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ARBORETUM NEWS

Vol. 16, No. 1

Madison, Wisconsin

Winter, 1967

This issue of the *ARBORETUM NEWS*, being larger than most, contains material originally planned for Vol. 15, No. 4, Autumn, 1966. Since we are behind scheduled publication date, Vol. 15, No. 4 will not be published.

BIRDS, BUGS, AND BIOTRONS

Snowflakes drift down past my office window; from the streets below, laden with gray snow, comes the sound of city traffic. On my desk lies a manual describing the new University of Wisconsin Biotron, an amazing structure capable of producing controlled environments—"sound, heat, light, the winds, and the rain are puppets of a computer."

It reminds me of another "laboratory" which has a natural variation in environment, with day length and temperature corresponding to the normal yearly pattern. In this "laboratory" I have studied the life cycle of several species of northern plants and their response to seasonal changes. Perhaps much of my study could have been carried on in the Biotron. Yet, there are some essential concepts I learned which a Biotron, or any man-made structure, will never teach. For this "laboratory" is the Finnerud Forest, the northern jewel of the Arboretum, where seasonal conditions which the Biotron can simulate artificially, just happen naturally.

It is hard to describe the expectation and excitement associated with the first day of the year suitable to be called spring. To a field botanist confined to an office for nearly five months, this day is like being reborn. The cool, damp northern Wisconsin wind cuts through my jacket as I swing open the gate to Finnerud Forest. From here I can see blue pockmarks of open water on the nearly ice-locked lake. As I drive on through the gate, a gaunt, startled whitetail deer streaks into the leafless cover, his gray winter coat rapidly blending into the landscape.

I pause to look at maple flowers, red, and beautifully silhouetted against a blue sky. The snow is gone except for a few shaded spots on north-facing slopes. A dark streak on the gray maple trunk catches my eye and I watch drops of sap collect on the end of a branch recently snapped off by a strong winter wind. The day is complete as, on my knees with childlike delight, I gaze upon the pink and white flowers of trailing arbutus and smell the delicate perfume-like fragrance of its blossoms filling the air.

The days are longer now and the air is warm on bare arms. A wall of green foliage greets me as the gate to the Forest swings open. The whitetail deer has his red summer coat; his head bears antlers in tender velvet.

Walking through the "laboratory," I am again aware of the natural history story it tells to eyes willing to "see." The fire-scarred trunks of the magnificent giants, the 125-year-old red pines, record earlier times when repeated fires swept through the northern part of our state. When I finally lower my eyes from the towering green crowns of the majestic pines, I see an ironic story revealed. The fires perpetuated the pines since their seedlings need the intense light and open habitat created by fire. Instead of a future generation of red pine, young red oak and red maple stand humbly in the shade of the pines knowing that, without disturbance of their environment, their deciduous crowns shall eventually reign.

A warm fall sun shines through a clear October sky. As the Forest gate swings open, the air is permeated with the aroma of drying and decaying leaves. A fat partridge explodes from dense hazel cover along the trail. Small aspen saplings with the bark worn off by hard, shining antlers tell of the activities of our whitetailed friend.

I have to admit that I still like to swish through masses of fallen leaves which collect on the forest floor. Lying on my back looking up through the crimson red and bright yellow of the hardwoods in autumnal splendor, I am as close to heaven as any earthly field botanist can ever get. With the approach of evening, light in the forest grows dim and streaks of a red sunset show through the forest canopy. A chilly breeze rustling fallen leaves reminds me that another season of field work is ending.

The Forest, being a good teacher, filled its student with facts and examples revealing the big main principle. Man is an integral part of his environment but he can control only certain aspects of it. Others are beyond his feeble control. This concept was taught in early April in a cold spring rain driven by a northwest wind, in July with heat, humidity and insects, and in November while the student stood on frozen ground covered with a light dusting of snow. This is something every man who works outside, or watches his crops grow, understands. But it is explained with great difficulty to a city dweller whose only contact with his environment is walking to the corner store, waiting for a bus, or thinking that milk originates in bottles. To exist in the future, we must understand our environment and live in harmony with it.

Teaching this principle will become increasingly difficult, at a time when it may be a matter of life or death. Each generation accepts as being normal an unbelievable amount of wanton destruction and spoilage of our natural landscape. One cannot explain the sound of rustling leaves underfoot, the smell of a forest after a rain, or the interactions of a natural system to someone who has not been fortunate enough to have experienced them. Biotrons help us to understand, but we need much more than merely a simulated environment—we must have the real article.

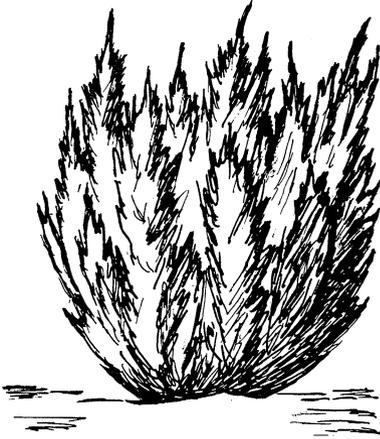
—Roger C. Anderson
Graduate Assistant, Botany



Finnerud Forest, the northern jewel of the Arboretum, Oneida County, Wisconsin.

HORTICULTURAL PLANTS IN THE ARBORETUM

4. Maney Juniper



A relative newcomer to our list of ornamental evergreens, *Juniperus chinensis* 'Maney' was first described by Haber and Lantz (1948) in *Iowa Farm Science* 2(11): 10-11. This cultivar originated from seedlings of the variable *J. chinensis* var. *sargentii* Henry sown at Iowa State University in 1935. Specimens of the Maney juniper were planted in bed 43 of the shrub section of the G. William Longenecker Horticultural Gardens of the Arboretum in the spring of 1961.

The growth habit of the Maney juniper is best described as irregular, being neither spreading nor upright. Plants develop numerous semi-erect branches and remain bushy and well clothed with needles at the base. After five years, the Arboretum specimens have attained a height of 3.5 to 4.5 feet and are as broad as they are high.

It is one of the best junipers for blue foliage, resembling in form and needle color the Meyer single-seed juniper (*J. squamata* 'Meyer'). The Maney juniper is superior as a landscape plant because it retains the foliage at its base, whereas the Meyer single-seed juniper becomes leggy and unattractive in many situations. Nurserymen report that the Maney juniper appears to be more tolerant of shade than other commonly planted junipers.

On The University of Wisconsin campus, the Maney juniper may be seen as potted subjects along the south wall of Bascom Hall. Of the numerous species of plants tried in pots or planters on the campus, the Maney juniper has proven to be the most successful. Being naturally tolerant of dry, poor soil, and exposure to sun and drying winds, it is a good choice for the trying conditions of survival in a planter or in other problem spots in our landscapes.

—E. R. Hasselkus
Depts. of Horticulture &
Landscape Architecture

FRIENDS PURCHASE PRAIRIE AREA FOR ARBORETUM

The Arboretum is about to acquire a new prairie. We have been laboring for over 30 years to re-establish prairies on our property, and the results have been spectacular on superficial observation, but disappointingly slow on close examination. Our prairies look like prairies, but they are heavily adulterated with all kinds of weeds, and even the real prairie plants are often doing better in places where they do not really belong. Dr. Theodore Sperry, our ecologist during the CCC days of the 1930's, made the remark that it would take roughly a thousand years to re-establish our prairies, and it looks like that estimate is not far wrong. The most difficult kind of prairie for us is the "high lime prairie," simply because we have neither the topography nor the soils to provide the proper habitat

for this plant community. We are doing the best we can with tons of crushed limestone, but progress is slow and our chances of success are probably not great.

We are, therefore, delighted to report that the *Friends of the Arboretum*, an organization that is becoming increasingly important to us, has about completed arrangements to give the Arboretum a six-acre plot of relatively undisturbed high lime prairie located at the intersection of Raymond and Gammon roads just west of Madison. This is an ideal location, being close enough to both the Arboretum and the University campus for daily visits by class or staff members. Its species list compares favorably with those of the few remaining pieces of prairie we know about. It has a fine display of pasque flowers and shooting stars as well as one of our relatively rare blazing stars, *Liatris cylindracea*, and a rare gentian, *Gentiana quinquefolia*. About a hundred species of prairie plants are there. We also have a few fine young bur oaks, and altogether too many aspens and sumacs. Work on removal of the aspens and sumacs will be started as soon as the prairie is ours, and we hope to burn over the entire property this spring.

This gift is only one of many from the *Friends of the Arboretum*. They have purchased property in the Lost City, sponsored our film, published our history—*A Thousand Ages*, and last summer they supported our entire public tour program. A sizeable portion of the money for this purchase came from memorials, and we hope that the flowers preserved by these gifts will last for a thousand ages.

This prairie, to be called Pasque Flower Hill, has already been used for Arboretum purposes. (It is known to many as the Raymond Road prairie.) It has been the source of numerous collections of plant materials, some of them pressed for herbarium specimens and some of them collected live for laboratory exercises in ecology. Last fall, it was the site of an experimental nature education program for 8th and 9th graders from the Unitarian Church, the former owners of the property.

—Grant Cottam

A DEDICATED ARBORETUM FAMILY—THE GILBERTS

It is with sorrow and a feeling of profound loss that we note the passing of Esther Montgomery Lowry Gilbert in Chesterton, Indiana, November 9, 1966, at the age of 83. Her death brings to a close part of the story of the Arboretum dealing with its earliest history. For Esther Gilbert was the widow of Edward Martinius Gilbert, Professor of Botany at The University of Wisconsin and the first Arboretum Committee Chairman. Mrs. Gilbert was a Life Member of the *Friends of the Arboretum* and maintained an avid interest in Arboretum and University affairs. At the time of her death, she was planning a trip to Madison to be honored by the University League (wives of faculty members and women faculty) with other past presidents of the organization in celebration of their 50th anniversary. A graduate of the Chicago Art Institute, Mrs. Gilbert pursued her artistic interests all of her life. Since moving to Chesterton ten years ago, after the death of Dr. Gilbert, she renewed her contacts with the Chicago Art Institute; and became chairman of the local Art Association, arranging for an exhibit each month in the Chesterton Library. She led an active, cheerful life, full of friendships and future plans, right up to the hour of her sudden passing.

It is fascinating to look back over an autobiographical statement made by Dr. E. M. Gilbert before his retirement from the University in 1946. It states, "I took on other functions, one of which has meant as much to me as any of my classes....Regent Michael Olbrich attended a convention at Boston in 1925, and brought back a circular about the Arnold Arboretum. Mr. Olbrich had known me since undergraduate days, so came to me about the Arboretum, and thus began a work that has taken much of my time for more than fifteen years. There were morning sessions while my colleagues were still asleep; there were sessions in Mr. Olbrich's office, often way into the night; there were afternoon and week-end trips to study areas around Madison, and I shall never forget the pleasure enjoyed when in 1927 Mr. Olbrich had accumulated \$64,000 and went before the Regents with an offer of the first tract of land for the proposed Arboretum.

"When the Regents accepted the offer, Mr. Olbrich insisted that I be made Chairman of the Arboretum Committee, and I have had the pleasure of seeing it increase from the small original tract to more than 1,200 acres, and to know that the tract is now fully paid for without having to call upon the legislature for a single dollar.

"There is no university in the U.S. that has anything to compare with our set-up, when all factors are taken into consideration. The work did not end with the Arboretum; because of the campaign of publicity, other tracts have come to the University, and more are still to come.

"The work done by the many capable and enthusiastic workers, who at all times gave valuable hours of their time, has been handsomely recompensed by our acquisitions, and to me this means more than having my name as author or co-author of a few research papers.

"I had the pleasure of working out with Mr. (Philip) Miles plans for the tract which he has given to the University, and was very glad to read of the final acceptance." (The Miles tract was the Faville Prairie at Lake Mills, Wisconsin, and was the first "satellite" area to come under Arboretum jurisdiction.)

It seems fitting to quote further from the Memorial Resolution of the Faculty of The University of Wisconsin on the Death of Emeritus Professor Edward Martinus Gilbert:

"Beneath the surface of the man's scientific specialty, a number of strong undercurrents influenced the pattern of his life and colored many of his attitudes and activities. His were the instincts of a naturalist with a deep-seated love for the northwoods and an intrinsic feeling for conservation. The summer sojourns with his family at the cottage on Bass (Windigo) Lake near Hayward (Wisconsin) were always more than vacations. Here he was able to steep himself in the feeling of the northwoods wilderness which so permeated his outlook on life.... These undercurrents explain the enthusiasm with which he worked for the preservation or restoration of natural areas. A rather large share of the credit for the establishment of the Arboretum of The University of Wisconsin should accrue to Dr. Gilbert. He was the first chairman of the Arboretum Committee at the time of its founding in 1932....During the exceedingly critical period of land acquisition and early development he served as the guiding hand, and his love for the wild country undoubtedly was influential in shaping the unique policy of the Arboretum which included the establishing of a series of native forest and prairie habitats each as complete in representation as possible."

The adult Gilberts were not the only family members to get into the Arboretum act. At the time of the dedication of the Arboretum on June 17, 1934, announcement cards were issued giving the program for the day in hand-lettered printing

on the face of the card, with a charming border design made up of plants, insects, birds and animals. This was the work of Jane, the Gilbert's daughter (now Mrs. William E. Peterson of Chesterton, Indiana) who obviously inherited her mother's artistic talent. The reverse side showed a map of the Arboretum of that era and listed the members of the Arboretum Committee and the Advisory Committee. It might be of interest to note these early committee members:

Arboretum Committee

F. A. Aust
J. G. Dickson
A. F. Gallistel
E. M. Gilbert
Aldo Leopold
G. Wm. Longenecker
M. E. McCaffrey
F. B. Trenk
George Wagner

Advisory Committee

E. A. Birge
C. E. Brown
L. J. Cole
N. C. Fassett
John Icke
Ralph Immell
J. W. Jackson
Chancey Juday
H. L. Russell
C. P. Winslow
Raphael Zon

Always a quiet, reserved sort of person, Dr. Gilbert stressed the work of others, ignoring any acclaim for his own contributions. It is typical that his name did not appear on the program side of the dedication card. With the family background being as it was, it seems fitting indeed that the Memorial Fund established in memory of Esther M. Gilbert will be used, along with other *Friends of the Arboretum* Memorial Funds, for the purchase of Pasque Flower Hill.

IN MEMORIAM

Contributions in memory of Esther M. Gilbert and in memory of Helen Ashman Wilde have been received recently by the University of Wisconsin Foundation for the *Friends of the Arboretum*.

Arboretum Personnel

Chairman of the Arboretum Committee Grant Cottam
Managing Director D. Archbald
Ranger-Naturalist James H. Zimmerman
Botanist Paul H. Zedler
Secretary, Arboretum Office Jane Curtis Medler
329 Birge Hall

The University of Wisconsin Arboretum

Grant Cottam, Chairman

329 Birge Hall

The University of Wisconsin

Madison, Wisconsin 53706



ARBORETUM NEWS

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Madison, Wisconsin

Spring, 1967

THE MANY USES OF THE FLOWERING CRABAPPLE

It is commonly agreed by many landscape experts that a good ornamental plant must have quite a few qualifications. Depending upon the particular plant these may differ but in the majority of cases good form and foliage, attractive flowers and fruits, hardiness, nonsusceptibility to plant disease and insects, and simplicity of cultural requirements are included. In the Midwest, an important group of plants that can fill all of the above stipulations are the crabapples. They are the flowering members of the genus *Malus* that have fruits up to two inches in diameter.

The crabapples are native to the temperate regions of Asia, Europe and America. The first plant known as a flowering crabapple was the Eastern European *Malus pumila*. The fruits are small and sour tasting—hence, crabby. In the latter part of the eighteenth century, the Siberian crab, *M. baccata*, was introduced into England. Planted among the native crab, hybridization occurred. In North America, the colonists as well as the Indians used the native crab, *M. ioensis*, for jelly. Traders and Indians carried apples to all parts of the country. Perhaps it was Johnny Appleseed who planted a parent of *M. soulardi*. But as a result of the mingling of the crabs from all parts of the world, we today have a great many species, species hybrids, botanical varieties and cultivars. Fortunately they now all have names that are fairly well standardized.

Not only is this attractive group easily grown in the Midwest, but because of its extensive varieties, there are one or more which will fit just about every possible landscaping situation or problem—be it a specimen plant in a formal garden or deciduous cover for a difficult bank.

The late Arie den Boer (1959), trained in Holland and working in Iowa, established the most extensive crabapple collection in the United States. Collecting specimens from all over the world and painstakingly hybridizing some of them himself, he gathered notes and made sketches, filling notebook after notebook with his observations.

Donald Wyman (1955) listed the following characteristics as being important when selecting a crabapple: height, length of bloom, color of flower buds, time of bloom, annual blooming, foliage color, and the length of time the fruits remain in colorful condition. It is important, too, to select a crab that is not susceptible to apple scab, cedar apple rust, or fire blight.

In selecting a tree for a particular location, it *must* be adaptable in shape and size and suited climatically and culturally to the site being considered. Form and habit are important to its placement in the landscape in order to create a certain picture or to acquire a functional effect.

Many of the crabapples are ideal for the small yards of the Midwest. They are easily transplanted, fast growing, tolerant of a wide range of soil conditions, and start to bloom when the tree is still young. Their relatively small size allows them to fit in with the architecture of today's houses and also to fill the size gap between shrubs and large trees.

Trees have much to offer on a busy street: they purify the air, absorb the sounds, modify the temperature, conserve water, and besides providing shade, they offer a restful effect on the eyes. However, the tree must fit the space available. The small stature of the flowering crabapples makes them a logical choice where overhead utility lines would interfere with taller street trees. On heavily traveled streets, with shallow setback and no wires, the columnar form, *Malus* 'Van Eseltine', is indispensable. It grows to 16 feet and has a grand display of oyster white flowers. *M. baccata* 'Columnaris' is another good upright.

Many communities across the nation have selected the flowering crab as a suburban symbol, and have encouraged all of their residents to plant one or more for a gloriously effective and dependable spring bloom. Crabapples are a good choice for the suburban homeowner, as they are relatively inexpensive and require no special pampering. The City of Madison has used the crabapple for accent, and on occasion for general planting, down the many boulevards it has landscaped in recent years.

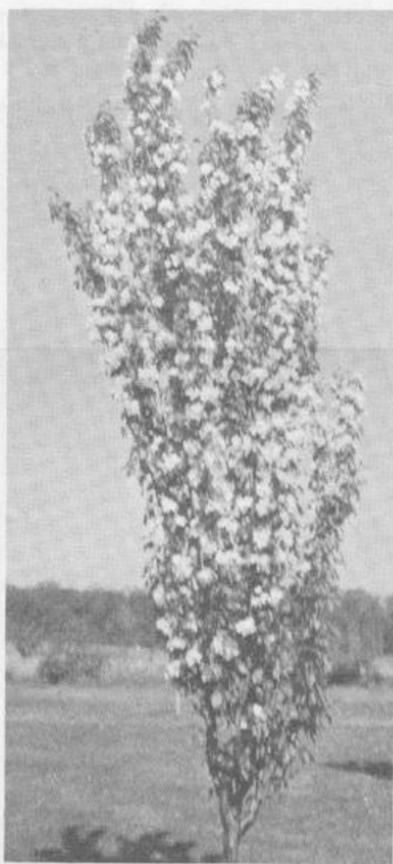
Espalier trees can offer year round pleasure—blossoms, foliage, fruit, and an interesting pattern in winter. This cultural practice was started in Europe during the times of the walled towns. Our modern architecture has given us large buildings with blank walls against which espaliers can be grown. They also can be used to ornament a space between or under windows, on fences or walls, to cover an arbor, and for a partition or decoration. There are many espalier forms, and to achieve them the plants should be properly trained and not just flattened against a wall. Be sure to use hardy varieties. Place in a sunny location in good soil and care for with a regular program of pruning, training, fertilizing, and protecting from disease and insects. The tea crab, *Malus hupehensis*, *M. sargentii*, and *M.* 'Red Jade' make excellent espaliers.

The growth form and habit of many of the crabs is especially adaptable to our present-day gardens, both big and small. The shrublike *Malus sargentii* is perfect for outdoor living rooms, formal areas, or small gardens. Its late blooming time and brilliant yellow and orange fall coloring add to its appeal. Columnar forms can be attractive as well as useful for screening a garden or along a property line. *M. baccata* 'Columnaris' or *M.* 'Strathmore' are narrow but will grow to a height of 20-25 feet. Some crabs make a beautiful specimen plant. Sculptured by nature, *M. atrosanguinea* soon becomes picturesquely twisted and irregular. *M. sieboldi* and *M. floribunda* also display an unsymmetrical form. With proper care, *M. baccata* 'Columnaris', *M. zumi calocarpa* and *M. purpurea* 'Eleyi' can be grown successfully in pots.

The weeping varieties of the crabapples, *Malus* 'Oekonomierat Echtermeyer', known as the pink weeper, and *M.* 'Red Jade' look extremely well planted at the top of a retaining wall or in a rockery where the branches will hang down over the stone. The lowest growing of the crabs, *M. sargentii*, is ideal for preventing erosion on a difficult steep slope. Furthermore, it does not sucker as do some roses and other shrubs occasionally used for this purpose.



Malus florabunda and *M. baccata* 'Columnaris', showing widely divergent habits of growth. Either one can be very effective planted in the correct location. Photos by Nancy W. Knight, taken in U. W. Arboretum.





Malus 'Selkirk' displaying lovely pink blossoms and *M.* 'Beverly' showing its attractive red fruit. Photos by G. Wm. Longenecker, taken in U. W. Arboretum.



Two crabs to keep in mind for good all year interest are *Malus* 'Red Jade' and *M. zumi calocarpa*. *M.* 'Red Jade' is picturesque with its pendulous habit of growth, small white flowers in May, and bright red cherrylike fruit in fall. *M. zumi calocarpa* has an attractive widespreading growth form, white blooms, dense summer foliage, and abundant pea-sized fruit ripening in fall and clinging on the tree into winter. For spring and summer foliage color in the bronze hues, *M. purpurea* 'Lemoinei' and *M.* 'Purple Wave' are excellent choices. As a whole, the crabs are not known for their fall coloring, but the Morton Arboretum (Kammerer, 1947, 1951, 1964) suggests *M. halliana spontanea*. The leathery leaves take on purplish-red and scarlet tones in early autumn.

Some of the crabs are not only valuable as ornamentals but also provide edible fruits, especially useful for jams, jellies and preserves. Notable examples are *Malus* 'Hopa', *M.* 'Cowichan' and *M. pumila niedzwetzkyana*. A larger-sized tree, *M.* 'Dolgo' produces excellent fruit and has been used in a Wisconsin commercial orchard. Its size probably makes it impractical for use in most home gardens, however.

One word of warning in selecting a particular crabapple for flowers or fruit is needed. Crabs are either annual or alternate-year bearers, so this is an important point to check in making a selection. Such information is available in the literature.

The prairie crab, *Malus ioensis*, will grow well in the filtered light beneath higher trees. Most effectively used in large thickets irregularly planted at the edge of large open areas bordering a woods, it blooms at a time when few other plants are flowering. Birds find it ideal for nest building and later the fruits provide delicious food for numerous members of the wildlife community. In The University of Wisconsin Arboretum, *M. ioensis* makes a striking display along the edges of Curtis Prairie and McCaffrey Drive.

The Arboretum began its crabapple display and test plantings in the spring of 1942 under the able direction of Professor G. William Longenecker.¹ At the present, the collection contains approximately 90 species and cultivars. Notable new additions include *Malus* 'Flame', 'Golden Hornet', 'Gorgeous', 'Pink Spires', 'Royalty', 'Snowdrift' and 'Vanguard'. The selection of the most promising new crabapples and the discarding of less-desirable ones is a constant continuing task of the Arboretum staff. Flowering time in early May attracts large numbers of people to the crabapple collection. The flowering crabs are not finished with their display in May, however. The diverse bronzes, red and greens of the foliage; the reds, purples, oranges, yellows and greens of the fruits; and the striking branching habits of the crabs may be enjoyed the year around.

¹Local support for this project from the West Side Garden Club and the McKay Nursery Company has been particularly helpful.

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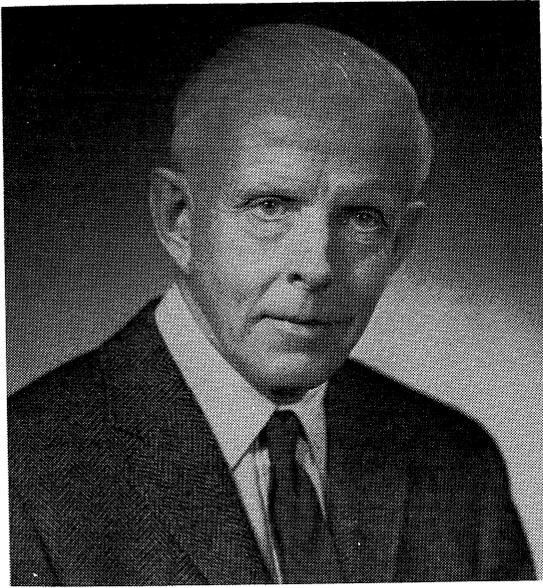
CAMPUS BIOLOGICAL AREAS

The Arboretum has assumed some additional responsibilities as the custodian of prime biological areas on the campus. University biologists have long been concerned over areas on the campus proper that are very convenient for teaching and limited research, but which often appear in imminent danger of disappearing under the impact of our continued expansion. Last summer, the edge of Eagle Heights Woods was destroyed in the construction of additional married student apartments, and this brought home to many people the extreme danger facing our semi-natural campus areas. As a result of this incident, and the resulting outcry from a great many people, biologists and nonbiologists alike, two groups began making proposals for a better administrative arrangement to insure that such incidents would be unlikely to happen again. One group was appointed by the campus biologists, the other was the Arboretum Committee. The composition of these two groups turned out to be almost identical, and a single report was eventually presented to the Graduate Biological Division and to the Chancellor. This report divided the biologically important areas on the campus into two groups. The first group contains areas that receive heavy nonbiological usage and includes John Muir Park (Bascom Woods), the shoreline from Park Street to Walnut Street, and the base of Picnic Point. These areas will be maintained and managed by the Division of Physical Plant, but all activities that affect their biotic potential will be cleared through the chairman of the Arboretum Committee. The second group includes those areas that still possess great potential for biologists. These are Eagle Heights Woods, the shoreline from Eagle Heights Woods to Second Point (the old Tent Colony), Second Point Woods, Picnic Point Marsh, and part of University Bay. Physical Plant will retain its responsibilities for routine maintenance of these areas (litter pickup, fence repairs, general esthetics), but the biological management will be assumed by the Arboretum. In effect, this action means that the development of the areas as biological laboratories will be assumed by the Arboretum, but that Physical Plant will do the "dirty work." We are making plans to remove the evidences of the tent colony and renovate the top of Eagle Heights. Although this added responsibility will increase the burden on our budget, we are delighted that these important areas will be a part of the Arboretum.

— Grant Cottam

DR. HENRY CAMPBELL GREENE

Held amid a chorus of prairie birds, the late afternoon dedication (May 8, 1967) of 40 acres of The University of Wisconsin Arboretum in the name of Dr. Henry C. Greene became also a requiem for the Wisconsin botanist.



Dr. Henry C. Greene

Dr. Greene, who spent 15 years or more in transforming 40 acres of farmland (see *ARBORETUM NEWS*, Vol. 15, No. 2-3, 1966) in the Grady tract into authentic prairie, was to have been the honored guest at the dedication. He died unexpectedly on April 27, 1967, in Tucson, Arizona.

Friends and colleagues gathered at the edge of the prairie for the joint dedication and memorial service, heard of Dr. Greene's contributions to the University Arboretum and the science of plants. They viewed the simple redwood marker for the Henry Greene Prairie, but perhaps the crowning tribute came from the prairie itself, spread before them and now approaching spring bloom.

Professor Grant Cottam said of him, "He was an eminent mycologist, an excellent ecologist, a teacher of both student and staff in the finer subtleties of field work."

"I am not familiar enough with his work in parasitic fungi to talk about it," he continued, "but I know it is voluminous, thorough, and very professional. As a result of his work, we know as much about the parasitic fungi of the Arboretum as about any comparable area in the world."

Professor G. William Longenecker and Dr. David Archbald spoke of Dr. Greene's almost single-handed building of the 40 acres of prairie, plant by plant, within the University's 1,200-acre outdoor laboratory; of his 20 years of service as secretary of the Arboretum Committee; and of his long service as editor of the *ARBORETUM NEWS*.

Born at Ft. Wayne, Indiana, December 13, 1904, Dr. Greene was 62 years old when he died. He held both bachelor and master degrees from the University of Washington and joined The University of Wisconsin Department of Botany after earning the Ph.D. from Wisconsin in 1933. He became curator of the University's Cryptogamic Herbarium in 1941 and remained at that post until his retirement in 1967.

"Henry's life was lived among the flowers of the prairie, the trees of the forest, and the microscopic fungi that lived on all these other plants," Prof. Cottam said. "It is appropriate that we use this prairie as the chapel most suitable in which to remember him. This is where he worshipped. This is what he loved."

—Vivien M. Hone

IN MEMORIAM

Contributions in memory of Henry Campbell Greene and in memory of Ralph E. Ramsay have been received recently by the University of Wisconsin Foundation for the *Friends of the Arboretum*.

Arboretum Personnel

Chairman of the Arboretum Committee	Grant Cottam
Managing Director	D. Archbald
Ranger-Naturalist	James H. Zimmerman
Botanist	Paul H. Zedler
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ARBORETUM NEWS

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Each year the students in the Plant Ecology course at The University of Wisconsin fulfill a class requirement of preparing a term paper based on individual research. Many of the research projects are conducted in the Arboretum, and add to our knowledge of the relationships of plants and animals with their environment. One such paper, a report of work carried out in the Leopold and Grady red and white pine forests, is presented here.

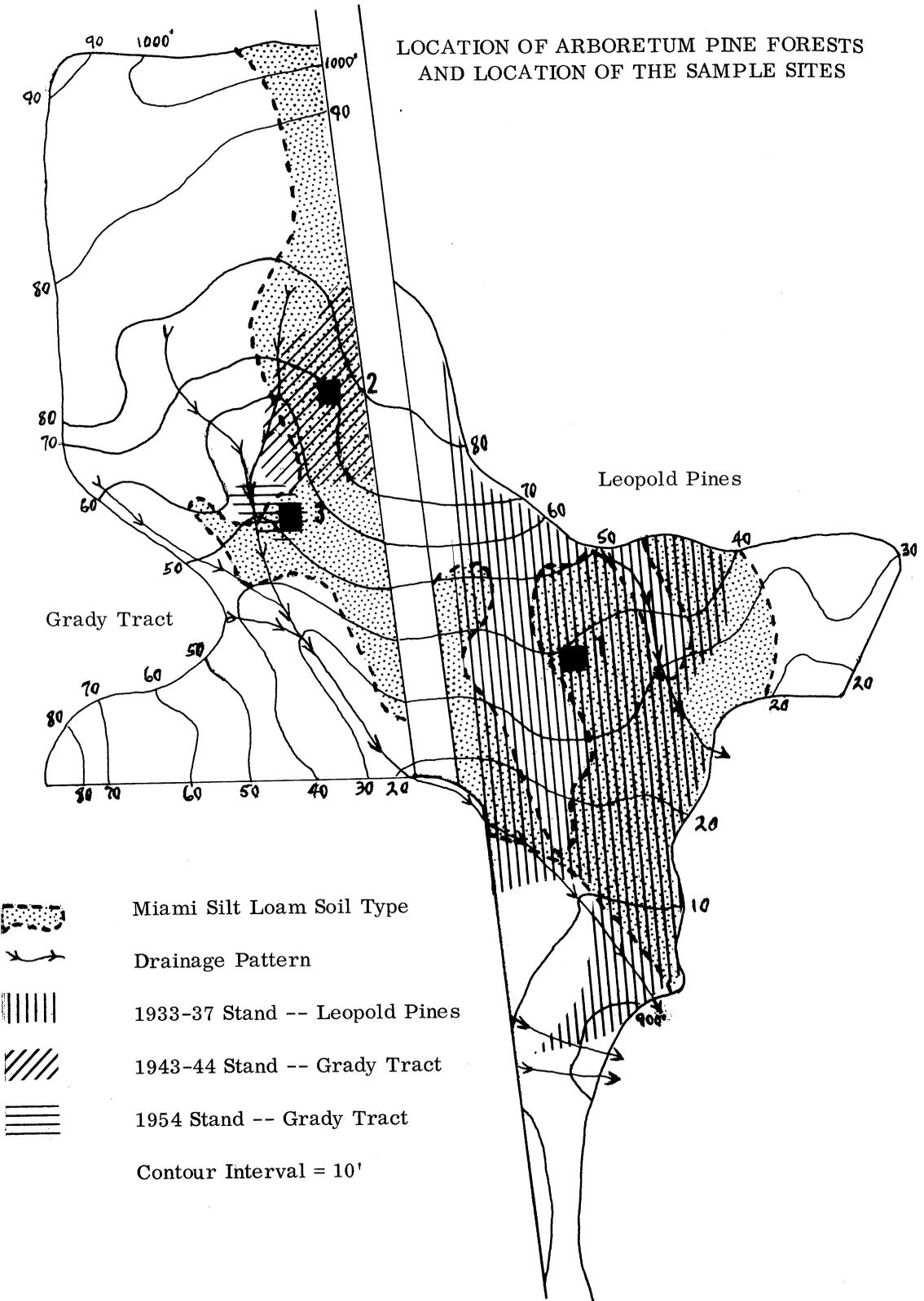
THE EFFECTS OF THREE RED AND WHITE PINE STANDS OF DIFFERING AGES ON THE pH, LITTER DEPTH, AND NUTRIENT CONTENT OF THE UNDERLYING SOIL

The artificial plantings of conifers in The University of Wisconsin Arboretum provide an opportunity to study the effects of vegetation on soil development. Very commonly the soils beneath natural conifer stands are strongly "podzolized," which means that a nearly white (leached) layer, very acidic and almost devoid of nutrients, is present beneath a mat of decaying needles. Such soils are called podzols. The natural soils of the Arboretum developed beneath a mixed deciduous forest and grassland and are more alkaline. They are only mildly podzolized, and referred to as gray-brown podzolics. Considering this, the question which arises is whether or not the pines planted on gray-brown podzolic soils will cause these soils to become more like the podzols of the northern coniferous forests by altering the chemical nature of the materials percolating through the soil.

With the discovery of the wide occurrence of strongly podzolized soils that are not acid, the purely chemical concept of podzolization has been broadened. According to Wilde¹ (1958), podzolization proceeds largely under the influence of microorganisms and the by-products of their metabolism where decomposition of forest litter tends to be retarded. Iron and aluminum oxides, as well as the bases, are leached from the surface layer of soil and are deposited at a lower level. This is brought about as a result of absorption of mineral salts by the microorganisms, by the action of reducing agents, and by the formation of complex organic compounds. Podzolization in a mild form can be a most beneficial process, immensely increasing the productivity of some forest soils, particularly those of sandy texture.

¹Wilde, S. A. 1958. *Forest Soils. Their Properties and Relation to Silviculture.* Ronald Press Co., New York. 537 p.

LOCATION OF ARBORETUM PINE FORESTS
AND LOCATION OF THE SAMPLE SITES



-  Miami Silt Loam Soil Type
-  Drainage Pattern
-  1933-37 Stand -- Leopold Pines
-  1943-44 Stand -- Grady Tract
-  1954 Stand -- Grady Tract
- Contour Interval = 10'

Three areas in the conifer forest of the Arboretum were chosen in which to investigate the effects of red and white pine stands of differing ages on the pH, litter depth and nutrient content of the underlying soil. One study was made in a portion of the Leopold Pines planted from 1933-37; two studies were located in the Grady Tract, one planted from 1943-44 and the other in 1954.

Choice of these areas can be explained by reference to the following rationale: (a) the areas were planted at about 10-year intervals; (b) they have a red pine to white pine ratio of about 1:1; (c) the three areas have the same soil type—Miami silt loam; (d) all had been farm land at one time; (e) they are free of trails, fire lanes, and major drainage courses, and are at approximately the same elevation with a slight easterly slope.

Soil samples were collected on April 29, 1967. A forty-foot quadrat was used for each study area, and each quadrat was divided into 9 sections, making 16 intersecting corners. Sample stations were located at each intersection.

After removal of the litter layer at each station, a soil core was obtained by means of a soil auger. Samples were taken at depths of one inch and six inches. The litter depth was measured at each station to the nearest quarter inch. The samples were stored overnight in a cooling device held at a temperature approximating that of the soil conditions in the pine stands.

Less than twenty-four hours after collecting the soil samples, pH was determined with the aid of a Beckman Zeromatic pH meter. Nutrient content was estimated using a La Motte Combination Soil Testing Kit, Model STH-14. Tests were made for nitrate nitrogen, available phosphorus, and replaceable calcium.

Statistical analyses of the data show that the three stands differ significantly with respect to pH values at the depths tested. The following table provides a general comparison of pH averages:

	Planting Date	pH at 1" Depth	pH at 6" Depth
(1)	1933-37	6.15	5.24
(2)	1943-44	6.32	5.54
(3)	1954	6.49	5.73

A calculation of the average litter depth from the data obtained yields the results presented in the table below. The data suggest a correlation between litter depth and pH of the soil.

	Planting Date	Average Litter Depth in Inches
(1)	1933-37	1.561
(2)	1943-44	1.250
(3)	1954	0.660

The tests on available soil nutrients show the 1954 stand contains appreciably more nitrate nitrogen and replaceable calcium than the 1933-37 stand. The 1943-44 stand is intermediate between the other two stands, as would be expected. Tests for phosphorus are not as clear in the results obtained, but show a trend toward a decrease in phosphorus as the age of the pines increases. Results show definitely greater amounts of calcium in the 1" layer than in the 6" layer of soil for all three ages of pine stands.

The estimate of soil nutrients by the La Motte method leaves much to be desired however, and only broad, qualitative trends may be cited with any confidence. From these trends it appears that there is a loss (leaching) of nutrients from the 1" and 6" levels of the soil with time. This loss is probably associated with the rise in acidity and is likely due to the presence of the conifer litter. Somewhat podzolic conditions have evidently been produced in the Arboretum pines.

Assuming that the decay of the pine needles gives rise to the complex organic acids that favor podzolization, it would be anticipated that the longer a pine forest stays on the soil, the greater would be the amount of decay and leaching leading to a lowering of the pH. This is borne out by the data obtained. The youngest stand (1954) has less than an inch of needles and the pH is the highest (most alkaline) of the three stands. The intermediate age (1943-44) has intermediate pH values and less than an inch and a half needle layer. The oldest stand (1933-37) proved to have the deepest layer of needle litter, as well as the lowest (most acid) pH values.

—Colin P. Rees
Research Assistant, Zoology

NOTES ON THE YELLOW CONEFLOWER (Ratibida pinnata) IN THE ARBORETUM

The yellow coneflower, *Ratibida pinnata*, is one of the most beautiful of the prairie plants. We are fortunate, therefore, that it has found the Arboretum to its liking and is among the more abundant plants—excluding the grasses—on the Curtis Prairie. The prairie survey of 1966 recorded the coneflower as being present in 233 out of 807 meter-square quadrats studied, or the ninth most frequent plant on the prairie. In general, it tends to be associated with native prairie species, rather than with the European weeds prevalent on parts of the Curtis Prairie. The most significant association values are with rigid sunflower (*Helianthus rigidus*), cut-leaf compass plant (*Silphium laciniatum*), bird's foot violet (*Viola pedatifida*), and blue-eyed grass (*Sisyrinchium campestre*).

Last winter, germination tests of *Ratibida* seed in the laboratory disclosed an interesting fact about this plant. A small percentage of the seedlings were found to be albinos, that is, without the normal green chlorophyll pigment. About four such albinos were observed in 1,500 seeds, so the frequency of this character is rather low. Since such plants cannot manufacture food, they die when very young, so naturally you will not find yellow coneflowers with white leaves on the Curtis Prairie.



Yellow Coneflower
(*Ratibida pinnata*)

—Paul H. Zedler
Arboretum Botanist

IN MEMORIAM - JACOB H. BEUSCHER

The unexpected death of Professor Jacob H. Beuscher was a great blow to the Arboretum. Jake was a man of many talents and gave freely of them. He was an expert in land and water law, and his interest in land and water extended far beyond the legal aspects. He loved the land, and dedicated himself to all sorts of activities that would improve its quality.

Jake's major formal contribution to the Arboretum was concerned with the formation of the *Friends of the Arboretum*. He was the author of its constitution and bylaws, but more important was his advice about its initial organization. Without his knowledge of procedures and people, the *Friends* would have been a far different organization. Many of us doubt that the *Friends* would have succeeded at all without him. In addition, Jake served on the old advisory committee of the Arboretum Committee, the advisory board of the *Friends*, and at the time of his death was a member of the executive board of the *Friends of the Arboretum*.

Great as was his contribution to the Arboretum, I shall miss him most for other reasons. Because of his great knowledge, keen mind, and genial personality he exerted a profound influence on legislation concerning environmental quality in this state, and throughout the world. He shared the philosophy of the people who founded the Arboretum, and this philosophy now exists in the law and in the attitudes of his students. One does not normally look for heroes among the writers of laws, but I am convinced that Jake Beuscher was a hero. I think he was one of the greatest men Wisconsin has produced, and the results of his activities will become more important with each succeeding generation.

Contained in the brochure, printed in 1962, which introduced the newly organized *Friends of the Arboretum* was a paragraph describing the attractions of the Arboretum. It was obviously done by someone with a deep appreciation for nature. It seems a fitting conclusion to a memorial statement for Jacob H. Beuscher. The paragraph is quoted here, as timely today as it was five years ago when first written by Jake himself.

"The Arboretum . . . plays an important role in outdoor activities. Thousands visit and enjoy this attractive open area located in the center of southern Wisconsin. Its lilacs and flowering trees are a noteworthy springtime attraction. Its quiet pathways, beautiful lake shores, native woods and meadows, are all strolling grounds for hundreds seeking respite from the tensions of city life."

—Grant Cottam

NEW MAP OF THE ARBORETUM IS AVAILABLE

A new map of The University of Wisconsin Arboretum is available from the Arboretum Office, 329 Birge Hall, Madison, Wisconsin 53706, at a cost of 25¢. Be sure your zip code is included in your address.

Without doubt the most accurate map we have ever had, it combines the skill of a commercial artist with the expert knowledge of our Field Office staff. It is the result of two years of work. Each trail and fire lane has been carefully checked, every boundary of a vegetational grouping has been mapped in the field. A revised descriptive text includes information on the prairies, wetlands, conifers, deciduous forests, landscape plants, and animal life. Printing costs were subsidized by the *Friends of the Arboretum*.

Two aspects are completely new. First, the map is in full color. Second, it introduces our system of marking trail intersections. Each trail and fire lane intersection has a new post carrying a symbol painted in white with a black number within the symbol. These same numbered markings appear on the map. Circles have been used for the Grady Tract, squares for the major part of the Arboretum north of the Beltline Highway, and triangles for the area north of McCaffrey Drive (Arboretum Drive). It is easy to follow a trail if one refers to the marked posts and his map.

EAGLE HEIGHTS WOODS

During the past summer the Arboretum began assuming its responsibilities toward the newly acquired Madison Campus Biological Areas. The most immediate problem was the damage done to the border of Eagle Heights Woods in the construction of additional married student apartments. We inherited a raw scar on a steep slope. With the cooperation of the Division of Physical Plant and of the Planning and Construction Department, we have set about to restore the border of the woods. During the fall, the entire area was replanted to dogwood, bladdernut and high-bush cranberry, and we are about to distribute a mulch of straw around the plantings to prevent erosion and improve water relations. If the plantings are successful, and we expect them to be, next fall should see the area almost completely healed. It will, of course, take a long time to get the area returned to a natural condition, but the immediate unsightliness and the danger of erosion will be over.

Another delicate task in the same area was the removal of a steel cable which was used as a fence. It was erected a long time ago, using the living trees of Eagle Heights Woods as fence posts. The trees grew around the cable, completely burying it. We were confronted with the problem of removing the cable without damaging the trees and did it by cutting the cable with a welding torch. All evidence of the presence of this cable should disappear in a few years, but the cable is still in the trees.



DEDICATION OF G. W. LONGENECKER HORTICULTURE GARDENS

On May 27, 1967, more than 200 members of the *Friends of the Arboretum* gathered in the bright sunshine for the annual spring breakfast meeting. Tribute was paid to G. William Longenecker, Executive Director of the Arboretum since its founding in the early 1930's. The 40-acre Horticulture Area, including shrub gardens, the famous lilacs, and the flowering crabapples, was dedicated as the G. William Longenecker Horticultural Gardens in honor of the man whose talent as a landscape architect was responsible for what the Arboretum is today.

The well-known lilac collection, attracting thousands of visitors each year, was in its peak of bloom for the dedication. This part of the Longenecker Horticultural Gardens was begun in 1935, aided by donations from the Madison Garden Club. The group of women to the left in the photograph are members of the Garden Club. They presented Mrs. Longenecker with a bouquet of lilacs from their own gardens.

From left to right, holding the redwood sign later placed at the entrance to the Longenecker Gardens, are David Archbald, Managing Director; G. William Longenecker; and Grant Cottam, Arboretum Committee Chairman. Professor Longenecker retired from his teaching duties and chairmanship of the Department of Landscape Architecture in June of this year.

IN MEMORIAM

Contributions in memory of Jacob H. Beuscher and in memory of Alice Blake Crane have been received recently by the University of Wisconsin Foundation for the *Friends of the Arboretum*.

Arboretum Personnel

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