

**Arboreta,
Gustavus Adolphus College Campus Development
and
Linnaeus Arboretum History**
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Introduction

The Linnaeus Arboretum of Gustavus Adolphus College belongs to a rich heritage of arboreta in our country. Since the late 1800's arboreta in the United States have been centers for horticultural display, public and private education, and research. Once established, an arboretum becomes part of the permanent fabric of a place. It symbolizes the long-term commitment of a community or institution to the care and beautification of a place.

The Linnaeus Arboretum is part of the ongoing tradition of campus beautification at Gustavus Adolphus College. Trees were planted around the Main building soon after its completion in 1876. The 1915 College Catalog expresses the importance of campus beauty in the following words: "For natural beauty, the college grounds are well selected and have few superiors. The College Park Association is working to improve the grounds, year by year, according to the plans of the architect."¹

In this paper I will discuss the definition of an arboretum, including the factors involved in defining such an establishment. I will also include a discussion of the considerations which must be made for the continuing support of an arboretum. I will look into the establishment and development of several arboreta which have connections with institutions of higher learning. Using examples from the history of these arboreta, I will show how they may provide insight on the Linnaeus Arboretum and its stage of development. I will tell the story of the campus development and the development of the arboretum as it came onto the scene.

The Linnaeus Arboretum has been shaped by many factors. The tradition of arboreta in our country, as well as the history of Gustavus Adolphus College, has

¹*Gustavus Adolphus College Catalog*. 1915. Gustavus Adolphus College Archives.

shaped and will continue to shape the arboretum. Present land-use issues of the college, and current use and involvement by the Gustavus and St. Peter communities also shape the arboretum. A broad-scale view of these factors will give us a balanced perspective on past, present and future development of this unique arboretum.

Arboreta: Definitions

The definition of an "arboretum" has changed over time. The word origin "arbor" implies a place with trees. Accordingly, the first arboreta were formal gardens of trees. Eventually shrubs and vines were planted in arboreta in addition to trees, and currently many arboreta have collections of herbaceous plants as well.² Some arboreta now include areas with communities of plants in their natural ecological groupings. This increased variety in the plant composition of arboreta has expanded the definition of an arboretum.

Similar to an arboretum is the "botanical garden." Arboreta and botanical gardens "have traditionally been places where plant materials were displayed in a systematic fashion, with emphasis on both study and appreciation."³ Plants were labeled with classification information: the family, genus, and species of the plant. Botanical gardens differ from arboreta conceptually in that they emphasize herbaceous plants. They have more flexibility in planting from year to year since herbaceous plants are generally shorter-lived than woody plants and plantings can be moved and changed from year to year. In contrast, arboreta are in part defined by longevity and stability (the plants remain in the same place year after year). This gives the arboretum a decidedly different character even though the types of plants in both of these types of collections overlap.

An arboretum is defined by its uses as well as by its plant composition.

²Fred Lape. *A Garden of Trees and Shrubs*. Ithaca, NY: Comstock Publishing Associates, Cornell University Press. p. 1.

³Institute for the Study of Science in Human Affairs, Columbia University. *The Prospective Role of an Arboretum, A Report*. Holden Arboretum, Mentor OH. June 1972. p. 3.

Arboreta may focus on horticultural display, plant taxonomy, research, education, recreation,⁴ or a combination of all of these. Most often arboreta have more than one focus for use. The primary use intended will shape the physical design of the arboretum.

Although arboreta have such a variety of uses, display is central to the definition of an arboretum. Research can be done in many different places (labs, field sites). Recreation can be pursued in parks and physical education facilities. Education may be practiced in any number of other settings. An arboretum, however, has the unique position of synthesizing all of these uses on one site.

The display of the arboretum will affect all of the other uses of an arboretum. Education will be specific to a particular arboretum. In formal arboreta, many plants of a similar genetic origin can be compared side by side. The type of research will be affected by the type of display, whether it be formal gardens or natural ecological groupings.

Research is an important component in some arboreta. Often, arboreta have experimental plots for introducing new species. They may be used to examine species growth and to determine the care required for the plants in a certain environment and climate. Arboreta may be useful in studying the effects of urbanization on plant groups and in searching for hardy plants for urban areas.⁵

The education of an arboretum is multi-faceted. An arboretum may provide educational programs for the public, or for the members of the institution with which it is connected. It may be arranged in a particular way for instruction, either taxonomically for botanical study, or in natural communities for natural history education. Trails, signs and audiotapes may be used for instruction.

The Prospective Role of an Arboretum: A Report states that few arboreta are

⁴Ibid.

⁵Ibid. p. 7.

"effectively integrated with university instructional programs."⁶ It is unfortunate that such institutions do not utilize a major part of their campus and educational resources. The *Report* also states that most college arboreta have no research programs.

As mentioned above, definitions of arboreta have evolved. The traditional, formal arboretum generally had plants arranged according to some pattern and identified with labels. The original and oldest arboreta focus on horticulture and collection of woody species (trees and shrubs), including many exotic species (species which are not found naturally in ones own area). These parts of an arboretum are expensive to care for and require a lot of tending. Now however, there are arboreta which emphasize natural communities. These natural groupings are more informal in their arrangement and generally have fewer or no identification labels. They normally retain some formal aspects as well. The University of Wisconsin Madison's arboretum and Carleton's Cowling Arboretum are examples of arboreta which have taken this route. The decision to do this was directed in part by the existing vegetation and condition of the landscape. Both began with fairly extensive tracts of wooded land and developed this land working with the existing plant communities.

Natural communities are valuable because they show respect for and appreciation of local natural history. In addition, native plants require less care. They are already adapted to the environment and thus take care of themselves. The Linnaeus Arboretum includes both formal areas and natural communities.

When planning an arboretum or the development of any sort of grounds, campus, park etc., one must consider the past, present and future of the arboretum. One must look at the past to set the historical context, the present to determine environmental and financial limits for arboretum design, and the future in order to plan properly for growth, expansion, and change.

The physical design of an arboretum is important. A good landscape architect, or other person knowledgeable in botanical and design matters, is needed to design

⁶Ibid. p. 1.

an arboretum. According to Fred Lape, *A Garden of Trees and Shrubs*, "What becomes of a school grounds is dependent almost entirely upon the vision or lack of it, in the original plans of the architect. Too often the athletic fields, parking lots, and driveways are thrown in haphazardly with little thought of taking advantage of the terrain or any future development."⁷

Lape lists three components which ought to be considered when designing an arboretum: the attractiveness of plantings in a certain arrangement, the systematic grouping of plants, and the placing of plants in appropriate microclimates (as determined by testing soil type and moisture, elevation, and wind patterns). Plants can be grouped taxonomically, by geographic origin, or simply by aesthetic preference.⁸ Plenty of space should be left for growth of plantings and expansion of some groupings.

The limits placed on the arboretum by local conditions ought to be considered. Local soil type, climate, the size of the property, as well as the financial resources available may determine the type of plantings which will be successful.⁹ The design plan must be flexible. Some plants may not grow where they were planned on paper to grow.¹⁰ Changes in financial resources, development concept, use, and the surrounding landscape will also affect the implementation of the original plan.

Planning ahead includes not only the physical design of an arboretum, but also setting up an administrative plan and providing funding for the arboretum into the future. An official administrative system and financial security are essential because an arboretum requires stability in order to mature.¹¹ It cannot be moved at a person's convenience or restarted in a different location. Arboreta have been

⁷Fred Lape. p. 106.

⁸Ibid. p.1.

⁹Institute for Study. p. 12.

¹⁰Fred Lape. p. 20.

¹¹Ibid. p. 2.

threatened by development pressures in the past. The former Elgin Botanical Garden was located where the Rockefeller Center is now and the Marsh Botanical Garden of Yale was replaced with institutional offices.¹² Changes will take place, but an endowment or an official connection with a particular long-standing institution can give an arboretum greater permanence. However important the recognition of the arboretum by a particular institution, the arboretum should have its own administration - a director/ coordinator for the arboretum alone - separate from that of the affiliate institution.¹³

The Linnaeus Arboretum has been influenced by many of the above-mentioned factors. The size of the arboretum, type of climate and soils, and amount of monetary support, must all be considered. Also the goals of the founders as reflected in the mission statement, and the interests and needs of those who will use the arboretum now and in the future must be considered. The history and models of other arboreta provide experience for the Linnaeus Arboretum's future development.

College arboreta: some examples

Arboreta have been set up as private foundations, experimental stations, and in connection with universities and colleges. I have examined several college arboreta in order to compare their histories with the Linnaeus Arboretum's history.

The Arnold Arboretum of Harvard (founded in 1872) was one of the first college arboreta in the United States. It focused primarily on collecting plants for taxonomic research.¹⁴ The Arnold Arboretum aimed to have a representative of every tree or shrub able to live in New England. Many exotic species were collected for the arboretum and the herbarium. One of the purposes of this was to experiment

¹²Institute for Study. p. 2.

¹³Ibid. p. 18.

¹⁴Ibid. p. 3.

with plants for landscaping.¹⁵ Experiments were done to determine the acclimatization of various species and the best varieties for hardy growth in that region.¹⁶ The arboretum thus could provide the local populace with information on identifying and caring for the plants native to their own region, as well as which species could be introduced and grown well in their area."¹⁷

The University of Wisconsin Madison set a precedent for arboreta by focusing on native plant communities. During the depression, land around the lakes in Madison was bought cheaply by a group of people with the intention of creating a park. Plans for the park did not materialize and the citizens turned the land over to the University to manage.¹⁸ An inter-disciplinary committee of professors at Madison, including the well-known Aldo Leopold, designed an arboretum which was to reflect the natural history of Wisconsin. This committee was fortunate to have a very large piece of land with a broad range of habitat and soil types represented. Development plans included upgrading of forests and construction and reconstruction of natural habitats. The arboretum was dedicated in 1934. Since then, many unique habitats have been nurtured or recreated there. The patience required for such restoration work is apparent as indicated by this quote from an arboretum publication: "Only time will bring many of these communities to their full state of development."¹⁹ The amount of land has increased to 1260 acres.²⁰ The arboretum

¹⁵E.H. Wilson. *America's Greatest Garden: the Arnold Arboretum*. Boston, MA: Stratford Company Publishers, 1925. p. ii.

¹⁶Ibid.

¹⁷Institute for Study. p. 3.

¹⁸William R. Wineke. "Arboretum: Special Report" *Wisconsin State Journal*. 20 July 1986, sec. 4:1.

¹⁹*University of Wisconsin Arboretum Map*. University of Wisconsin Arboretum.

²⁰*Welcome to the University of Wisconsin Arboretum*. University of Wisconsin Arboretum.

is used extensively for research²¹ in a variety of fields, from plant pathology to landscape architecture and horticulture.²² In 1962, a community support organization was formed. It provided help in property acquisition, conducting guided tours and public programs, organizing arboretum publications, and supporting continued research.²³

Carleton's Cowling Arboretum offers striking parallels to the Linnaeus Arboretum in both its development and history. The arboretum of this small, liberal arts college was begun in 1927 through the interest and dedicated efforts of botany professor Harvey Stork, ground's superintendent D. Blake Stewart, and student interest. The college made farmland purchases in the 1900's to the north of the campus along the Cannon River. The land closest to the river was forested; the remainder was farmland. Many different species of trees and shrubs were planted including over one thousand lilacs. Several lakes were developed from pasture sloughs.²⁴ The lakes were a problem in later years as they became choked with silt and weeds.

Harvey Stork retired in the 1950's and the ground crew size decreased. Interest in and care for the arboretum waned. It had never been incorporated into the college's administration plan and had no built in governance of its own.²⁵ For twenty years, the arboretum was neglected. People still used it for recreational purposes, but its educational use declined greatly. In the 1970's, interest in the arboretum revived. Several reports were written recommending changes in the management and use of the arboretum. In 1973, a geology professor held a seminar to examine the roles of the arboretum and stimulate interest in the arboretum. The

²¹ William R. Wineke.

²² *Welcome*.

²³ *Ibid*.

²⁴ "A Century of Constant Change." *The Carleton Voice*. Summer 1978: 4.

²⁵ *Ibid*. p. 5.

arboretum began to shift its emphasis from a formal design to the enhancement of the natural habitats present in the arboretum. The shift in emphasis was reflected in and furthered by the 1977 statement of purpose. According to this document, the arboretum should be "preservational, educational, and recreational" and "should be managed as a mosaic, protecting fragile plant communities and animal habitats while allowing recreational use in other areas."²⁶ Now the arboretum plan follows the natural vegetation pattern quite closely.²⁷

The committee also felt it important to "establish a formal system of arboretum management." This system would include an arboretum committee, and a position of naturalist/manager. The arboretum also struggled with financial problems. As of 1978, the college had implemented a formal management plan, secured funding for maintenance and improvement, created a position of manager, designated a director, and designed a student mentorship program to keep student interest in the arboretum alive. Since the seventies, a number of research projects have also been conducted in the Cowling Arboretum.

The Linnaeus Arboretum has its own uniqueness and differs from the Cowling Arboretum in several ways. Natural water is present there only seasonally compared with the presence of the Cannon River which flows through the Cowling Arboretum. All of the Linnaeus Arboretum has been farmed at one time, whereas the Cowling Arboretum has areas which have never been greatly disturbed by European settlement. The Cowling Arboretum is forty-six years older than the Linnaeus Arboretum, making our twenty-year-old arboretum a relatively young establishment. These differences set a different scenario for its development.

Because the Linnaeus Arboretum has started "from the soil up," great patience is required in waiting for trees to grow to an appreciable size. Because few arboreta are started on agricultural fields, there is no precedent for the Linnaeus Arboretum to follow. The plantings there have been experimental in the sense that one does not

²⁶Ibid. p. 6.

²⁷ Mark McKone. Personal interview. March 1993.

know how the planting will work out.

The Linnaeus Arboretum's physical properties including sandy, well-drained soil; location on a windy hillside; and other climatic influences; make the arboretum unique. The trees planted there will grow differently than on other sites. For example, the trees in the arboretum, will not grow as tall as trees on the Minnesota River Floodplain or even as tall as the trees further down the hill.

Gustavus Campus Development

Since the Linnaeus Arboretum is a part of the Gustavus campus, it is important to examine it in the context of campus history. The hill was a dry sand prairie. Fires from the west kept this western slope free of trees, while the other side of the river had plenty of trees. The Lakotas lived along the river and on the adjacent prairies. When European settlers came, they farmed the level prairie land above the river valley and pastured cows on the valley slopes. The hillside was dry and grassy with an occasional set of boulders. There were only a handful of trees.²⁸

When the campus was moved from Red Wing to St. Peter in 1876, it began with a twenty-acre plot of pasture land, on which was built one structure.²⁹ The campus was the highest point of elevation within the city limits of St. Peter. This made it a good site to view the valley. Indeed, the College Catalog from 1943 states that in 1862 European settlers fortified the hillside where the campus is now located because of conflicts with other inhabitants of the valley.³⁰ When the main building (present day Old Main) was built in 1876, a row of new trees was planted near the building. Fences framed the fields and pastureland. Farmfields and a few farmbuildings stood on land adjacent to the campus's twenty acres. By 1885, two

²⁸Photo. Gustavus Adolphus College Campus. Nicollet County Historical Society.

²⁹Conrad Peterson. *A History of Eighty Years: 1862-1942*. Augustana Book Concern, Printers and Binders. Rock Island, IL, 1942. pp. 35-36.

³⁰*Gustavus Adolphus College Catalog*. Vol. 43. Gustavus Adolphus College Archives.

buildings occupied the college land.

The Catalog of 1915 boasts of a "campus finely shaded by a growth of evergreens and various other shade trees" as well as tennis courts and fields for outdoor sports.³¹ In 1915, the trees would have been forty years old, large enough to shade the campus lawns. The administration was eager to convince its supporters and prospective students of the acceptability of St. Peter as a site for the campus. They wrote in the college catalog of the natural beauty of the campus and the many improvements in landscaping which were forthcoming.³² Nine buildings now faced the valley. The college continued to plant trees on the hillside to beautify the campus and "improve" it if you will. They were concerned with the image of the campus and making it beautiful. By 1924 there were trees as tall as the roof of the main building.³³ Uhler and the football stadium were built in 1929. In 1937 the college had acquired more land and owned an 80 and a 40 acre plot. Rundstrom was built in 1939 as well as a field house.

In 1947, an architect was hired to design new campus plans. The plans included expansion through a mall oriented east-west starting about where Vickner Hall is now. At this time, a farmhouse rimmed by trees stood where the fine arts building is now. Another farmhouse stood on the land between the present Nobel Hall and the present Social Science building.³⁴ In this year also, a 205 acre farm was added to the twenty acre campus. The farm supplied the dining hall with potatoes and vegetables.³⁵ The campus was changing in other ways too. The road which had gone up the hill to the doors of the main building was removed, and a periphery (ring) road installed to service buildings being built increasing distances from the Old

³¹Ibid. 1915.

³² Ibid. 1915.

³³Photo. Gustavus Adolphus College Campus. Nicollet County Historical Society.

³⁴Campus Plan 1948. Campus Plan File. Gustavus Adolphus College Archives.

³⁵*Gustavus Adolphus College Catalog*. Vol. 46.

Main.³⁶ In the period from 1950 to 1961, the number of buildings on campus increased to 19, the chapel was built. The catalog for 1964-1966 describes the campus: "Its 246 acres spread themselves for several blocks along the crest of the hill and away from the valley about one-half mile into the rich farmlands of Nicollet County."³⁷ This same catalog spoke of Gustavus' "handsomely landscaped grounds." It appears that Gustavus placed great importance and pride in the appearance of its campus.

The Linnaeus Arboretum

Establishment

The idea for an arboretum at Gustavus may have evolved over coffee conversations during the late 1960's. Charles Mason, (professor of biology 1967-present) recalls from his first year here a conversation with a student. The student was concerned about having no quiet place near the campus where one could go to walk. One had to go down by the river to walk. The conversation stayed with Professor Mason and was a factor influencing the development of the arboretum. The Mason family was on sabbatical in Scotland for the year 1971-1972. When they returned, someone requested that Charles Mason speak with President Barth about the idea of planting trees in the field west of the campus. The President's house was built in the northeast portion of the college's western property in the beginning of 1973. The house was fairly near the Old Fort Road. Noise and dust from the road, then unpaved, easily reached the President's house. First Lady Marge Barth was interested in having some trees planted around the house to block some of the negative aspects of the house's location. Charles Mason expressed his interest and he and Harriet Mason began working on the idea immediately in the fall of 1972.

The land proposed to be arboretum had been bought by the college in the mid 1940's. The campus farmed it for awhile and in later years it was rented out to

³⁶Ibid. Vol 47. aerial photo.

³⁷Ibid. Vol. 60. p. 10.

neighboring farmers on a cost per acre. The farmer was planting winter wheat and soybeans there in the late 1960's.³⁸ Chester Johnson, (emeritus professor of geology) remembers when he first came to campus in the 1940's that peas were grown on that field and some faculty members would glean the peas from the field after harvest. The wind row was already in place and had probably been planted to prevent wind erosion in the 1940's.³⁹

In the spring of 1973, Professor Mason presented a plan for a campus arboretum to the Board of Trustees of the College. The original plan included development of all college owned land west of the campus into a 130 acre arboretum. Charles Mason "presented what he had and had to see what happened."⁴⁰ Approval was given to develop 55 acres of land east of the wind row⁴¹ with the understanding that approval of the remaining 75 acres was likely contingent on the success of the first plantings. The arboretum was on its way.

There were some objections originally to the idea of an arboretum. Some people were skeptical of trees growing in the sandy soil. Professor Mason pointed out the successfully growing wind row west of the campus. Other resistance stemmed from conflicts in land-use interest. There were many ideas as to what should be done with the land. Ideas discussed at least informally included: a riding area and stables for horses; a golf course; an apple orchard or a black walnut grove, in order to sell apples or walnut lumber.

Finally there were financial considerations. Turning the land into arboretum meant giving up the rent from the farmer.⁴² It meant making a commitment to a large project and the college was uncertain about whether it wanted a new financial

³⁸Jeffrey S. Miller. "A Garden of Sweden." *Twinflower*. Fall 1989. Vol. 1. p. 1.

³⁹Charles Mason. Personal interview. 29 April 1993.

⁴⁰Ibid.

⁴¹Ibid.

⁴²Bob Peterson. Personal interview. 30 March 1993.

"burden." Eventually however, the promise of an arboretum overrode financial concerns.⁴³ With President Barth's support, the use of the land for an arboretum was approved in the spring of 1973. Soon after approval, the first trees were planted around the president's house. Charles Mason and two students planted some of the first trees. President Barth put about \$1500 into an arboretum account so it could be used to give the arboretum a start. He also helped to plant the young trees. There was no permanent financial security for the fledgling arboretum,⁴⁴ but it did quite well on the generosity of the college community and people living in the area. The Greater Gustavus Fund has given \$5000 a year to the arboretum since its inception. Gifts from alumni have provided important financial support. Trees have been given by landowners from their woods or from floodplain sections. Some people bought trees and donated them.⁴⁵ Forty to fifty trees were transplanted by hand during the spring of 1973.

Also in this first year, brome grass was planted in the north thirteen acres on the recommendation of the soil service. The brome grass held the soil in place and kept out weeds and weedy trees. It even gave the pine seedlings some competition. Brome is a very competitive grass and will make later introductions of native herbaceous plants difficult, but the planting was an experiment and a learning experience.⁴⁶

The following spring, in 1974, seedlings were ordered from the soil conservation service at one and one-half cents per seedling. The seedlings included mostly pines; however, several black walnut and silver maple trees were included. Most of the black walnuts and maples died or were moved out of the conifer section and planted elsewhere on the campus.

⁴³Ibid.

⁴⁴Ibid.

⁴⁵Ibid.

⁴⁶Charles Mason.

A special chapel service was held to commemorate this "first planting." After chapel, participants walked out to the arboretum dressed in their nice clothes, carrying tree seedlings. They ceremonially planted the seedlings. President Barth was there and a number of faculty and students were also present.

Most of the seedlings were planted with a planter which made a furrow, allowed a seedling to be dropped in and then closed the furrow again.⁴⁷ Two people sat on the back of the planter and dropped the seedlings into the ground. The two students who were especially involved during these very first years of work on the arboretum were Cheryl Schwanke and Steve Brandt, biology majors. Charles Mason involved his botany students in planting the arboretum, requiring tree planting for a laboratory period. He believed in the educational value of planting trees and even made it into a game, to see who could plant the greatest number. However, some students rebelled, saying that it was forced labor. Perhaps 1500 trees were planted in the spring of 1974.⁴⁸

The planting which had gone on so far was still in the 13 acre area near the President's house. The nursery was also planted at this time. There were plans to plant trees in the nursery and then be able to move them out onto the rest of campus, a plan which has worked out well as large trees can be transplanted to other places on campus at little cost.⁴⁹

During the first few years when the trees were small, volunteer corn plants and grasses came up and hid the seedlings. The little trees were so overshadowed by June of the first year that it seemed to some people as if they had all died.⁵⁰ The little trees could best be seen during the winter.⁵¹

⁴⁷Remember this area had been an agricultural field, so it was easy to cultivate.

⁴⁸Charles Mason.

⁴⁹Charles Mason.

⁵⁰Bob Peterson.

⁵¹Frank Barth's comments on Arbor Day 1993.

While the first trees were being planted, the plan for the present sections of the arboretum was not on paper. The people originally planting the arboretum knew they wanted a conifer section and that they wanted trees around the President's house, so they began planting pines. Other early ideas for the arboretum included natural areas, two man-made ponds, and a nature center surrounded by tiered gardens.⁵²

During the fall of 1974, plans for the arboretum were discussed in open meetings. The Minnesota Environmental Sciences Foundation, an organization which gives advice in the planning of public parks etc., was hired (for about \$2000) to formalize an arboretum plan. Those actively involved included students, faculty, grounds crew, a recent alumnus, and the President.⁵³

Dr. Charles Mason recommended an emphasis on natural areas in the design. Such an emphasis would reflect the natural heritage of Minnesota by providing example of vegetation zones characteristic to the state. Native vegetation does not need as much care as formal plantings do. However, support for a formal arboretum was strong as well. In the plan which resulted from these discussions, the physical aspects of the arboretum and the varying opinions in purpose and focus were considered. Both natural areas and a twenty-five acre formal area were included in the master plan. Jim Gilbert, (Gustavus Alumnus and naturalist) contributed many diagrams during the planning process which were a major influence on the eventual shape of the arboretum.⁵⁴

The master plan was completed and published in January of 1975. It contains contour maps and maps of soil type. Development phases were indicated and

⁵²*Gustavian Weekly*. 22 March, 1974: 6.

⁵³MESF acknowledged the help of the following individuals in the development of the Gustavus Arboretum plan: Gerhard T. Alexis, Dr. Frank Barth, Wendell G. Bradley, Gretchen Brockmann, Bill Commer, Dr. Rouse Farnham, William J. Geary, James Gilbert, Dale A. Haack, Dr. Gustav Hard, Robert E. Karsten, Janna King, Ted Kunze, Dr. Charles Mason, Eric Mattison, Don Nielsen, Bruce Robb, Cheryl Schwanke, and Ward Tanner.

⁵⁴Charles Mason.

firebreak plans were made. Eight habitat types from across the state were included in the plan: upland pine forest, lowland spruce-fir-tamarack bog forest, mixed conifer-hardwood forest, upland hardwood forest, bottomland hardwood forest, prairie-forest transition, prairie, and an area of mid-successional development from field to forest.⁵⁵ The ninth section of the arboretum would be the formal section. Each section was described in the plan and recommendations made for its planting.

In the spring of 1975, planting continued with the help of volunteers. One hundred fifty trees and shrubs were planted that spring on the 24th and 25th of April including plum, cherry, crabapple, birch, black walnut, butternut and oak saplings.⁵⁶

A second spring planting was planned for mid-May. An additional 2700 trees arrived from the Soil Conservation Service. The new seedlings, about 15-20 inches tall, included Ponderosa pine, Colorado spruce, white oak and Norway pine. Shovels were purchased so volunteers could help plant the new trees.⁵⁷

In a 1975 *Gustavian Weekly* interview with Cheryl Schwanke, she stated that the purpose of the arboretum is "to re-establish natural areas with native Minnesota trees." According to Schwanke, the finished arboretum would contain "collections of varieties of trees" and some "native wilderness areas." It was hoped that the planting on the fifty-five acres closest to the campus would be finished by the spring of 1976 and the remaining 75 acres could be planted in the following 5-10 years.⁵⁸

In the spring of 1976, Emanuel Roth, a gardener from the Minnesota Landscape Arboretum, was hired to help with the Gustavus arboretum. He began planting clusters of trees in the formal section. On Saturdays he drove to St. Peter bringing trees from his own backyard nursery in his car. According to Charles Mason, Roth would bring the tree out, look around, ask if it was in the right general

⁵⁵Ad Hoc Committee. "The Role of the Linnaeus Arboretum in the life of Gustavus Adolphus College. Gustavus Adolphus College, St. Peter, MN. March 1992.

⁵⁶*Gustavian Weekly*. 2 May 1975. p. 1.

⁵⁷Ibid.

⁵⁸Ibid.

area, (according to the design plan) and then plant it. Students helped dig the holes for the trees. Trees were added each year as they were donated or as more money came in. However the initial planting pulse had come to an end. In the 1970's the Gustavus Catalog had described "grassy malls, [and] tall shade trees" among the buildings. The 1974-75 catalog description included "field laboratories,"⁵⁹ apparently referring to the arboretum. In 1976, the arboretum was labeled on the campus map for the first time.⁶⁰

It was planned that the natural succession would develop the arboretum to a certain extent. Trees were planted, but the undergrowth was left up to nature. There were plans to introduce more of a diversity of species in the understory as the trees developed. The brome planted in the northernmost thirteen acres stopped a lot of successional development, but in the other areas of the arboretum, the ground cover development was left up to chance. Because of the bare soil, the ground was very receptive to volunteer seedlings from the wind row. The hardwood area especially, became very brushy, with many small trees and other undergrowth in addition to the trees which had been planted. The diversity and density of cover attracted birds and animals. Hungarian partridge, pheasant, eagles, and other animals came to the arboretum.

This dense brush would have diminished as the trees grew and began to shade the undergrowth, but that could have taken many years. The arboretum was considered messy and unkempt. Considering its proximity to campus buildings, the arboretum could easily be scrutinized by members of the Gustavus community. The undergrowth was criticized. The opinion was voiced that someone should "Clean it up out there."⁶¹

This was done. The trees which were deemed "worthy," both those which had

⁵⁹*Gustavus Adolphus College Catalog*. Vol. 69, no. 4. Gustavus Adolphus College Archives.

⁶⁰*Ibid.* Vol. 71.

⁶¹Loreli Steuer. Personal interview. 18 March 1993.

been planted and those which had volunteered, were tagged to be saved. A front end loader, equipped with brush-eater blades went through the area, chopped up all of the unwanted brush and saplings and turned them into wood chips. The arboretum was thus made more presentable for the public, though less desirable for many of the animals which had lived there. The brush clean up decreased competition for the young saplings.

Development

In 1979, the arboretum was ceremonially dedicated. At the dedication luncheon were present Edward and Patti Lindell, the presidential family at the time. This dedication helped to put the arboretum in the spotlight and increase its recognition and support within the Gustavus community. In a speech at the luncheon it was stated that the "Gustavus arboretum is dedicated to campus beautification"⁶² a statement which fit well with the vision for the whole campus.

Few changes were made in the arboretum in the late 1970's and early 1980's. The physical education department laid woodchip paths and installed the athletic fitness trail. Benches were also installed.⁶³ The trees continued to grow and were becoming more visible. It was no longer questionable in mid-summer whether an arboretum existed in the field or not.

In 1984, during John Kendall's presidency, an arboretum committee was formed to guide development of the arboretum.⁶⁴ Another pulse of interest and activity began at this time. Shep Hayman, grounds crew director, who arrived at this time, put a lot of energy into working on the arboretum. The Borgeson Cabin was moved from Norseland Minnesota to the Gustavus arboretum in the summer of 1986. This Swedish settler cabin built by Clara and Carl J. Borgeson was donated to Gustavus by Nicollet County. Bob Douglas of the geography department, assisted by

⁶²Gustavus Adolphus College Arboretum Dedication Luncheon Program, 1979.

⁶³Deb Proechel. "Arboretum improved." *Gustavian Weekly*. 20 October 1982: 4.

⁶⁴Ad Hoc Committee.

students Julie Kero and Chris Rosin headed a project to restore the cabin.⁶⁵ The siding was removed to reveal the original fitted logs from which it had been built, the roofing was repaired, and new windows were installed. Currently, the interior is being redecorated.⁶⁶

In 1986, the Arboretum Committee asked Herb Baldwin, a landscape architect, to revise the arboretum design. At this point, the 1975 plan had been only partially completed. The status of over half of the land originally planned was unsure. Since the prairie was to be planted on the western 75 acres, there was as of 1986 no prairie. Herb Baldwin modified the original plan in order to fit a six-acre prairie section into the east 55 acres, in the part which the 1975 plan designated as the formal area. The prairie section in the Linnaeus Arboretum is greatly reduced compared to the planned prairie of 1975. The six acre prairie is also fragmented because of several trails running through it. This makes it difficult to use as a research site and not very useful for ground-nesting bird habitat. There is too much peripheral area which predator species easily dominate. Baldwin also added a nature center surrounded by ten formal gardens to the original plans for development. In 1987 the college began building the Interpretive Center designed by the architect James Stageberg.⁶⁷ The building was "to serve as an arboretum information center for the campus" and the public⁶⁸ and to host arboretum and campus functions. It was completed in April, 1988.⁶⁹

On May 28, 1988, the arboretum was officially named the Linnaeus Arboretum at a special ceremony. The name was chosen to emphasize the college's Swedish

⁶⁵"Swedish Cabin." *Mankato Free Press*. 26 June 1986.

⁶⁶*The Borgeson Family Log Cabin*. Linnaeus Arboretum. Gustavus Adolphus College. St. Peter, MN.

⁶⁷*Twinflower*. Volume 1. Fall 1989.

⁶⁸Ad Hoc Committee.

⁶⁹Jeffrey S. Miller. "A Garden of Sweden." *Twinflower*. Fall 1989. Vol. 1, p. 6.

heritage and the arboretum's connection with Sweden. Since Linnaeus was a famous Swedish botanist it seems appropriate to name an arboretum after him, especially one with Swedish connections. Special guests at the naming ceremony included Orjan Nilsson, Director of the Linnaeus Gardens at Uppsala, and Karl-Erik Andersson, the Swedish Consul-General.⁷⁰ In addition, a Granlund bust of Linnaeus was unveiled. Trees were planted in honor of those instrumental in creating the arboretum.⁷¹

The Uhler Prairie was planted in 1988 by Prairie Restorations, a business out of the twin-city area. Several groups of trees in the formal section were moved to make room for the recently designated prairie area. The ground was dug up and sterilized with roundup before planting. The contractors used prairie seed native to Minnesota as well as transplanting some plants as seedlings. The six-acre prairie was located on the western side of the 55 acres facilitating expansion of the prairie into the western 75 acres, should that land be approved for arboretum development.

Toward the end of the year, the Arboretum Committee began developing a mission statement for the arboretum. It reads as follows:

"The mission statement of the Linnaeus Arboretum on the campus of Gustavus Adolphus College is to be an integral part of the life of the college by providing a living collection of plants representative of our Minnesota and Swedish heritage; to encourage education in nature, history, and science; to offer a setting for those seeking solitude in nature; and to enhance the stature of the College in the global community."

The statement was important in defining the arboretum and clarifying its goals. The implications of the statement for development were not new ideas, they had been practiced all along, but now they were to have a written formality. One of the goals of the arboretum's founders was to have represented in the arboretum every plant able to grow in Minnesota. The plan of representing various natural habitats reflected the value in appreciating the natural heritage of the state.

⁷⁰Ibid.

⁷¹Ibid.

The arboretum has been proud to reflect the Swedish heritage of the college and has drawn upon this heritage in several ways. First, the name "Linnaeus Arboretum" pays tribute to the famous Swedish botanist Karl von Linnaeus. This is an especially fitting name for our arboretum because it simultaneously embodies both the botanical nature of an arboretum and Gustavus' Swedish heritage. Second, connections have been made between the Linnaeus Arboretum and Swedish citizens and places. Formal connections with the Swedish Royal family and the Linnaeus Gardens in Uppsala Sweden have been established. Prince Bertil of the Swedish Royal Family is on the Linnaeus Arboretum's planning committee. Third, tangible elements demonstrate the arboretum's Swedish heritage. The Borgeson Log Cabin symbolizes the influence of Swedish settlers in this area. A bust of Linnaeus stands outside the Interpretive Center. The bust was sculpted by Paul Granlund, sculptor in residence and unveiled at the 1988 naming ceremony. There are plans to plant a garden containing plants unique to Sweden, and plants which are common to both Minnesota and Swedish landscapes. This garden will hopefully include plants sent from the Linnaeus Gardens at Uppsala. A shipment of plants from the Linnaeus Gardens in Sweden arrived in the late 1980's, but the roots dried out before they could be planted and none of them survived.⁷² Another shipment is hoped for.

The Linnaeus Arboretum's focus on education parallels the mission of Gustavus Adolphus College. The arboretum has been used for biology classes, writing classes, and physical education classes. Educational seminars have been held in the interpretive center. The arboretum has welcomed the public including school groups from the area.

The mission statement mentions one of the original inspirations for the arboretum, namely a student's request for a quiet place to walk near campus. Indeed the arboretum makes Gustavus unique since few small liberal arts colleges in the country have such a valuable resource.

Linnaeus Arboretum growth has been a slow project, often limited by funds.

⁷²Charles Mason.

This situation improved with the establishment of the Friends of the Linnaeus Arboretum in 1990. This organization was formed to provide support for the arboretum both physically through volunteer work and financially through gifts. Due to the increased funding available and the Friends' ability to draw people together, to work on the arboretum, more money was given and more interest generated in developing the arboretum. The organization is currently headed by Frank Gamelin, a retired educator. The Friends have conducted plant sales to raise money. They publish the *Twinflower*, which tells of current events and changes in the arboretum, Friends social events, educational seminars and gardening information. The Friends of the Linnaeus Arboretum have an annual meeting in the fall and plan an annual Arbor Day celebration. Membership has steadily grown since its initiation.

Since the Friends organization began, there has been a flurry of garden planting made possible by gifts. According to Herb Baldwin's general plan, a rose garden, a white garden, an herb garden, and a hosta garden have been planted. This year, 1993, the Evelyn Gardens have been planted. This process of planting new gardens as money came in has filled out the formal arboretum. First in a succession of garden plantings was the herb garden. It was planted to display herbs adaptable to Minnesota. Jane Thompson chose the herbs which would be used. Money for the garden was a gift from her and her husband, Brad Thompson. The Rose Garden, given as a gift by Melva Lind, contains thirty-eight types of rose bushes of hardy varieties from Canada. The white garden includes white flowering bushes and white annuals. This garden was given by Donald Swenson to honor his wife Ella. The Rose Garden and the White Garden were dedicated in the spring of 1991.⁷³

A vegetable garden was planted around the Borgeson cabin. It is an all natural (no chemicals used) vegetable garden planted with pioneer seeds, and tended by Lloyd Hollingsworth. It includes "potatoes, tomatoes, lettuce, beets, peas, beans, rutabagas, raspberries, currants, gooseberries," and sunflowers. Another garden, the

⁷³ "Two Gardens in the Linnaeus Arboretum to be Dedicated this Spring." *Twinflower*. Spring 1991. 3:1.

hosta garden, has been planted in a trellis area just east of the Interpretive Center.⁷⁴

Of course money is not the only requirement for arboretum growth. A lot of hands-on work goes into the planting and tending of an arboretum. Bill Larson, the campus gardener, spends a lot of hours working in the formal area of the arboretum. He is a creative force behind the gardens. Although there is the general plan, in the end, the gardener decides exactly where each plant will be placed.

The planting continued as in the fall several groves of trees were donated and planted. The Esbjornson family donated seven ironwood trees which were planted in a circle east of the Borgeson Cabin.⁷⁵ The Gamelin family donated funds for a Linden Grove.⁷⁶ The groves were planted within the hardwood natural area. These formal groupings of native hardwood species added a formal element to the natural area. In an interview with First Lady Loreli Steuer she imagined the effect of this formal grove within the "natural" area as the arboretum matures. She emphasized the delightful feeling of coming upon a formal, ordered grove of trees hidden in the midst of an otherwise "natural" area with randomly planted trees.⁷⁷

Recent Development

In 1992, Axel and Loreli Steuer came to campus as the first family and have been very involved in arboretum activities. On Arbor Day, 1992, Loreli Steuer was honored as the new first lady. To express her appreciation, she gave enough money for the planting of a lilac bower and an oak grove.⁷⁸ Thirteen varieties of lilacs were planted along a walkway in honor of Gustavus' first ladies. A plaque placed among the lilacs lists the names of all of the college's first ladies. Thirteen oak trees were

⁷⁴Ibid. p. 5.

⁷⁵"Esbjornson family dedicates 'Esbj Grove.'" *Twinflower*. Vol. 3. p. 2.

⁷⁶"Gamelin Family dedicates Linden Grove on August 17." *Twinflower*. Fall 1991 Vol. 3. p. 3.

⁷⁷Loreli Steuer. Personal interview. 18 March 1993.

⁷⁸"First Lady's Day' on April 24 (Arbor Day) to honor Loreli Steuer." *Twinflower*. Winter 1992. Vol. 4. p. 1.

planted in the President's Grove. Each oak was labeled with a plaque bearing the name of a former Gustavus president. These new additions to the arboretum are "living tributes to Gustavus Adolphus College Presidential couples."⁷⁹ The Walk and Grove were dedicated on April 24, (Arbor Day) 1992. In addition to gifts of gardens and tree groves, many trees have recently been donated in honor of family members and labeled with dedication plaques. In 1993 the Linnaeus Arboretum Memorial Tree Endowment Plan was instigated to offer supporters a chance to honor someone or commemorate an event through a gift to the arboretum. A gift of \$500 will benefit the arboretum and allow the donor to designate a tree. The tree will be marked with a plaque and maintained in the future, and replaced if the tree dies.⁸⁰ Also on Arbor Day at the luncheon, First Lady Steuer announced the newly organized fund drive "to raise one million dollars for the Linnaeus Arboretum Endowment."⁸¹

In this present era there is a real emphasis on raising money. Fundraising is intense right now, because it seems important to ensure the future of the arboretum by providing the necessary financial support for it.

During the years 1990-1993 several campus development issues have surfaced which will potentially affect the size and shape of the arboretum. It became obvious that a cohesive long-range plan for campus development was needed. During John Kendall's presidency, the architects BRW Inc. were commissioned to draw such a plan under explicit directives from the Board of Trustees. The college owns 80 acres west of the current 55 acre arboretum which is being rented to a local farmer. The Board instructed the architects that the most likely area for expansion would be these 80 acres. To connect development on this land with currently existing campus buildings, expansion would take place through the northern part of the arboretum.

⁷⁹Loreli Steuer. Address on the occasion of the dedication of the "First Ladies' Lilac Walk" and the "Presidents' Grove." 24 April 1992.

⁸⁰*Linnaeus Arboretum Memorial Tree Endowment Plan.* Friends of the Linnaeus Arboretum.

⁸¹"Loreli Steuer announces."

This would preserve the cohesiveness of the campus.⁸² The Board adopted one of BRW's proposed plans which included the placement of additional buildings and athletic fields on a westward mall radiating from Christ Chapel. Due to the deteriorated condition of the current stadium, the college currently faces the issue of rebuilding a football field and track. Relocation of the football field according to the 1990 BRW plan would decrease the size of the current arboretum and leave little land for arboretum expansion. In the fall of 1991, President Axel Steuer appointed a committee to investigate the land-use issues surrounding the arboretum and the arboretum's role in campus development. The issues are difficult. People want what is best for the campus in the long run, but they have differing priorities. Some people feel that the college should make a permanent commitment to support and protect the arboretum as it now stands. Some feel that the arboretum is one teaching tool which enhances the campus, but that it should not have higher priority than any other campus concern. If another concern were to be found more important to the campus as a whole, arboretum land could be used for development of that project.

The committee finished its report by May of 1992 and submitted it to the Board. It recommended that the current fifty-five acres be preserved at all costs and if possible, that the arboretum be expanded into the adjoining eighty acres of land west of the current arboretum. It offered alternative options for placement of the football field.

In the spring of 1992, the college was able to purchase 40 acres of land west of the Swanson Tennis Center. With this land available, some of the expansion pressure on the college is eased. The campus could expand to the north or to the west. It is likely that the campus will expand to the north since this land is closer to the campus center than the land to the west. Expansion to the north is problematic only in that Highway 5 runs between the campus and the newly acquired land. It would be advantageous to the college to reroute Highway 5 around to the north and west of the college's current land holdings.

⁸²Ad Hoc Committee. 26 March 1993.

The land-use questions are complex. Will expansion require changes in the present arboretum land? Is there a need or potential for arboretum expansion? The arboretum is a part of the campus. Some even conceptualize the whole campus as an arboretum. This concept is a holistic approach which emphasizes the need for an aesthetically pleasing and well-planned campus. The arboretum should contribute to the mission of the whole college. But it must be flexible so as not to hinder campus development. An arboretum however needs special consideration as a campus resource. Whereas buildings can be constructed in less than a year, it takes many years to develop an arboretum. Infringement on existing arboretum land would be a setback for arboretum development. The oldest trees in the arboretum have been growing for twenty years. The trees could be moved, but this would be somewhat difficult and land would have to be designated for their transplantation. Considering the patience required in waiting for trees to grow, this kind of a move would be discouraging. The college needs to make a commitment to the maintenance and future development of the arboretum.

The Arboretum: Present and Future

A Survey of Use

According to Frank Gamelin, the optimal size of an arboretum will depend on what type of plants one places there (whether woody species or gardens) and the possibility of acquiring "solid financial support."⁸³ To determine good choices for further development of the arboretum, it would be useful to know how the arboretum is being used by the campus community. In the spring of 1993, I conducted a survey on use of and attitudes about the arboretum. The surveys which were returned have been divided into two sets due to differences in the nature of distribution. Set one includes 59 surveys from a fairly random sample of the people walking through the Union. The surveys were handed out at a Greens information

⁸³Frank Gamelin. "Chairman Sets Goals for 'Friends of Linnaeus Arboretum'" *Twinflower*. Spring 1990. Vol. 2. p. 5.

table. All of the respondents from this set of surveys were students. The second set of 27 surveys were personally distributed. The respondent profile was as follows: 7 faculty and staff in the Canteen surveys; 7 students in botany class; 4 physical educators in Lund Center; 3 biology faculty and staff. Results from set one and two were similar in many aspects. For these cases, all 86 surveys were used.

Thirty-five percent of the respondents indicated that they have visited the arboretum 3-6 times during this school year while 27% visited once a week or more. Seventeen percent have visited 1-2 times this year and 12% have not visited this year. This indicates that 88% of the respondents use the arboretum at some time during the school year.

According to the survey, the most popular activities in the arboretum are: walking, indicated by 80% of the respondents, sitting - 45%, running - 37%, studying - 21%. Other activities for which the arboretum is used are: birdwatching, studying plants and learning plant names, skiing, playing games, starwatching, camping, Tai-chi, and talking with friends. Favorite aspects of the arboretum were indicated in this order: quiet, trees, open space, animals. Other aspects indicated were "nature," star visibility, the interpretive center, mental escape, sunsets, and "plums in the fall!"

The arboretum was considered mostly recreational by 65% of the survey respondents, and mostly educational by 16%. Twelve percent indicated that they considered it both recreational and educational.

The remaining results I will treat separately for the two survey sets. Set one, including only student respondents, showed that 34% had used the arboretum for a class, while only 22% of the surveys from the other set had indicated using the arboretum for a class. This lower percentage may reflect the presence of non-teaching staff in the sample. Mostly biology or physical education classes were listed as having used the arboretum, although several other departments were represented. Course participants were primarily engaged in observation (21%) or exercise (15%). Only 6% had used the arboretum for research, and this was presumably in-class research. I know of only one independent study done in the arboretum. The courses mentioned as having used the arboretum were as follows: General Biology, Field

Botany, Plant Physiology, Aerobic Jog/Run, Aerobic Body Conditioning, Art, Tai-chi, Nature Writing, and Yoga.

It is apparent from the percentages listed above that the arboretum is used frequently. When looking at the figures from the first survey set, the percentage is even higher. Ninety-two percent of these student respondents had been to the arboretum this year, and 74% of these had visited at least three times. The arboretum receives a variety of recreational uses. It is an important place for students to run, walk, talk, and play.

The arboretum has educational value as well. Eight percent of the first survey set and 22% of the second set responded that they learn plant names in the arboretum; for birdwatching the response was 5% and 15% respectively. The arboretum is used in teaching some biology courses, as well as being a resource for writing courses and physical education courses.

Proposals

The educational potential of the arboretum is much greater than the use it now receives. Four survey respondents indicated that improvements could be made in the informal educational aspects of the arboretum. Labeling of tree species could be better. Self-guided tours could be designed and accompanied by signs or brochures. Signs could be posted at the entrances telling about the arboretum and its design (conifer forest, hardwood forest, prairie and formal area).

The arboretum could be used as a resource for more courses. Especially its use could be expanded to departments other than biology and physical education. It could be used as a teaching tool for philosophy classes; math courses could use it to study stochasticity and chaotic systems.

Its use for independent research could be greatly increased. Research could be done on tree growth, light levels under trees, insect and bird populations, community diversity in the prairie, soil drainage and composition, horticulture, etc. The best encouragement for students to do research in the arboretum would be for professors to identify research topics in the arboretum within their discipline. The Carleton arboretum has been a site for research since the 1970's. Topics include study of the

sedimentation of two human-made lakes, watershed pollution, garter snakes, wildflowers, tree plantings, waterleaf, ants, and forest floor vegetation. Currently a population of the state-threatened wood turtle is being studied and there is research in the prairie areas on pollination.⁸⁴ The following topics would be particularly interesting for and beneficial to the Linnaeus Arboretum: a survey of plants which are native to both Sweden and Minnesota, a soil study to see the different effects of the vegetation in different areas of the arboretum, and a study on the wet areas in the arboretum including study of the fast draining properties of the soil.

Other improvements suggested in the survey were to expand and develop the existing plantings. The diversity of plants could be greatly increased, by introducing herbaceous ground cover, and by decreasing the amount of mowed green grass. Survey respondents suggested that more flowers and trees be planted.

Several respondents suggested that wetlands be developed. Another suggestion was to decrease the amount of mowing in the arboretum to increase diversity of wildlife habitat and save energy. Some felt that the arboretum should feel more isolated. Some felt that more benches should be placed along paths and that they could be made of Shetkaboard. One person disliked the wood chips. Other possibilities could be investigated for the paths. However, wood chips can be obtained at a low cost and must be replaced every few years. Sixteen percent of the 86 respondents indicated that the arboretum should be left alone to grow and mature.

Some people suggested increasing awareness of the arboretum among students. The arboretum could be used for first-year student orientation activities. This would introduce first-year students to the arboretum immediately. Tours for students could also be led through the arboretum on Saturdays in the fall and on Arbor Day in the spring to increase student awareness of the arboretum.

On the question of arboretum size, the surveys showed a difference in opinion between the two survey sets. The first set showed that 66% of the respondents, all

⁸⁴Mark McKone, Biology Professor at Carleton. Personal interview. March 1993.

students, found the arboretum too small, while the remainder found it adequate. In the second set, 30% found it too small, and 63% said that the arboretum was adequate.

Some of the improvements mentioned in the previous paragraphs are tied to the size of the arboretum. The original development plan encompassed 130 acres. The development of all of the original vegetation sites has not been completed due to lack of space. This has necessitated a reallocation of space to the various sections of the arboretum. Presently there are four basic divisions of the arboretum, conifer, hardwood, prairie, and formal. The 1975 plan included nine different areas. To expand and diversify plantings one could follow up on that plan. This expansion would also increase the potential for research in the arboretum by creating more of a diversity of habitats to study and larger study sites which would be more realistic. A larger arboretum would increase the amount of wildlife which would live there. However, more land would need to be approved as arboretum in order to make these improvements possible.

The prairie area is small due to the lack of space for expansion. According to the 1975 plan, thirty acres of prairie were planned for the western 75 acres. Because additional land had not been approved for the arboretum by 1986, Herb Baldwin redesigned the formal area to include a small plot of prairie. The existing prairie, planted in 1988, is only six acres in size and is fragmented by trails. This small fragmented prairie site is not very useful for research. Also, the area is not large enough to provide habitat for many prairie inhabitants. Ground nesting birds need larger areas where they will feel somewhat protected from predators which thrive at the edges of habitats. Three of the eighty-six survey respondents mentioned on the "improvements" section that the prairie should be enlarged. Since the prairie section represents the natural habitat which was actually here on this campus site 200 years ago, it would be sad to bring in other natural heritage habitats from Minnesota and not include the one representing this very area.

The college should wisely consider land-use and plan for the future. It would be advisable to purchase land when it is available so that it would not be difficult to

purchase land at times when the college really needs it. This extra land would serve as a buffer for the college against some of the city development which is beginning to surround it. To the south, a new subdivision is being built. To the north the college owns the land and has built an apartment complex and a tennis center. To the west, the land is agricultural. Inevitably, the land will be bought and developed by someone if the college does not buy it.

The college needs to concern itself with aesthetic beauty as well as practicality. The arboretum is a source of campus beautification. As previously mentioned, some people have suggested that the entire campus be thought of as an arboretum since the campus as a whole ought to be well designed and beautiful. In this way the two sections can be better integrated and the campus will be enriched by thoughtful planning and landscaping throughout the property owned by the college. The present fifty-five acres regarded as arboretum is an important "green space" where members of the Gustavus community can go to exercise, observe, and reflect. It is a bit removed from the buildings and people, so it is a retreat of sorts from the hectic atmosphere of college life.

The arboretum is important as a long-term commitment by the college. Arboreta cannot be transplanted every twenty years. They can be quickly removed, but are slow to return. This necessary longevity of arboreta must be considered in future campus planning. The arboretum could be a beautiful resource symbolizing the commitment of the college to campus beautification and emphasizing the enduring nature of the college institution itself, now 113 years old (1993).

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