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A Botanical Study of the Trees and Shrubs Found on the Campus of Ursinus College

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This paper is submitted to the faculty of Ursinus College in partial fulfillment of the requirments for Departmental Honors in Biology.

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INTRODUCTION

The trees of Ursinus College are one of its distinguishing features. To me they represent the Christian principles for which Ursinus was founded. Few students, if any, have not gazed with delight at the red-orange colors of the sugar maple in fall, the verdant pine in winter, and the delicate pink and white dogwood in spring. To many students who have lived most of their lives in the city, these trees represent their first association with the once abundant forests of early America. Although much of my life has been spent in the country, I did not grasp a full appreciation of trees until I took advanced botany under Dr. Wagner. As a direct result of his stimulating instruction, I developed an intense interest in the trees of Ursinus College campus. This interest created a desire to classify and plot each tree on the campus for the interest of future students.

PURPOSE

It is the purpose of this paper to give a report of the progress made in taking a botanical survey of the campus. In taking this survey I have endeavored to do the following:

1. Take a sample from all trees and shrubs of different species on the campus.
2. Press and dry each specimen.
3. Classify the specimen by the binomial system.
4. Mount each specimen in the manner prescribed by the Ursinus College Botany Department.
5. Make a map of the campus and plot the location of each tree on the map.
6. Have a painting made of the campus as seen from an aerial view, with the trees plotted on the painting.
7. Inquire about name plaques for the outstanding trees of the campus.

COLLECTION

After obtaining permission of the superintendent of grounds to take specimens of the trees, I started a systematic survey of the campus, beginning on the north side early in February and completing in the east wing in the middle of April. In taking cuttings special care was taken not to harm the symmetry of the tree. Particular care was also taken in the selection of specimens to make sure the cutting was representative of the species. In many cases the limbs nearest the ground were "sucker" shoots with precocious growth which were not satisfactory material. For these trees, cuttings had to be taken from the top either by climbing the tree or reaching the high boughs with a pole saw. At the time of collection each cutting

was tagged with a number, and this number was also placed on a field map, locating the position of the tree on the campus. One hundred and thirty-one cuttings were taken during the survey.

PRESSING

After each day's collecting, the specimens were taken to the laboratory for pressing and drying. The cuttings were placed between newspapers. The covered specimen was then placed between two cotton pads lying between two felt blotters. The blotters were bound on both sides by corrugated cardboard. This arrangement comprised a pressing unit. The felt, cotton, and paper took up moisture, while the cardboard allowed air to circulate through the many pressing units comprising a full press. A series of pressing units was placed between two wooden frames held in position by two strong straps. After tightening the straps the press was placed over several drying lamps for three or four days.

CLASSIFICATION

After being dried, the specimens were ready for classification. Since most of the specimens were from deciduous trees no leaves were present. To identify the specimens, winter keys were employed. It would serve no purpose to list these keys, but I shall include their sources in the bibliography at the end of this report. A few of the characteristics used in classification follow:

1. Size, shape, and arrangement of leaf scars.
2. Number of vascular bundles.

3. Texture of bark.
4. Type of fruit.
5. Stipule scars.
6. Type of pith (solid or chambered).
7. Habitat.
8. Presence or absence of leaves.

In any type of taxonomical work the procedure is most exacting, to say the least. In the truest scientific manner one stage of a tree should not be viewed in classification. Since time has not permitted my collecting a spring, summer, fall and winter collection, I cannot say with full confidence that the names I have assigned one hundred per cent correct. In those cases in which a doubt is present I have indicated it. Most instances of doubful classification are in the divers shrubs and hybridizing trees. Difficulty was encountered particularly in identifying the genera Thuja, Taxus and Quercus. In the cases in which I believed hybridization had occurred I have named it by the most phenotypical trait.

In my survey I found approximately seventy different species of trees and shrubs on the campus. In most cases I have verified my findings with specimens found in the school herbarium. In many cases of cultivated and hybridized specimens a duplicate was not found in the school herbarium. It had been Dr. Wagner's and my intention to take all cultivated and hybridized cuttings to the Morris Arboretum for further analysis. However, through unavoidable circumstances, such a trip has not been made. In any event I feel my work on these odd specimens has been indicative because a negative result is better than none.

As mentioned previously the binomial system has been used to assign names to the different species. A genus name is followed by the species name. Directly behind the species name an initial is found, which designated the person who classified the specimen. For example, Quercus alba L. designated the specimen to be in the genus Quercus, the species of which is alba as identified by Linnaeus. Although I have placed the common name behind the universal binomal name, I wish to warn the non-scientific reader that common names vary with geopraphical location. For example, Platanus occidentalis L. is called the button ball, sycamore and plain bark tree. In cases in which hybridization has occurred an X has been placed before the genus. A listing of trees found on the campus, designated as above, is placed at the end of this report.

In all cases in which I was not sure of the correct name because of poor characteristics or hybridization, I attempted to secure a spring cutting. Because of climatic conditions, only a few have been taken at the time of this writing. These spring cuttings, plus the winter specimens, will in all probability give an accurate interpretation of the species.

MOUNTING

After the specimens had been classified, they were mounted. In most instances I did the mounting myself, but I did receive some outside help. Before obtaining outside assistance I procured my adviser's permission. All specimens were mounted and labeled by the procedure outlined by the Ursinus College Botany Depart-

ment. Those specimens which I could not accurately classify have not been mounted. This will facilitate any future study. These unclassified specimens are numbered, however, and are located on the map.

MAP

As mentioned previously, after each cutting was taken it was numbered, and this number was placed on a map of the campus, locating the tree. A small map given me by the superintendent of grounds was enlarged for plotting locations. The few trees omitted from the survey were either diseased or in such poor condition they will have to be removed. Some of the smaller shrubs likewise were omitted because they are so easily destroyed or moved.

On the map I have placed a removable legend. In case additions or corrections are desirable the legend may be removed and changes made. All trees are listed in their respective families. I apologize for the fact that the numbers are not consecutive, but the process of renumbering all trees in consecutive order would not be advisable, since all duplicates and unknown trees would also have to be changed.

PAINTING

The painting which accompanies my work was executed by my brother David. The map on the painting is an exact duplicate of my map of the campus. In place of the Latin name we have substituted the common names of the trees. The painting, of course, is not to be considered as part of my honors work. It is designed to create an interest in trees by the non-scientific

student and particularly an interest in the trees of Ursinus College campus.

PLAQUES

The vast diversity of trees at Ursinus is known to a very few students. I realize that many people do not have the interest nor time to take a course in taxonomy, but I do think many of these non-scientific students would like to know the names of the trees on campus. With this in mind I have formulated a plan with the assistance of Dr. Wagner, by which the trees may be marked with plaques. Again time and circumstances have intervened and no progress has been made in acquiring such plaques. It was originally planned to have the plaques made of bronze, but the present state of national affairs makes this impossible. Although the plaques have not been obtained, the information to be put on the plaques has been compiled. In honoring Dr. Wagner's opinion, we feel that the genus and species name should be placed on the plaque along with the common name and the natural geographical location of the species.

TREES AND SHRUBS OF URSINUS COLLEGE CAMPUS

The numbers in front of the names correspond to those found on the location map. The first name given is the genus, the second the species, the initial is that of the person naming the species. An initial in parenthesis indicates that the first person to identify the species was corrected by the person whose initial appears directly behind the parenthesized initial. An X before the genus name indicates it to be a hybrid.

EXAMPLE:

Genus - Syringa

Species - vulgaris

Initial - L (Linnaeus)

Cult. - Cultivated

X - Hybrid

GYMNOSPERMAE

6 - Ginkgo biloba L. Ginkgo, Maidenhair Tree (Cult.)

109 - Pinus nigra Arnold var. austriaca Aschers. and Graebn., Austrian Pine

107 - Pinus resinosa Ait. Red Pine, Norway Pine

101 - Pinus strobus L., White Pine

74 - Picea Abies (L.) Karst., Norway Spruce (CULT.)

18 - Picea ?

19 - Tsuga canadensis (L.) Carr. Hemlock, Hemlock Spruce

5 - Chamaecyparis pisifera Sieb. and Zucc., Sawara Cypress?

69 - Thuja occidentalis L. Arbor-vitae

2 - Thuja ? cult.

4 - Thuja ? cult.

13 - Thuja ? cult.

3 - Thuja ? cult.

26 - Cryptomeria ? cult.

50 - Taxus ? cult.

1 - Taxus ? cult.

ANGIOSPERMAE

28 - Salix ? Willow

110 -Salix ? Willow

104- Juglans nigra L. Black Walnut

136- Fagus sylvatical, Copper beech (cult.)

60- Fagus grandifolia Chrh., Beech

51- Quercus alba L. White Oak

87- Quercus borealis Michx. f. var. maxima (Marsh.) Ashe, Red Oak

67- X Quercus coccinea Muenchh., Scarlet Oak

89- Quercus imbricaria Michx. Shingle Oak or Laurel Oak

27- Quercus macrocarpa Michx. Bur Oak, Mossy Cup Oak

7- Quercus palustris Muenchh., Pin Oak

44- Quercus rubrum L., Spanish Oak, Southern Red Oak

39- Quercus velutina Lam., Black Oak

24- Ulmus american L. American Elm, White Elm

59- Ulmus chinensis L. cult.

132- Morus alba L. White Mulberry

80- Magnolia acuminata L. Cucumber Tree, Mountain Magnolia (cult)

62- Liriodendron Tulipifera L. Tulip Tree, Yellow Poplar

83- Liquidambar styraciflua L., Red or Sweet Gum

88- Platanus occidentalis L. Sycamore or Buttonball

26- Pyrus malus L., Apple

81- Pyrus ? Flowering apple (cult)

90- Prunus ? Flowering cherry (cult.)

131- Prunus avium L. Sweet Cherry

36- Prunus serotina Ehrh., Wild Black Cherry

33 - Pyracantha gibbsee, Fire Thorn (cult.)

30 - Gymnocladus dioica (L.) Koch., Kentucky Coffee Tree

137 - Gladrastis lutea (Michx.) Koch, Yellow Wood

12 - Buxus sempervirens L. Common Box ?

34 - Ilex opaca Ait., American Holly

105 - Acer platanoides L. Morway Maple

43 - Acer rubrum L., Red or Soft Maple

5 - Acer saccharunum L., Silver or White Maple

53 - Acer saccarum Marsh., Sugar or Rock Maple

46 - X Tilia europea L. Basswood, Linden (cult.)

41 - Hibiscus syriacus L., Rose of Sharon, Shrubby Althaea (cult.)

64 - Aralia spinosa L., Hercules Club

55 - Cornus florida L., Flowering Dogwood

35 - Rhododendron maximum L. Great Laurel, Rose Bay

70 - Oxydendrum arboreum (L.) DC., Sourwood, Sorrel-tree.

119 - Azalea (cult.) ?

96 - Chionanthus virginica L., Fringe Tree or Old Man's Beard (cult.)

22 - Forsythia suspensa Vahl., Weeping Forsythia (cult.)

48 - Fraxinus americana L., White Ash

65 - Fraxinus nigra Marsh., Black or Hoop Ash

47 - Fraxinus pennsylvanica Marsh., Red Ash

125 - Syringa vulgaris L., Common Lilac

40 - Catalpa speciosa Warderl, Western Catalpa

85 - Sambucus pubens Michx., Red-berried Elder (cult.)

86 - Paulownia tomentosa L. Empress tree of China (cult.)

Map numbers 116, 122, 115, 97 and 66 have not been classified in want of a more complete set of cuttings.

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