "the leaf you enclosed is, I believe, a species of Ophrys, say hyemalis. I could not procure a flowering stem" (Darlington 1849, p. 565).

Muhlenberg thought that Ophrys was a badly described genera (Darlington 1849, p. 565). L. smallii may have been collected in Georgia by William Bartram and sent to Muhlenberg (Harper, p. 582). Writing to William Bartram

in 1792, Muhlenberg noted that

No. 33 is a plant we call Adam and Eve. I think it is not described; and therefore name it in my index [sent to APS in 1790] Ophrys hyemalis until better informed; because the leaves are green all winter (Darlington 1849, p. 472).

Lychnis chalcedonica L.

Maltese-cross, Scarlet Lychnis

Caryophyllaceae

Maltese-cross is an erect, stout perennial herb topped with vivid scarlet flowers. Clusius was familiar with varieties of this plant, and Parkinson, who called it a "glorious flower," is figured holding a double form in his Paradisus Terrestris (Curtis 1794, 6: p. 257). Marshall's copy of Gerard's Herbal described this Russian flower which was common in English gardens by 1596.

Darlington (1842) cataloged "Lychnis chalcedonica; Hort. Marshall, by W.D."

Magnolia spp.

Magnolias

Magnoliaceae

Magnolias are noted in almost every general account of Marshall's garden. Magnolias are very ornamental deciduous and evergreen trees of the Americas and Asia. All of the Eastern North American species and varieties are

beautiful in form and flower. The flower, Miller noted, (1754, p. 862) "greatly resembles the flower of the Waterlily."

Some European gardens of the eighteenth century were devoted to Magnolias, just as today we have gardens devoted to the rose. In 1814, Humphrey Repton included a Magnolia and American Garden in his plan for Ashridge, the Herdfordshire seat of the Earl of Bridgewater (Belden 1965, p. 105). Marshall received a description of Fothergill's own American garden at the time Marshall was preparing to move to Marshallton,

It is acknowledged by the ablest botanist we have, that there is not a richer bit of ground, in curious American plants, in Great Britain: and for many of the most curious, I am obliged to thy diligence and care. ...I have an Umbrella Tree, above twenty feet high, that flowers with me abundantly, every spring. The small Magnolia, likewise, flowers with me finely. I have a little wilderness [in which] I have planted Kalmias, Azaleas, all the Magnolias, and most other hardy American shrubs... The great Magnolia has not yet flowered with me, but grows exceedingly fast ...and will ere long, I doubt not, repay my care with its beauty and fragrance (Darlington 1849, p. 508).

Surviving orders for Marshall's Magnolias are second in number only to the Tulip Poplar (Harshberger 1929). One hundred Magnolia plants are included in one request from a London nursery (HSP, Marshall Corres. I:35) which included all three Pennsylvania species: M. accuminata;

M. tripetala; and M. virginiana. Magnolias, wrote Fothergill to Marshall in 1769, "are always acceptable." Thomas Bond informed Marshall in 1780 that the Royal Garden at Paris does not desire "botanical curiosities," but only such things as would "enrich France,-...Magnolias, &c" (Darlington 1849, p. 538).

Darlington (1811) included Magnolia among the plants to be collected at Marshall's. The Chester County Cabinet of Natural Science reported (Hazards) in 1828 that the, "Botanic Garden, at Marshallton,...still exhibits many interesting relics, [including] several species of Magnolia." Twenty years later Darlington (1849, p. 488) described the

Botanic Garden at Marshallton [where] Magnolias (especially Magnolia acuminata) all planted by the hands of the venerable founder, have now attained to a majestic altitude.

A letter written from the Marshallton homestead by Mary Marshall in 1830 tells of collection for Peirces' Arboretum. "Samuel Peirce was here last week, making his usual fall collection of seeds & plants; he gathered Horse-chestnuts, Magnolia Seeds & c" (West Chester).

Magnolia acuminata L.

Cucumber-tree

Magnoliaceae

Cucumber-tree takes its name from the resemblance of the immature fruit to a small cucumber. Also known as the Mountain Magnolia it follows the Appalachian range from Georgia to Canada, and is the best represented Magnolia in Pennsylvania. It is a large tree, to 100 feet, with whitish, and occasionally bluish, flowers. Cultivated since 1736, it is a handsome shade tree.

Cucumber-tree is one of the best recorded plants in Marshall's garden. One surviving tree may be part of the oldest botanic garden planting in America.

Moses Marshall, while on a collecting journey in Pennsylvania, wrote to his uncle in 1784 that he saw, "plenty of Cucumber Trees among the Pine Mountains" (Darlington 1849, p. 83). In the summer of 1790, Moses Marshall noted the Magnolia acuminata while collecting near Green River Cove. Humphry Marshall (1785, p. 83) described

Magnolia acuminata. long leaved Mountain Magnolia, or Cucumber Tree...the flowers come out early in spring and are composed of twelve large bluish colored petals.

Gutowski, in 1984, counted 187 annual rings in a trunk section taken twenty-eight feet from the base of a

Magnolia acuminata taken down after the August 1983 tornado caused severe damage to the trees in the Marshallton garden. The lower portion of the trunk [40 inches DBH] was hollow. Allowing for over one foot annual increase in height to reach twenty-eight feet, this plant dated to the establishment of the garden, possibly transplanted from Marshall's earlier garden along the Brandywine. The single remaining Cucumber-tree is even larger in diameter [46 inches DBH] and probably dates to the same period. Its distinctive habit has been noted by several observers over the years.

Hamilton requested (HSP Dreer 175-52), "a plant or two of your Magnolia acuminata" in a 1799 letter to Humphry Marshall. On June 5, 1829, Townsend (Herb.) collected "Magnolia acuminata from Marshall's Garden." Darlington (1849, p. 488) recorded M. acuminata among the surviving trees planted in the Garden by Marshall, and reiterates this in a letter written that year (Belden 1965).

Meehan (1853, p. 150) notes in his description of the Cucumber-tree that

the specimens in Marshall's garden of the most beautiful and regular conical shape. Having no leaves but at the extremities, we look up into this specimen as to an immense umbrella. This is about ninety years old [ca.1763], and is seven feet ten inches in circumference, and perhaps eighty feet high.

The West Chester Local reported, May 5, 1874, that the "Magnolia acuminata has expanded to a circumference of ten feet [at two feet from the base]."

Sargent (1880) during a visit to the garden with W. M. Canby measured a

Magnolia acuminata. A magnificent symmetrical specimen, with bark hardly to be distinguished from that of White Oak, 11 feet 9 inches [circumference at three and a half feet].

Sargent (1893, p. 461), viewed it in its prime a decade later and reported,

a Cucumber tree, Magnolia acuminata with a remarkably thick trunk and unusually stout branches, and altogether, one of the noblest specimens of this fine tree that can be seen any where. [It is one of] the most remarkable of those planted by Humphry Marshall now left standing in his arboretum.

Photographs as early as 1913 (CCHS) clearly indicate the distinctive branching habit of the Cucumber-tree which survived the tornado at the cost of most of its crown.

Harshberger (1920) recorded Cucumber-tree among the "notable trees of the planted ground." Baxter (1925), who made reference to Meehan's measurements in the garden, reported on the trees in "Marshall's humble arboretum" and noted,

A Cucumber Magnolia (M. acuminata), the largest we have ever seen--is 16 ft. and 10 ft. 10 in. in girth, its buttress being 8 ft. 6 in. in diameter. ...Its trunk is a perfect bole.

Wildman (1933) instructed the readers of Penn's Woods to note the Mountain magnolia "among the trees planted by Humphry Marshall and still living in his garden."

Belden (1958, p. 133) measured two Cucumber-trees in the grove, nine-feet-eight inches and eleven-feet-five inches in circumference, "large enough to have been planted in the eighteenth century." Belden also presents a photo of the larger tree which compares with the 1913 photograph, with the surviving tree (1984), and with a 1965 photograph (Belden 1965, p. 112).

Gutowski (1984) described the Cucumber trees, reported on their condition and made recommendations for tree health care.

Magnolia acuminata var. cordata Sarg.

Yellow Cucumber Tree "

Magnoliaceae

Yellow Cucumber-tree is a yellow-flowered variety of Cucumber-tree discovered by Michaux in Georgia shortly before Moses Marshall met Michaux in South Carolina and arranged for shipment of Magnolias and other plants from Michaux's Charleston garden (M. Marshall 1790). The national champion Yellow Cucumber tree grows in Peirces'

Park at Longwood Gardens, Kennett Square, Pennsylvania and is estimated to have been planted about 1801. Samuel Peirce regularly collected *Magnolia* seeds from the garden of his kinsman, Humphry Marshall (West Chester).

Darlington (Belden 1965, p. 111) wrote in 1849 that he believed "*Magnolia cordata*, Mx" was among the trees planted by Humphry Marshall.

While the foregoing chain of events only establishes the probability that Yellow Cucumber-tree was grown by Marshall, the story is too brief to omit and establishes an important link between the Marshalls and Michaux.

Magnolia fraseri Walt.

Fraser Magnolia, Umbrella M.

Magnoliaceae

Fraser Magnolia is a medium-sized deciduous tree of the southeastern mountains with broad leaves over one foot long. It has large whitish flowers and was introduced about 1787.

Marshall had not seen this species in 1785 but noted in his description of *M. tripetala* (p. 85) that "there are said to be two other species in the southern states." The first record in the garden is Moses Marshall's response to a London nursery request in 1793, in which he alludes to

his collecting trip in 1790, which included magnolias.

The Magnolia auriculata cannot be had, I believe, without going to the place of its native growth; which is (at least, what I have seen) in South Carolina, about two hundred miles from the seacoast. I have but one plant; and Bartram two or three, which he does not incline to part with. There are some, that M. Michaux, a French botanist, procured and sent from Charleston, a few years since (Darlington 1849, p. 581).

Magnolia grandiflora L.

Southern Magnolia, Bull Bay M.

Magnoliaceae

Southern Magnolia is one of America's most popular ornamental trees abroad. An evergreen with large, fragrant blooms, which reaches to 100 feet in the coastal plain forests of the southeast. It requires a protected site to achieve old age in Chester County, Pennsylvania. It was introduced to Europe by 1734. Marshall (1785, p. 84) described,

Magnolia grandiflora. Evergreen Laurel-leaved Tulip-Tree. ...This is allowed to be one of the most beautiful ever-green trees yet know, but it is impatient of cold.

Moses Marshall answered a London nursery in 1793 that, "of the Magnolia grandiflora, I have two fine plants, too large to send abroad" (Darlington 1849, p. 581).

Magnolia tripetala L.

Umbrella Magnolia

Magnoliaceae

Umbrella Magnolia is a very large-leaved deciduous tree with widespreading branches and large flowers. Marshall (1785, p. 85) noted that the leaves are, "placed at the ends of the branches in a circular manner, somewhat resembling an umbrella; from whence it obtained its name." It is a forest tree of small stature, ranging in rich woods from Pennsylvania to Florida and Arkansas. Introduced in 1752, its ease of propagation, self-sowing habit, and precocious flowering made it one of the most commonly grown magnolias by the mid-nineteenth century.

Darlington (1842) cataloged "Magnolia umbrella Lam., Hort. Marshall; William Darlington." In 1849, Darlington listed Umbrella Magnolia among the surviving trees planted by Humphry Marshall (Belden 1965, p. 111).

Medicago lupulina L.

Black Medic

Leguminosae

Black Medic is a naturalized annual plant of Eurasia, common as a weed from Nova Scotia to South America. It is a yellow-flowered fodder plant related to

Alfalfa. Barton (1818) did not list it in his Flora of Philadelphia, although Pursh (1814, p. 490) noted it in gravelly soil and road sides from Canada to Carolina, and M'Mahon included Medicago polymorpha [syn.] in varieties of Snail Medic and Hedgehog Medic among his offerings.

Mawe (1778) reported that the annual species of Medicago are grown in the "Pleasure Garden [and are] known by the names of Snails, and Hedge-hogs, &c. from the different odd shapes of their seed-pods."

Darlington collected, "Medicago lupulina L., from Marshall's garden, July 1, 1827" (Herbarium). Darlington also commented in Flora Cestrica (1837, p. 405) that M. lupulina

is an introduced plant; and not generally naturalized in this County. I am not certain that I have observed it, except in the vicinity of the late Humphry Marshall's Botanic Garden.

Napaea dioica L.

Glade Mallow

Malvaceae

Glade Mallow is a coarse, erect perennial herb with large divided leaves and small white flowers born in large panicles in summer. The only species is American, occurring in moist alluvial woodlands from Ohio west to Minnesota. It reaches eight feet in height and is

dioecious. A poetic rendering of the species name is "nymph of the glade."

In 1796 Hamilton requested a plant or seed of the "Napaea scabra dioica [seen in the garden] a year ago" (Darlington 1849, p. 578).

Ocimum basilicum L.

Common Basil

Labiatae

Common Basil is a fragrant, tender annual herb of the Old World Tropics cultivated in England since the late sixteenth century. Darlington (1839, p. 338) observed, "this fragrant little plant is often cultivated for culinary purposes." Mawe (1778) described several varieties with

piercing aromatic scent, some like cloves, and others like citron, and some like fennel; they are good for culinary uses [and] for medical purposes; and the plants are employed for embellishing the pleasure garden, [and] some in pots for adorning courtyards, and to place in room-windows for their sweet odor.

Darlington collected, "Ocimum basilicum, in Marshall's Garden, 1828" (Herbarium).

Ornithogalum umbellatum L.

Star-of-Bethlehem

Liliaceae

Star-of-Bethlehem is a tufted, perennial, bulbous

lily introduced from Europe and North Africa, it was common in sixteenth-century European gardens. While not recorded in Marshall's garden until 1920 (Harshberger), Barton (1818, p. 164) described it as naturalized in meadows and, "exceedingly troublesome to the farmers." Darlington reported (1839) frequent occurrences in Chester County, where, "this foreigner has escaped from the gardens, and has become a grievous nuisance on many farms."

Ostrya virginiana K. Koch.

Hop-hornbeam

Betulaceae

Hop-hornbeam is a small tree of moist woods, found in Chester County along streams (Stone 1945, p. 480). Marshall (1785, p. 25) knew the tree and described it as "Carpinus Ostrya, the Hop Hornbeam." Its strong, dense wood has long recommended it to mechanics and carpenters, sometimes under the common names of Ironwood and Leverwood.

The Hop-hornbeam recorded near the southeast corner of Marshall's house in 1984 measured 14 inches DBH. As a single trunk tree, this is among the largest recorded in southeastern Pennsylvania (Swartly 1969). This same tree appears in the 1884 photograph of the house [see Figures 4 and 5] at about the same height it grows today. Given that this tree is hollow, growing in severe competition on a

dry, upland site, a slow growth rate can be expected. An estimated age of 150 years or more is not unreasonable for this plant. While it may not have been planted by Marshall, its presence in the grove area can be explained by introduction of this species into the site during Marshall's tenure. It is a notable tree despite its small stature.

Panax quinquefolius L.

Araliaceae

American Ginseng

American Ginseng is an herbaceous perennial of cool eastern North America woodlands. Its thick spindle-shaped roots, exported to China, reputedly yield medicinal properties. Barton (1818) reported in his Medical Botany that it was a rare plant about Philadelphia but found above the Wissahickon and above the falls of the Schuylkill. Barton was reserved in recommending its use but declared it to be, "a gentle and innocent stimulant." Darlington (1839) reported it rare in Chester County but occurring near the Forks of the Brandywine, and observed

The root of this plant is slightly stimulant, and not unpleasantly aromatic. Its celebrity, as an article of commerce with the Chinese, has been great; and its real value, as a medicament, has been extravagantly over-rated by the good people of the celestial empire.

Joseph Banks wrote to Marshall in 1786 requesting, "one or two hundred weight of fresh [Ginseng] roots" to be used in experiments upon curing the root (Darlington 1849, p.559). Moses Marshall collected about one hundred weight during a journey two hundred miles westward. Various hardships were described by Marshall in the letter (Darlington 1849, p. 560) accompanying the shipment to Banks. Marshall considered "an English crown a pound" reasonable compensation. He also noted that

the Ginseng is either dug up for sale, or rooted up by the hogs so much, that it begins to grow scarce in the inhabited parts...and seems likely to be entirely demolished, amongst the inhabitants in a few years.

Humphry Marshall himself grew Ginseng and noted in his letter to Banks, "I have experienced it will not bear our summer heat, without being shaded, especially in the middle of the day."

Papaver omniferum L.

Opium Poppy

Papaveraceae

Opium Poppy is an erect annual herb reaching four feet in height and bearing white, red, or purple flowers. The milky sap gathered from the unripe fruit of these Eurasian plants is used to manufacture medicinal opium.

Dr. Thomas Bond, friend of Jussieu and the first lecturer at Pennsylvania Hospital, wrote to Humphry Marshall in 1781, "The Opium you sent, is pure and of good quality; I hope you will take care of the seed" (Darlington 1849, p. 540).

Persea borbonia Spreng.

Redbay

Lauraceae

Redbay is an evergreen, aromatic tree or large shrub from the swamps and low woods and is found from Delaware to Florida and Mississippi. The fruit is a small dark-blue drupe born on a red peduncle. Marshall (1785, p. 73) described

Laurus Borbonia. [syn.] Red-stalked Carolinian Bay-Tree. The wood is of a very fine grain, proper for cabinet making and other ornamental furniture. It also dies a beautiful black color.

Hamilton wrote to Marshall requesting a plant of Marshall's "Laurus Borbonia" seen in the garden (Darlington 1849, p. 578).

Philadelphus inodorus L.

Mock-Orange

Saxifragaceae

Mock-Orange, which occurs on moist stream banks and

hillsides of the mountains from eastern Pennsylvania to Tennessee and Georgia is a ten foot tall shrub bearing white, scentless flowers in late spring along its arching branches. The Botanical Magazine (1812, No. 1478) indicates this was introduced from Carolina into England before 1738. Marshall may have obtained Mock-Orange after 1785 when he described in Arbustrum (p.99), "Philadelphus inodorus. Carolinian Scentless Syringa. [which] is said to grow naturally in Carolina."

Darlington (1811) listed it among the plants he intended to collect from Marshall's garden, and in 1849 (Belden 1965, p. 111) included "Philadelphus grandiflorus Wild." in a list of plants planted by Marshall which still survived in the garden.

Phlox paniculata L.

Perennial Phlox

Polemoniaceae

Perennial Phlox is the common summer blooming garden phlox, a clump-forming perennial native to rich soils from New York to Georgia and west to Illinois and escaped from gardens. Darlington collected "Phlox undulata ? [Mx.] from Marshall's garden, August, 1828." A note added later changed the name to P. paniculata. Neither Darlington (1837) nor Stone (1945) included Perennial Phlox in the

Chester County flora.

Picea Dietr.

Spruce

Pinaceae

Abies, under which spruces were grouped by the observers cited here, were recorded in Marshall's garden and are associated with him, but no species is identified. Three species are suggested here as likely: Picea glauca (Moench) Voss. White Spruce; P. mariana (Mill.) B.S.P., Black S.; and P. abies, Norway S.

There are three spruce native in Eastern North America: (1) Picea glauca Voss, White Spruce, cultivated in Europe by 1700; (2) P. mariana B.S.P., Black S., promoted by Joslyn in 1672 in his History of New England; and (3) P. rubens Sarg., Red S.

These three spruces, with Picea abies Karst., were the only four members of the genus Picea known or available to the Marshalls. All other spruce species have been introduced since that time.

The Spruces, Picea, were first described as a genus in 1824. During the 18th and most of the 19th centuries Abies (Tournefort, 1719) included firs [Abies Mill.], hemlocks [Tsuga Carriere, Traite General des Conifers,

1855], and spruces [Picea Dietrich, Flora der Gegundum Berlin, 1824] which are now viewed as separate genera. The Victorian botanists who recorded "Abies" in Marshall's garden grouped spruce, firs and hemlock in "Abies."

Linnaeus (1753, p. 1002) described one spruce in 1753, including it among the ten species of pine described. This was Pinus Abies [Picea abies (L.) Karst.--Norway Spruce]. "The Norway Spruce was long cultivated for its many virtues and" it appeared in Materia Medica and related books such as John Parkinson's Paradisi in Sole, Paradisus Terrestris, London, 1629.

The Chester County Cabinet of Science (Hazards 1828) observed that Marshall's Botanic Garden "still exhibits many interesting relics...such as Pine and Fir trees."

Darlington recalled "several species of Pines, Abies, and Larix" still growing in Marshall's garden (Belden 1965, p. 111).

Darlington (1853) grouped together under "Abies" the Hemlocks [Tsuga], spruces [Picea], and firs [Abies]. He describes two true firs: A. balsamea, Marshall [A. balsamea Mill.]; and A. picea, Lindley [A. alba Mill.]. He also describes A. canadensis Mx. [Tsuga canadensis Carr.] and three spruces: A. excelsa D.C. [Picea abies, syn.

Pinus abies L., Pinus picea DuRoi]; Abies alba Mx. [P. glauca]; and A. nigra Poir. [P. mariana (Mill) B.S.P.]. All of the spruces were observed as cultivated in Chester County. P. abies & P. marina were observed frequently in cultivation.

Hoopes (1868, p. 416) observed few "specimens of the Coniferae" remain in the garden, only "a few of the commoner species of Pines and Firs are all now that remain."

Hoopes grouped the "Firs" [Abies, Picea, and Tsuga] as sub-genera of Abies Tourn., but followed Linnaeus in reversing the common names. Grouped as Abies were subsections: 1. Abies, Spruce [Picea]; 2. Tsuga, Hemlock Spruce; 3. Picea, Fir [Abies].

If the pine and fir trees referred to were relics, that is, surviving elements of the garden, then which of the more common species of pines and firs, especially Picea, known to these Victorian era botanists were available to the Marshalls and a hardy enough to survive?

Humphry Marshall (1785, p. 103) described "Pinus-Abies canadensis, Newfoundland Spruce," of which Marshall remarked "there are said to be three varieties of this, distinguished by the color of their cones ... of this

the famous spruce beer is brewed." Picea mariana (Mill.) B.S.P, is the "Newfoundland Spruce." The other two "varieties" are most likely: P. glauca (Moench) Voss., and P. rubens Sarg.

Picea mariana was described by Marshall and recognized as an ornamental and economic plant. Bartram offered "Pinus Abies Picea foliis brevioribus" in his 1783 catalogue. M'Mahon (1806, p. 597) recommended and offered Pinus nigra, Black Spruce Fir, in 1806. Michaux (1817, 1:pp. 174-81) devoted over six pages to the virtues of Abies Nigra. Pursh (1814, p. 640) described Pinus nigra, which "besides its great mechanical use, is the tree of which that wholesome beverage called Spruce Beer is made. Barton (1818, p. 183) recorded Pinus nigra "On the Wissahickon; not common" and extolled the popularity and value of "extract of Spruce." Darlington (1853, p. 291) observed that Abies nigra Poir, Black Spruce, was found in "yards, and lawns of Chester County and was becoming frequent as an ornamental tree." Thomas Meehan (1853, p. 54) recorded a thirty-four feet tall Abies nigra Ait. in Bartram's Garden, and noted it was not a fine specimen. Hoopes (1868, p. 170) remarked that the Spruce-beer made from Abies nigra Poir. was a "popular drink" but "as an ornamental tree we cannot recommend it...the timber is valuable for many purposes." Its adaptability to

cultivation is limited. Picea mariana was an important plant, available to and offered by Marshall. Its unsuitability as an ornamental specimen does not suggest that in the shelter of a grove it would not survive to be seen as an old, however unattractive, plant.

Picea glauca (Moench) Voss, White Spruce, was introduced into England by Bishop Compton before 1700 and is perhaps better suited to cultivation at the Marshallton site than Black Spruce. White Spruce is the Abies canadensis of Miller (1768), the Pinus Alba of M'Mahon (1806) and Pursh (1814), and the Abies Alba of Michaux (1817-9) who noted it was common in France where it was esteemed a valuable ornament for parks and gardens. Darlington recorded A. alba Mx. as cultivated in Chester County as an ornamental (1853, p.292). Hoopes commented (1868, p. 159) that this species "a great favorite with arboriculturists ... is one of our most desirable species." Picea glauca was available and well known in Marshall's time, and it has the capacity to survive into the record dates. It had more ornamental than economic interest and was a common fir in area gardens at the time of record.

Picea rubens Sarg, Red Spruce, Abies rubra of Poiret (1804) and Pursh (1814), includes in its range the

Allegheny Mountains of Pennsylvania, where the Marshalls collected extensively. It was introduced to Britain by 1755. Michaux (1817) and Hoopes (1868) considered it a variety of the Black Spruce with similar mechanical and ornamental use. There is little other than availability to suggest that it was distinguished in Marshall's garden.

Picea abies (L.) Karst, Norway Fir, Abies picea of Miller, has long been cultivated, and was introduced to America before 1700. M'Mahon offered it in Philadelphia (1806) as Pinus abies, Norway Spruce. Michaux included it in his Sylva of North America (1817-19) because of its usefulness. By 1850 Andrew Jackson Downing (1859, P. 256) considered it the best of the spruces and had noted "superb specimens of this species in various gardens of the middle states, 80 or 100 feet high." Meehan recorded a plant at Bartram's reaching one hundred and twenty feet high in 1853. Darlington (1853, P. 292) observed it becoming frequent in Chester County yards and grounds in that same year. Hoopes recorded seventeen varieties available in 1868 and noted

This tree has become so common that, to describe it, one feels as if introducing an old and intimate friend... the term evergreen has become synonymous with Norway Spruce (1868, p. 160).

Norway spruce was well known and available to Marshall. The importance of this species would certainly

have recommended it to him. It was capable of surviving to the observation dates and would have been considered a "commoner sort" of fir.

Pinus spp. L.

Pines

Pinaceae

"Pines" are observed in Marshall's garden and associated with him, but no species is identified until 1920 when Pinus strobus was noted. Several species of importance in Marshall's era are suggested here as highly likely: (1) Pinus strobus L., White Pine, introduced to Europe before 1600 and a very important economic plant; (2) P. taeda L., Lobloly P., an important economic plant grown in Europe by 1713; (3) P. rigida Mill., Pitch P., valued economic plant, cultivated about 1750; (4) P. virginiana Mill., Scrub P., Jersey P. cultivated by Miller in 1739 at the Chelsea Physic Garden; and (5) P. echinata Mill., Yellow P., an important economic plant, cultivated in England by 1700.

These five species were among six native pines described by Marshall. A sixth, P. palustris Mill., is not likely to survive at this site although Belden (1958, p. 56) noted that Humphry Marshall may have received seeds from North Carolina. Three (White P., Pitch P., and Scrub)

were native to Chester County but uncommon in the wild. The only species named in the garden was the White Pine observed in 1920. The five suggested are among the commoner species known into the mid-nineteenth century. Each of these are requested at least four times in surviving orders for Marshall's plants (Harshberger 1929).

P. sylvestris L., Scotch P., an important and common European species, was available in Philadelphia in Moses Marshall's time and might be considered here. M'Mahon (1806, p. 597) offered four varieties of Scotch P. for sale in 1806. Another European pine offered by M'Mahon, Pinus cembra L., Siberian Stone Pine, was growing at the Woodlands in 1785. This may be the earliest date of introduction into America. Hamilton noted, "another plant cannot be obtained in England."

The Chester County Cabinet of Natural Sciences reported "Pine trees [surviving as] interesting relics" in Marshall's garden (Hazard's 1828, p. 302). Darlington described in 1849 (p. 416) that Pines planted by Humphry Marshall "have now attained to a majestic altitude," and mentioned in a letter (Belden 1965, p. 111) that, "several species of Pinus" planted by Marshall were still growing in Marshall's garden in 1849. In 1868, Josiah Hoopes included Marshall's botanical garden in his brief list of pinetums

worth noting in America, however

but a few of the original trees remain. These grounds at the present time contain so few specimens of the Coniferae... A few of the commoner species of Pines and Firs are all that now remain; and in a few short years these too will, in all probability, be cut for fuel, as this appears to be all the value our country friends see in them (p. 416).

In 1985 only two Pinus strobus, sixteen and eighteen inches DBH, represented the genus. Both were part of a landscape introduced by Weir and both were damaged by the 1983 tornado.

Podophyllum peltatum L.

May-apple

Berberidaceae

May-apple is a rhizomatous perennial herb common in moist, open woodlands of Chester County and Eastern North America, often growing in large colonies. Cultivated in England by 1664, the fruit is edible, the herbage and seeds are toxic. The drug podophyllum is obtained from the rhizomes. Darlington (1854, p. 34) listed it as a cathartic and "a tolerable substitute for Jalap." Barton (1818, II: p. 9), who also lists the common names of "Mandrake" and "Wild Lemon," considered it, "A very important medicinal plant."

Harshberger (1920) noted that "Mayapple

(Podophyllum peltatum) lent an interest to a stroll about the place." There is no intent here to imply that Marshall grew May-apple, although it would have interested him. It was abundant locally. May-apple is included in this catalog because it and the False-mermaid weed also observed by Harshberger were not found in the grove during several visits by this author. Their apparent disappearance is evidence of the changing environment within the grove.

Polygala paucifolia Willd.

Fringed Milkwort, Flowering Wintergreen

Polygalaceae

Fringed Polygala is a small, rhizomatous evergreen perennial herb with attractive white or more commonly rose-purple flowers of which the keel petal is fringed. It occurs in rich moist woods from Quebec to Wisconsin and in the Mountains to Georgia. It is rare in Chester County (Stone) where it occurs in Rocky woods. Darlington did not include it in his floras.

Moses Marshall, "writing by direction of by uncle," in 1788, described and sent to Dr. Lettsom "a small Evergreen from the mountains" hoping to call it Lettsomia in his honor. A sketch accompanied the description of what is Polygala paucifolia (Darlington 1849, p. 547). Lettsom replied that the proposed species, "is a species of

Polygala, and is, I believe, a new one. Perhaps thou may send me some plants, at fall of the leaf." Lettsom authorized the payment of ten pounds sterling (Darlington 1849, p. 549). That autumn, Humphry Marshall acknowledged his error to Lettsom and noted, "It has gone but to thyself, except lately, by the name of Polygala, to Sir Joseph Banks" (Darlington 1849, p. 549). Banks apparently received the plants and passed them on to William Aiton who responded with a request for "Polygala, all the species" (Darlington 1849, p. 562). In 1796, Hamilton requested seed or plant of "Polygala biflora" [syn.?.; other species flowers are more-or-less crowded racemes] seen on a previous visit to Marshall's garden.

Polygala Senega L.

Seneca Snakeroot, Officinal Milk-wort

Polygalaceae

Seneca Snakeroot sends several flowering stalks from its thick perennial root stalk. It is found in dry or moist woods and prairies over much of eastern North America. Darlington (1837, p. 403) cited its well-known medical value and considered it a frequently occurring plant in the hilly woodlands and along the Brandywine, while Stone (1945) described it as rare in the rocky woods

of Chester County. Snakeroot may have been subjected to commercial overcollection in the way that Ginseng was.

Barton (1818, 2: p. 114) claimed in his Medical Botany, "This humble plant is deservedly esteemed one of the first medicines in point of importance, native to our country." First introduced to European medicine from the "Senagaros" in 1735, its various medicinal uses included treatment of pleurisy, typhoid pneumonia and hydrophobia. Miller (1754, p. 1108) reported that it was used in many disorders and as an infallible remedy for the "bite of the Rattlesnake." He predicted, "when its virtues are fully known, [the root] may become one of the most useful medicines yet discovered." Castiglioni (1790, p. 425) noted that on the basis of such reports Linnaeus recommended, "Senega ought to be kept in drug shops as one of the most necessary remedies in the same way that one finds there opium, mercury and quinine." Although its virtues were recognized to be overrated by the time of Castiglioni's visit, it was still considered a valuable medicinal plant.

Hamilton requested a plant or seed of "Polygala Senega" which he has seen in Marshall's garden in 1795 (Darlington 1849, p. 598).

Populus alba L.

White Poplar

Salicaceae

White Poplar is a rapidly growing large deciduous tree introduced from Europe and Asia as an ornamental. The leaves are whitish on the lower leaf surface. Miller (1754, p. 1112) highly recommended it for planting in plantations and boggy ground but found it "unfit to be planted near a house or garden." The wood, he continued, is unequalled in "whiteness [for] trays, bowls, and such turnery-ware, and is proper for wainscoting of rooms, shoe soles and heels, light carts, poles and fuel."

Harshberger (1920) listed "White Poplar Populus alba" among the "noteworthy trees" in the planted ground at Marshall's. In 1985, P. alba was collected in the thicket above the pond north of the house. This species is widely naturalized and grows so rapidly that it would not take long to become a notable-sized tree as observed by Harshberger. It may have been a descendant of trees planted by the Marshalls, as its seeds establish in disturbed ground and can persist from spreading rootstalks. Harshberger's notice, however, remains unconfirmed by previous or later observations. Darlington observed in his 1854 flora that White Poplar was becoming

somewhat frequent in the county as a shade tree.

Populus deltoides Marsh.

Eastern Cottonwood

Salicaceae

Eastern Cottonwood is a tall, broadspreading deciduous tree with leaves somewhat triangular, or deltoid, in shape. Eastern Cottonwood frequents low, rich moist soils. Widespread in eastern North America, and cultivated since 1750, it is not native to Chester County. Marshall (1785, p. 106) described

Populus deltoides, White Poplar or Cotton Tree of Carolina. (Bartram's Catalogue)...the wood is white, firm, and elastic, principally used for fence rails.

Meehan (1853, p. 182) described

Populus angulata, Aiton; [Syn.] Cotton-wood Poplar; [observing that] the finest specimen I have seen, probably eight feet in circumference, stands by the roadside near old Humphry Marshall's garden.

Humphry Marshall's property originally extended across Strasburg Road [see Figure 1], and was not divided until the Orphan Court's settlement of Moses Marshall's estate. Humphry Marshall also cared for the adjacent meeting house grounds and cemetery - noted for its trees. It is reasonable to conclude that this remarkable specimen, growing outside its native range like the roadside Kentucky

Coffee-tree discussed earlier, was planted by Marshall.

Potentilla erecta L.

Tormentil

. Rosaceae

Tormentil is a slender, leafy ascending perennial herb with yellow flowers. The rhizome is said to have medicinal properties. Tormentil is a native of Europe and Asia. Marshall's friend and neighbor, John Jackson's herbarium contains, undated, a collection of, "Potentilla tormentilla" with notes by E. Durand, "Tormentille repens; Tormentilla erecta" (Herbarium). In 1796, Hamilton requested seed of the, "Tormentil from Italy" seen at Marshall's garden in 1795 (Darlington 1849, p. 578).

The Abbe Fontana is a probable source for the Tormentil in Marshall's garden. According to a letter from George Logan to Marshall, Marshall sent various seeds and live plants to the Abbe as early as 1783, possibly by Baron de Belin (HSP, Dreer Collection, 174:10). Abbe Fontana wrote to Marshall (Darlington 1849, p. 552) in January, 1784 thanking him for the live plants he had received and offered, "to get a few seeds" from the garden at the University [Botanic Garden at Pisa]. A box accompanied a letter from Abbe Fontana, carried by the same Captain Williams who delivered live plants from Humphry Marshall to

the Abbe, arriving in Philadelphia in June, 1784
(Darlington 1849, p. 535).

Prunus americana Marsh.

Wild Plum, American Plum

Rosaceae

Wild Plum is a coarse, small thicket-forming tree with white flowers and red or yellow edible fruit. It occurs from New England to Manitoba and south to New Mexico and Florida. Marshall (1785, p. 111) described, "Prunus americana, Large Yellow Sweet Plum" and noted the variation in fruit qualities. Many cultivars have been selected.

Meehan (1853, p. 186) observed, "Prunus Americana...American Red Plum. Near the door of Marshall's old house is a specimen, probably of his own planting."

Prunus serotina Ehrh.

Black Cherry, Wild Cherry

Rosaceae

Black Cherry is a large deciduous forest tree of dry woods, now widely distributed in waste places, hedgerows and roadsides from Nova Scotia and North Dakota to Florida and Guatemala. The white blossoms and blackish fruit are born on long slender racemes, "pretty thick set on the

branches," said Marshall. Darlington (1839, p. 290) considered [Cerasus virginiana, Mx] frequent in Chester County, and noted that the "bark is a rather unpalatable, but valuable tonic." Castiglioni (1790, p. 430) noted that the bitter tasting fruit is used to flavor brandy and rum and that infusions of the bark are useful in treating jaundice. The wood, wrote Castiglioni, is used for "the most magnificent furniture."

Marshall (1785, p. 112) described

Prunus-Cerasus virginiana.
 Virginian-Bird-Cherry-Tree. ...The Timber is of a reddish streaked color, capable of receiving a fine polish; and is frequently sawed into boards and used by joiner, cabinet makers, & c. for many purposes.

Darlington (Herbarium) made an undated collection of "Cerasus serotina DC, Prunus serotina Willd.; Hort. Marshall." This collection may have been from the tree described in the Philadelphia Times (1894, June 3) and confirmed by Harshberger (1899, p. 84) on his 1894 visit

until a short time ago, when it was blown down in a severe storm, probably the largest cherry tree in this part of Pennsylvania was growing in the garden. It was a common black cherry, but had attained an enormous height. 'I got nearly \$70 worth of good wood out of that tree,' said Mr. Lilley, 'and there would have been nearly twice that much if the tree hadn't been so rotten in parts on account of its great age.'

Prunus virginiana L.

Choke-cherry

Rosaceae

Choke-cherry is a large shrub or small deciduous tree bearing deep red-colored fruit which becomes red-purple when ripe. It is locally abundant in thickets and woodland borders along streams of much of Eastern North America but is rare in Chester County. Its common name derives from the fruit quality, which compared to P. serotina, said Marshall, "is not of so bitter a taste, but greatly corrugating the mouth and throat so as to obtain the name of Choak-Cherry" (1785, p. 113).

Darlington (Herbarium) noted on a sheet with, "Cerasus virginiana; cult. J. Hoopes, July 8. 1848. J.H. says he obtained this from Marshall's garden." Hoopes may have obtained this for commercial use in his nursery, perhaps to propagate for the ornamental thicket popular in some Victorian landscapes.

Ptelea trifoliata L.

Rutaceae

Common Hop-tree

Common Hop-tree is a North American genera of deciduous shrubs or small trees found in alluvial thickets,

gravels, and rocky slopes. Cultivated in England from seeds sent by Catsby in 1724, it is useful as an ornamental in shady moist sites. The blossoms are said to have a charming fragrance. Washington planted Common Hop-tree at Mount Vernon. An extract of the bark was used as a tonic and the leaves used as vermifuge, according to Castiglioni (1790, p. 432), and as a substitute for hops in beer.

Marshall (1785, p. 115) described, "Ptelea trifoliata; Carolinian Shrub-trefoil." Darlington (Herbarium) collected, "Ptelea trifoliata" from Marshalls garden July 1828, and listed (Belden 1965, p. 111) this species among the plants which Marshall grew in his garden.

Pyrularia pubera Mx.

Oil-nut, Buffalo-nut

Santalaceae

Oil-nut is a scraggely shrub of mesic woods, chiefly in the mountains of the piedmont. The pear-shaped drupe yields an acrid, toxic oil. The plant is parasitic on the roots of shrubs and trees in the oak hickory forests where it is found. Oil-nut was first cultivated in 1897, according to Rehder, and rarely since then.

The Oil-nut was described in detail by Moses Marshall in 1790, who referred to it as "my Pentandria

monogyna" and considered it a new discovery (CCHS, Vault Diaries, Moses Marshall, 1790). Moses Marshall wrote to a London nursery in 1793

With respect to new things, when I consider that a Kalm and a Clayton have been here, I have little hopes of making discoveries; yet I find there are many little plants that have escaped their view. In a circuitious route of about seven hundred miles, which I took this summer, I have observed several small herbaceous, and two shrubby plants, which I believe are new. One of the shrubs is, perhaps, a Spireae: the other, the Oily Nut [Pyralia, Mx., Hamiltonia oleifera, Muhl.], of which I formerly sent a specimen to Sir Joseph Banks [November 10, 1791?]. ... As I have discovered this to grow at the distance of only two hundred and fifty mile, if those I now have should not shoot, in the spring, I intend setting out for a new supply (Darlington 1849, p. 581).

Dr. James Mease wrote to Moses Marshall, February 23, 1803

Dr. Barton has just published his Elements of Botany. It is an excellent work, and will do him credit. He says the oil-nut 'is a new Pentandrous genus of plants, allied to Nerium. It is a native of Pennsylvania, Virginia, and other parts of the U. States.' You shall not be deprived of the merit of the discovery of this genus: that is to say, provided you are desirous of having the merit attached to your name. ... I must notice it, in my work. Say at what time you discovered it, and where. If I were not so engaged every day in correcting a proof sheet, I would go to Pittsburgh, with my friend Rafinesque, and describe the plant, this summer (CCHS, Darlington Manuscript, 861).

Quercus spp.

Oaks

Fagaceae

Oaks are the largest American genus of native trees with 68 species and over 100 recognized interspecific hybrids (Little, p.221). Marshall (1785) described seventeen species and varieties with notes, on their uses, such as acorn species preferred by swine and the influence of the moon at harvest on timber durability. The largest Oak on the Marshall property in 1985 was a White Oak, Quercus alba L., 54.5 inches DBH located north of the Pond in the woods at a fence intersection. This Oak may be 250 years old. A most remarkable picture, undated, of White Oaks is to be found in the stereoptic collection of the CCHS showing the ancient grove which embowered the Bradford Friends Meeting in Marshallton. The last of these monarchs were destroyed in the same series of tornadoes which lately severely damaged the grove in Marshall's garden.

There are several specific and general descriptions of Oaks in Marshall's Botanic Garden. In 1828, (Hazard's) the Chester County Cabinet of Natural Science reported, "the willow leaved and English oaks" among those planted by Marshall. In 1849 Darlington reported the, "Oaks planted by Marshall have reached great height" (1849, p. 488).

Darlington also listed (Belden 1965, p. 111) that year, "Q. Phellos, Q. Imbricaria, Q. heterophylla, and perhaps some others" planted by Marshall and growing in 1849. In 1907 the Daily [West Chester] Local News (July 23) reported, "More than a dozen large oaks are in the group, nearly all of special interest because of their odd variety."

Quercus x heterophylla Mx.f.

(Q. rubra x Q. phellos)

Bartram's Oak

Fagaceae

Bartram's Oak is a large, round to oval crowned deciduous tree with variously lobed leaves and small acorns. Darlington suggested that Bartram had Q. heterophylla on his property and refers to a letter, 1750, from Collinson to Bartram, "Pray what is the reason I have no acorn from that particular species* of Oak that Doctor Mitchell found in thy meadow?" (Darlington 1849, p. 183).

Townsend (Herbarium) collected

Quercus heterophylla?; Bartram's Oak? collected from Marshall's Garden, 14 September, 1835. A fine thrifty looking tree which may have been raised from the acorn of Bartram's oak; but the history is lost.

Darlington listed, "Quercus heterophylla, Mx." planted by Marshall and growing in the garden in 1849.

(Belden 1965, p. 111). Meehan described Bartram's Oak in Marshall's garden, noting in 1853 (p. 198):

The tree from which Pursh drew up his description, was privately destroyed by some of Mr. Hamilton's gardeners (as I have been informed by Col. Carr.) because it interfered with a view of the Schuykill from the Woodlands. A seedling from this tree at Bartram is seventy feet high...the leaves are considerably narrower than those of another tree at Marshall's garden; making it appear, without examination, like a willow oak. Marshall's specimen, on the other hand, has its leaves much resembling those of a Q. imbricaria, Mx, which is growing beside it...

While Pursh and Michaux believed Bartram's plant to be the only one known in their time, Sargent (1893), in his time, described in Marshall's garden

one of the largest and most perfect specimens of Quercus heterophylla that are now known to exist; it was raised from an acorn brought by Marshall from the original tree of this species or hybrid discovered by John Bartram in the neighborhood of his gardens on the Schuykill.

Sargent (1880) measured the Bartram's Oak at Marshalls, "a very tall and spreading tree, girted 7 feet 1 inch." Baxter (1925) measured, "Quercus heterophylla or Bartram Oak, 14 ft. 8 in. in girth, 1 ft. above the ground and 10 ft. 2 in. 5 ft. above the ground." Wildman (1933, p. 81) noted, "a fine specimen of the Bartram oak" in the garden. When Belden (1958, p. 133) measured this tree it was 11 feet 7 inches in circumference. Swartly (1967, p. 17) reported it to be 12 feet 4 inches in circumference in

1967, then the largest in the Philadelphia area. And in 1968 (Clark, p. 40) as the state champion its reported measurements were: circumference, 11 feet 9 inches; height, 85 feet; spread 75 feet. The last recorded measurement (Rhoads, p. 12) reported: circumference, 13 feet 5 inches; height, 96 feet; spread 42 feet. The tree was removed in 1982.

In 1984 (Gutowski) two Bartam's Oaks were recorded in the garden along the driveway at the east side of the grove. They were in good condition, eleven inches DBH, but crowded and sparsely branched. Herbarium specimens taken from these plants were not distinguishable from the 1835 herbarium collection noted above.

Quercus imbricaria Mx.

Shingle Oak

Fagaceae

Shingle Oak is a medium-sized deciduous tree with broad, entire leave. The durable wood splits well enough to be used in making shingles and clapboard. It is found in upland and fertile bottomlands from Pennsylvania to Kentucky and Georgia.

Moses Marshall wrote to Humphry Marshall while on a collecting trip in 1784, "about Juniata, we found broad,

willow-leaved oak" (Darlington 1849, p. 553). Marshall (1785, p. 124) described, "Quercus Phellos latifolia. Broad Willowleaved Oak."

Hamilton, in 1796, requested, "two of your Oaks with ovate entire leaves," seen by him in the garden the prior year (Darlington 1849, p. 578). Townsend (Herbarium) collected specimens of, "Quercus imbricaria, Hort Marshall, 14 September, 1835." Darlington (Belden 1965, p. 111) listed Q. imbricaria among the Oaks still growing in 1849 which were planted by Marshall. Meehan observed Q. imbricaria growing next to the Bartarm's Oak in 1853.

Quercus phellos L.

Willow Oak

Fagaceae

Willow Oak is a rapid-growing large, deciduous tree of the coastal plain and Mississippi valley. The narrow linear leaves resemble those of a willow. Marshall (1785) noted the timber was of good quality in his description.

The Chester County Cabinet of Natural Science reported (1828) that "the willow-leaved oak" was among the Oaks surviving in the garden." Darlington listed "Quercus Phellos" among the trees planted by Marshall and surviving in 1849 (Belden 1965, p. 111).

Quercus robur L.

English Oak

Fagaceae

The English Oak is a large, spreading deciduous tree long cultivated in for its stately appearance and valuable timber. Its introduction date in America has not been determined, however Washington and Jefferson both grew English Oak and M'Mahon offered it in 1806.

In 1828 the Chester County Cabinet of Natural Science reported (Hazards) "English Oaks" planted by Marshall still growing in in garden. In 1907, the Daily Local News reported that

Many [trees] have been of need sacrificed because of their age, and one, a great English Oak, was split by lightning on Saturday night last, but there are enough [trees] still standing.

Rhamnus caroliniana Walt.

Carolina Buckthorn

Rhamnaceae

Carolina Buckthorn is a shrub or small tree of rich woods and sheltered slopes, occurring from Virginia south to Florida and from Ohio to Texas. Its greenish flowers are followed by somewhat fleshy black drupes. The fruit has been used medicinally as a cathartic.

Hamilton requested in 1796 a plant of, "Carolina Rhamnus" seen by him in the garden the prior year (Darlington 1849, p. 578).

Rhododendron flammeum Sarg.

Scarlet Azalea, Ōcone A.

Ericaceae

Scarlet Azalea [R. speciosum Sweet.]; [Azalea Nudiflora var. Coccinea Ait.], native to South Carolina and Georgia, was introduced to England by Peter Collinson about 1734. Marshall described three Azaleas and one Rhododendron in Arbustrum. Azaleas, especially the bright colored forms, were one of the most popular American plants in late eighteenth-century England. Their popularity was reflected in the number of requests for Azaleas from Marshall (Belden 1965, p. 117).

Marshall was advised in 1787 that one London nurseryman paid Twenty Pounds for a scarlet azalea and charged two and a half guineas for each of its descendants (HSP, Dreer Collection, Marshall Correspondance I: 36, 40). A similar story is also related in the Botanical Magazine's description of

Azalea Nudiflora var. Coccinea, Scarlet Azalea...the Azalea coccinea was little known here till the sale of Mr. Bewicks's [of Clampham in Surrey] plants;...one of them produced twenty guineas (1793, 5: p. 180).

Ten days from Augusta, Georgia, Moses Marshall crossed the summit of Bald Mountain, June 17, 1790,

the highest I ever crossed [finding] the orange and almost scarlet azalea [R. calendulaceum Torr. Flame Azalea] in bloom which was as forward three weeks ago in their places Northward [southwestern Pennsylvania and West Virginia] (CCHS Moses Marshall's Diary, 1790).

Earlier in 1790, Samuel Kramsch wrote to Marshall from Salem, North Carolina, "the scarlet blowing azalea, I shall hardly find sixty mile distant from the big mountains" (Darlington 1849, p. 575).

Hamilton requested "Azalea coccinea" which he had observed in Marshall's garden in 1795 (Darlington 1849, p. 578). In 1799 Hamilton reminded Marshall of his promise to, "spare a plant or two of Azalea coccinea" (Darlington 1849, p. 580). R. flammeum Sarg., syn. A. nudiflora var. coccinea Ait., occurred within the Marshall's collecting range. Marshall's description of "Azalea nudiflorum, Red-flowered Azalea" noted, "There is great variety in the colour of the flowers, from red to almost white" (1785, p. 15).

Rhododendron maximum L.

Rosebay Rhododendron

Ericaceae

Rosebay Rhododendron is the largest native

Rhododendron, sometimes reaching thirty feet, and forming dense evergreen groves along streams, in damp woods and uplands. Ten requests for R. maximum survive in the Marshall correspondence (Harshbergber, 1929). Moses Marshall passed through "groves" of Rhododendron during his 1790 journey and reported traveling among them frequently during his 1784 journey in Pennsylvania. Marshall (1785, p. 127) described, "Rhododendron maximum, Pennsylvanian Mountain Laurel...this is much and deservedly esteemed as a very beautiful, evergreen, shrub." Darlington (1837) in his flora observed, "This magnificent ornament of our mountain forests is rare in Chester County; having only been observed along the Schuylkill."

Darlington collected from Marshall's garden, "Rhododendron maximum, July 2, 1853" (Herbarium). Sargent described in 1893, "a Rhododendron maximum which has grown into a tree with a short thick stem." Harshberger (1899) confirmed Sargent's observation, and on July 23, 1907 the Daily Local News reported, "a bush or two of Rhododendron in full bloom add to the beauty of the place."

Robinia pseudoacacia L.

Black Locust

Leguminosae

Black Locust is usually a rugged-barked deciduous

tree up to one hundred feet tall with spiny branches. Long pendant clusters of sweet scented white blossoms, and durable timber made Black Locust one of the earliest introductions to Europe. Cultivated in France by 1601, and of easy propagation, it was a common ornamental by Marshall's time.

Botanists are unsure of the original range, probably south and central Appalachian Mountain regions and part of the Ozarks. Darlington observed (1839, p. 410) in his Flora Cestrica that

this tree, - though frequent here, and very abundant on the Mountains, - has never appeared to me like an indigenous plant in this County. The timber is very valuable...the tree is often planted about houses.

While there is only a single reported observation of a "noteworthy" Black Locust in Marshall's garden (Harshberger 1920), Marshall's own detailed description and his interest in agricultural applications of forest tree products makes it likely as part of Marshall's collection. Marshall described

Robinia Pseud-Acacia, White flowering Robinia, or Locust-Tree. ...This grows naturally in several of these states;...the timber is very durable and used for posts to set in the earth and for other purposes; therefore, the propagation of it might well be worthy of attention (1785, p. 133).

Robinia viscosa Vent.

Clammy Locust

Leguminosae

Clammy Locust is a small deciduous tree with rose colored blossoms and sticky glandular hairs on the twigs, petioles, and pods. It is native to dry woods and mountains from Pennsylvania to Alabama, and introduced by Michaux in 1791. F. Michaux noted, "it forms one of the most brilliant ornaments of the park and garden" (1818, 2: 132). He added that his father sent stock to "his friends residing [in Pennsylvania] where it succeeds perfectly well." Hamilton, a friend of Michaux's, requested from Marshall in 1799 the "Robinia viscosa" seen a year earlier in his garden (Darlington 1849, p. 578).

Rosa sp.

Rose

Rosacea

Cultivated for thousands of years, there are about 20,000 taxa of Rosa today. Chester County has three native species, two of which are described by Marshall in Arbustrum: Rosa carolina L. [includes R. humilis Marsh.]; and R. palustris Marsh.

Darlington and Townsend both collected,

Rosa; White Chester Rose, a small single white

rose, very fragrant-flowers somewhat corymbose;
Hort. Marshall, Aug. 18, 1828 (Herbarium).

Rosemarinus officinalis L.

Rosemary

Labiatae

Rosemary is an aromatic evergreen shrub of Mediterranean origin which requires winter protection in Chester County. The flowers have long been used in perfumes and medicines, and the linear leathery leaves used fresh or dried in seasoning.

John Jackson asked his friend Marshall in March, 1789,

if thou couldst procure me a set or two of Rosemary I should accept it as a favour, having lost mine in the hard winter, and not got any since. Perhaps some slips set in the ground in season, would take root and be safely moved towards fall (Darlington 1849, p. 550).

Rubia tinctorum L.

Madder

Rubiaceae

Madder is a Mediterranean perennial herb with yellow flowers and whorled leaves. Its roots are a source of the dye, alizarin, for which madder has long been cultivated. Among its medical uses, Gerard noted it is "commended for those that are fallen from high places" (Gerard, 1121).

Hamilton requested, "Rubia tinctorum" which he had seen in Marshall's garden in 1795 (Darlington 1849, p. 578).

Rubus odoratus L.

Flowering Raspberry

Rosaceae

Flowering Raspberry is a deciduous colonizing shrub bearing loose clusters of showy, fragrant purple flowers. Miller cultivated it in England in 1739. Curtis (1795, 9: 323) noted, "[its flowers] are so shewy, and so plentifully produced that the plant has long been thought to merit a place in most shrubberies."

Moses Marshall encountered, "Mountain Raspberry" while collecting in the "Pine Mountains" of central Pennsylvania in 1784 (Darlington 1849, p. 533). Humphry Marshall described

Rubus odoratus, Virginian Rose-flowering Raspberry;...this grows naturally on rocky mountains in Pennsylvania and Virginia, and makes an agreeable appearance and a long succession of rose-shaped flowers (1785, p. 138).

Darlington noted (1811) that he intended to collect Rubus odoratus from Marshall's garden.

Ruellia strepens L.

Wild Petunia

Acanthaceae

Ruellia is a perennial herb with opposite leaves and showy petunia-like flowers, pale blue-violet in color, found in rich woods, aluvial soils, and frequently associated with calcareous sites. Ruellia is found from New Jersey and Ohio to Texas and South Carolina.

Darlington made an undated collection from Marshall's of Ruellia strepens (Herbarium); and cataloged "Ruellia strepens, Hort. Marshall" (1842). There is also an undated collection of Darlington's, "Dipteracanthus strepens, Le Conte; Ruella strepen, L.; Dizygandra strepens. ...; Hort. Marshall" (Herbarium).

Salix spp.

Willows

Salicaceae

Willows are dioecious trees and shrubs with the flowers borne in dense catkins. Willow is a contender for the largest and most complex genera of native American woody plants. Marshall described, and is author for, three Willows, all natives and frequent in Chester County: Salix nigra Marsh.; S. sericea Marsh.; and S. humilis Marsh.

Darlington collected, "Salix ?; Marshall's garden; 1829" (Herbarium). This vegetative specimen has ovate leaves to 7 cm. with more or less crenate margins and densely pubescent leaves, petiole and stem. Darlington made a different collection in 1835, "Salix aquatica?; Hort. Marshall, Sep 14, 1835; [and in pencil later] introduced" (Herbarium).

Schrankia microphylla Macbr.

Sensitive Brier

Leguminosae

Sensitive Brier is a deciduous perennial herb with weakly arching stems, usually armed with prickles, and bearing globose heads of rose-colored flowers. The leaves are sensitive in the manner of the true sensitive plants, Mimosa spp.

Hamilton requested a plant of "Mimosa Intsia [Walt]" from Marshall which he had seen in his garden in 1795 (Darlington 1849, p. 578). Hamilton wrote Marshall in 1799 that during the severe winter he lost the "Wise Briar" received from Marshall (Darlington 1849, p. 580).

Sedum telephoides Mx.

Wild Liveforever

Crassulaceae

Wild Liveforever is a smooth, fleshy-leaved herb, often purple-leaved, with pale pink terminal flowers. This summer blooming plant is common on the sandstone cliffs and slopes of the Alleghenies. Wild Liveforever resembles the Eurasian plant, S. Telephium, Liveforever or Garden Orpine, of which it may be a geographic variety. Wild Liveforever occurred in several counties visited by Moses Marshall.

In 1788, Moses Marshall sent plants of a Sedum to Lettsom which he believed was yet undescribed (Darlington 1849, p. 546.). Of the two then undescribed native sedums in Marshall's collecting area (S. telephiodes Mx. and S. ternatum Mx), S. telephoides meets the description of Hamilton's* in his 1796 request to Humphry Marshall for a plant or seed of, "a nondescript sedum from the west, somewhat like the Telephium [seen in your garden last year]" (Darlington 1849, p. 578).

Sedum ternatum Mx.

Wild Stonecrop

Crassulaceae

Wild Stonecrop is a root perennial characterized by

creeping stems and erect flowering stems blooming in spring. Wild Stonecrop is rare in Chester County but widespread in the southern United States. Darlington (1839) noted that this was the S. portulacoides of Muhlenberg's Catalog. Among the native species in the Marshall's collection range, it is distinguished by having its fleshy leaves arranged in whorls (verticillate).

Muhlenberg wrote to Moses Marshall in 1792 noting that he will visit the Marshalls in a fortnight and asking if you could spare a plant of what your uncle calls Sedum verticillatum, I would be very glad to have it in my garden. It is a fine little plant (Darlington 1849, p. 577).

S. verticillatum L. Sp. Pl. 430, and S. Cepaea L. (syn. S. y. Latour.), both Old World species, are of undetermined cultivation date in the New World and are less likely.

Shepherdia canadensis (L.) Nutt.

Soapberry

Elaeagnaceae

Soapberry is a deciduous shrub, to eight feet, with leaves silvery-downy beneath. The yellow berry-like fruit ripens in fall. Soapberry commonly grows on calcareous rocks and sandy shores of the northern states but also

south to Arizona. Mawe (1797) noted that

Hippophae canadensis [L. Sp. Pl. 1022] is retained in gardens as furniture for the shrubbery, to increase the variety with their two-coloured leaves...cultivated in all the nurseries for sale.

Marshall (1785, p. 60) described, "Hippophae canadensis. Canada Sea-Buckthorn...[the berries] are said to be purgative." In 1796 Hamilton requested a plant of "Hippophae Canadensis" seen in Marshall's garden (Darlington 1849, p. 578).

Silene armeria L.

Garden Catchfly

Caryophyllaceae

Garden Catchfly is a long cultivated Eurasian annual with erect stems and showy terminal cymes of pink, rose, or white flowers appearing from June to frost. It is easily cultivated and long naturalized in the United States.

Townsend collected "Silene armeria; August 1826, Marshall's Garden" (Herbarium).

Silphium perfoliatum L.

Cup-plant

Asteraceae

Cup-plant is a tall, stout, rhizomatous perennial bearing heads of yellow flowers resembling sunflowers in

summer and fall. The leaf bases surround the stem, forming a cup. Cup-plant grows in rich woods, along river banks, in thickets and prairies from Ontario to South Dakota and south to Georgia and Louisiana. It is a rare introduction in Chester County with two of the three wild collections from Marshallton (Stone, p.1374), perhaps escaped from Marshall's garden.

Darlington collected, "Silphium perfoliatum DC; S. connatum Mx.; Hort Marshall; Aug. 24, 1833" (Herbarium).

Solanum carolinense L.

Horse-nettle

Solanaceae

Horse-nettle is a prickly perennial with creeping rhizome, violet or white flowers and yellow berries. Horse-nettle is a troublesome farm and pasture weed. While not directly observed in Marshall's garden, there is a traditional story regarding the plant's introduction by Humphry Marshall which is still told by farmers in the Marshallton area.

Darlington recorded its occurrence in Marshallton and West-Chester, but not common in the county.

This is a vile, pernicious weed; and extremely difficult to subdue, or eradicate. It is believed to have been introduced by the Humphry Marshall into his Botanic Garden at Marshallton, -whence it

has spread around the neighborhood; and strongly illustrates the necessity of caution, in the introduction of mere Botanical curiosities into good agricultural districts (1837, p. 138).

An article in the Cultivator & Country Gentleman for 1871 reported that

[S. carolinense] is a nuisance which has been gradually but steadily marching up from South Carolina...and now we Pennsylvanians are awaking to our danger. W.C.B. of Del. Co. reports, 'in my neighborhood [S. carolinense] has had a foothold for many years--the first seed, it is said, having been disseminated from the garden of the old botanist, Humphry Marshall, who was unfortunate enough to introduce this rare plant into his garden.'

An article entitled "Not an Unmitigated Evil" appeared in the Westchester Daily Local News July 13, 1875, noting

The potato bug that is now overrunning the county is performing one good service for the farmers, eating horse nettle (Solanum carolinense)...one of the worst weeds we have, if not the very worst... it appears to have been first introduced by the late Humphry Marshall, at his Botanical Garden in Marshalton.

Sorbus americana Marsh.

American Mountain-ash

Rosaceae

American Mountain-ash is a small smooth-barked tree or coarse shrub bearing showy, white, flat-topped flower clusters followed by orange-red fruit. American Mountain

Ash is native to moist soils from Newfoundland and Minnesota south to Pennsylvania and Illinois and further south through the mountains to North Carolina.

Marshall described "Sorbus americana. American Service Tree. ...This grows naturally upon the mountains towards Canada" (1785, p. 145). Darlington, with an undated collection, recorded "Pyrus Americana ? Sorbus Americana? Hort. Marshall" (Herbarium). A second collection by Darlington is labeled, Pyrus Americana DC.

Spigelia marilandica L.

Pinkroot, Wormgrass, Indian-pink

Loganiaceae

Pinkroot is an erect, perennial herb with showy red colored tubular flowers. Native to Moist woods and thickets from North Carolina to Oklahoma and south to Texas and Florida. Dr. Alexander Garden of South Carolina introduced Pinkroot to Dr. Hope of Edinburgh Botanic Garden about 1763, writing,

About forty years ago, the anthelmintic virtues of the root of this plant were discovered by the Indians; since which time it has been much used here by physicians, practitioners, and planters; ...I have given it in hundreds of cases (Woodville 1792, 2: p. 289).

Barton's Medical Botany (1818, 2: p.80) described it as "a medicine of high reputation as a vermifuge" and

valuable when used in other treatments. He noted that although it no longer occurred north of Virginia in the wild it "is cultivated abundantly in some of our gardens, particularly at [Bartrams] where it thrives luxuriantly."

Moses Marshall, still active as a doctor, purchased Pinkroot in Charleston, the Saturday before he sailed for home in 1790. He wrote "I walked about a little hunting for Pink Root to buy but could find none but in one place at 1/g sh" (CCHS, Moses Marshall's 1790 Diary).

Hamilton requested "a few seeds" of Marshall's "Spigelia Marylandica" in 1797 (Darlington 1849, p. 578). He again requested seeds of this plant in 1799 (HSP, Dreer Collection, 175-52).

Darlington collected, "Spigelia Marylandica L.; Marshall's garden; July 1, 1827" (Herbarium). The following year, Townsend collected, "Spigelia Marylandica, Carolina Pink; Marshall's Garden; August, 1828" (Herbarium). Darlington also cataloged, "Spigelia Marylandica Linn.; Hort. Marshall; M. Marshall" (1842).

Spiraea hypericifolia L.

Hypericum-leaved Spiraea

Rosaceae

Hypericum-leaved Spiraea is a six foot, arching

shrub of southeastern Europe and Asia which has become widely naturalized in the Europe. It has entire leaves and white flowers in sessile umbels, with each flower on a stalk nearly one half an inch. M'Mahon (1806, p. 595) recommended S. hypericifolia for American gardens.

Hamilton sent Marshall a plant of, "Spiraeae (vulgo hypericum) frutex," May 3, 1799 (HSP, Dreer Correspondance 175-52). Hypericum frutex was a common synonym for this plant (Mawe 1797; Louden 1838, 2: p.726).

There is some debate regarding this taxon. Marshall (1785) described, "Spiraea hypericifolia, Canada Spiraea or Hypericum-frutex." However, the description by Marshall differs from the true species in: flower color, "yellow;" leaf texture, "smooth;" and leaf arrangement, "opposite." Pursh (1818) and others described S. hypericifolia (L.) Willd. as a native of North America or early introduced, but others claim the American taxon is S. alba Du Roi., Meadowsweet. The S. hypericifolium in Muhlenberg's herbarium is, according to Torrey and Gray's Flora of North America, a variety of S. alba Du Roi. With regards to Marshall's description, Muhlenberg, who exchanged garden visits, books, and plants with the Marshalls, commented to Humphry Marshall in 1790 that

If I am not mistaken, I found a great number of your Spiraea hypericifolia at the Susquehanna. It blossoms the latter end of July, with a fine

yellow flower; but I doubt whether it should not be called Hypericum Kalmianum or prolificum, as the capsule is very different from Spiraea. When the exemplar you sent to me blossoms, I will be better able to judge (Darlington 1849, p.575).

"Spiraea nova"

[Rosaceae]

Hamilton requested a plant or seeds of the, "Spiraea nova from the Western Country" which he had seen in Marshall's garden in 1795 (Darlington 1849, p. 578).

Based only on this meager description and eliminating local species, the plant in question could be S. corymbosa Raf., S. virginiana Britt., or any of a number of hybrids which were recorded in western Pennsylvania and in other parts of the Marshall's collecting range. The "western country" was just beginning to be explored with the discoveries yet to be revealed by the efforts the Marshall's botanical associates such as Michaux, Muhlenberg, Pursh, and Rafinesque. The journey contemplated by Moses Marshall would soon be carried out by Lewis and Clark.

Staphylea trifolia L.

American Bladdernut

Staphyleaceae

American Bladdernut is an upright shrub or small tree with three parted leaves and drooping flower clusters

which are succeeded by a three parted, inflated capsule containing a few boney seeds. Bladdernut occurs frequently in low rich woods and streams in Chester County.

Marshall (1785, p. 148) described, "Staphylaea trifoliata, Three-leaved Bladder-nut-tree." Darlington listed Staphylea trifolia L. among the shrubs which survived in 1849 from Marshall's plantings (Belden 1965, p. 111).

Stewartia malacodendron L.

Virginia Stewartia, Silky-camellia

Theaceae

Virginia Stewartia is a deciduous tree chiefly found in fertile, coastal woods from eastern Virginia to Florida and Louisiana. Marshall (1785, p. 149) described, "Stewartia Malacodendron, Virginia Stewartia. ...This makes a beautiful appearance when well filled with its large white flowers."

Moses Marshall responded to a request from a London nursery in 1793 that the Stewartia in his garden was "too large to send abroad" (Darlington 1849. p. 581). Hamilton, in 1799, asked Marshall "to let me have a plant or two or your Stewartia Malachodendron...I am very desirous to compare a flower of your Stewartia with J.

Bartrams" (Darlington 1849, p. 580).

Darlington (Herbarium) collected, "Stewartia virginica [syn., Cav.]; Marshallton, June 5, 1819; not quite in flower." Darlington (Belden 1965, p. 111) listed "Stewartia Virginica" among the trees planted by Marshall which survived in 1849.

Streptopus roseus Mx.

Rose Mandarin, Twisted Stalk"

Liliaceae

Rose Mandarin is a stout stemmed, rhizomatous, leafy perennial herb of mountain woods and moist thickets from Labrador to Minnesota and in the mountains to North Carolina. The pendulous lily flowers are followed by red berries. There are several varieties.

Hamilton, in 1796, requested plants or seeds of "two kinds of a genus supposed, by Dr. Marshall, to be between Uvularia and Convallaria" [where Streptopus rests in the Englerian sequence]. Darlington noted (1849, p. 578) that Hamilton probably referred to "Streptopus of Michaux which the Marshalls proposed to call Bartonia." The Benjamin Smith Barton herbarium in the American Philosophical Society collections contains a sheet identified, "Streptopus Roseus Mx.; I think from Mr. Marshall."

Muhlenberg replied to William Baldwin in 1811 "Packet III, No. 13 'Bartonia of Marshall' is Streptopus Mx" (Darlington 1843, p. 26). Rafinesque (1808) also alluded to the discovery of Hexorima dischtoma [Rafin., syn.] by Marshall.

Styrax grandifolius Ait.

Big-leaf Snowbell, Large-leaved Storax

Styracaceae

Big-leaf Snowbell is a deciduous shrub or small tree with dark, streaked bark. The leaves are about six inches long. White, scented blossoms are disposed along the slender branches in small racemes. It occurs in mixed forests and upland woods of the Piedmont and Coastal Plain from Virginia to Louisiana and was introduced to Europe by 1765. S. americana Lam., Snowbell, a similar species in the same range, was introduced to Europe at the same time.

Marshall (1785, p.150) appears to have described, as "Styrax americana, Carolinian Storax-Tree," either the variety known as the Downy Storax, S. a. var. pulverulenta Mx. or S. grandiflora Ait. Both Dowy Storax and Big-leaved Snowbell are distinguished from Snowbell in part by dense pubescence on the undersides of the leaves, in Marshall's words, "a little downy on the upper surface, ...much more downy underneath; [the leafstalks and young twigs] woolly

or downy." Big-leafed Snowbell has leaves twice the size of S. americana. Marshall, in his description of the latter, noted, "The leaves are pretty large."

Darlington collected, "Styrax grandifolium; Hort. Marshall; June 5, 1829" (Herbarium). Darlington listed Styrax grandifolium among the plants surviving in 1849 which were planted by Humphry Marshall in his garden at Marshallton (Belden 1965, p. 111).

Talinum teretifolium Pursh

Fameflower

Portulacaceae

Fameflower is a rhizomatous, perennial, tufted herb about one foot tall. It is found on dry rocks, often serpentine, and sands. The fleshy leaves are smooth, thick, and blunt. Its roseate flowers open from noon to mid-afternoon, a characteristic which made Fameflower a popular component of Victorian "floral clocks." It occurs from Pennsylvania, Delaware, and West Virginia south to Georgia. In Chester County, Fameflower has only been collected on serpentine barrens.

In 1788, Moses Marshall sent to Dr. Lettson, "a few small plants, which I believe are yet undescribed [including] a species of Portulaca" Darlington (1849,

p. 546) noted that Marshall's complete description of this plant was a good description of the

Talinum teretifolium, Ph.; written long before the plant was generally known to the botanists, or published in the books. It grows abundantly on the Serpentine rock, in the vicinity of Marshallton, Humphry Marshall's former residence, where Doctor M. pointed it out to [me] several years prior to the publication of Pursh's Flora.

Hamilton requested a plant or seed of the "Talinum [Muhl.?]" seen in 1795 in Marshall's garden (Darlington 1849, p. 579).

Taxus canadensis Marsh.

American Yew

Taxaceae

American Yew, a low straggling species seldom exceeding five feet in height, was rare in nineteenth century Chester County. This sole representative of the genus in Eastern North America, the only American species known until 1849, has disappeared from much of its former range in Pennsylvania and elsewhere, largely because of browsing pressures from expanded deer populations.

It was Marshall who first described "Taxus canadensis, Canadian Yew-Tree," including in his descriptions a note on its ornamental value in topiary. "This is a beautiful evergreen shrub, capable of being

formed into any shape" (1785, pp. 150-51). Whether or not Marshall, well known for his expertise in pruning, practiced topiary in his garden is not known.

Townsend collected an herbarium specimen of "Taxus canadensis, Yew, from Marshall's Garden, April 23, 1829" (Herbarium). Twenty years later, Darlington listed Taxus canadensis Marsh. among the plants which survived from Marshall's time (Belden 1965, p. 111).

Tetragonetheca helianthoides L.

Tetragonatheca

Asteraceae

Tetragonatheca helianthoides is a tap rooted perennial of the dry open woods ranging from Virginia to Florida. The pale yellow flower heads resemble sunflowers on the five foot tall plants.

Fothergill wrote Humphry Marshall in 1772 that "the Tetragonatheca...is no longer in England" and requested a few seeds or a root "if they fall in thy way" (Darlington, 1849 a, p. 509). In 1790 Moses Marshall reported finding Tetragonatheca near Green River Cove while on his way to Charleston (Marshall, 1790). Hamilton requested a plant or seed of the Polymnia tetragonatheca [Linn. Syst. ed. XII. 576 = T. helianthoides] seen in 1795 while visiting

Marshall (Darlington 1849, p.578).

Tilia americana L.

American Basswood

Tiliaceae

American Basswood, or Linden, is a large deciduous tree reaching one hundred thirty feet. A beautiful and useful tree, rather rare in Chester County, ordered from Marshall by Europeans (Harshberger 1929, p. 226). Barton observed that this well known tree was "frequent on the country seats of this neighbourhood [Philadelphia], and planted occasionally in the streets of this city" (1818, 2: p. 6).

Marshall (1785, pp. 153-54) described "Tilia Americana, American black Lime, or Linden Tree" and noted that the "Linden flowers diffuse a fragrant odour, and are continually haunted by bees during their continuance." He also notes that an infusion of flowers is used to treat Epilepsy, and the wood used is used "by turners, carvers, &c. also by architects in framing models of buildings, &c."

Darlington listed "Tilia americana Mill" in 1849 among the survivors in Marshall's garden. (Belden 1965, p. 111). Seventy five years later, Baxter (1925) reported "an American Linden (Tilia Americana) is 15 ft. 5 in. [at one

foot] and 9 ft. 6 in. [at five feet] with a 9 ft. buttress." If Baxter's recorded plant dated to 1790, the average annual increase in DBH would have been just over one quarter inch, a reasonable figure for a one hundred thirty five year old tree under stress with a limited canopy. This is also confirmed by known growth rates described earlier: Acer saccharum -- 0.12-0.25 in./yr./ca. 1850-1984; Aesculus octandra -- 0.23 in./yr./1854-1984; and Magnolia acuminata -- 0.19 in./yr./1797-1984.

Tsuga canadensis Carr.

Eastern Hemlock

Pinaceae

Hemlocks, which were grouped under Abies by the observers cited here, were recorded in Marshall's garden and are associated with him, but no species was identified. One Hemlock species, Tsuga canadensis (L.) Carr., Hemlock, is suggested here.

Humphry Marshall (1735, p. 103) described "Pinus-Abies Americana, Hemlock Spruce Fir-Tree" and remarked on its uses in tanning and dye works. T. canadensis was the only hemlock species distinguished in Marshall's era. This is the Pinus canadensis of Linnaeus (1753), Abies americana of Miller (1768), Abies Canadensis

of Michaux (1803), and Picea Canadensis of Link (1841).

Tsuga was first described as a separate genus in 1855. During the 18th and most of the 19th centuries Abies [Tournefort, 1719] included firs [Abies Mill.], hemlocks [Tsuga Carriere, Traite General des Conifers, 1855], and spruces [Picea Dietrich, Flora der Gegundum Berlin, 1824] which are now viewed as separate genera. Darlington and Hoopes, the botanists who recorded "Abies" in Marshall's garden, grouped spruce, firs, and hemlock in "Abies."

John Bannister, of Virginia, sent Hemlock to Bishop Compton in London. Plunkenet's description (Sargent 1897, 12: p. 65) of this cultivated plant, 1691, is its first record. It has been a part of garden history, and a frequent element in parks and gardens ever since. The famous Hemlock avenue planted in 1730 by George Logan, the governor and botanist, at Stenton in Philadelphia is one example.

The Chester County Cabinet of Science (Hazard 1828, p. 302) observed that Marshall's Botanic Garden "... still exhibits many interesting relics, such as pine and Fir [includes Hemlock] trees ..."

Darlington (Belden 1965, p. 111) recalled in 1849 "several Species of Pines, Abies, and Larix" still growing

in Marshall's garden. He described Abies Canadensis, Mx. as somewhat rare in Chester County but "so generally diffused throughout North America that it has been adopted as emblematic." He notes it makes a useful clipped hedge (Darlington 1853, pp. 291-2).

Hoopes observed (1868, p. 416) few "specimens of the Coniferae" remain in the garden, only "a few of the commoner species of Pines and Firs [includes Hemlock] are all now that remain. His description of Abies canadensis Mx., which he groups under Abies with the spruces and firs, is extensive and glowing.

Harshberger (1920, p. 138) observed "Noteworthy ...Hemlock, Tsuga canadensis...in the planted ground."

Tussilago farfara L.

Coltsfoot

Asteraceae

Coltsfoot is a yellow-flowered, spring blooming, low growing, Old World perennial which has become naturalized in disturbed places. There is one species, and it has long been cultivated as a remedy, in teas and syrups, for coughs and related ills.

We might, without exception, cite every writer upon the Materia Medica. ... Every part of the plant has been medicinally employed for the same purpose, but more usually the leaves, and these are the principal ingredient in the British herb

tobacco. It is remarkable, that the smoking of this plant has the recommendation of Dioscorides, Galen, Pliny, Boyle, &c (Woodville 1790, p. 38).

Hamilton observed Tussilago Petasites [T. farfara] in Marshall's garden in 1796 and requested a plant or seed (Darlington 1849, p. 578). Darlington planned to collect Tussilago in 1811 [and perhaps discuss its virtues with Moses Marshall, M.D.] (Darlington 1811).

Viburnum lentago L.

Nannyberry

Caprifoliaceae

Nannyberry is a large deciduous shrub, rare in Chester County, occurring in thickets, woods borders and on stream banks. It has showy, white flowered cymes and sweet, blue-black fruit. Marshall (1785, p.161) described "Viburnum Lentago, Canadian Viburnum."

A collection made by Darlington from the garden is of an unnamed specimen [which is V. lentago]. Darlington's collection notes are one of the few clues about the early garden appearance. "Marshalton Garden, July 30, 1822. A tree or Shrub on the west side of the garden, near the gate at the road" (Herbarium).

Vinca minor L.

Common Periwinkle

Apocynaceae

Common Periwinkle is a trailing, evergreen subshrub with ovate to oblong leaves and blue violet flowers in spring. This Old World plant has long been cultivated and is persistent when established. V. minor in the Marshallton garden today is a recent planting.

Townsend collected "Vinca minor L., April 23, 1829" from Marshall's garden, and mounted it on the same sheet with V. minor from Carr's Garden [Bartram's], May 2, 1829 (Herbarium).

Zanthoxylum americanum Mill.

Prickly-ash

Rutaceae

Prickly-ash is a deciduous aromatic shrub or tree with prickly branches and compound leaves. The medicinal virtues of the plant were early learned from Native Americans, whom Lawson remarked "extracted from its berries the salivating power of mercury, and made use of decoctions of the plant, as strong perspiratives" (Browne 1846, p.151). Introduced to Britain in 1740, it became common in European collections. Darlington (1858, p. 43) reported

that it had escaped from gardens [probably including John Jackson's] and was becoming naturalized in Chester County.

Castiglioni, after his 1785-87 visit to America, reported that

the bark and capsule, of a strong and warming flavor, are used in America to sooth toothache, so that it got the name of toothach tree. Tincture of Zanthoxylum is also recommended for rheumatic pains, and the seeds ooze a very abundant oil which perhaps might be good for something (1790, pp. 461-62).

Castiglioni's comments on its medicinal use resembled Marshall's who wrote describing

Xanthoxylum fraxinifolium, Ash-leaved Tooth-ach Tree. This grows naturally in Pennsylvania and Maryland ... The bark and capsules are of a hot acrid taste, and are used for easing the tooth-ach, from whence it obtained the name of tooth-ach Tree: a tincture of them are also much commended for the cure of Rheumatism (1785, p. 167).

Darlington collected for his herbarium a specimen of "Zanthoxylum fraxinifolium, Marshallton, June 5, 1819, done flowering (cum futex)" (Herbarium). Another collection (Darlington 1842) was recorded of Zanthoxylum americanum Kunth. Darlington recalled, in 1849, Zanthoxylum Americanum among the plants which survived in Marshall's garden (Belden 1965, p. 112).

"Two plants from Botany Bay"

William Hamilton included, "Two plants from Botany

"Bay and not described" in the list of "plants in ye Box directed for Mr. Marshall" sent to Humphry Marshall from the Woodlands and accompanied by Hamilton's letter of May 3, 1799 (HSP, Dreer Collection, Marshall Correspondance).

Botany Bay was first explored, and named by, Sir Joseph Banks with Captain Cook in 1770. [In 1784 Banks would attempt to resettle American Loyalist refugees as the first European settlers in Australia, an honor which instead went to the First Convict Fleet in 1787 (Brockway, p. 67)]. Banks returned from this journey with 331 Australian plants never before seen by a European, including species of acacias, banksia, gardenias, correas, orchids and eucalyptus (Lemmon 1968, p. 36). A greenhouse erected at Kew, the famous 'Botany Bay House' (1788-1856) was crowded with botanical treasures. M'Mahon (1806) listed several Australian species in his catalog of greenhouse trees and shrubs including Banksia serrata and Eucalyptus obliqua. Marshall's greenhouse room may have been the location for these rarities.

The 1801 Inventory of Humphry Marshall lists "a number of greenhouse plants" (Belden 1958, Appendix 3). Generations later, in 1830, Maria Marshall wrote her brother from the Marshallton house that "the greenhouse plants are out yet" (West Chester).

Appendix A

SUMMARY LIST OF THE DOCUMENTED COLLECTION

This list is not an exhaustive list of plants grown in Marshall's Botanic Garden. This is a summary list of Chapter 2, the annotated catalog in this thesis, of plants observed in the garden and associated with the tenure of Humphry and Moses Marshall, 1773-1813. While the catalog is arranged alphabetically, this summary list is first grouped into woody and herbaceous plant lists, then alphabetically.

Key

- * Species represented in the garden in 1985.
- ** Plantings surviving from the Marshall period.
- Marsh. Species first described in Arbustum.
- [] Conjectural species name and/or nativity
- " " Data as cited in primary source.

Trees, Shrubs, and Vines:

- | | |
|--|-------------------|
| Abies balsamea - Fir | Eur. & Amer. |
| Acer platanoides - Norway maple* | Eur. |
| A. psuedoplatanus - Sycamore M. | Eur. & W. Asia |
| A. saccharum (Marsh.) - Sugar M.* | E. N. Amer. |
| Aesculus glabra - Ohio Buckeye | W. PA to IA & AL |
| | |
| A. hippocastanum - Eur. Horse Chestnut | Balkans |
| A. octandra (Marsh.) - Yellow B.** | Sw. PA to IL & GA |
| A. pavia - Red B. | Se. N. Amer. |
| Ailanthus altissima - Tree-of-Heaven | China |
| Amorpha fruticosa - Bastard Indigo | N. Amer. |

<i>Aralia hispida</i> - Bristly Sasaparilla	Nfld. to NC & MN
<i>Aristolochia durior</i> - Dutchman's Pipe	PA to GA & KA
<i>Ascyrum hypericoides</i> var. - St. Andrew's Cross	N. Amer., Mex., W.I.
<i>Asimina triloba</i> - Pawpaw*	NY to FL & TX
<i>Bacharris halimifolia</i> - Groundselbush	Coastal MA to C.Amer.
<i>Betula lenta</i> - Black Birch	MA to AL
<i>Buxus sempervirens</i> - Eng. Boxwood**	Hort.
<i>B. s.</i> var. <i>arborescens</i> - Treebox**	Hort.
<i>B. s.</i> 'Aureo-variegata' - Goldleaf T.**	Hort.
<i>Calycanthus floridus</i> - Sweet Shrub	VA to FL
<i>Camellia sinensis</i> - Tea	Se. Asia
<i>Carya illinoensis</i> - Pecan	Cent. U.S. to Mex.
<i>Castanea dentata</i> - Amer. Chestnut	ME to MS
<i>C. pumila</i> - Chinquapin	PA to FL & TX
<i>Catalpa [bignonioides]</i> -	Se. U.S.
<i>Celtis occidentalis</i> var. <i>crassifolia</i> - Hackberry*	Que. to NC & AL
<i>Cercis canadensis</i> - Redbud	E. U.S.
<i>Clematis viorna</i> - Leather Flower	PA to GA, IL & Tex.
<i>Corylus cornuta</i> (Marsh.) - Beaked Filbert	E. N.Amer.
<i>Diospyros virginiana</i> - Common Persimmon	CN to FL & TX
<i>Fothergilla [gardennii]</i> - Witch Alder	Se. U.S.
<i>Franklinia altamaha</i> (Marsh.) - Franklin Tree	Se. GA
<i>Fraxinus americana</i> - White Ash**	E. N.Amer.
<i>Gleditsia triacanthos</i> - Honey Locust*	E. N.Amer.
<i>Gymnocladus dioica</i> - Kentucky Coffee-tree*	E. U.S.
<i>Halesia carolina</i> - Wild Olive	WV to FL & TX
<i>Iva [imbricata]</i> - Marsh Elder	"from Carolina"
<i>Juglans nigra</i> - Black Walnut *	MA to Ont., FL & TX
<i>Laburnum alpinum</i> - Scotch Laburnum	S. Eur.
<i>Larix decidua</i> - European Larch	Eur.

Ledum groenlandicum - Labrador Tea	N.N.Amer. & Green
Liquidambar styraciflua - Sweetgum	CT to FL & C. Amer.
Magnolia acuminata - Cucumber Tree **	Ont. to GA, AL & LA
M. a. var. cordata - Yellow C. T.	NC, SC & GA
M. fraseri - Ear-leaved Umbrella Tree	VA to GA & AL
M. grandiflora - Bull Bay	NC to FL & TX
M. tripetala - Umbrella-tree	PA to AL & MS
Ostrya virginiana - Hop-hornbeam	N.S to FL & TX
Persea borbonica - Red Bay	DE to FL
Philadelphus inodorus - Mock Orange	PA to AL
Picea spp. - Spruce	Eur. & E.N. Amer.
Pinus spp. - Pine *	Eur. E. N.Amer.
Populus alba - White Poplar	Eur. & Asia
P. deltoides (Marsh.)- Cottonwood	Que. to FL & TX
Prunus americana (Marsh.) - Amer. Plum	ME to Man. NM & FL
P. serotina - Black Cherry	E. N.Amer.
P. virginiana - Chokecherry	Nfld. to Sask., NC & KS
Ptelea trifoliata - Hop Tree	Ont. to MI, TX & FL
Pyrularia pubera - Oil Nut	VA to TN & GA
Quercus x heterophylla - Bartram Oak	E. U.S.
Q. imbricaria - Shingle Oak	PA to AR & GA
Q. phellos - Willow Oak	NY to FL & TX
Q. robur - English Oak	Eur., N.Afr. & W.Asia
Rhamnus caroliniana - Indian Cherry	NY to FL & TX
Rhododendron Flammeum Sarg. - "Azalea coccinea"	SC & GA
R. maximum - Great Laurel	NC to GA & AL
Robinia psuedoacacia - Black Locust	E. & Cent. U.S.
R. viscosa - Clammy L.	NC to AL
Rosa - "White Chester Rose"	Hort.
Rubus odoratus - Flowering Raspberry	MI to NC, GA & TN
Salix - Willow	
Shepherdia canadensis - Soap Berry	Temp. N.Amer..
Sorbus americana (Marsh.) - Amer.Mnt.Ash	E. N.Amer.
Spiraea hypericifolia - Hypericum- leaved Spiraea	Cent. & E. N. Amer.
"S. nova" -	"the west country"

Staphylea trifolia - Amer. Bladdernut	E. U.S.
Stewartia malacodendron - Virginia Camellia	Se. U.S.
Styrax grandifolius - Snowbell	VA to FL
Taxus canadensis (Marsh.) - Ground Hemlock	Nfld. to VA & IA
Tilia americana - Basswood	New Bruns. to VA & TX
Tsuga canadensis - Canada Hemlock *	Nov. Sc. to AL
Viburnum lentago - Nannyberry	E. N.Amer.
Vinca minor - Periwinkle	Eur.
Zanthoxylum americanum - Toothache Tree	E. N.Amer.

Herbaceous Plants

Acanthus spinosissimus - Bear's Breech	Se. Eur.
Actaea alba - White Baneberry	E. N. Amer.
Althaea cannabina - Mallow	S. & E.-cent. Eur.
Althaea officinalis - Marsh Mallow	Eur.
Aruncus dioicus - Goatsbeard	Eurasia & N.Amer.
Atriplex hortensis - Garden Orach	Asia
Baptisia alba - False Indigo "Beans"	VA to FL "New Orleans"
Cacalia suaveolens - Indian Plantain	CT to IA & FL
Canna [flaccida] - Canna	[Se. N.A. & Carrib.]
Chenopodium hybridum - Maple-leaved Goosefoot	Circumboreal
Conium maculatum - Poison Hemlock	Eur.
Coreopsis major var. rigida - Tickseed	GA to NC, OH & MS
Digitalis [purpurea] - Foxglove	[Portugal & Spain]
Echinacea purpurea - Purple Cornflower	OH to IA, LA & GA
Elephantopus carolineanus - Elephant's-foot	PA to FL, TX & IL
Eranthus hyemalis - Winter Aconite *	S. Eur.
"Ferns" - Ferns	E. N.Amer.
Filipendula rubra - Queen-of-the-Prairie	PA to MI, IA & GA
Filipendula vulgaris cv. Flore Pleno	Hort.
Floerkea proserpinacoides - False Mermaid	Que. to DE & TN
Foeniculum vulgare - Fennel	Hort.
"Geranium" - Geranium	

Helleboris niger - Christmas Rose	Eur.
Hibiscus coccineus - Rose Mallow	GA to FL
Hordeum - Barley	Hort.
Hydrophyllum appendiculatum	
- Appended Waterleaf	Ont. to MN, MO & TN
H. canadense - Canada W.	Ont. to AL & MO
H. virginianum - Virginia W.*	Que. to Man., VA, TN, & AR
Jeffersonia diphylla - Twinleaf	Ont. to IA & AL
Lavatera thuringiaca - Tree Mallow	Cent. & s. Eur.
Listera sp. - Twayblade	E. N. Amer.
Lychnis chalcedonica - Maltese-cross	N. U.S.S.R.
Medicago lupulina - Black Medic	Eurasia
Napaea dioica - Glade Mallow	OH to IL & MN
Ocimum basilicum - Common Basil	Trop. Old World
Ornithogalum umbellatum - Dove's Dung	Eur. & N. Afr.
Panax quinquefolius - Ginseng	Que. to MN, OK & GA
Papaver somniferum - Opium Poppy	Se.Eur. & W. Asia
Phlox paniculata - Perennial Phlox	NY to GA, IL & AR
Polygala paucifolia - Fringed Polygala	Que. to Sask., MN & GA
P. Seneca - Seneca Snakeroot	Que. to Alta., GA & AR
Potentilla erecta - "Tormentil"	"from Italy"
Rosemarinus officinalis - Rosemary	Medit.
Rubia tinctorum - Madder	Medit.
Ruellia strepens - Wild Petunia	NJ to IL, SC & TX
Schrankia microphylla - Sensitive Briar	VA to KY, FL & TX
Sedum telephoides - Wild Live Forever	NC to IL
S. ternatum - Wild Stonecrop	E. N.Amer.
Silene armeria - Garden Catchfly	Eur.
Silphium perfoliatum - Cup Plant	Ont. to SD, MS & GA
Solanum carolinense - Horse Nettle	E. N.Amer.
Spigelia marlandica - Pinkroot	SC to FL & TX
Streptopus roseus - Rose Mandarin	E. U.S.
Talinium teretifolium - Fameflower	PA to GA & TX
Tetragonatheca helianthoides	FL to MS, VA & TN
Tussilago farfara - Coltsfoot	Old World & Asia
"two plants from Botany Bay and not described"	Australia

Appendix B
SOIL AND CLIMATE

Soil

The Village of Marshallton is located within the southern Chester Piedmont, a physiographic region which like most of the gently undulating Appalachian Piedmont Province has undergone prolonged differential erosion. The Mansion site and the garden fronting on Strausburg Road slope southeasterly and are, in that way, typical of the larger region. Approximate elevations on the site range from four hundred feet at road level to four hundred twenty feet at the Mansion.

Chester County was never glaciated. The landscape was subjected to the Appalachian Revolution, being at various times under inland lakes, folded, uplifted, washed down and deposited on. County surveys indicate the garden site is a Glenneg Channery silt loam (Soil Conservation Survey 1959). This is consistent with results of soil sampling performed in 1984 by the author.

According to the 1959 Soil Conservation Survey,

Glenneg Channery silt loam has moderate available moisture capacity, and it is moderately fertile. The soil is moderately deep, medium-textured and is moderately permeable. Slope is 3 to 8 percent with moderate erosion. It is considered well-suited to general farm crops, truck crops, tree fruits and timber production.

The soils developed in weathered granite, gneiss and mica schist. There are occasional large fragments of flat channery. Fragments of quartz and schist makes up 20 percent of the surface horizon by volume of a typical cultivated field profile; pH 6.7 at 15 inches.

The native forest was chiefly white oak, red oak, black oak, tulip poplar and beech [all of which are still evident in nearby woodlands].

Mechanical analysis of fourteen samples taken by this author September, 1984 showed results typical of Glenneg channery silt loam. Average mechanical analysis, USDA, of the sample: 57 percent silt, 33 percent sand, 10 percent clay.

The fourteen samples were taken with a standard core sampler to a depth of fifteen inches. Distribution of samples was designed to include a variety of site conditions: ridges and swales, drip lines and centers of

box plantings, from open areas, from soil adjacent to the oldest tree trunks, and from the cultivated field west of the grove.

Chemical analysis of the fourteen samples indicated that the soil reaction was at equilibrium for uncultivated Glenneg channery silt loams. The pH averaged 5.0 for the fourteen samples with very low phosphorus (2 mg/dm³) and potassium (2mg/dm³) indexes. Calcium and magnesium varied but were generally low.

Anomalies were of two types. Samples taken from the dripline and interior of a boxwood clump, recently fertilized and also treated with foliar insecticide and fungicide, showed elevated levels of potassium, phosphorus and copper. The second anomaly was in the higher pH of some samples which may be explained as follows. One sample, pH 6.8, located in the grassy area east of the house has long been cultivated as a lawn and has likely received applications of agricultural limestone. It is also the former location of an outbuilding and part of the former "farm yard". This history of use accounts for the high potassium index, 129, which is typical of old farm yard sites. The high readings, for this site, of pH, calcium (970 mg/dm³) and magnesium (485 mg/dm³) are consistent with lime application or rubble from the former stone and mortar building.

A sample (pH 6.3) was taken from the field, which at the time of sampling was cultivated alfalfa. The analysis was similar to the sample just discussed. This field, west of the garden, has long been cultivated for crops and has received periodic applications of dolomitic limestone, accounting for a pH level higher than the grove area.

Samples were taken from boxwood beds reported to have received slow release, root injected fertilizer in November of 1983, and treated in the same year for mites and insect control with foliar applications of insecticide. This history accounts for the high copper (12-31 lbs/acre) and phosphorus (97-155 mg/dm³) concentrations.

A sample taken from an elevated small area located in the east center of the grove indicated that this soil may have been amended or introduced from another location.

Samples were taken less than two feet from the bole of the Magnolia acuminata dated to Marshall's time; the stump of the second magnolia dating to Marshall's time; and the large white ash attributed in this thesis to Marshall's time. These samples were taken to reduce the chance of sampling disturbed or introduced soil. These samples proved similar to four random samples within the grove. Characteristic of all seven of these samples, which are

representative of the grove in general, is low pH (4.5-5.2), low availability of phosphorus (2 mg/dm³) and a low average reading for potassium (55 mg/dm). These findings indicate that there has been little human intervention in the garden soils for at least fifty years and that the soils here have been allowed to reach equilibrium typical of the uncultivated Glenneg soil series. Further testing or landscape archeology could reveal more about the site's history, such as buildings pathways or fence locations.

Management implications of the soil reactions discussed include the application of both limestone and NPK fertilizer to restore the vigor of declining trees within the grove.

Climate

"The humid, modified continental climate of the Chester County area is favorable for a prosperous agricultural [sic] and high level of civilization." (Chester County Planning Commission 1963) Except for author's comments specific to the site, all climate data is taken from the Planning Commission's report.

The southern Chester County region has great daily and seasonal contrasts. Extremes of heat and cold are

usually of short duration. One related effect is that about 70 days per year of alternate freezing and thawing occurs mostly in December through March. There is an average of fourteen inches of rainfall in those months. This is a major cause of weathering of the soil materials and makes the soil fairly susceptible to frost actions.

Rainfall is about forty five inches per year. Snowfall is about twenty five inches annually. Precipitation is evenly distributed throughout the year.

Temperatures average 53°F annually in the County. Extremes below 0°F and above 100°F are unusual. The lowest recorded in the County until 1960 was minus 19°F, January 14, 1912. The highest on record for the same period is 111°F on July 9, 1936. Chester County is generally more moderate than many localities across the country at its latitude.

Chester County winters are moderately mild, the mean maximum-minimum temperature range being 41°F during January. Summers can be uncomfortable, hot and humid, with July mean temperatures ranging 87°F for maximum-minimum.

The growing season averages about 190 days, generally from mid-April to mid-October, with some early and late freezes. Average daily temperatures of 43°F or

greater occur from mid-March to mid-November. This latter season of about 210 days is adequate for the growth of perennial and less frost susceptible plants. Chester County is included in Zone 7 of the USDA plant hardiness map.

The prevailing winds are from the northwest in the winter months and from the west-southwest from May through October. The northwestern winds of winter are, locally, notoriously strong at the ridge straddled by the Marshall House. The house and existing evergreen plantings provide some local protection for the garden, located on a south easterly facing slope, which is well drained as far as cold air is concerned.

Winds of destructive force are reportedly rare in the County; however, the Marshallton site and the Meeting House grounds across the road have suffered substantial damage from tornadoes on two occasions in the last decade. The most recent, August 11, 1983, caused the loss of more than a dozen mature trees in the grove, including a Magnolia acuminata dating to about 1790, and severely damaged the crowns of many trees. Hurricane Hazel, in 1954, blew down a European larch (Larix decidua) in the garden which was attributed to Humphry Marshall's time.



BIBLIOGRAPHY

Abercrombie, John. The Universal Gardener's Kalendar.
London: J. Stockdale, 1789.

American Philosophical Society. "Catalogue
D'Arbres et De Plantes Qui Croissent en Amerique, &
Produisent de Graines en Maturite dans le Jardin de
John Bartram...1783." (Manuscript.)

Andes, Martin. "Honeybrook's Only Nobleman." Chester
County Collections. No. 9. Westchester, Pa.: Bureau
of Historical Research, January, 1938.

Bailey, Liberty Hyde. "The Botanic-Garden Idea." The
Garden Lover. New York: Macmillan Company, 1928, pp.
111-138.

Bartlett Tree Experts, Division 3, District 11, Office 11,
to Chester County Historical Society; Work Order
number 518048, Re: Estate of Campbell Weir, November
19, 1982.

Barton, Benjamin Smith. Collections for an Essay towards a
Materia Medica of the United States. Philadelphia,
1810.

_____. Elements of Botany. Philadelphia: Benjamin Smith
Barton, 1803.

Barton, William P. C. Compendium Florae Philadelphicae.
2 vols. Philadelphia: Carey and Son, 1818.

_____. Vegetable Materia Medica of the United States or
Medical Botany. 2 vols. Philadelphia: M. Carey & Son,
1818.

Bartram, John, Jr. Catalogue of American Trees, Shrubs and
Herbaceous Plants. Philadelphia, 1783.

Baxter, Samuel Newman. "The Humphry Marshall Arboretum, Notes from a Visit to the Old Homestead of the First American Author on Native Trees." The Florist's Exchange and Horticultural Trade World, August 15, 1925, p. 504.

_____. "Notable Trees and Old Arboreta in and around Philadelphia." Reprint from Proceedings, Ninth National Shade Tree Conference, New York, 1933.

_____. "Restoration of Plants in Bartram's Garden by the Fairmount Park Commission of Philadelphia." Bartonia, special supplement to 12:38-50, 1932.

Belden, Louise Conway. "Humphry Marshall, American Quaker Botanist." Master's Thesis, University of Delaware. 1958.

_____. "Humphry Marshall's trade in plants of the New World for gardens and forests of the Old World." Winterthur Portfolio II, 1965.

Berkeley, Edmund and Dorothy Smith Berkley. John Clayton, Pioneer of American Botany. Chapel Hill: The University of North Carolina Press, 1963.

Bones, Joseph. Bartlett Tree Experts, Exton, Pennsylvania. Interview, March, 1984.

Boyd, James. A History of the Pennsylvania Horticultural Society, 1822-1927. Philadelphia: Edward Stern & Co. Inc., 1929.

Breou's Official Series of Farm Maps, Chester County, Pennsylvania. Philadelphia: W. H. Kirk & Co., 1888.

Britton, N. L. "Botanical Gardens." Bulletin of the Torrey Botanical Club 23:9. Lancaster, Pa., September, 1896.

Britton, N. L. and A. Brown. Illustrated Flora of the Northern United States, Canada and the British Possessions. 3 vols. New York: Charles Scribner's Sons, 1896.

- Brockway, Lucile H. Science and Colonial Expansion, The Role of the British Royal Botanic Gardens. New York: Academic Press, 1979.
- Browne, D. J. Trees of North America; Native and Foreign, Pictorially and Botanically Delineated, and Scientifically and Popularly Described. New York: Harper and Brothers, 1857.
- Brooklyn Botanic Gardens. "Origins of American Horticulture." Plants and Gardens, Autumn, 1967.
- Butler, Scott. "Who can top the Boxwood at Tosalma?" The Boxwood Bulletin. 20:2.
- Castiglioni, Luigi. Viaggio, Travels in the United States of North America, 1785-87. Milan: Marelli, 1790.; Translated and edited by Antoniao Pace, with Natural History Commentary and Luigi Castiglioni's Botanical Observations translated and edited by Joseph and Nesta Ewan, Syracuse: Syracuse University Press, 1983.
- Chester County Historical Society. Archives, Manuscripts, Orphan's Court Records, Register of Wills, Special Collections, and County Tax Assesments. West Chester, Pennsylvania.
- Chester County Planning Commission, "Chester County: Natural Environment and Planning:", West Chester, PA: The Chester county Planning commission. July 1963, p. VIII.
- Cheston, Emily Read. John Bartram, 1699-1777, His Garden and His House. 2nd ed. Philadelphia: John Bartram Assoc., 1953.
- ✓ Clark, Michael G. "An evaluation of the Humphry Marshall Property, West Bradford Township, Chester County, Pennsylvania." Prepared for the Chester County Historical Society. Media: Michael G. Clarke Ltd., October, 1985.
- Clark, Robert, ed. Big Trees of Pennsylvania. 100th Anniversary Special Issue. Mechanicsburg: The Pennsylvania Forestry Association, 1986.
- Coiner, Betsy C., ed. Chain of Friendship, selected letters of Dr. John Fothergill of London, 1735-1780. Belknap Press: Cambridge, 1971.

Curtis, William, ed. and Sims, ed. The Botanical Magazine; or Flower Garden Displayed. vols. 1-52. London: Stephen Couchman, 1787-1839.

D. "Moses Marshall." Obituary. Am. Rep. October 5, 1813.

Darlington, William, M.D. "Catalogue of Medicinal Plants indigenous to Chester County, Penna." The Medical Reporter, 2:2. Chester County Medical Society, October, 1854. reprint ed., with notes by Dorthy Lansing, Devon, Pa.: Ancro Press, 1972.

_____. "Catalogue of the Botanical Specimens contained in the herbarium of the Chester County Cabinet of Natural Science: arranged according to Lindley." Westchester, 1834. (Handwritten)

_____. "Catalogue of the Botanical Specimens contained in the herbarium of the Chester County Cabinet of Natural Science. 3rd edition." Westchester, 1842. (Handwritten)

_____. Notations in Flora Boreali-Americana, Darlington Library, Darlington Collections, Westchester State University, West Chester, Pennsylvania. 1811. (Handwritten)

_____. Flora Cestrica: an attempt to enumerate and describe the flowering and filicoid plants of Chester County. Philadelphia: Kimber and Sharpless, 1837.

_____. Flora Cestrica: an Herborizing Companion for the Young Botanists of Chester County, State of Pennsylvania. 3rd ed. Philadelphia: Lindsay & Blakiston, 1853.

_____. Memorials of John Bartram and Humphry Marshall. Philadelphia: Lindsay & Blakiston, 1849. Reprint ed. with introduction by Joseph Ewan. New York: Hafner Publishing Co., 1967.

_____. Reliquiae Baldwiniana. Philadelphia, 1843; reprint with intro. by Joseph Ewan, New York: Hafner Publishing Co., 1967.

Downing, Andrew Jackson. Landscape Gardening. 6th Edition. New York: Moore & Co., 1859.

Ewan, Joseph, ed. A Short History of Botany in the United States. New York: Hafner Publishing Co., 1969.

- . Classica Botanica Americana Vol. 3: Andre Michaux, Flora Boreali-Americana. New York: Hafner Press, 1974.
- Faris, John T. Old Gardens in and About Philadelphia. Indianapolis: Bobbs-Merrill Co., 1932.
- . "Historic Byways Around Philadelphia." Keystone Motorist. January, 1931.
- Favretti, Rudy F. and Gordon P. De Wolf. "Colonial Garden Plants." Arnoldia, July 1971, pp. 172-249.
- Favretti, Rudy F. and Joy Putman Favretti. Landscapes and Gardens for Historic Buildings. Nashville: American Association for State and Local History, 1978.
- Feret, Peter and Terry Sharik, eds. Proceedings: Dendrology in the Eastern Deciduous Forest Biome. Publication No. FWS-2-80, School of Forestry and Wildlife Resources, Virginia Polytechnic Institute and State University, Blacksburg, Va., 1980.
- Fernald, Merritt Lyndon. Gray's Manual of Botany. 8th ed. New York: American Book Co., 1950.
- Fitzpatrick, T.J. Rafinesque--a sketch of his life with Bibliography, 1836; reprint edit., 1978.
- Fogg, John M. Jr. "The Development of Horticulture in America." Morris Arboretum Bulletin 25, March, 1974, pp. 5-9.
- Fox, Hingston R. Dr. John Fothergill and his Friends. London, 1919.
- Futhey, J. Smith and Gilbert Cope. History of Chester County Pennsylvania Philadelphia: Louis H. Everts, 1881.
- Geer. Glenn B., compiler and Ann Rhoads, ed. Big Trees of Southeastern Pennsylvania. Philadelphia: The Morris Arboretum of the University of Pennsylvania, 1980.
- Gerard, John. The Herball, or General Historie of Plants. London, 1633; reprint edit., New York: Dover Publications, Inc., 1975.
- Gleason, Henry A. and Arthur Cronquist. Manual of Vascular Plants of Northeastern United States and Adjacent Canada. Boston: Willard Grant Press, 1963.

- Gordon, Robert B. "The Darlington Herbarium at West Chester." Bartonia 22. Philadelphia: Academy of Natural Sciences, 1943, pp. 6-9.
- Greene, John C. American Science in the Age of Jefferson. Ames: Iowa State University Press, 1984.
- Gutowski, Robert R. "Consultant's Report: Condition of Trees in the Marshallton Botanic Garden, March, 1984." prepared for the Director of the Chester County Historical Society, West Chester, Penna.
- _____. "Documenting Humphry Marshall's Botanic Garden Plantings." 1985 Longwood Graduate Program Seminars. Newark, De.: University of Delaware, 1986.
- _____. "Documenting Humphry Marshall's Boxwood." The Boxwood Bulletin, 24:4, April, 1985.
- Harper, Francis. The Travels of William Bartram, naturalist's edition. New Haven: Yale University Press, 1958.
- Harper, Francis and Arthur N. Leeds. "A supplementary Chapter on Franklinia alatamaha." Bartonia 19, Philadelphia Botanical Club, 1937, pp. 1-13.
- Harshberger, John W. "Additional Letters of Humphry Marshall." The Pennsylvania Magazine of History and Biography 53, 1929, pp. 269-82.
- _____. "The Old Gardens of Pennsylvania: Humphry Marshall's." The Garden Magazine. November, 1920.
- _____. The Botanists of Philadelphia and Their Work. Philadelphia: T.C. Davis & Sons, 1899; author's copy with addenda, Archives of the University of Pennsylvania, Philadelphia.
- _____. and Irwin Williams. "Memorial Exercises in Honor of Marshall and Darlington." Bulletin of the Chester County Historical Society, West Chester, 1913.
- Hayes, John Russell. "Humphry Marshall and his Times." Daily Local News, Westchester, September 23, 1913.
- Hazard, Samuel, ed., "Report of the Chester County Cabinet of Science." The Register of Pennsylvania 1, May 1828, pp. 302-04.

- Hedrick, U. P. A History of Horticulture in America to 1860. New York: Oxford University Press, 1950.
- Herbarium Collection. Darlington Herbarium, Botany Department, West Chester State University, Pennsylvania.
- Hindle, Brooke. The Pursuit of Science in Revolutionary America, 1735-1789. Chapel Hill: The University of North Carolina Press, 1974.
- Hillier's Manual of Trees and Shrubs. 5th ed. London: David & Charles, 1981.
- "His Old Trees: Humphry Marshall's Garden is Still Extant." Philadelphia Times. June 3, 1894.
- Historical Society of Pennsylvania. Barton Papers; Dreer Collection, Marshall Correspondence.
- Hoopes, Josiah. Book of Evergreens. New York: Orange Judd & Co., 1868.
- Hough, Romeyn Beck. Handbook of the Trees of the Northern States and Canada East of the Rockies 3rd and revised ed. Lowville, NY: R. B. Hough Co., 1924.
- "Humphry Marshall." Daily Local News. West Chester, July 23, 1907.
- Jackson, B. Dayton and Joseph Hooker. Index Kewensis. 2 vols. Oxford: Clarendon Press, 1895.
- "Journal of James Kenny 1761-1763." The Pennsylvania Magazine, vol. 37, 1913.
- Kalm, Peter. Travels into North America, 1770-71; trans. from the Swedish ed., London: Warrington.
- Kammer, E. L. "What Woody Plants Were Used in American Colonial Gardens." Morton Arboretum Bulletin 20, February 1947.
- Kelly, Howard A. Some American Medical Botanists. Troy, NY: Southwark Co., 1914.
- Lawrence, George H. M. "The Historical Role of the Botanic Garden." Longwood Program Seminars. Newark, Del.: University of Delaware, 1969, pp. 33-37.

- Leighton, Ann. American Gardens in the Eighteenth Century.
Boston: Houghton Mifflin Co., 1976.
- Lemmon, Kenneth. The Golden Age of Plant Hunters. London:
J. M. Dent & Sons, 1968.
- Lemon, James T. The Best Poor Man's Country, a
Geographical Study of Early Southeastern
Pennsylvania. Baltimore: John Hopkins Press, 1972.
- Lemon, James T. and Gary B. Nash. "The Distribution of
Wealth in 18th Century America: A Century of Change
in Chester County, Pennsylvania, 1693-1802." Journal
of Social History 2, Fall 1968, pp. 1-24.
- Linnaeus, Carl. Species Plantarum. 2 vols. Stockholm,
1753; facsimile ed., London: Ray Society, 1957.
- Little, Elbert L., Jr. Checklist of United States Trees
(Native and Naturalized) Agricultural Handbook No.
541. Washington, D.C.: USDA Forest Service, 1979.
- Lockwood, Alice B. ed. Gardens of Colony and State. 2
vols. New York: Scribner's Sons, 1931.
- Loudon, John Claudius. Arboretum et Fruticetum Britannicum
8 vols. London: James Ridgway and Sons, 1838.
- MacElree, Wilmer W. Along the Western Brandywine. 2nd ed.
Westchester, Pa.: F. S. Hickman, 1912.
- McLean, Elizabeth P. "Visits to Bartram's Garden: 1829."
Bartonia 50, pp. 2-7, 1984.
- M'Mahon, Bernard. American Gardener's Calendar; adapted
to the Climates and Seasons of the United States.
Philadelphia: B. Graves, 1806.
- Marshall, Humphry. Arbustrum Americanum: The American
Grove, or, an alphabetical catalogue of forest trees
and shrubs. Philadelphia, 1785; facsimile with French
ed. (1788) and introduction by Joseph Ewan. New York:
Hafner Publishing Co., 1967.
- Marshall, Moses. "Memorandum Book of Moses Marshall."
Diary Series, Chester County Historical Society, West
Chester, Pennsylvania.
- Massey, George Valentine. The Pennocks of Primitive Hall.
West Chester: Chester County Historical Society,
1951.

- Mawe, Thomas and John Abercrombie. The Universal Gardener and Botanist or a General Dictionary of Gardening and Botany. London: G. Robinson and T. Cadell, 1797.
- Meehan, Thomas. American Handbook of Ornamental Trees. Philadelphia: Lippencott, Grambo, and Co., 1853.
- Meisel, Max. Bibliography of American Natural History, the Pioneer Century, 1764-1865. 3 vols. New York: Premier, 1924-29.
- Michaux, Andre. Flora Boreali-Americana 2 vols. Paris, 1803; facsimile with introduction by Joseph Ewan, New York: Hafner Press, 1974.
- Michaux, F. Andre. The North American Sylva. 3 vols. Paris: C. D'Hautel, 1817-1819.
- Miller, Philip. The Gardener's Dictionary. abridged ed. London, 1754; reprint with introduction by W.T. Stearn, Lehre: J. Cramer, 1969.
- _____. The Gardener's Dictionary. 8th ed. revised. London, 1778.
- Nuttall, Thomas. The Genera of North American Plants. Philadelphia: D. Heartt, 1818.
- Pennel, Francis W. "Botanical Collectors of the Philadelphia Local Area." Bartonia 21, May 1942, pp. 38-57; Bartonia 22, pp. 10-32.
- _____. "Historical botanical collections of the American Philosophical Society and the Academy of Natural Science of Philadelphia." Proceedings of the American Philosophical Society 94, pp. 137-151, 1950.
- _____. "Humphry Marshall, Botanist." Manuscript Collection, Academy of Natural Science, n.d. (Typewritten)
- Pennsylvania Horticultural Society. From Seed to Flower. Philadelphia: The Pennsylvania Horticultural Society, 1976.
- Pursh, Frederick. Flora Americae Septentrionalis 2 vols. London: White, Cochrane, and Co., 1814.

Radford, Albert E., Harry E. Ahles, and C. Ritchie Bell.
Manual of the Vascular Flora of the Carolinas.
 Chapell Hill: The University of North Carolina Press,
 1964.

Rafinesque, C. S. Medical Reporter of New York vol. 5,
 1808, p. 351.

_____. New Flora of North America, 1837.

Redfield, R. S. Front of Humphry Marshall's House at
 Marshallton, Chester County, April 5, 1884;
 photograph, Academy of Natural Sciences collections;
 printed by Harshberger in Botanists of Philadelphia,
 1899.

Rehder, Alfred. Manual of Cultivated Trees and Shrubs Hardy
 in North America. 2nd ed. New York: the MacMillan
 Co., 1967.

Sargent, Charles S. "Humphry Marshall." Garden and Forest.
 New York: Garden and Forest Publishing Company,
 November 8, 1893, pp. 461-62.

_____. "Notes on Trees in the Arboretum of Humphry
 Marshall." The Gardener's Monthly and Horticulturist
 22 (January 1880): 16-17.

_____. Silva of North America. 14 vols. Boston:
 Houghton, Mifflin and Co., 1891-1902.

Schoepf, David Johann. Travels in the Confederation,
 1783-4. Philadelphia: William Campbell, 1911.

Schooler, Alice, compiler. "The Humphry Marshall House,
 Marshallton, Pennsylvania." Preliminary architectural
 /historical study presented to the Chester County
 Historical Society; John Milner Associates, West
 Chester, Pennsylvania, July 1985.

Sharpless, William T. "Moses Marshall, M. D." Proceedings
 of the Chester County Historical Society, West
 Chester, 1895.

Short, Thomas. Medicina Britannica 3rd ed. Philadelphia,
 1751.

Smith, Benjamin H. "Some Letters from William Hamilton, of
 the Woodlands, to his Private Secretary",
Pennsylvania Magazine of History and Biography 29,
 January, 1905.

- Soil Conservation Service, United States Department of Agriculture. Chester and Delaware Counties Soil Survey Series, No. 19. 1959.
- Sparks, Zona. "Colonial Gardening." Plants and Gardens. Autumn, 1977, pp. 46-50.
- Stearn, William T. Botanical Latin. 2nd ed. Newton Abbot, Devon, Eng.: David & Charles, 1973.
- Stetson, Sarah P. "The Philadelphia Sojourn of Samuel Vaughan." The Pennsylvania Magazine of History and Biography, October 1949, pp. 459-474.
- _____. "William Hamilton and his Woodlands." The Pennsylvania Magazine of History and Biography, vol. 73, 1949, pp. 26-33.
- Stokes, M. A. and Terah Smiley. An Introduction to Tree-Ring Dating. Chicago: University of Chicago Press, 1968.
- Stone, Hugh E. Flora of Chester County, Pennsylvania. 2 vols. Philadelphia: Academy of Natural Sciences, 1945.
- Strausbaugh, O. D. and E. L. Core. Flora of West Virginia. 2nd ed. Morgantown: West Virginia University, 1970-77.
- Swartley, John C. Some trees Notable for Size and/or Rarity in the Philadelphia Area. Prepared for the International Shade Tree conference (ISTC) Educational Committee, 1967 Convention; revised August 1969, Philadelphia: Temple University and the ISTC, 1969.
- Thacher, James. The American New Dispensatory. 2nd ed. Boston: Thomas Wait and Co., 1813.
- Torrey, John and Asa Gray. A Flora of North America. 2 vols.; facsimile of the 1838-43 ed., intro. by Joseph Ewan, New York: Hafner Publishing Co., 1969.
- Urban, Sylvanus, ed. "Gentleman's Magazine and Historical Chronicle." Vol. 15, London, 1770. CCHS ms. 3389.
- W. C. B. "The Horse Nettle: *Solanum Carolinense*." Cultivator and Country Gentleman. March, 1871.

- Walker, Elizabeth Colt. "18th Century Pennsylvania Horticulture." Research paper for the Pennsylvania Horticultural Society, Philadelphia, no date, ca. 1976, typewritten.
- Walter, Thomas. Flora Caroliniana. London: J. Wenman, 1788; facsimile ed., Cambridge: Arnold Arboretum, 1946.
- Waterhouse, Benjamin. The Botanist. Boston: Joseph T. Buckingham, 1811.
- West Chester, Pennsylvania. Private collection of William Baldwin, bookseller; letter from Mary Marshall, Marshallton, to Moses Marshall, Philadelphia, October 4, 1830.
- West Chester (Pennsylvania) Daily News, May 5, 1874.
- West Chester University, Darlington Library Collection. William Darlington's handwritten notations, 1811, in his copy of Andre Michaux's Flora Boreali Americana.
- Wherry, Edgar T., John Fogg, and Herbert Wahl. Atlas of the Flora of Pennsylvania. Philadelphia: The Morris Arboretum of the University of Pennsylvania, 1979.
- Wildman, Edward E. Penn's Woods 1682-1932; reprint of 1933 ed., by the author; Philadelphia: Wildman, 1944.
- Williams, Bradford, ed. Colonial Gardens, the Landscape Architecture of George Washington's Time. Prepared by the American Society of Landscape Architects. Washington D. C.: U. S. George Washington Bicentennial Commission, 1932.
- Williams, Irvin C. "Humphry Marshall and William Darlington." Bulletin of the Chester County Historical Society, September 1913, pp. 20-34.
- Woodville, William. Medical Botany. 3 vols. London: James Phillips, 1790-3.
- Wren, R. W. Potter's New Cyclopedia of Botanical Drugs and Preparations. London: Sir Isaac Pitman & Sons, Ltd., 1956.